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**Proposed  
Butte Resource Management Plan and  
Final Environmental Impact Statement  
September 2008**

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*(all files are pdf)*

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**PROPOSED**  
**Butte Resource**  
**Management Plan**  
**and**  
**Final Environmental Impact Statement**

**VOLUME I**

**September 2008**



**BLM**

Butte Field Office





# United States Department of the Interior



In Reply To:  
1610 (070)

BUREAU OF LAND MANAGEMENT  
Butte Field Office  
106 North Parkmont  
Butte, Montana 59701-3388  
Telephone: 406-533-7600  
[http://www.blm.gov/mt/st/en/fo/butte\\_field\\_office.html](http://www.blm.gov/mt/st/en/fo/butte_field_office.html)

September 2008

Dear Reader:

Enclosed for your review is the Proposed Resource Management Plan/Final Environmental Impact Statement (Proposed RMP/Final EIS) for the Butte Field Office. The Bureau of Land Management (BLM) prepared the Proposed RMP/Final EIS, taking into account public comments received during this planning effort. The Proposed RMP/Final EIS provides a framework for the future management direction and appropriate use of the Butte Field Office, located in Beaverhead, Broadwater, Deer Lodge, Gallatin, Jefferson, Lewis and Clark, Park, and Silver Bow counties. The document contains both land use planning decisions and implementation decisions to guide the BLM's management of the Butte Field Office. Both the Proposed RMP/Final EIS and the Draft RMP/EIS are available on the Butte RMP website at [http://www.blm.gov/mt/st/en/fo/butte\\_field\\_office.html](http://www.blm.gov/mt/st/en/fo/butte_field_office.html).

The Proposed RMP/Final EIS have been developed in accordance with the National Environmental Policy Act of 1969 (NEPA) and the Federal Land Policy and Management Act (FLPMA) of 1976. The Proposed RMP/Final EIS is largely based on Alternative B, the Preferred Alternative in the Draft RMP/EIS, which was released on June 8, 2007. The Proposed RMP/Final EIS contains the Proposed Plan, a summary of changes made between the Draft RMP/EIS and Proposed RMP/Final EIS, predictable impacts of the Proposed Plan, a summary of the written and verbal comments received during the public review period for the Draft RMP/EIS, and responses to the comments.

Pursuant to the BLM's planning regulations at 43 CFR 1610.5-2, any person who participated in the Butte RMP planning process and has an interest which is or may be adversely affected by approval of this Proposed RMP and the land use plan decisions contained within it may protest the plan within 30 days from the date the Environmental Protection Agency publishes its Notice of Availability in the Federal Register. For further information on filing a protest, please see the accompanying protest regulations in the pages that follow (labeled as Attachment #1). The regulations specify the required elements of your protest. Take care to document all relevant facts. As much as possible, reference or cite the planning documents. To aid in ensuring the completeness of your protest, a protest checklist is attached to this letter (labeled as Attachment #2). This is also available online on the Butte RMP website. Press releases on the actual date ending the protest period will be sent to local and regional media contacts and information will be placed on the Butte RMP website.

Only those persons or organizations who participated in the planning process leading to this Proposed RMP may protest. A protesting party may raise only those issues submitted for the record during the planning process leading up to publication of this Proposed RMP. New issues may not be brought into the record at the protest stage.

Electronic mail and faxed protests will not be accepted as valid protests unless the protesting party also provides the original letter by either regular or overnight mail postmarked by the close of the protest period. Under these conditions, the BLM will consider the email or faxed protest an advance copy and will afford it full consideration. If you wish to provide the BLM with such advance notification, please direct faxed protests to the attention of the BLM protest coordinator at 202-452-5112, and e-mailed protests to [Brenda.Hudgens-Williams@blm.gov](mailto:Brenda.Hudgens-Williams@blm.gov).

All protests, including the follow-up letter (if e-mailing or faxing) must be in writing and mailed to the following address:

Regular Mail:  
Director (210)  
Attention: Brenda Williams  
P.O. Box 66538  
Washington, D.C. 20035

Overnight Mail:  
Director (210)  
Attention: Brenda Williams  
1620 L Street, N.W., Suite 1075  
Washington, D.C. 20036

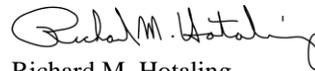
Before including your address, phone number, e-mail address, or other personal identifying information in your protest, be advised that your entire protest – including your personal identifying information – may be made publicly available at any time. While you can ask us in your protest to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

The BLM Director will make every attempt to promptly render a decision on each protest. The decision will be in writing and will be sent to the protesting party by certified mail, return receipt requested. The decision of the BLM Director shall be the final decision of the Department of the Interior.

Upon resolution of all land use plan protests, the BLM will issue an Approved RMP and Record of Decision (ROD). The Approved RMP and ROD will be mailed or made available electronically to all who participated in the planning process and will be available to all parties through the “Planning” page of the BLM national website (<http://www.blm.gov/planning>), or by mail upon request.

The Proposed RMP/Final EIS contains land use planning decisions subject to protest with the exception of decisions on site-specific travel plans. **Decisions on travel route-specific management for the Helena Travel Planning Area (TPA), East Helena TPA, Lewis and Clark County NW TPA, Boulder/Jefferson City TPA, and Upper Big Hole River TPA are not protestable.** Unlike land use planning decisions, implementation decisions are not subject to protest under the BLM planning regulations, but are subject to an administrative review process, through appeals to the Office of Hearings and Appeals (OHA), Interior Board of Land Appeals (IBLA) pursuant to 43 CFR, Part 4, Subpart E. Implementation decisions generally constitute the BLM’s final approval allowing on-the-ground actions to proceed. Where implementation decisions are made as part of the land use planning process, they are still subject to the appeals process or other administrative review as prescribed by specific resource program regulations once the BLM resolves protest to land use planning decisions and issues an Approved RMP and ROD. The Approved RMP and ROD will therefore identify the implementation decisions made in the plan that may be appealed to the Office of Hearings and Appeals.

Sincerely,



Richard M. Hotaling

Butte Field Manager

## ATTACHMENT #1

### **43 CFR 1610.5–2 PROTEST PROCEDURES**

(a) Any person who participated in the planning process and has an interest which is or may be adversely affected by the approval or amendment of a resource management plan may protest such approval or amendment. A protest may raise only those issues which were submitted for the record during the planning process.

(1) The protest shall be in writing and shall be filed with the Director. The protest shall be filed within 30 days of the date the Environmental Protection Agency published the notice of receipt of the final environmental impact statement containing the plan or amendment in the FEDERAL REGISTER.

For an amendment not requiring the preparation of an environmental impact statement, the protest shall be filed within 30 days of the publication of the notice of its effective date.

(2) The protest shall contain:

(i) The name, mailing address, telephone number, and interest of the person filing the protest;

(ii) A statement of the issue or issues being protested;

(iii) A statement of the part or parts of the plan or amendment being protested;

(iv) A copy of all documents addressing the issue or issues that were submitted during the planning process by the protesting party or an indication of the date the issue or issues were discussed for the record; and

(v) A concise statement explaining why the State Director's decision is believed to be wrong.

(3) The Director shall promptly render a decision on the protest. The decision shall be in writing and shall set forth the reasons for the decision.

The decision shall be sent to the protesting party by certified mail, return receipt requested.

(b) The decision of the Director shall be the final decision of the Department of the Interior.

**ATTACHMENT #2**

**Resource Management Plan  
Protest Critical Item Checklist**

**The following items *must* be included to constitute a valid protest  
whether using this optional format, or a narrative letter.**

**(43 CFR 1610.5-2)**

BLM's practice is to make comments, including names and home addresses of respondents, available for public review. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment--including your personal identifying information--may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so. All submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials of organizations and businesses, will be available for public inspection in their entirety.

**Resource Management Plan (RMP) or Amendment (RMPA) being protested:**

**Name:**

**Address:**

**Phone Number: (    )**

**Your interest in filing this protest (how will you be adversely affected by the approval or amendment of this plan?):**

**Issue or issues being protested:**

**Statement of the part or parts of the plan being protested:**

**Chapter:**

**Section:**

**Page:**

**(or) Map:**

**Attach copies of all documents addressing the issue(s) that were submitted during the planning process by the protesting party, OR an indication of the date the issue(s) were discussed for the record.**

**Date(s):**

**A concise statement explaining why the State Director's decisions is believed to be wrong:**

**PROPOSED  
BUTTE RESOURCE MANAGEMENT PLAN  
AND  
FINAL ENVIRONMENTAL IMPACT STATEMENT**

**BUTTE FIELD OFFICE  
BUTTE, MONTANA**

**SEPTEMBER 2008**



**PROPOSED  
BUTTE RESOURCE MANAGEMENT PLAN  
AND  
FINAL ENVIRONMENTAL IMPACT STATEMENT**

1. Responsible Agency:

United States Department of the Interior,  
Bureau of Land Management

2. Draft ( )            Final (X)

3. Type of Action:    Administrative (X)                      Legislative ( )

4.        Abstract: The Proposed Resource Management Plan and Final Environmental Impact Statement describes and analyzes four alternatives for managing the public lands and resources administered by the Bureau of Land Management's Butte Field Office and located in southwestern Montana in Beaverhead, Broadwater, Deer Lodge, Gallatin, Jefferson, Lewis and Clark, Silver Bow, Park, and Beaverhead Counties. These alternatives are: Alternative A (continuation of current management, or the No Action Alternatives); Alternative B (Preferred Alternative) and Alternatives C and D. Major RMP issues include vegetation communities; wildlife, wildlife habitat, special status and priority plant and animal species; travel management and access; recreation; and special designations including Areas of Critical Environmental Concern, National Trails, Wild and Scenic Rivers, and Wilderness Study Areas. The alternatives present a range of management actions to achieve goals and desired future conditions for the Butte Field Office.

5.        Protests on the Proposed Resource Management Plan and Final Environmental Impact Statement must be postmarked within 30 days from publication of the Notice of Availability by the Environmental Protection Agency. The close of the protest period will be announced in news releases and on the RMP website at [www.blm.gov/mt/st/en/fo/butte\\_field\\_office.html](http://www.blm.gov/mt/st/en/fo/butte_field_office.html).

6.        For further information, contact:

Tim La Marr, RMP Team Leader  
Bureau of Land Management, Butte Field Office  
106 North Parkmont  
Butte, MT 59701  
(406) 533-7645  
[Timothy\\_LaMarr@blm.gov](mailto:Timothy_LaMarr@blm.gov)



## ACRONYMS

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°C	Degrees Celsius	FRCC	Fire Regime Condition Class
ACEC	Area of Critical Environmental Concern	GCC	Global Climate Change
AG	Arctic Grayling	GHG	Greenhouse Gas
AML	Abandoned Mine Lands	GIS	Geographic Information System
AMS	Analysis of the Management Situation	HUC	Hydrologic Unit Code
APLIC	Avian Power Line Interaction Committee	IGBC	Interagency Grizzly Bear Committee
ATV	All Terrain Vehicle	IM	Instructional Memorandum
AUM	Animal Unit Month	ITRR	The University of Montana's Institute for Tourism and Recreation Research
B.P.	Before Present	KGRA	Known Geothermal Resource Area
BBER	The University of Montana's Bureau of Business and Economic Research	LWCF	Land and Water Conservation Fund
BCFG	Billion Cubic Feet of Gas	MAAQS	Montana Ambient Air Quality Standards
BFO	Butte Field Office	MBF	Thousand Board Feet
BLM	Bureau of Land Management	MBMG	Montana Bureau of Mines and Geology
BMP	Best Management Practice	MBOGC	Montana Board of Oil and Gas Conserva- tion
BT	Bull trout	MBTSG	Montana Bull Trout Scientific Group
CCF	Hundred Cubic Feet	MCF	Thousand cubic feet
CEQ	Council on Environmental Quality	MDEQ	Montana Department of Environmental Quality
CFL	Commercial Forest Land	MFP	Management Framework Plan
CFR	Code of Federal Regulations	MFWP	Montana Fish, Wildlife and Parks
CSU	Controlled Surface Use Stipulation	MLA	Mineral Leasing Act
DA	Decision Area	MMBF	Million Board Feet
DBH	Diameter at Breast Height	MMBO	Million Barrels Of Oil
DNRC	Montana Department of Natural Resources	mph	Miles per hour
DOE	Department of Energy	NA	Not Applicable
DOI	US Department of the Interior	NAAQS	National Ambient Air Quality Standards
EA	Environmental Assessment	NDA	No Data Available
EIS	Environmental Impact Statement	NEPA	National Environmental Policy Act
EMU	Elk Management Unit	NFU	Nonfunctioning
EPA	Environmental Protection Agency	NL	No Lease
ERMA	Extensive Recreation Management Area	NO <sub>2</sub>	Nitrogen Dioxide
ESA	Endangered Species Act	NOI	Notice of Intent
FAA	Federal Aviation Administration	NPS	National Park Service
FAMS	Facility Asset Management System	NRCS	Natural Resource Conservation Service
FAR	Functioning At Risk	NSO	No Surface Occupancy Stipulation
FLPMA	Federal Land Policy and Management Act	NW	Northwest
FMU	Fire Management Unit	OHV	Off-Highway Vehicle
FO	Field Office		

## Acronyms

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PA	Planning Area	SO <sub>2</sub>	Sulfur Dioxide
PEIS	Programmatic Environmental Impact Statement	TL	Timing Limitation Stipulation
PILT	Payment in Lieu of Taxes	TMDL	Total Maximum Daily Load
PM <sub>10</sub>	Particulate Matter less than 10 micrograms	TPA	Travel Planning Area
PM <sub>2.5</sub>	Particulate Matter less than 2.5 micrograms	TPCC	Timber Production Capability Classification
ppm	Parts per million	USC	United States Code
PPS	Proposed Planning Scenario	USDA	United States Department of Agriculture
PSQ	Probable Sale Quantity	USDI	United States Department of the Interior
R&PP	Recreation and Public Purposes	USFS	United States Forest Service
RFD	Reasonably Foreseeable Development	USFWS	United States Fish and Wildlife Service
RMP	Resource Management Plan	USGS	United States Geological Survey
RMZ	Riparian Management Zone	VRM	Visual Resource Management
ROD	Record of Decision	VUD	Visitor Use Days
ROS	Recreation Opportunity Spectrum	WCT	Westslope Cutthroat Trout
ROW	Right-of-way	WFIP	Wildland Fire Implementation Plan
RTM	Recreation Tourism Market	WFU	Wildland Fire Use
SIMPPLLE	Simulating Patterns and Processes at Landscape Scales	WSA	Wilderness Study Area
SLT	Standard Lease Terms	WSR	Wild and Scenic River
SMRA	Special Recreation Management Area	WUI	Wildland/Urban Interface
SMZ	Streamside Management Zone	YCT	Yellowstone Cutthroat Trout

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## READER'S GUIDE

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Preparation of this document was guided by United States Department of the Interior (USDI) Bureau of Land Management (BLM) planning regulations issued under the authority of the Federal Land Policy and Management Act (FLPMA) of 1976 and federal environmental policy under the National Environmental Policy Act (NEPA) of 1969. The Draft Resource Management Plan/Environmental Impact Statement (RMP/EIS) primarily focuses on five planning issues and the decisions needed to resolve them. The issues were identified through public scoping, concerns raised to BLM staff in interactions with public land users, and resource management concerns of the BLM and cooperating agencies. The issues are:

- vegetation communities;
- wildlife, wildlife habitat, special status and priority plant and animal species;
- travel management and access;
- recreation including national trails, visual resources, wild and scenic rivers, and wilderness; and
- Areas of Critical Environmental Concern (ACEC).

Other management concerns were addressed in the RMP, but do not drive the formulation of the alternatives. To assist agency decision-makers and the general public in choosing appropriate solutions to the planning issues, four alternatives were proposed and their impacts evaluated. The alternatives were limited to those that span a reasonable way of managing public lands and federal minerals, while offering a broad range of options.

Enclosed with the Proposed RMP/Final EIS is a compact disk of "Supplemental Electronic Files". This disk contains a "Readme.txt" file and four folders: "Acrobat Reader", "AMS Figures", "Grazing Allotment Maps", and "Travel Plan Maps". The "Readme.txt" file contains guidance on the additional information contained on the disk and how to access it. The "Acrobat Reader" folder contains a version of Adobe Acrobat Reader that will enable readers to view the maps in other folders.

The Proposed RMP/Final EIS is designed to be used in conjunction with map information provided in the Draft RMP/EIS. Only maps where substantive information has changed since release of the Draft RMP/EIS have been produced for the Proposed RMP/Final EIS. These maps are listed in the Map Changes section at the end of Chapter 1.

## DOCUMENT SECTIONS

The format of the EIS follows the Council on Environmental Quality's (CEQ) regulations implementing the NEPA (40 CFR 1500). The major sections of the EIS include:

### Executive Summary

The Executive Summary provides an overview of information detailed in the full document and serves as a synopsis of the planning issues, alternatives and potential environmental consequences.

### Chapter 1 (Purpose and Need)

This chapter contains background information on the planning process and sets the stage for the information that is presented in the rest of the document. The main sections in Chapter 1 include the Overview, Purpose and Need for Revising the Plan, Decisions from this Plan, Description of the Planning Area, Scoping and Planning Issues, Planning Criteria and Regulatory Requirements, Planning Process, Related Plans, Policy, Collaboration and Overall Vision and Desired Future Conditions. The final section of Chapter 1 describes Changes from the Draft RMP to the Proposed RMP. Substantive text revisions are shaded in gray throughout the Proposed RMP/Final EIS.

### Chapter 2 (Alternatives)

This chapter provides the description of management scenarios proposed for lands managed by the BLM within the Butte Field Office Planning Area. This chapter explains how alternatives were developed and, provides an overview of the four alternatives considered in detail, states the goals for management of resources, and describes the management actions by planning issue and management concern for each alternative, those common to all the alternatives and those common to the action alternatives. Alternatives that were considered but not analyzed in detail are discussed along with rationale for why they were not considered in detail. Finally, there is a table that shows the management actions in each alternative for easy comparison, followed by a table comparing the effects of each alternative.

### Chapter 3 (Affected Environment)

This chapter describes the current condition of the Planning Area. This chapter is organized by resource, resource use, special designation, and social and economic conditions.

### Chapter 4 (Environmental Consequences)

This chapter describes the projected impacts and changes that would result with implementation of each of the alternatives. There are two fundamental parts of this chapter. The first part of this chapter (in Volume I) discusses environmental consequences of RMP alternatives. The RMP alternatives section starts with an explanation of the types of effect discussed, followed by assumptions that were made in the analysis for each resource. The effects are organized by resource and resource use. Each resource/resource use section describes

direct and indirect effects common to all alternatives, effects of Alternative A (No Action), effects common to the action alternatives, then effects of Alternative B, Alternative C and Alternative D. The cumulative effects section follows, with an introduction and listing of activities considered in the analysis and the cumulative effects. The RMP alternatives section closes out with the analysis of irreversible and irretrievable commitment and unavoidable adverse impacts. While details of the impacts are provided in this chapter, the summary table of impacts is found at the end of Chapter 2.

The second part of this chapter (in Volume II) discusses environmental consequences of the alternatives for the five site-specific travel plans, organized by travel planning area. Direct/indirect and cumulative effects on each resource or resource use are discussed at the scale of each travel planning area. The chapter concludes with a discussion of cumulative effects of the travel plan alternatives for all five travel planning areas in aggregate at the Decision Area/Planning Area scales.

### **Chapter 5 (Consultation and Coordination)**

This chapter describes public involvement efforts and collaborative processes, lists of agencies, and organizations receiving the document, and identifies the preparers of the RMP/EIS. It also includes disclosure of substantive public comments received and the BLM's responses to those comments.

### **References**

Scientific publications and other references used as supporting information are listed in alphabetical order here.

### **Glossary**

Technical terms and phrases with specific policy meaning or definition are explained in more detail.

### **Index**

Terms frequently referenced are listed along with the page numbers where they occur.

## **OTHER INFORMATION**

**Tables** and **Figures** have been included throughout the document to display and summarize pertinent information. While several **Maps** are nested within Volume I, most of the maps are oversized and are provided in a packet with an envelope. In the Proposed RMP/Final EIS, only maps where substantive information has changed since the Draft RMP/EIS have been reproduced.

Acreages displayed in this document should be considered approximations even when displayed to the nearest acre. Most acreages were calculated from GIS coverages (considered the best available information by the BLM for the scale of this planning effort) and as a result may not match acres provided in prior published documents that contained calculations from master title plats or other base data. In other instances, acres have been rounded as analysis was completed. These rounded figures should also be considered approximations. The data used throughout this document is for land use planning purposes and not necessarily for actual on-the-ground implementation. The precision afforded by GIS calculation does not reflect project level accuracy. Acreage figures provided in this document for land use plan analysis purposes will be refined as subsequent site-specific analysis is conducted. Data used in development of the RMP is dynamic. Updating data is considered a plan maintenance action and will be incorporated over time as the RMP is implemented.

**Appendices** provide more detail on some subjects. Some appendices may contain several pieces of information related to the appendix topic.

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# EXECUTIVE SUMMARY

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## OVERVIEW

The United States Department of the Interior (DOI), Bureau of Land Management (BLM) has prepared this revision of the Resource Management Plan (RMP) to provide direction for managing public lands under the jurisdiction of the Butte Field Office (BFO) in mid-western Montana and an environmental impact statement (EIS) to analyze the environmental effects that could result. The affected lands are currently being managed under two plans: the Headwaters Resource Management Plan (USDI-BLM 1984) and the Dillon Management Framework Plan (MFP) (USDI-BLM 1979). The Headwaters RMP has been formally amended on eight occasions and the Dillon MFP has been formally amended on three occasions. In addition, several new laws, regulations, and policies have affected management of public land since approval of both plans. For lands administered by the Butte Field Office, this RMP revision will replace the Headwaters RMP and the Dillon MFP.

Land use planning is used to manage resources and to designate uses on public lands in coordination with tribal, state, and local governments, land users, and interested public. This RMP: 1) incorporates new information about resources and resource uses and regulatory guidance that has come into existence since establishment of the Headwaters RMP and Dillon MFP over 20 years ago, and 2) provides management direction where it may be lacking or requires clarification. The RMP is being revised according to guidance in the Federal Land Policy and Management Act (FLPMA) of 1976 (43 US Code [USC] 1701 et seq.) and BLM's Land Use Planning Handbook, H-1601-1. An EIS is incorporated into this document as required by the National Environmental Policy Act of 1969 (NEPA), Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508) (CEQ 1978), and requirements of BLM's NEPA Handbook, H-1790-1 (USDI-BLM 2008a).

## PURPOSE OF AND NEED FOR REVISING THE PLAN

The purpose of the RMP is to provide a single, comprehensive land use plan to guide management of public lands administered by the BFO. The plan provides objectives, land use allocations, and management direction to maintain, improve, or restore resource conditions and to support the long-term economic needs of local communities.

Since the original plans were approved, several conditions have changed. These include:

- Changed ecological, socioeconomic, institutional, and regulatory conditions;

- Many new laws, regulations, and policies that invalidate or supersede previous decisions;
- Changing user demands and activities;
- Changing acceptance of impacts; and
- Changes in the BFO boundaries.

These conditions drive the need for an inclusive, comprehensive plan that provides updated, clear direction to both the BLM and the public.

The purpose of site-specific travel planning is to develop travel plans that meet the needs of public and administrative access, are financially affordable to maintain, and minimize user conflicts and natural resource impacts associated with roads and trails, in part as per 43 CFR 8342. There is a need to do this because in many portions of the BFO, travel planning has not ever been conducted in a manner to establish a managed transportation network that meets these regulations and fully considers public and administrative needs, user conflicts, and natural resource impacts.

## DECISIONS FROM THIS PLAN

This RMP will provide the basis for two types of decisions. Land Use Plan decisions will be those associated with management prescriptions and activities tied to the various Resource and Resource Use visions, desired future conditions, and goals in the plan. Management, such as the range of acres for vegetation treatments by alternative, Fire Management Unit designations, and whether or not to implement Riparian Management Zones are examples of Land Use Plan Decisions. The only implementation decisions to be made from this document will be associated with five site-specific travel plan areas (Helena, East Helena, Lewis and Clark County Northwest, Upper Big Hole, and Boulder/Jefferson City) where travel route-specific management decisions will be made.

## ISSUES

### PLANNING ISSUES

A planning issue is a relatively substantial controversy or dispute regarding management of resources or uses. These issues drive the formulation of the range of alternatives considered in this EIS.

#### Issue 1: Vegetation Communities

*How will vegetation on BLM lands be managed to achieve healthy ecosystems while providing for a broad range of multiple uses?*

## **Issue 2: Wildlife, Wildlife Habitat, Special Status and Priority Plant and Animal Species**

*How will BLM lands be managed to provide wildlife and fish habitat, and to conserve, and recover special status and priority species?*

## **Issue 3: Travel Management and Access**

*How should the BLM manage motorized public travel to meet the needs for public access and resource uses while minimizing user conflicts and impacts to air, soil, watershed, vegetation, wildlife, and other resource values?*

## **Issue 4: Recreation**

*How should recreation be managed to accommodate the full range of recreational uses enjoyed by the public on BLM lands?*

## **Issue 5: Special Designations including ACECs, National Trails, Wild and Scenic Rivers, and WSAs**

*Which areas, if any, should be managed as special designations? How should they be managed to protect values that warrant their special designation status?*

## **Management Concerns**

Management concerns are topics that involve a resource, resource management activity or land use that generally do not have enough controversy surrounding them to generate different RMP alternatives to address them. While these concerns are addressed in the plan, management related to them may or may not change by alternative.

Management concerns included:

- Air Quality;
- Soil Resources;
- Water Resources;
- Cultural Resources, Traditional Cultural Properties and Paleontological Resources;
- Visual Resources;
- Lands and Realty;
- Minerals and Energy;
- Abandoned Mine Lands;
- Hazardous Materials;
- Social and Economic Environment;
- Prime or Unique Farm Land;
- Environmental Justice; and

- Tribal Treaty Rights including Native American Religious Concerns.

## **DESIRED FUTURE CONDITIONS**

The overall vision for the Decision Area is expressed in the desired future conditions and management goals summarized below.

### **Issue 1: Vegetation Communities**

The desired future condition is for vegetation to fall within the historic range of variability, with diverse, site-appropriate plant communities that contain healthy populations for native species.

- **Forests and Woodland** - Maintain or restore healthy stands of site appropriate species with a diversity of age classes and structure for wildlife habitat, soil stability, and wood products for present and future generations.
- **Upland and Riparian Resources** - Provide a sustained level of livestock grazing while maintaining healthy public land resources.
- **Wildland Fire Management** - Protect public health, safety, and property.

### **Issue 2: Wildlife, Wildlife Habitat, Special Status and Priority Plant and Animal Species**

The desired future condition is for BLM lands to provide a diverse landscape with native vegetation communities that provide suitable habitat to maintain viable and well distributed populations of native wildlife species on public land.

### **Issue 3: Travel Management and Access**

The vision is to provide a range of quality motorized and non-motorized opportunities, and reasonable access for management while protecting natural resources, now and in the future.

### **Issue 4: Recreation**

The vision is to provide a range of quality recreation opportunities, services, and appropriate facilities for public use and enjoyment.

### **Issue 5: Special Designations including ACECs, National Trails, Wild and Scenic Rivers and Wilderness Study Areas**

The vision is to protect relevant and important ACEC values and manage for appropriate uses; protect established National Trail values and manage for appropriate uses; protect Outstandingly Remarkable Values in Wild and Scenic River-eligible river segments and manage for

appropriate uses; protect wilderness characteristics in Wilderness Study Areas.

## Management Concerns

### *Air Quality*

Air resources are maintained to protect human health and the environment.

### *Soil Resources*

Stable soils contribute to properly functioning watersheds and support productive plant communities consistent with site potential.

### *Water Resources*

Water bodies have sufficient water quality to meet state and federal standards, and support designated beneficial uses.

### *Cultural Resources, Traditional Cultural Properties and Paleontological Resources*

There is a minimal loss or degradation of cultural resources, traditional cultural properties, and paleontological resources within the BFO.

### *Visual Resources*

A spectrum of visual qualities are provided and protected for the public. RMP alternatives establish Visual Resource Management (VRM) Classifications to guide the management of public land based on scenic quality, sensitivity levels, and distance zones.

### *Lands and Realty*

The needs of the public are met and support for all BLM resource programs is provided.

### *Minerals and Energy*

Use of geologic resources recognizes the need for domestic sources of energy and minerals.

### *Abandoned Mine Lands*

Threats to human health and the environment from historic mining activities on public land are reduced.

### *Hazardous Materials*

Employees, the public, and the environment are protected from exposure to hazardous materials in public facilities or on public land.

### *Social and Economic Environment*

Conservation, stewardship, and partnerships on public land are cultivated for the use and enjoyment of present and future generations.

## OVERVIEW OF THE ALTERNATIVES

There are four alternatives considered in detail. This section provides a brief overview of each of those alternatives. Alternatives considered in detail include one “No Action” Alternative (Alternative A), and three “action” alternatives (Alternatives B-D) that would reflect various levels of change from the existing Headwaters RMP and Dillon MFP direction.

All alternatives include management direction that is not being revised from current management established by the Headwaters RMP, Dillon MFP, or more recent policy or regulatory guidance. This direction is presented in the sections entitled “Management Common to All Alternatives” and is not described in this overview. Continued management direction reflects the following categories:

1. Management Direction from legal statute, regulation, or manual direction. This management direction may not have been specifically included in the Headwaters RMP or Dillon MFP but includes management direction for things such as restricted uses near bald eagle nests or current regional decisions on noxious weed abatement techniques.
2. Management Direction from the Headwaters RMP/Dillon MFP, including amendments by subsequent modifications from other decisions that are not being revised by the Butte RMP.

Some potential management options identified early in this planning process were resolved using one approach in the “action alternatives”. These are identified under the category “Management Common to Action Alternatives” in the “Alternatives Considered in Detail” section. This management guidance represents areas where there was generally little controversy over that particular aspect of management. One example of this approach is the common management direction for the “action” alternatives to restore, maintain or improve ecological conditions of vegetation communities through the use of prescribed and managed wildland fire, prescriptive livestock grazing, planting, timber harvest, other mechanical methods, and exclusion of intense disturbance. These components are not included in this overview.

### ALTERNATIVE A – NO ACTION

Alternative A is the continuation of present management, referred to as “No Action”. This alternative would continue present management practices based on existing land use plans and other management decision documents. Direction contained in the Headwaters RMP and the Dillon Management Framework Plan would continue to be implemented. Direction contained in existing laws, regulations, and policies would also continue. The current levels, methods, and mix of multiple use management would continue, and resource values would receive

attention at present levels with relatively little specific management direction or priorities compared to other alternatives. Motorized access and motorized recreational opportunities would not change from the current condition. One ACEC (Sleeping Giant – 11,679 acres) would continue to be managed as such. Eligible Wild and Scenic River segments would continue to be managed to protect the values that make them eligible.

## **ALTERNATIVE B – PREFERRED ALTERNATIVE**

This alternative emphasizes moderate levels of resource protection, use, and restoration. Alternative B places a priority on vegetative restoration. Quantities of forest-based commodity resources from vegetation restoration activities would be similar to Alternative A, greater than in Alternative C, but less than in Alternative D. Project-level wildlife habitat and riparian management measures would be greater than in Alternatives A and D due in part to establishment of Riparian Management Zones (RMZs) where managing for riparian values would be the focus, but less than in Alternative C where RMZs would be wider and with more protective management than under Alternative B.

Alternative B emphasizes more of a balance of motorized and non-motorized recreation and access opportunities compared to the other action alternatives (C and D). Four ACECs would be designated, totaling about 70,644 acres. Two rivers would be recommended as “suitable” for Wild and Scenic River designation. There would be more oil and gas leasing management measures than in Alternatives A and D, but less than in Alternative C.

Alternative B represents the mix and variety of actions that in the opinion of BLM, best resolves the issues and management concerns and is therefore considered BLM’s Preferred Alternative.

## **ALTERNATIVE C**

Alternative C emphasizes a lesser degree of vegetative restoration than any of the other alternatives. Production of forest-based commodity resources from vegetation restoration activities would be lowest of all alternatives. This alternative emphasizes a greater degree of project-level wildlife habitat and riparian management measures (wider Riparian Management Zones than Alternative B, no RMZs under Alternatives A or D) than in any other alternative.

Alternative C emphasizes non-motorized recreation opportunities more than the other alternatives. All potential Areas of Critical Environmental Concern (87,893 acres) would be designated with this alternative. All four river segments eligible for Wild and Scenic status would be found suitable and recommended for Wild and Scenic designation. Alternative C provides for the most oil and gas leasing management measures of any alternative.

## **ALTERNATIVE D**

Alternative D emphasizes the greatest degree of active management to restore vegetative communities and would produce the greatest quantities of forest products from vegetation restoration activities of all alternatives. Alternative D features fewer wildlife habitat and riparian management measures than Alternatives B and C, but more than Alternative A.

This alternative emphasizes motorized access and recreation opportunities more than Alternatives B and C. Three ACECs would be designated (23,695 acres). No river segments eligible for Wild and Scenic status would be recommended as suitable for Wild and Scenic designation with this alternative. Alternative D would have the fewest oil and gas leasing management measures of all the alternatives.

## **ENVIRONMENTAL CONSEQUENCES**

Effects on all resources from all actions are described in detail in Chapter 4. This section contains a summary of the effects by alternative as related to the Planning Issues.

### **ISSUE 1: VEGETATION COMMUNITIES**

#### **Grassland and Shrubland**

In Alternative A, vegetation treatments would occur on 5,250 acres of grasslands and shrublands per decade. Because conifer encroachment into these habitats is occurring at a rate of approximately 6,411 acres per decade, conifer encroachment would continue to increase at a net rate of 1,161 acres per decade under Alternative A. Alternative B would restore up to 15,450 acres per decade of grassland and shrubland communities for a net increase in restored grassland/shrubland habitat on 9,039 acres per decade. Alternative C would treat up to 2,700 acres per decade resulting in a net increase in conifer encroachment (3,711 acres per decade) rather than an increase in restored habitat. Alternative D would treat up to 25,900 acres per decade resulting in a greater net increase in restored habitat (19,489 acres per decade) than under any other alternative.

In Alternative A, prescribed fire would reduce fuel loading and remove encroaching conifers and there would be no timing restrictions for prescribed burning. Under Alternative B prescribed burns would be planned to burn 80 percent by area (on average) of planned burn units, leaving conifers in a mosaic of unburned patches within units. Soil, grasses, and forbs would be protected from fire-related mortality during hotter drier months by imposed burning restrictions May-August. Prescribed burns to treat conifer encroachment in Alternative C would be planned to burn 60 percent by area (on average) of each unit (leaving more conifers in unburned patches than Alternative B) and would have the same

seasonal restriction as Alternative B. These prescribed burns in Alternative D would be planned to burn 90 percent of each unit without the seasonal restriction described above.

Alternative A would include no conversion of non-native grassland vegetation to native grasslands at McMasters Hills and Ward Ranch. Alternatives B, C, and D would convert up to 850 acres in these areas to native grasslands, which would provide benefits to grassland habitat in this area that would not occur with Alternative A.

## Forests and Woodlands

In dry forest types, Alternative A would treat the least acres per decade (5,100 acres) to help restore historic conditions and still exceed the rate of decline in forest health. This would also be the case for cool, moist forest (2,400 acres of treatment/decade) to help restore historic conditions and still exceed the rate of decline in forest health. Alternative B would treat the second most acres of dry forest treated per decade (up to 14,750 acres) and cool, moist forest treated per decade (up to 3,750 acres). Alternative C would treat the least acreage (up to 4,800 and 500 acres, respectively), and vegetation would not be restored at a rate exceeding the rate of decline in forest health. Alternative D would treat the most acres of each (up to 18,200 and 5,050 acres, respectively) and would move the greatest number of forested acres back toward historic condition of all alternatives.

Under all action alternatives, timber harvest is considered a tool for meeting forest health and restoration goals. The following levels of forest product removal are directly related to the amount of forest health and ecosystem restoration proposed as follows. Alternative A would result in a Probable Sale Quantity (PSQ) of 12 to 27 Million Board Feet (MMBF) (40,000 to 97,000 Hundred Cubic Feet (CCF)) per decade. Alternative B would result in a PSQ of 9 to 25 MMBF (33,000 to 91,000 CCF) per decade. Alternative C would result in a PSQ of 5 to 12 MMBF (19,000 to 41,000 CCF) per decade. And, Alternative D would result in a PSQ of 10 to 30 MMBF (36,000 to 107,000 CCF) per decade.

## Noxious Weeds

Proposed noxious weed treatments vary across the alternatives, mainly dependent on the amount of disturbance proposed by other management actions as well as the number of designated open roads. Alternative A would treat a minimum of 20,000 acres per decade, with Alternative B slightly higher at a minimum of 21,000 acres of treatment per decade. Management under Alternative C would result in the least amount of treatment at a minimum of 16,000 acres per decade, with the greatest amount of treatment in Alternative D at a minimum of 25,000 acres per decade. Even with continued or increased noxious weed treatments, all alternatives would result in a projected increase of noxious weeds infesta-

tions on public lands in the BFO. By the year 2015, infestations are projected to spread to 43,000 acres under Alternative A, 48,000 acres under Alternative B, 51,000 acres under Alternative C, and 47,000 acres under Alternative D. Alternative A would have the greatest amount of weed infestation associated with open roads at 67 acres, with Alternative B at 46 acres, Alternative C at 42 acres, and Alternative D at 52 acres.

## Riparian

Alternative A would manage 3,270 acres of riparian and associated upland vegetation as Streamside Management Zones (SMZs) and mechanically treat or prescribe burn 30 acres of riparian vegetation per decade to restore communities to properly functioning condition. (This treatment figure is a continuation of what has occurred, however the Headwaters RMP allows treatment in all riparian areas subject to other management constraints.)

Alternatives B and C would both include the concept of Riparian Management Zones (RMZs) where riparian ecological health would be the primary focus. Alternative B would manage 10,461 acres of riparian and associated upland vegetation as RMZs and mechanically treat or prescribe burn up to 700 acres per decade to improve vegetative conditions. Alternative C would manage 19,620 acres as RMZs and mechanically treat or prescribe burn up to 200 acres per decade. Alternative D would manage the same amount of acres as SMZs as Alternative A. By mechanically treating or burning up to 1,700 acres per decade to meet site-specific riparian objectives, Alternative D would provide the shortest period required to restore riparian vegetation communities to proper functioning condition. Additional acres of riparian communities would be restored through implementation of livestock grazing guidelines and Abandoned Mine Land reclamation under all alternatives.

## Wildland Fire Management

Alternative A provides for 7,300 acres of Category A fire management in which wildland fire is not desired and prescribed fire cannot be used as a fuels reduction tool. It treats the second least acres (12,780 acres/decade) for fuel reduction of all alternatives. Lower fuel levels would result in a reduced potential for high-severity fires. Alternative A provides the most opportunities for human caused wildland fire due to it having the greatest number of open road miles of all alternatives.

Alternative B provides more flexibility to manage fires since there would be no Category A designations. It treats the second most acres for fuels reduction (up to 34,650 acres/decade) and would reduce fire intensity and behavior, improve fire fighter safety, and move towards historic fire regimes more than Alternatives A and C. Extent of motorized access for fire suppression and fuel reduction treatments would be the second lowest of the alternatives. However, this also provides the second least

amount of opportunity for human-caused fire ignitions of all alternatives.

Alternative C would be the most restrictive fire management with most acres (41,000) of Category A fire management. The least acres would be treated for fuels reduction (up to 8,200 acres/decade), which would do the least of all alternatives to reduce fire intensity and behavior, improve wildland fire fighter safety and move toward historic fire regimes. It provides the least motorized access for fire suppression and fuel treatments and the fewest opportunities for human-caused wildland fire associated with road access.

Alternative D allows the greatest flexibility in fire management. It treats the most acres for fuels reduction (up to 50,850 acres/decade) and would do the most of any alternative to reduce fire intensity and behavior, improve wildland fire fighter safety, and move toward historic fire regimes. The second highest level of motorized access for fire suppression and fuel reduction treatments would be provided of all the alternatives, along with the second greatest opportunity for human-caused fire ignitions.

## **ISSUE 2: WILDLIFE, WILDLIFE HABITAT, SPECIAL STATUS AND PRIORITY PLANT AND ANIMAL SPECIES**

### **Wildlife**

In all vegetation types, vegetation treatments under Alternative A would provide less restoration of habitat than Alternatives B and D. Alternative C would provide the least vegetation restoration of all alternatives. Alternative D would treat and restore more habitat than all other alternatives but would also have the most short-term adverse effects from treatments and temporary road construction than all other alternatives.

Alternative A would have the greatest miles of open road (471.8 miles open yearlong) and would have the least amount of road restrictions of all alternatives. This would cause the most negative impacts on wildlife and habitat from disturbance, road kill, habitat alteration and loss (from weeds, firewood cutting and trespass), and habitat fragmentation of all alternatives. Alternative B would have fewer open roads (263 miles open yearlong) than Alternatives A and D but 7 percent more than Alternative C. The benefits to wildlife from fewer open roads would be the greatest in Alternative C (244.3 miles open yearlong). Alternative D (304.8 miles open yearlong) would have 17 percent more open roads than Alternative B, 25 percent more than Alternative C, but 55 percent less than Alternative A.

### ***Bighorn Sheep Management***

Domestic sheep and goat grazing can detrimentally affect native bighorn sheep by creating competition for resources and allowing for introduction of diseases into

bighorn sheep populations. Alternatives A and D provide the least amount of protection of wild sheep from the effects of domestic sheep and goat allotments and from weed control using domestic sheep and goats because they lack specific buffers between domestic sheep/goat grazing and occupied bighorn sheep habitat. Alternative B would allow no new sheep/goat allotments in occupied bighorn sheep habitat or within a five-mile buffer. Under Alternative B, sheep and goats could not be used for weed control within 2 miles of occupied native sheep habitat. Alternative C offers the greatest protection from disease and competition for resources due to the largest mandatory buffer (nine miles) between bighorn sheep and domestic sheep/goat allotments. Under Alternative C, sheep and goats could not be used for weed control within 4 miles of occupied native sheep habitat.

### ***Big Game Management***

Alternative A contains little direction related to road density within important big game areas. No unroaded blocks would be protected as security habitat.

All action alternatives would provide for protecting big game security habitat in forested blocks at least 250 acres in size, with larger sized blocks being considered and addressed during project or watershed-scale planning.

Alternative B would protect more winter range than Alternatives A and D by managing to reduce the road density to 1.0 mile/mi<sup>2</sup> or less in the five site-specific travel plan areas and by allowing no net increase in permanent roads where current road densities are 1 mi/mi<sup>2</sup> or less in winter range. It provides more wildlife corridor in low road density than Alternatives A and D, but less than Alternative C.

Alternative C would have the most improvement to big game winter range by having the lowest road density (road densities in winter range would be 0.8 mi/mi<sup>2</sup> or less in the five site-specific travel plan areas) and by allowing no net increase in permanent roads where road densities are 1.5 mi/mi<sup>2</sup> or less in winter range. It would also provide the most connectivity and least fragmentation of habitat because it provides for the most acres of low road density in wildlife movement corridors.

Alternative D would provide less protection to winter range because more roads would be allowed to remain open in winter range (road densities in winter range would be 1.2 mi/mi<sup>2</sup> or less in the five site-specific travel plan areas) than in Alternatives B and C, but less than in Alternative A. Under Alternative D, winter range would continue to be degraded or lost because net increases in permanent road mileage would be allowed in areas where road densities exceed 0.5 mi/mi<sup>2</sup>. Alternative D would provide less connectivity and more fragmentation than Alternatives B and C due to fewer acres of low road density in wildlife movement corridors.

## Fish

Alternatives A and D provide some protection for fish and aquatic and riparian habitats through Streamside Management Zones (SMZs). Alternative B provides more protection with Riparian Management Zones (RMZs) where management would be focused primarily on meeting site-specific riparian objectives, including aquatic resource objectives. RMZs under Alternative B would be an average of 160 feet wide for fish-bearing streams (either side of stream), compared to generally 50 foot widths of SMZs in Alternatives A and D. RMZs would be widest under Alternative C (300 feet on either side of fish-bearing streams), providing the most protection to aquatic and riparian habitats for a diversity of species. RMZ widths on perennial non fish-bearing streams would be 80 feet in Alternative B and 150 feet in Alternative C. RMZ widths on intermittent streams would be 50 feet in both Alternatives B and C.

RMZs (Alternatives B and C) would reduce sediment inputs in streams, and provide for more long-term large wood recruitment, more streamside shade and nutrient inputs, and better long-term riparian vegetation health compared to SMZs (Alternatives A and D).

Roads in riparian areas can have effects on fish and aquatic habitat including sedimentation; loss of shade, ground cover, and large wood recruitment due to preclusion of riparian vegetation; and alteration of stream channel morphology due to roads impacting stream channel or floodplain function. Miles of open road within 300 feet of streams were used as an indicator to assess the relative degrees to which these direct and indirect impacts may occur by alternative. Alternative A would likely have the greatest degree of these negative impacts with 94.3 miles of open road within 300 feet of streams. These effects would be less under Alternative B with 77.4 miles of road and less still under Alternative C with 73.7 miles of open road. Alternative D would have the second greatest degree of impact due to its 81.2 miles of open road within 300 feet of streams. Under Alternative A there would be 17.1 miles of closed roads within 300 feet of streams. Alternatives B, C, and D would all reduce these impacts to varying degrees by closing or decommissioning 33.9, 37.6, and 30.2 miles of road within 300 feet of streams, respectively.

## Special Status and Priority Wildlife, Fish, and Plants

### Wildlife

Alternative A would provide no seasonal buffers for noise/human activity disturbance to raptor nests, or bald eagle roost and nest trees and would have the greatest disturbance due to motorized access. Alternative B would provide a seasonal buffer (from noise and human activity) to occupied (½ mile) raptor nests and reduce motorized disturbance to occupied nest sites more than Alternatives A and D. Alternative C would provide the

greatest protection for raptor nests with a 1 mile buffer around occupied nests to protect nests from disturbance and loss of habitat. The buffers would be the smallest (¼ mile for occupied nests) and motorized access reduced the least of the action alternatives under Alternative D.

Alternative A protects the least amount of habitat for grizzly bear by allowing the highest density of open roads within the distribution of grizzly bear and by not limiting the miles of road that could be built in grizzly bear habitat. Alternative B provides more protection for grizzly bears by providing for lower road densities in their habitat (0.8 mi/mi<sup>2</sup> in distribution zone) than Alternatives A and D and reduces the potential for human–bear conflicts. Alternative B also improves and increases habitat for grizzly bear by allowing no net increase in permanent roads in grizzly bear habitat where the road density is 1 mi/mi<sup>2</sup> or less. Alternative C would protect the most habitat for grizzly bear from loss of habitat and disturbance from open roads by allowing no net increase in permanent roads in grizzly bear distribution area where open road densities are 1.5 mi/mi<sup>2</sup> or less. Alternative C has the most acres benefiting from low road densities, the fewest acres impacted by high road densities and provides the greatest benefit to grizzly bear habitat by reducing fragmentation, protecting larger blocks of habitat and reducing disturbance (road density of 0.6 mi/mi<sup>2</sup> in distribution zone). Of the action alternatives, Alternative D would restore and protect the fewest acres of habitat within the distribution of grizzly bear by allowing more open roads (1.3 mi/mi<sup>2</sup> in distribution zone).

There would be approximately 54,810 acres unavailable for oil and gas leasing under Alternative A. This is more than under Alternatives B (28,774 acres) and D (36,406 acres) but less than under Alternative C (580,382 acres). Alternative A would have No Surface Occupancy on 251,779 acres, which is less than under Alternative B (280,312 acres) but more than Alternatives C (23,903 acres) and D (93,288 acres). Alternative A would have fewer acres protected with timing limitations and controlled surface use (313,694 acres) than Alternative B (325,165 acres) and Alternative D (468,421 acres), but more than Alternative C (47,909 acres). Alternative B would protect the most acres with timing limitations for big game, sage grouse, and raptors and would have more acres under No Surface Occupancy (280,312) than any other alternative. Alternative C would protect the most habitats for all species by not allowing oil and gas leasing on approximately 580,382 acres. Alternative D would protect most species to a lesser degree with controlled surface use and timing limitations.

There would be eight sensitive species given protection under all alternatives with oil and gas stipulations; prairie dog, sage grouse, ferruginous hawks, peregrine falcons, raptor breeding territories, westslope cutthroat trout, Yellowstone cutthroat trout, and Arctic grayling.

Under Alternative A, all sensitive species would be protected with a No Surface Occupancy (NSO) stipulation up to ¼ mile with the exception of sage grouse which would have a smaller area protected around leks and timing restrictions in winter/spring habitat.

Alternatives B and D would have similar stipulations for sensitive species with only four stipulations that differ. Under Alternative D there would be Standard Lease Terms for raptor breeding territories compared to timing restrictions under Alternative B. Ferruginous hawks would be given a timing restriction under Alternative D but a NSO under Alternative B and westslope cutthroat trout, Yellowstone cutthroat trout and Arctic grayling would have a Controlled Surface Use (CSU) stipulation within ½ mile of their habitats with Alternative D but a NSO within ½ mile of their habitats under Alternative B.

Alternative C would provide the most protection of all alternatives to sensitive species with either No Leasing or NSO stipulations throughout most of their habitats.

All federally listed species would be protected in habitats where they are found with a CSU stipulation under all alternatives. The action alternatives would provide additional protection for currently listed and de-listed species (grizzly bear, bald eagle, gray wolf, peregrine falcon, and bull trout) through the use of NSO, timing restrictions or No Leasing. Of the action alternatives, Alternative C would provide the most protection to currently listed species and Alternative B would provide more protection than Alternatives A and D.

Big game habitat and state wildlife management areas would also be protected through the use of oil and gas stipulations. The stipulation for wildlife management areas would be more restrictive under Alternative A than Alternatives B or D but less restrictive than C. Alternatives A, B and C would have the same stipulation for big game winter/spring range (Timing Limitation) but Alternative C would be more restrictive with No Leasing. For elk calving areas, Alternative D would be the least restrictive (Standard Lease Terms) with the stipulation being a Timing Limitation for Alternatives A and B, while Alternative C would be most protective with No Lease in these areas. For bighorn sheep habitat, Alternative C is the most protective (No Lease) of all alternatives while Alternative B (Timing Limitation in Year-long Range, NSO in Core Areas) is more protective than Alternatives A (Timing Limitation in Yearlong Range) and D (Timing Limitation in Yearlong Range).

### ***Fish***

Effects and relative degrees of protection for special status fish would generally be similar to those described in the general Fish section above. Bull trout habitat would be managed under the Interim Bull Trout Habitat Conservation Strategy (USDI BLM 1996a).

Alternative C would protect habitat of genetically pure westslope cutthroat trout and other aquatic and riparian

dependant species along approximately 2 miles of stream in the Muskrat Creek drainage through a proposed 180-acre locatable mineral withdrawal. This habitat would not be subject to direct effects from mineral exploration and development under this alternative. Under Alternatives A, B, and D, this protection would not be in place as there would be no mineral withdrawal of these riparian areas.

Oil and gas stipulations would protect special status fish species in affected streams by NSO within ½ mile of streams in Alternative B. Alternative B would also protect streams identified as having high restoration potential for native fish species with a NSO stipulation within ½ mile of these streams. Alternative C would have the greatest amount of protection with NSO or No Lease within ½ mile of streams affected for various species. Alternative D would be less protective than either Alternative B or C with a CSU stipulation within ½ mile of most special status fish species.

### ***Plants***

Vegetation treatments in Alternative A would provide less restoration and maintenance of special status plant habitat than Alternatives B and D because fewer acres would be treated. Alternative D would treat the most acres whereas Alternative C would treat the fewest with corresponding effects on habitat. Potential short-term adverse impacts from vegetation treatments due to disturbance or crushing of special status plants would vary similarly to long-term potential benefits by alternative.

Off highway vehicle (OHV) use potentially affects special status plants and habitat through ground disturbance. More OHV use causes greater ground disturbance which can cause direct destruction of plants, and degradation or fragmentation of habitat. Motorized vehicle use can also facilitate increased noxious weed spread, potentially leading to special status plants being outcompeted by noxious weeds. The greatest amount of motorized vehicle use would be with Alternative A while the least amount of motorized use is proposed for Alternative C. Potential impacts on special status plant populations and habitat from motorized vehicle use would be the least for Alternative C and the most for Alternative A while Alternatives B and D fall in between with B having fewer potential impacts than Alternative D.

## **ISSUE 3: TRAVEL MANAGEMENT AND ACCESS**

### **Travel Management**

Alternative A has the greatest number of motorized opportunities and the most acres open to cross-country snowmobile use. User conflicts and the potential for accidents/injuries would be the greatest of all alternatives because motorized and non-motorized users would share the same routes. Road development associated with forest product removal could increase road density.

Wildlife closures would have the fewest short-term impacts on travel and access due to fewer seasonal wildlife closures than other alternatives. Establishment of new permanent roads increasing public access is likely to be more widespread than with any other alternative.

Alternative B (417 miles open yearlong or open w/restrictions) would have less motorized route use opportunities than Alternatives A (629 miles open yearlong or open w/restrictions) and D (479 miles open yearlong or open w/restrictions), but more than with Alternative C (372 miles open yearlong or open w/restrictions). Non-motorized opportunities under Alternative B would be greater than with Alternatives A and D but less than with Alternative C. Cross-country snowmobile use would be less with Alternative B than with either Alternative A or D, but would be greater than with Alternative C. User conflicts, accidents, and injuries would be reduced under Alternative B compared to Alternatives A and D due to more dispersed recreational opportunities. Illegal activities due to the size of the motorized route network may be less under Alternative B than Alternatives A and D, but may still occur more than Alternative C.

Route closures in Alternative C would result in the greatest decrease in motorized use opportunities and highest level of non-motorized opportunities of all alternatives. Cross-country snowmobile use would be the most limited of all alternatives. Potential user conflicts, accidents, and injuries would likely be the least of all alternatives due to the greatest opportunities for motorized and non-motorized uses to be separated.

Alternative D provides the greatest motorized use opportunities and the least non-motorized opportunities of the action alternatives. Non-motorized opportunities would be more than Alternative A but less than Alternatives B and C. Cross-country snowmobile use would be slightly less than with Alternative A but greater than with either Alternatives B or C. Potential user conflicts, accidents, and injuries would likely be greater than with Alternatives B or C, but less than with Alternative A. Illegal activities would likely be less with Alternative D than with Alternative A, but may still occur more than with Alternatives B and C.

### ***Helena Travel Planning Area***

In Alternative A (52.2 road miles open yearlong), no non-motorized trails would be designated. Alternative B (9.8 road miles open yearlong) would have decreased opportunities for motorized users and increased opportunities for non-motorized users since, in the Scratchgravel Hills area, wheeled motorized access would be restricted to routes leading to existing trailheads (with the exception of a few routes needed for residential access). Alternative C (7 road miles open yearlong) would provide 5 percent more non-motorized only route opportunities than Alternative B and 85 percent fewer motorized route opportunities than Alternative A. Alter-

native D (21.9 road miles open yearlong) would have greater opportunities for motorized users than with the other action alternatives because new loop routes would be created in Scratchgravel Hills.

Management costs under Alternative A would be mixed. Less personnel time would be required to monitor user compliance compared to other alternatives; however more effort would be required for signing designated routes than with any other alternative. Alternatives B and C would have increased costs for trailhead maintenance, gates, and signage associated with restricted motorized access. Alternative D would have higher costs than the other action alternatives due to costs for signage and maintenance of more open routes as well as costs associated with constructing new connector routes and reconstructing existing routes.

Under Alternative A, transportation facility costs would be higher than under the action alternatives. Alternative B would cost 81 percent less than Alternative A, Alternative C would cost 87 percent less, and Alternative D would cost 58 percent less.

### ***East Helena Travel Planning Area***

Alternative A (36.6 road miles open yearlong, 7.7 miles open w/restrictions) would provide 60 percent more motorized opportunities than Alternatives B (13.7 miles open yearlong) and C (12 miles open yearlong), and 15 percent more than Alternative D (36 miles open yearlong). Non-motorized only opportunities would increase under Alternative B compared to Alternatives A and D. Alternative B would also provide increased opportunities for disabled hunters. Alternative C would provide the least amount of motorized opportunities of all alternatives while providing the most non-motorized opportunities. Alternative D would provide over 55 percent more motorized opportunities than either Alternatives B or C. There would be fewer non-motorized dispersed opportunities with Alternative D than with Alternatives B or C.

Management costs under Alternative A would be mixed. Less personnel time would be required to monitor user compliance than with other alternatives; however more effort would be required for signing designated routes. Costs would increase under Alternatives B and C for new trailhead development, initial signing, and long-term compliance efforts. Costs with Alternative D would be less than with Alternative A, but more than with Alternatives B and C due to initial signing and long-term maintenance and compliance efforts.

Transportation facility maintenance, monitoring, compliance, and weed control costs would be 17 to 269 percent higher under Alternative A than under the action alternatives. Due to the overall reduction in maintained routes, transportation facility costs under Alternative B would be 62 percent less than Alternative A, Alternative C would cost 73 percent less, and Alternative D would cost 14 percent less.

### ***Lewis and Clark County NW Travel Planning Area***

Alternative A (57.5 road miles open yearlong, 6.7 miles open w/restrictions) would provide 47 percent more motorized routes than the action alternatives. Non-motorized users would have fewer opportunities under Alternative A. Under Alternative B (13.8 road miles open yearlong, 14.3 miles open w/restrictions) opportunities for non-motorized users would be greater than under Alternatives A and D (19.6 miles open yearlong, 14.5 miles open w/restrictions). Alternative C (8 miles open yearlong, 11.7 miles open w/restrictions) would provide the least opportunities for motorized users and the greatest for non-motorized users. Closure of routes in the northwest corner of TPA would result in enhanced non-motorized opportunities. Alternative D would provide more motorized opportunities than other action alternatives.

Management costs under Alternative A would be mixed. Less personnel time would be required to monitor user compliance than with other alternatives; however more effort would be required for signing designated routes. Costs would increase under Alternatives B and C, for initial signing and long-term compliance efforts. Costs under Alternative D would increase as well due to initial signing and long-term maintenance and compliance efforts.

Transportation facility maintenance, monitoring, compliance, and weed control costs would be 88 to 128 percent higher under Alternative A than under the action alternatives. Due to the overall reduction in maintained routes, transportation facility costs under Alternative B would be 56 percent less than Alternative A, Alternative C would cost 69 percent less, and Alternative D would cost 47 percent less than Alternative A.

### ***Boulder-Jefferson City Travel Planning Area***

Alternative A (60.5 road miles open yearlong) would have 37 percent more routes open to motorized use than Alternative D (5.3 miles open yearlong, 32.8 miles open w/restrictions) and approximately 60 percent more than Alternatives B (3.7 miles open yearlong, 25.1 miles open w/restrictions) and C (3 miles open yearlong, 20.5 miles open w/restrictions). In addition, Alternative A would have no designated non-motorized routes, and fewer recreation opportunities for non-motorized users. Alternative B would provide more opportunities for non-motorized users than Alternative A. Alternative C would provide the fewest opportunities for motorized users since it has the least number of open routes. Opportunities for motorized users under Alternative D would be greater than under Alternatives B and C but less than under Alternative A.

Management costs under Alternative A would be mixed. Less personnel time would be required to monitor user compliance than with the other alternatives; however more effort would be required for signing designated

routes. Costs would increase under Alternatives B and C for initial signing and long-term compliance efforts. Costs under Alternative D would be less than Alternative A, but more than under Alternatives B and C due to initial signing and long-term maintenance and compliance efforts.

Under Alternative A, transportation facility maintenance, monitoring, compliance and weed control costs would be 59 to 122 percent higher than under the action alternatives. Due to the overall reduction in maintained routes, transportation facility costs under Alternative B would be 55 percent less than with Alternative A, Alternative C would cost 61 percent less and Alternative D would cost 37 percent less than Alternative A.

### ***Upper Big Hole River Travel Planning Area***

Alternative A (70.6 road miles open yearlong, 88 miles open w/restrictions) would have at least 38 percent more motorized routes than the other alternatives. Alternative A has the fewest non-motorized opportunities. Alternative B (26.9 miles open yearlong, 57.9 miles open w/restrictions) would reduce by half the motorized opportunities due to seasonal restrictions or road closures and non-motorized opportunities would be enhanced. Alternative C (19.2 miles open yearlong, 40.8 miles open w/restrictions) would provide the fewest opportunities for motorized users and the greatest opportunities for non-motorized users. Alternative D (26.8 miles open yearlong, 70.6 miles open w/restrictions) would provide fewer opportunities for motorized use than Alternative C, but more than Alternatives A and B.

Management costs under Alternative A would be mixed. Less personnel time would be required to monitor user compliance than under the other alternatives; however more effort would be required for signing designated routes. Costs would increase under Alternatives B and C for initial signing and long-term compliance efforts. Costs under Alternative D would be less than under Alternative A, but more than under Alternatives B and C due to initial signing and long-term maintenance and compliance efforts.

Under Alternative A transportation facility maintenance, monitoring, compliance, and weed control costs would be 62 to 163 percent higher than under the action alternatives. Due to the overall reduction in available routes, transportation facility costs under Alternative B would be 49 percent less than under Alternative A, Alternative C would cost 62 percent less, and Alternative D would cost 38 percent less than under Alternative A.

## **ISSUE 4: RECREATION**

### **User Opportunities**

Alternative A provides the most opportunities for motorized users, organized motorized events, boat-in camping, and snowmobile use. Alternative A also provides the fewest non-motorized use opportunities.

Alternative B provides more opportunities than Alternatives A and D for non-motorized users due to its greater number of closed roads. Under Alternative B there would be a reduction in boat-in camping opportunities as these would be limited to developed and designated undeveloped dispersed recreation sites along the Holter and Hauser Lake shorelines.

Alternative C would provide the most opportunities for non-motorized users and the least opportunities for motorized users due to its greatest number of closed roads of all alternatives. Opportunities for organized motorized events would be eliminated under Alternative C. Dispersed camping at Holter and Hauser Lakes would be reduced to the greatest extent due to closing of the entire shorelines to boat-in camping except at developed sites.

Alternative D would provide greater motorized and lower non-motorized use opportunities than either Alternative B or C. Alternative D would limit organized motorized events to non-competitive activities in the Pipestone area only. Boat-in camping opportunities would be the same as Alternative A.

### **User Conflicts and Violations**

Alternative A would impose the fewest management measures on motorized and non-motorized users within the Scratchgravel Hills and therefore motorized travel violations, user conflicts and illegal activities would likely be greater than with any other alternative. Alternatives B and C would have the greatest potential to reduce conflicts and violations compared to Alternatives A and D in the Scratchgravel Hills due to restricted motorized access and dusk to dawn closure (Alternative C). These effects under Alternative D would likely be slightly less than under Alternative A but greater than under Alternatives B and C.

### **Recreation Opportunity Spectrum**

Alternative A could have negative impacts on recreation uses and experiences because there would be no ROS classifications. Management would be reactive rather than proactive. Alternative B would provide a balanced approach for managing recreation settings, opportunities and experiences compared to Alternatives C and D. Alternative C would provide the most acreage designated as ROS Semi-Primitive Non-Motorized creating the greatest non-motorized and the least motorized opportunities. Alternative D would manage 90 percent of the Decision Area under ROS settings allowing varying degrees of motorized activity.

## **ISSUE 5: SPECIAL DESIGNATIONS INCLUDING ACEC, NATIONAL TRAILS, WILD AND SCENIC RIVERS AND WSAs**

### **Areas of Critical Environmental Concern**

Under Alternative A the existing ACEC (Sleeping Giant, 11,679 acres) would be the only area managed as an ACEC. In Alternative B, four areas (70,644 acres) would be managed as ACECs, while five ACECs (87,893 acres) would be designated under Alternative C. Alternative D would manage the least amount of acreage as ACECs (23,695 acres) of the action alternatives.

### **National Trails**

The Continental Divide Trail (CDT) and the Lewis and Clark Historic Trail (L&CHT) would be managed cooperatively with the USFS and the NPS respectively, in accordance with national policy guidelines under all alternatives. BLM would also continue managing the L&CHT with other established partners to promote collaborative planning under the Missouri/Madison Comprehensive Recreation Plan. Under the action alternatives, the two trails would be managed in accordance with final ROS, VRM, travel plan and other resource/resource use decisions. In addition BLM would coordinate with the FS to evaluate opportunities to re-route the CDT segment to enhance user experiences and reduce future needs for easements and/or acquisitions.

### **Wild and Scenic Rivers**

Suitability studies for the four eligible river segments (Upper Big Hole River – 2.3 miles, Upper Missouri River – 3.1 miles, Moose Creek – 4.0 miles and Muskrat Creek – 2.6 miles) would not be completed and protective management would continue indefinitely for these segments under Alternative A. Under Alternative B, Muskrat Creek would be recommended as suitable and the Upper Missouri River segment would be recommended preliminarily suitable pending concurrence by the USFS (Helena National Forest) for inclusion in the NWSRS; interim protective management would continue for these two segments. The remaining segments, Upper Big Hole River and Moose Creek, would be identified as non-suitable. Alternative C provides the greatest protection for the four eligible river segments as they would all be recommended as suitable for Congressional designation. Alternative D provides the least protection for these eligible segments as all would be identified as non-suitable, and interim protective management would be discontinued.

## **Wilderness Study Areas**

Under all alternatives, all six WSAs (Humbug Spires, Sleeping Giant, Sheep Creek, Black Sage, Elkhorn Tack-on, and the Yellowstone River Island) would continue to be managed under the Interim Management Policy and Guidelines for Lands under Wilderness Review until Congress either designates them as wilderness or releases them from further review. Under the action alternatives, Sleeping Giant, Sheep Creek, Humbug Spires and the Elkhorns Tack-on WSAs would be ma-

naged as ACECs should Congress release them from wilderness consideration. Should Congress release Black Sage and the Yellowstone River Island then they would be managed under the general guidelines established under each alternative.

## **PREFERRED ALTERNATIVE**

At the time of publication of the Proposed RMP/Final EIS, Alternative B has been modified from the Draft RMP/EIS and is the preferred alternative.

# CHAPTER 1

## PURPOSE AND NEED

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### OVERVIEW

The United States Department of the Interior (DOI), Bureau of Land Management (BLM) has prepared this revision of the Resource Management Plan (RMP) to provide direction for managing public lands under the jurisdiction of the Butte Field Office in mid-western Montana and an environmental impact statement (EIS) to analyze the environmental effects that could result. The affected lands are currently being managed under two plans: the Headwaters Resource Management Plan (USDI-BLM 1983) and the Dillon Management Framework Plan (MFP) (USDI-BLM 1979). The Headwaters RMP has been formally amended on eight occasions and the Dillon MFP has been formally amended on three occasions. In addition, several new laws, regulations, and policies have affected management of public land since approval of both plans. For lands administered by the Butte Field Office, this RMP revision will replace the Headwaters RMP and the Dillon MFP.

Land use planning is used to manage resources and to designate uses on public lands in coordination with tribal, state, and local governments, land users, and interested public. This RMP: 1) incorporates new information about resources and resource uses, and regulatory guidance that has come into existence since establishment of the Headwaters RMP and Dillon MFP over 20 years ago, and 2) provides management direction where it may be lacking or requires clarification. Current management direction that has proven effective and requires no change will be carried forward into the revised RMP.

The RMP is being revised according to guidance in the Federal Land Policy and Management Act (FLPMA) of 1976 (43 US Code [USC] 1701 et seq.) and BLM's Land Use Planning Handbook, H-1601-1 (USDI-BLM 2005a). An EIS is incorporated into this document as required by the National Environmental Policy Act of 1969 (NEPA), Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508) (CEQ 1978), and requirements of BLM's NEPA Handbook, H-1790-1 (USDI-BLM 2008a).

### PURPOSE OF AND NEED FOR REVISING THE PLAN

The purpose of the RMP is to provide a single, comprehensive land use plan to guide management of public lands administered by the Butte Field Office. The plan provides goals, objectives, land use allocations, and management direction to maintain, improve, or restore resource conditions and to provide for the long-term economic needs of local communities.

Since the original plans were approved, several conditions have changed. These include:

- Changed ecological, socioeconomic, institutional, and regulatory conditions;
- Many new laws, regulations, and policies that invalidate or superseded previous decisions;
- Changing user demands and activities;
- Changing acceptance of impacts; and
- Changes in the Butte Field Office boundaries.

These conditions drive the need for an inclusive, comprehensive plan that provides updated, clear direction to both BLM and the public.

The purpose of site-specific travel planning is to develop travel plans that meet the needs of public and administrative access, are financially affordable to maintain, and minimize user conflicts and natural resource impacts associated with roads and trails, largely as per 43 CFR 8342. There is a need to do this because in many portions of the BFO, travel planning has not ever been conducted in a manner to establish a managed transportation network that meets these regulations and fully considers public and administrative needs, user conflicts, and natural resource impacts.

Planning for the management of BLM-administered lands is a tiered process. Documents produced during each successive tier are progressively more focused in scope and more detailed in terms of their identification of specific measures to be undertaken and impacts that may occur. The four tiers are described briefly below:

The RMP provides an overall vision of the future (goals and objectives) and includes measurable steps, management actions, and allowable uses to achieve the vision.

Subsequent implementation decisions are carried out by developing activity-level or project-specific plans. Activity-level plans usually describe multiple projects for a single or multiple resource programs. Project-specific plans usually describe a single project or several related projects.

The RMP provides basic program direction with the establishment of goals, objectives, allowable uses, and management actions or prescriptions. The RMP focuses on what resource conditions, uses, and visitor experiences should be achieved and maintained over time. To do this, the RMP must take a long-term view.

**Planning Area** is all the land within the Butte Field Office administrative boundary regardless of jurisdiction.

**Decision Area** is comprised of only those lands administered by the BLM (surface and mineral estate).

Defining planning issues and planning criteria represent the first steps in establishing the scope of the RMP revision. These, combined with public input, provide the framework in which RMP decisions are made. RMP decisions refer to what is established or determined by the final RMP. The RMP provides guidance for land use planning decisions in accordance with the following categories:

- Natural, biological, and heritage resources
- Resource uses
- Special designations such as Areas of Critical Environmental Concern and Wild and Scenic Rivers.

In the context of these categories, the planning team develops management strategies aimed at providing viable options to address planning issues. These management strategies provide the basis for future activity-level plans or specific projects.

In addition to the RMP type decisions described above, several implementation decisions associated with activity plans for several site-specific travel plans will be made based on this document. Travel route-specific management decisions will be made for the following five Travel Planning Areas (TPAs): Helena, East Helena, Lewis and Clark County Northwest, Upper Big Hole, and Boulder/Jefferson City.

## DESCRIPTION OF THE PLANNING AREA

The Butte Field Office administrative area is located in mid-western Montana (**Map 1**). The Planning Area is all the land within the Butte Field Office administrative boundary. Within the Planning Area, BLM administers about 307,300 acres of public land surface and 652,200 acres of federal mineral estate in Broadwater, Deer Lodge, Gallatin, Jefferson, Lewis and Clark (southern portion), Silver Bow, Park, and the northern portion of Beaverhead County. **Table 1-1** identifies BLM-administered acres and total acres within the Planning Area by county. Collectively, the lands that BLM administers (surface and mineral estate) are considered the

County	BLM Surface Acres	BLM Mineral Estate	County Acres in Planning Area
Beaverhead	12,660	22,372	31,429
Broadwater	70,679	106,032	792,866
Deer Lodge	5,227	141,648	473,932
Gallatin	7,250	34,656	1,683,558
Jefferson	94,397	116,161	1,061,462
Lewis & Clark	63,510	113,119	895,925
Park	8,365	53,505	1,793,054
Silver Bow	45,221	64,701	460,124
<b>TOTALS</b>	<b>307,309</b>	<b>652,194</b>	<b>7,192,349</b>

“Decision Area”. Surface lands within the Planning Area administered by other federal agencies, such as the U.S. Department of Agriculture, Forest Service (USFS), and U.S. Department of the Army are not subject to decisions made in association with this RMP. Approximately 1,800 acres of land administered by the Bureau of Reclamation surrounding Canyon Ferry Lake near Townsend; 65,500 acres of land administered by the State of Montana including several wildlife management areas, and approximately 277,585 acres of private land for which the BLM holds subsurface mineral rights are also subject to fluid mineral leasing decisions in this document.

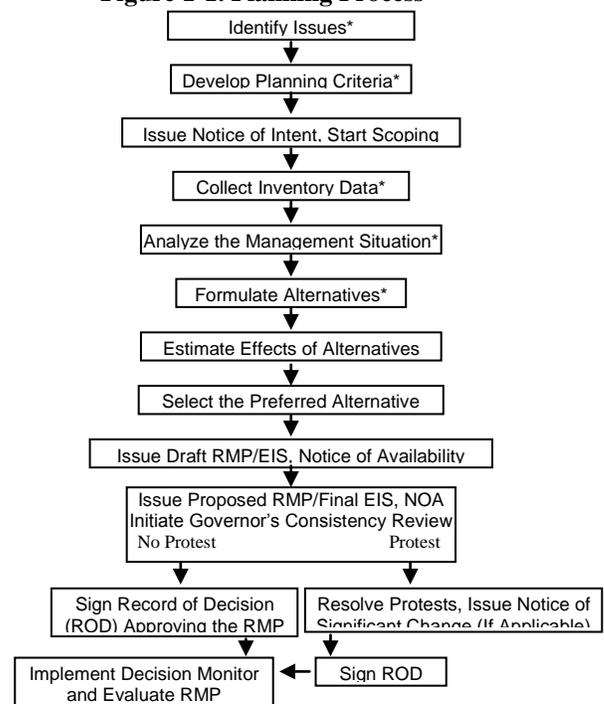
The Decision Area consists of many tracts ranging in size from less than one acre to over 20,000 acres. BLM-administered lands are mixed among private, State of Montana, Bureau of Reclamation, and USFS-administered lands, each of which may be influenced or directly affected by BLM decisions.

The BLM will coordinate with other federal and state agencies, especially for those resources and issues that share boundaries.

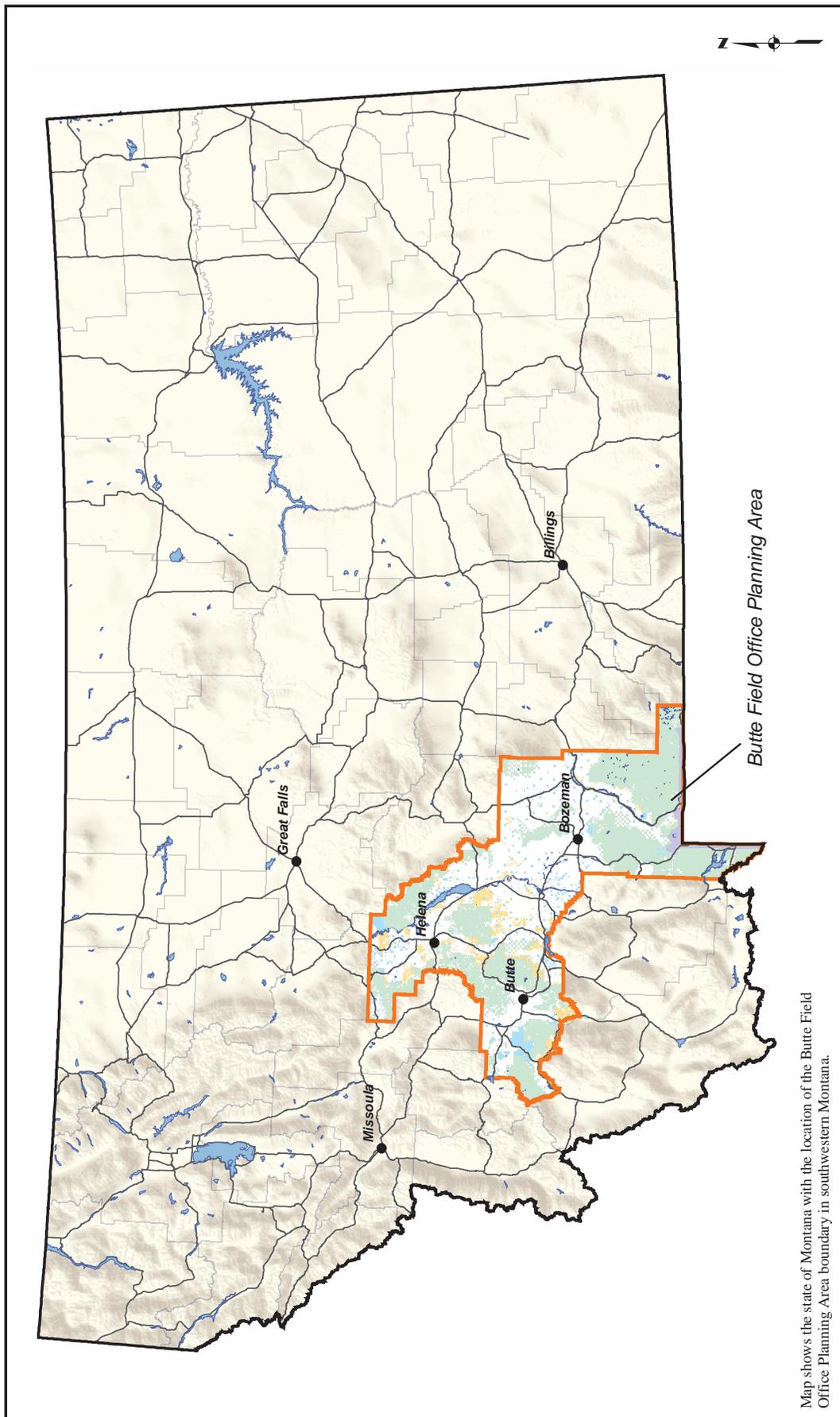
## PLANNING PROCESS

The planning process involves public participation, assessment, decision-making, implementation, plan monitoring, and evaluation, as well as adjustment through maintenance, amendment, and revision. This process ensures that land use plans and implementation decision remain consistent with applicable laws, regulations, orders, and policies. The steps of RMP preparation are interrelated as illustrated in **Figure 1-1** and **Table 1-2**.

**Figure 1-1. Planning Process**



\* These steps may be revisited throughout the process.



Map shows the state of Montana with the location of the Butte Field Office Planning Area boundary in southwestern Montana.

This map is intended for display purposes. No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data, or for purposes not intended by BLM. This map may not meet National Map Accuracy Standards. This product was developed through digital means and information may be updated without notification.

Map Scale 1:4,000,000  
 0 100 Miles  
 Albers Equal Area, NAD83 Projection

Map generated by the Butte Field Office in February 2007

**Map 1: Project Location Map**

U.S. DEPARTMENT OF THE INTERIOR  
 Bureau of Land Management



Butte Field Office  
 Proposed RMP/Final EIS

**Table 1-2**  
**Steps in the BLM Land Use Planning Process**

Step	Process
Step 1 – Identification of Issues	This planning step is designed to identify major problems, concerns, or opportunities associated with the management of public land in the Planning Area. Issues are identified by the public, the BLM, and other governmental entities. The planning process is then focused on resolving the planning issues.
Step 2 – Development of Planning Criteria	Planning criteria are identified to guide development of the RMP and prevent the collection of unnecessary information and data.
Step 3 – Collect and Compile Inventory Data	This planning step involves the collation and collection of various kinds of environmental, social, economic, resource, and institutional data. In most cases, this process is limited to information needed to address the issues. The data required for land use planning decisions is usually at a broader scale than data required in implementation level planning and analyses.
Step 4 – Analysis of the Management Situation	This step calls for the deliberate assessment of the current situation. It identifies the way lands and activities are currently managed in the Planning Area, describes conditions and trends across the Planning Area, identifies problems and concerns resulting from the current management, and identifies opportunities to manage these lands differently. It also forms the basis for the “No Action” alternative.
Step 5 – Formulate Alternatives	During this step, BLM formulates a reasonable range of alternatives for managing resources in the planning area. Alternatives include a continuation of current management (no action) alternative and other alternatives that strive to resolve the major planning issues while emphasizing different management scenarios. Alternatives usually vary by the amounts of resource production or protection that would be allowed, or in the emphasis of one program area over another.
Step 6 – Estimation of Effects	This step involves estimating the physical, biological, economic, and social effects of implementing each alternative in order to provide a comparative evaluation of impacts in compliance with CEQ regulations for implementing NEPA (40 CFR 1500).
Step 7 – Selection of Preferred Alternative	Based on the information resulting from the estimation of effects, the BLM identifies a Preferred Alternative. The Draft RMP/EIS is then prepared for printing and distributed for a 90 day public review.
Step 8 – Selection of RMP	Following review and analysis of public comments on the Draft RMP/EIS, BLM makes adjustments as warranted and selects a proposed RMP. The Proposed RMP and a Final EIS is then published. A final decision is made after a 60-day Governor’s Consistency Review and a 30-day public protest period are completed. BLM then publishes the Record of Decision (ROD) and prepares the Approved Resource Management Plan.
Step 9 – Monitoring and Evaluation	This step involves the collection and analysis of resource condition and trend data to determine the effectiveness of the plan in resolving the identified issues and achieving desired results. Implementation of decisions requiring subsequent action is also monitored. Monitoring continues from the time the RMP is adopted until changing conditions require revision of the whole plan or any portion of it.

## SCOPING AND PLANNING ISSUES

### SCOPING PROCESS

Early in the planning process, the public was invited to identify planning issues and concerns relating to the management of BLM-administered public lands and resources/uses in the Planning Area. The formal scoping period began with publication of the Notice of Intent (NOI) in the Federal Register on December 19, 2003. The scoping period ended February 17, 2004, which provided 60 days for comment submittal.

The Butte RMP website housed current information including background documents, maps, meeting announcements, published bulletins, and other documents ([http://www.blm.gov/mt/en/fo/butte\\_field\\_office.html](http://www.blm.gov/mt/en/fo/butte_field_office.html)). After April 2005 the BLM was required to take the website down and it was unavailable until approximately January 2006. Scoping information and newsletters were sent to a list of individuals, agencies, and organizations compiled including those who participated in past BLM events, those who requested to be on the mailing list, or

individuals who participated in the scoping meetings or submitted a comment.

Advertisements were published in Montana newspapers and a press release was sent to newspapers, radio stations, and television stations to: notify the public of the project, announce six public open houses, request public comments, and provide contact information for the BLM.

Six public meetings were held in January 2004. **Table 1-3** illustrates the attendance at each scoping meeting. At the six scoping meetings, 37 people registered their attendance. Comment forms were available at the six scoping meetings to collect comments. No written comments were received during the public meetings; however, verbal comments were offered and recorded.

Meeting Location	Meeting Date	Attendance
Helena, MT	January 6, 2004	7
Boulder, MT	January 8, 2004	2
Wise River/Divide, MT	January 13, 2004	6
Butte, MT	January 13, 2004	14
Bozeman, MT	January 14, 2004	4
Townsend, MT	January 15, 2004	4

Representatives from the Butte Field Office also met with several groups during the scoping period, including County Commissioners (Lewis and Clark, Silver Bow, Broadwater, Deer Lodge, and Jefferson counties); the Big Hole Watershed Committee, the Western Montana Resource Advisory Council; American Wildlands; and the East Pioneers Stewardship Group.

During initial scoping, the public submitted a total of 17 responses containing 554 comments.

### Proposed Planning Scenario

Using comments received during the initial scoping period, the BLM interdisciplinary team developed the "Proposed Planning Scenario", which describes possible management prescriptions and goals for individual programs. The Proposed Planning Scenario (PPS) was distributed on June 6, 2005 to gather public and agency comment on issues and concerns regarding the plan. The comment period closed July 6, 2005. Comments on the PPS were contained in 34 written letters, which included 691 specific individual comments that were considered during development of RMP alternatives.

On August 10, 2005, the PPS was sent to tribal governments, local, state, and federal agencies asking them to comment. The deadline for these comments was September 6, 2005. No comments were received.

Public meetings were held on the PPS, June 9, 2005 in Helena and June 13 and 29, 2005 in Butte. These meetings were attended by a total of about 30 people. Public comment forms were provided at the meetings. Few comments were received at the public meetings. Most comments were subsequently received in writing during the comment period.

In an effort to solicit more public feedback on the RMP, 29 organizations or groups were contacted and offered BLM briefings on the PPS. Of those, 10 requested briefings. The briefings were held during June and July 2005. Of the ten organizations that received briefings, six were county commissions, the remainders were advocacy groups.

### Travel Management Planning

Travel management and access is addressed at two levels in this document. Proposed management is described at the Field Office level as part of the RMP decision to be made. In addition, there are five Travel Planning Areas for which site-specific management by individual travel routes is proposed by alternative. Site-specific travel plan decisions for each of these five areas will be made separately from the RMP level decisions as implementation type decisions.

Five public meetings were held over a two-week period in November and December 2004. Separate meetings were held specific to each of the five following Travel Planning Areas: Upper Big Hole, Boulder/Jefferson City, East Helena (North Hills), Lewis and Clark County Northwest (Marysville) and Helena (Scratchgravel Hills). To advertise the meetings, BLM sent a mailer to all people on its mailing list and advertised the meetings on its public website. In addition, BLM sent a press release to the appropriate newspapers, radio stations, and television stations announcing the meetings. Table 1-4 presents a summary of attendance at the five meetings.

A formal presentation was given by the Butte Field Office management. After the presentation the participants were asked to state issues and concerns and proposed solutions before the group. Participants were also encouraged to submit written comments which were

TPA	Meeting Date	Attendance
Upper Big Hole	November 15, 2004	4
	November 3, 2005	11
Boulder/Jefferson City	November 16, 2004	7
East Helena	November 30, 2004	24
Helena	December 1, 2004	101
Lewis and Clark Co. NW	December 2, 2004	16

used to formulate the alternatives for travel management in these areas.

Two additional public meetings (one in Divide, the other in Butte) were held on November 3, 2005, to scope public feedback on the Upper Big Hole Travel Planning Area. A total of 11 people attended these meetings.

### ***Working Group Proposal Development***

BLM initiated *community based collaborative working groups* (comprised of non-BLM personnel and sponsored/overseen by Lewis and Clark County) in an effort to help BLM develop site-specific travel management alternatives agreeable to the public as well as the agency. Refer to **Appendix A – Travel Planning** for further details on the working group process. Additional information on this topic can be found in Chapter 5.

## **PLANNING ISSUES**

Planning issues were identified through an extensive review of the Dillon MFP (1979), Headwaters RMP (1984), and associated amendments and decision documents. This resulted in the Butte RMP Preparation Plan, which identified land management direction that could be carried forward, and management direction that needed to be changed (see the Purpose and Need section above).

Public comments were reviewed, categorized, and analyzed to identify specific planning issues and concerns to be addressed in the Butte RMP.

Planning issues and management concerns identified and the land management direction to be developed in the Butte RMP are described in **Table 1-5** (page 9).

### **Issue Identification**

Issue identification is the first step of the nine-step BLM planning process (see Planning Process below). A planning issue is a major controversy or dispute regarding management of resources or uses. These issues drive the formulation of the range of alternatives considered in this EIS.

The criteria used to identify issues included identifying if the effects:

- Would approach or exceed standards or a threshold.
- Would substantially change a resource.
- Would be controversial.
- Would offer a wide range of opportunities.
- Would cause disagreement regarding their environmental impact.

Analysis of the public comments was completed and a Scoping Summary Report finalized in September 2005 (USDI-BLM 2005b). After consideration of public responses, 5 major planning issues and 12 management

concerns were identified. These issues and management concerns were used to develop alternatives.

### ***Issue 1: Vegetation Communities***

***How will vegetation on BLM lands be managed to achieve healthy ecosystems while providing for a broad range of multiple uses?***

This issue highlights concerns over management of vegetation resources and communities. There is considerable interest in insuring that vegetation management provides a range of commodity uses such as timber and other forest products, and livestock grazing, while maintaining or restoring vegetative communities to provide other resource values such as high quality wildlife and aquatic habitats.

Ecosystems within the Planning Area have evolved over time in response to periodic fire disturbance, and sustainable ecosystems are those that are in balance with the inherent frequency, size, and severity of the natural disturbance cycle. Many acres in the Decision Area have missed one or two fire disturbance cycles due to long-term fire suppression efforts. The vegetative response to this lack of fire disturbance is a change in species presence or prominence, and fuel quantity and continuity.

Management of noxious weeds and other non-native, invasive species is a critical part of public land management. Noxious weeds are one of the largest threats to maintaining and restoring ecosystem health because they usually spread aggressively and have a history of substantial negative impacts on soils, water, habitat, wildlife, and fire cycles. They can also affect local economies with regard to recreation, grazing, forestry, and mining activities.

### ***Issue 2: Wildlife, Wildlife Habitat, Special Status and Priority Plant and Animal Species***

***How will BLM lands be managed to provide wildlife and fish habitat, and to conserve and recover special status and priority species?***

The RMP will focus on a multi-species, ecosystem approach to managing habitat for wildlife, fish, and special status plants and animals. There is a need to protect habitat for viable populations of all native species, manage habitat at scales large enough to accommodate natural disturbances such as fire, wind, and insect outbreaks, provide diversity of vegetative communities, and manage human uses in a manner that conserves and enhances ecological processes. Areas where restoration activities could restore or enhance terrestrial and aquatic habitat will also be identified.

Special status species include species that are listed, proposed for listing, or are candidate species under the Endangered Species Act; and sensitive species identified by BLM. BFO lands provide habitat for species listed as threatened or endangered under the Endangered Species Act (ESA), including the Ute ladies' tresses, Canada

lynx, grizzly bear, bull trout, and three species that have been de-listed under the ESA, the peregrine falcon, bald eagle, and gray wolf. In addition, the area provides habitat for 45 “sensitive species” identified by the BLM. Sensitive species are those for which BLM must manage in a manner to minimize the risk of a future federal listing under the ESA. The RMP will identify strategies that contribute to conservation and recovery of special status species in the PA in consultation with the U.S. Fish and Wildlife Service as required under the ESA for listed species.

### ***Issue 3: Travel Management and Access***

***How should the BLM manage motorized public travel to meet the needs for public access and resource uses while minimizing user conflicts and impacts to air, soil, watershed, vegetation, wildlife, and other resource values?***

Travel and access considerations are of major importance to hunters, off-highway recreationists, livestock grazers, miners, wildlife advocates, non-motorized recreationists, and others.

Travel and access issues are driven by the need to manage for the use and enjoyment of the public lands while protecting resource values and providing user safety. Travel management also involves the need to adequately address increased conflict between motorized and non-motorized users, particularly at urban/rural interfaces.

RMP alternatives for five Travel Planning Areas (TPAs) were developed in consideration of the public’s interest and demand for motorized as well as non-motorized travel opportunities while minimizing and/or mitigating resource impacts and user conflicts.

### ***Issue 4: Recreation***

***How should recreation be managed to accommodate the full range of recreational uses enjoyed by the public on BLM lands?***

This issue focuses on the need to set direction for recreation management in light of: increased demands on developed recreations sites and the need for new strategies to improve management efficiency, appropriate services and facilities, and public experiences; the need for management of Special Use Permits to better protect natural resources, minimize user conflicts, provide for needed opportunities and ensure fair value returns for both the permittee and BLM; and the need to classify recreation settings using the Recreational Opportunity Spectrum (ROS) system and modify existing Special Recreation Management Areas to provide a wide range of appropriate activities that foster beneficial experiences for the public.

### ***Issue 5: Special Designations including Areas of Critical Environmental Concern (ACECs), National Trails, Wild and Scenic Rivers, and Wilderness Study Areas (WSAs)***

***Which areas, if any, should be managed as special designations? How should they be managed to protect values that warrant their special designation status?***

In the Butte RMP process, nine nominated areas were reviewed for ACEC designation. In order to qualify as potential ACECs, nominated areas must meet relevance and importance criteria that are established in regulation and in BLM guidance. Five areas met the relevance and importance criteria and are being considered in the RMP. Inclusion of particular potential ACECs within specific alternatives was based in part on the focus of the alternatives.

Concerns with ACEC designation revolve around limitations that special management might place on current and future uses. Proponents of ACEC designation see it as a way of preventing loss of or impact to values of particular interest.

FLPMA states that priority should be given to the designation and protection of these areas when developing land use plans. A potential ACEC is designated in the approved RMP if it requires special management to protect its relevant and important values. Management is considered special if it is outside of the ordinary or routine requirements of the BLM or if it is not covered by provisions already stipulated in the RMP; special management is unique to the area and includes terms and conditions specifically designed to protect the values in the ACEC.

Each of the five potential ACECs have been proposed for designation in at least one alternative in accordance with ACEC guidance found in BLM Manual 1613 (USDI-BLM 1980a).

The RMP also provides protective strategies and appropriate uses for the management of National Trails to protect their resource values and characteristics.

The approved RMP will determine whether any rivers in the Planning Area are recommended as suitable for inclusion in the National Wild and Scenic River system. Four river segments were assessed as to whether they would be suitable for designation under the Wild and Scenic Rivers Act of 1968. Recommendations were incorporated into the plan alternatives.

Six Wilderness Study Areas (WSAs) are located within the Butte Field Office. RMP alternatives consider management options for WSAs that would take effect if Congress releases them from wilderness consideration.

## **Management Concerns**

Management concerns are topics that involve a resource, resource management activity, or land use that generally do not have enough controversy surrounding them to generate different RMP alternatives to address them. While these concerns are addressed in the plan, management related to them may or may not vary by alternative. Concerns were raised outside of the issues described above. These are described below.

### ***Air Quality***

This management concern is driven by the need to identify area-wide standards that apply to activities authorized by the Butte Field Office that might affect air quality. Yellowstone National Park is a Federal Class I airshed, and a portion of Silver Bow County is a non-attainment area. These could be affected by activities authorized under the plan.

Air quality concerns include public health impacts from wildland and prescribed fires. The U.S. Environmental Protection Agency (EPA) recommends following the Interim Air Quality Policy on Wildland and Prescribed Fires (May 15, 1998) to assure that an air quality analysis is completed for prescribed burns.

### ***Soil***

This management concern focuses on the need to reduce accelerated soil erosion and compaction from occurring within the Decision Area and the potential impacts on soil productivity and other resources.

Off-highway vehicle (OHV) use has created new roads and trails in areas with steep terrain, causing accelerated soil erosion. Other roads and trails have been constructed to a new standard and these disturbances create areas with some short-term and potential long-term soil erosion. In some places, historic cattle grazing has impacted soil and caused localized soil erosion and compaction. The spread of noxious weeds and conifer encroachment may have also had a detrimental effect on soils.

### ***Water Resources***

Management concerns associated with water resources involve preventing water quality degradation and improving watershed function to support beneficial uses. Additional concerns stem from water rights issues including management of existing water rights and acquiring water rights when feasible and with willing holders where acquisition of the water right meets a management objective or need.

Over the next decade, several total maximum daily load (TMDL) plans (restoration plans for water quality impaired streams) will be developed by the State of Montana. This will result in new water quality goals intended to improve water quality where beneficial uses are impaired.

## ***Cultural Resources, Traditional Cultural Properties and Paleontological Resources***

Management concerns include compliance with new laws, guidelines, and directives to ensure that significant cultural, traditional, and paleontological resources are identified and evaluated prior to surface disturbing activities to ensure protection of resources through appropriate mitigation. The alternatives present options for inventory of archeological and historical sites, coordination with tribal governments to identify religious or traditional lifeway values, education and public outreach programs, mitigation of cultural sites, maintenance of historic buildings, and mapping of fossil localities.

### ***Visual Resources***

Management concerns focus on the need to establish Visual Resource Management (VRM) Classifications to guide the management of public land based on scenic quality, sensitivity levels, and distance zones.

### ***Lands and Realty***

Management concerns for lands and realty focus on establishing conditions for disposal, retention, or acquisition of land or interests in land. Utility corridors would be designated where placement of future utility facilities would be encouraged. Another concern is the need to develop criteria to assess the impacts of land disposal and acquisition when considering land tenure adjustments.

### ***Minerals and Energy***

Management concerns associated with minerals and energy include development of a consistent approach to recognition of mineral rights under the General Mining Law and mineral leasing acts to identify the need for environmentally acceptable exploration, development, and production. The BLM Energy and Non-Energy Mineral Policy, which references several existing acts, recognizes the nation's need for domestic sources of minerals, energy, and other resources and the responsibilities concerning the discovery, development, production and acquisition of minerals and metals. The RMP alternatives provide management options for leasable, saleable, and locatable minerals. These management policies will ensure that federal minerals are available for national economic and energy needs.

### ***Abandoned Mine Lands***

Management concerns associated with Abandoned Mine Lands (AML) sites include: the threats posed to human health and the environment from contaminated water, acid rock drainage, or airborne contamination from mine or smelter sites; and public safety issues related to hazardous mine openings such as adits, shafts, open pits, and subsidence over buried mine openings. RMP alternatives incorporate information in accordance with bureau policy to guide the elimination or reduction of physical hazards and safety issues on public lands.

***Hazardous Material Management***

Management concerns associated with hazardous material management consist of the need to protect employees, the public, and the environment from exposure to hazardous materials in public facilities or on public land. The RMP alternatives comply with all appropriate laws and regulations regarding hazardous material management.

***Social and Economic Environment***

The Planning Area includes land within eight counties, and near many communities ranging from small cities like Butte and Helena to towns such as Townsend, Whitehall, and Boulder. The concerns among residents and the impacts to communities from public land management decisions vary.

Management concerns associated with the social and economic environment focus on changes to recreation, forestry, mining, livestock grazing, and other land-uses as a result of increased population, economic growth, and continuing development in the Planning Area.

***Environmental Justice***

Management concerns associated with environmental justice focus on the requirement that BLM evaluate and disclose whether actions would place a disproportionate share of negative environmental consequence on populations covered by Executive Order 12898.

***Tribal Treaty Rights including Native American Religious Concerns***

Management concerns focus on the requirement to notify and consult with appropriate Native American tribes on BLM authorized actions.

**Table 1-5  
Description of Planning Issues/Management Concerns,  
their Desired Future Conditions/Visions, and Management Goals**

<b>Issue or Management Concern</b>	<b>Description of Desired Future Conditions/Visions and Management Goals</b>
<p>Issue 1: Vegetation Communities</p>	<p>The desired future condition is for vegetation to fall within the historic range of variability, with diverse, site-appropriate plant communities that contain healthy populations for native species.</p> <p>Management direction is needed to: 1) maintain and/or improve ecological health of woodland communities for sustainability and diversity; 2) manage dry forest types to contain healthy stands of site-appropriate species; 3) manage moist forest types to contain healthy stands that combine into a diversity of age classes and structure; 4) manage old forest structures in a sustainable manner; 5) minimize infestations of invasive plants and noxious weeds; 6) manage upland vegetation communities by including a full range of herbaceous and shrub species; 7) maintain or enhance communities in priority habitats to provide desired ecological functions and values; 8) manage riparian and wetland communities for the appropriate composition, density and age structure; and, 9) manage wetland and riparian habitats to support healthy, diverse and abundant populations of fish and associated aquatic and riparian dependent species.</p> <p>Management direction for forests and woodlands is needed to: 1) restore and/or maintain the health and productivity of public forests to provide a balance of forest and woodland resource benefits to present and future generations; and, 2) manage forestry resources to provide a sustained flow of local economic benefits and protect non-market economic values.</p> <p>Management direction for livestock grazing is needed to: 1) maintain, restore, or enhance BLM rangelands to meet the Land Health Standards; and, 2) manage livestock grazing to provide a sustained level of local economic benefits and protect non-market economic values.</p> <p>Direction for wildland fire management is needed to: 1) provide an appropriate management response to all wildland fires, emphasizing firefighter and public safety; 2) move toward restoring and maintaining desired ecological conditions consistent with appropriate fire regimes; 3) minimize the adverse effects of fire on resources, resource uses and Wildland Urban Interface areas; 4) promote seamless fire management planning across jurisdictions within the boundaries of the Butte Field Office; and, 5) protect life and property by treating hazardous fuels on BLM lands near Wildland Urban Interface areas.</p>

<b>Table 1-5 Description of Planning Issues/Management Concerns, their Desired Future Conditions/Visions, and Management Goals</b>	
<b>Issue or Management Concern</b>	<b>Description of Desired Future Conditions/Visions and Management Goals</b>
Issue 2: Wildlife, Wildlife Habitat, Special Status and Priority Plant and Animal Species	<p>The desired future condition is for BLM lands to provide a diverse landscape with native vegetation communities that provide suitable habitat to maintain viable and well distributed populations of native wildlife species on public land.</p> <p>Management direction is needed to: 1) conserve, enhance, restore, or contribute to the recovery of threatened, endangered, or candidate plant or animal species; 2) conserve or enhance habitat of BLM sensitive plant and animal species to prevent the federal listing of these species; 3) conserve special-status species and habitats across the landscape through collaboration and cooperation; 4) provide a variety of well-distributed diverse plant communities to support a diversity of habitats; 5) conserve, enhance, or restore areas of important wildlife habitat such as rare or limited seasonal habitats, corridors, blocks of intact functional habitat across the landscape, areas of low road-density, foraging areas, and riparian areas; and, 6) conserve, enhance or restore special habitat features or mitigate/minimize impacts to special habitat features including, but not limited to caves, cliffs, riparian areas, wetlands, snags, and down woody material.</p>
Issue 3: Travel Management and Access	<p>The vision is to provide a range of quality motorized and non-motorized opportunities, and reasonable access for management while protecting natural resources, now and in the future.</p> <p>Management direction is needed to: 1) provide a balanced approach to travel management that provides a sustained flow of local economic benefits, minimizes or mitigates user conflicts, safety concerns, and resource impacts while taking into consideration the unique attributes of the various travel management Planning Areas; and, 2) maintain facilities, roads and trails to provide for public and/or administrative use and safety while mitigating impacts to resources.</p>
Issue 4: Recreation	<p>The vision is to provide a range of quality recreation opportunities, services, and appropriate facilities for public use and enjoyment.</p> <p>Management direction is needed to: 1) provide a diverse array of recreational opportunities while maintaining healthy public land resources; 2) establish, manage and maintain quality recreation sites and facilities to meet a broad range of public needs subject to resource constraints; 3) manage commercial, competitive or special events with special recreation permits that eliminate or mitigate impacts to resources and conflicts with other users; and, 4) manage recreation opportunities to provide a sustained flow of local economic benefits and protect non-market economic values.</p>
Issue 5: Special Designations including ACEC, National Trails, Wild and Scenic Rivers and WSAs	<p>The vision is to protect relevant and important ACEC values and manage for appropriate uses; protect established National Trail values and manage for appropriate uses; protect Outstandingly Remarkable Values in Wild and Scenic River-eligible river segments and manage for appropriate uses; protect wilderness characteristics in Wilderness Study Areas.</p> <p>Management direction is needed to: 1) designate ACECs where special management attention is required to protect relevant and important values; 2) manage National Trails to promote public enjoyment and protect their designated values; 3) manage preliminarily eligible river segments so that their suitability for potential National Wild and Scenic Rivers System designation is not impaired; and 4) manage WSAs so that their suitability for potential wilderness designation is not impaired.</p>
Air Quality	<p>The desired future condition is for air quality to be maintained in a condition that protects human health and the environment.</p> <p>Management direction is needed to ensure BLM authorizations and management activities protect the local quality of life and sustain economic benefits by complying with tribal, local, state, and federal air quality regulations, requirements and implementation plans.</p>

<b>Table 1-5 Description of Planning Issues/Management Concerns, their Desired Future Conditions/Visions, and Management Goals</b>	
<b>Issue or Management Concern</b>	<b>Description of Desired Future Conditions/Visions and Management Goals</b>
Soils	<p>The desired future condition is for stable soils to contribute to properly functioning watersheds and support productive plant communities consistent with site potential.</p> <p>Management direction is needed to: 1) manage uses to minimize accelerated soil erosion and compaction and maintain surface soil water infiltration based on site-specific conditions; and, 2) maintain or improve soil health and fertility, prevent or minimize erosion and compaction while supporting multiple use management.</p>
Water Resources	<p>The desired future condition is for water bodies to have sufficient water quality to meet state and federal standards, and support designated beneficial uses.</p> <p>Management direction is needed to: 1) <b>restore and/or maintain</b> the chemical, physical and biological integrity of water resources to protect designated beneficial uses and achieve water quality standards; 2) maintain existing or acquire new water rights on BLM land to ensure water availability for multiple-use management; 3) minimize erosion and accelerated runoff to streams to improve watershed function; and, 4) protect water quality for municipal, industrial, agricultural, recreation, and residential purposes by adopting protective measures to meet tribal, state, and local water quality requirements.</p>
Cultural Resources/ Traditional Cultural Properties/ Paleontological Resources	<p>The desired future condition is for there to be a minimal loss or degradation of cultural resources and traditional cultural properties within the Butte Field Office.</p> <p>Management direction is needed to: 1) preserve and protect eligible cultural resources, and traditional cultural properties within the Butte Field Office; 2) identify cultural resource sites and traditional cultural properties and mitigate impacts when necessary, from natural or human-caused deterioration; and, 3) preserve and protect eligible cultural resources to ensure that they are available for appropriate uses by present and future generations.</p>
Visual Resources	<p>The vision is that a spectrum of visual qualities are provided and protected for the public.</p> <p>Management direction is needed to manage visual resources in accordance with VRM classifications described in <b>Appendix C – Visual Resource Management Classes.</b></p>
Lands and Realty	<p>The vision is for the needs of the public to be met and support for all BLM resource programs is provided.</p> <p>Management direction is needed to: 1) look for opportunities to acquire non-federal land or interest in non-federal land with important resources and resource uses; and, 2) provide for land-use opportunities to provide a sustained flow of economic benefits and meet local infrastructure needs while protecting or minimizing adverse impacts to resources and resource uses.</p>
Minerals and Energy	<p>The vision is for the use of geologic resources to recognize the need for domestic sources of energy and minerals.</p> <p>Management direction is needed to: 1) ensure that federal minerals are available for energy and mineral exploration and development; 2) manage exploration and development of mineral resources and ensure they are conducted in an environmentally sound manner; and, 3) where possible, conserve significant or unique geological features.</p>
Abandoned Mine Lands	<p>The vision is for threats to human health and the environment from historic mining activities on public land to be reduced.</p> <p>Management direction is needed to: 1) reclaim AML sites on public land to improve water quality, plant communities, and diverse fish and wildlife habitat; 2) reduce and/or eliminate risks to human health from hazardous mine openings; and, 3) protect historic resources and wildlife habitat commonly associated with AML sites.</p>

<b>Table 1-5 Description of Planning Issues/Management Concerns, their Desired Future Conditions/Visions, and Management Goals</b>	
<b>Issue or Management Concern</b>	<b>Description of Desired Future Conditions/Visions and Management Goals</b>
Hazardous Materials Management	The vision is for employees, the public, and the environment to be protected from exposure to hazardous materials in public facilities or on public land. Management direction is needed to mitigate threats and reduce risks to the public and environment from hazardous materials.
Social and Economic Environment	The vision is for conservation, stewardship, and partnerships on public land are cultivated for the use and enjoyment of present and future generations. Management direction is needed to: 1) provide opportunities for economic benefits while minimizing adverse impacts to resources and resource uses; 2) provide for a diverse array of activities that result in social benefits for local residents, businesses, visitors, interested citizens, and future generations, while minimizing negative social effects; 3) sustain, and where appropriate, restore the health of forest, rangeland, aquatic, and riparian ecosystems administered by the BLM to provide a sustained flow of economic benefits within the capability of the ecosystem; 4) protect visual quality, wildlife habitats, and recreation opportunities on BLM lands to sustain non-market economic values; and, 5) make resource commodities available to provide a sustainable flow of economic benefits within the capability of the ecosystem.
Environmen- tal Justice	Management direction is needed to identify and remediate to the extent possible disproportionate negative effects to minority or low income populations per Executive Order 12898.
Tribal Treaty Rights	Management direction is needed to accommodate treaty and legal rights of appropriate Native American groups in management of public lands.

Note: Unnumbered items are management concerns.

## **ISSUES CONSIDERED BUT NOT FURTHER ANALYZED**

During scoping, several concerns were raised that are beyond the scope of this planning effort or that represented questions on how the BLM would go about the planning process and implementation. There are several issues raised in scoping that are clearly of concern to the public but which are governed by existing laws and regulations (for example, water quality). Where certain management is already dictated by law or regulation, alternatives have not been developed; rather, management will instead be applied as “Management Common to All Alternatives.”

The Scoping Report (USDI-BLM 2005b) and the BLM Final Surface Management Regulations EIS (USDI-BLM 2000a) provides a comprehensive list of issues outside the scope of the RMP or issues addressed through administrative or policy action. Some major issues were considered but not analyzed further because they are inconsistent with existing laws or higher level management direction, or because they are beyond the scope of the RMP purpose and goals. These issues are listed below.

- It would be useful if the EIS discussed the Hard Rock Mining Act of 1872, its benefits and impacts, and potential conflicts with the Clean Water Act, Clean Air Act, and Endangered Species Act.
- Minerals management should be greatly restricted.
- OHV recreationists in Montana generate total State and Federal annual gas tax revenue on the order of \$8 million. A Federal excise tax refund program for gasoline used for off-road purposes does not exist at this time. Excise tax on gasoline used for off-road fuel use should either be refunded to off-highway recreationists or used to fund programs that benefit off-highway recreationists.
- OHV recreation and tourism has not been promoted or supported by Montana Fish, Wildlife and Parks (MFWP) as aggressively as other recreation and tourism associated with fish and wildlife programs. OHV users request that MFWP actively promote OHV recreation and tourism.
- OHV use should be eliminated from BLM lands.
- Commercial use of public lands should be encouraged and promoted over all other considerations.

## PLANNING CRITERIA AND REGULATORY REQUIREMENTS

FLPMA is the primary authority for BLM's management of public lands. This law provides the overarching policy by which public lands will be managed and establishes provisions for land use planning, land acquisition and disposition, administration, range management, rights-of-way, designated management areas, and the repeal of certain pre-FLPMA laws and statutes.

NEPA requires the consideration and public availability of information regarding the environmental impacts of major federal actions significantly affecting the quality of the human environment.

BLM planning regulations (43CFR1600, Subpart 1610) require preparation of planning criteria to guide development of all resource management plans. Planning criteria guide the development of the plan and determine the approach to developing alternatives, and ultimately, the selection of a Preferred Alternative. The criteria serve to help ensure that plans are tailored to the identified issues and avoid unnecessary data collection and analyses.

Preliminary planning criteria were developed prior to public scoping meetings to set the side boards for focused planning and to guide decision making by topic. These criteria were introduced to the public for review in January 2004 at all scoping meetings. The public was encouraged to comment on, and suggest additions to, these criteria at the meetings, and through written correspondence. Final planning criteria included:

- The plan will comply with FLPMA and all other applicable laws.
- The planning process will include an EIS that will comply with NEPA standards.
- The plan will establish new guidance and identify existing guidance upon which the BLM will rely in managing public lands within the Decision Area.
- The RMP/EIS will incorporate by reference the Standards for Rangeland Health and Guidelines for Livestock Grazing Management; the Montana/Dakotas Statewide Fire Management Plan; Off-Highway Vehicle EIS and Plan Amendment for Montana, North Dakota, and Portions of South Dakota; the Final Statewide Oil and Gas Environmental Impact Statement and Proposed Amendment of the Powder River and Billings Resource Management Plans; and Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States.
- The RMP/EIS will incorporate by reference all prior Wilderness Study Area findings, suitability studies, and reports that affect public lands.

- The plan will result in determinations as required by special program and resource specific guidance in Appendix C of the BLM's Planning Handbook.
- The plan will recognize the state's responsibility to manage wildlife populations, including uses such as hunting and fishing, within the Planning Area.
- Decisions in the plan will strive to be compatible with the existing plans and policies of adjacent local, state, tribal, and federal agencies as long as the decisions are in conformance with legal mandates on management of public lands.
- The scope of analysis will be consistent with the level of analysis in approved plans and in accordance with Bureau-wide standards and program guidance.
- Geospatial data will be automated within a Geographic Information System (GIS) to facilitate discussions of the affected environment, alternative formulation, effects analysis, and displaying the results.
- Resource allocations must be reasonable and achievable within available technological and budgetary constraints.
- The RMP will consider conservation and management strategies developed for protection, conservation, and restoration of Yellowstone and westslope cutthroat trout, bull trout, fluvial Arctic grayling and sage grouse.
- The RMP will incorporate existing recovery plans and management strategies and guidelines for federally listed threatened and endangered species, including Ute Ladies' Tresses, the Northern Continental Divide population of the grizzly bear, and lynx (the Lynx Conservation Assessment and Strategy). State management plans will be considered for delisted species including the peregrine falcon, bald eagle, wolf, and Yellowstone population of grizzly bear.
- The RMP will recognize the State of Montana's authority on Montana water law and water rights.
- The RMP will recognize federal land management agency obligations under tribal treaties and laws or executive orders on Native American reserved rights, religious freedoms, and traditional use areas.

## RELATIONSHIP TO BLM POLICIES, PLANS, AND PROGRAMS

A number of plans have been developed by the BLM that relate to or otherwise govern management in the Planning Area. Some of these plans amended the Dillon MFP and Headwaters RMP while others, though they have not been formally adopted through the land use

planning process, are considered by BLM when implementation level planning is conducted or other specific actions are analyzed. Specific management actions from these plans must be in conformance with the Butte RMP and Record of Decision when completed. These major plans and other major management guidance are listed below and provide a perspective of the many management considerations pertinent to the Planning Area.

## LAND USE PLANS AND AMENDMENTS

- Mountain Foothills Rangeland Management Program Document (USDI-BLM 1981a).
- Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota and South Dakota ROD (USDI-BLM 1997).
- Elkhorns Travel Management Plan/Amendment (USDI-BLM *et al.* 1995).
- Off-Highway Vehicle ROD and Plan Amendment for Montana, North Dakota, and Portions of South Dakota (USDI-BLM 2003c).
- Clancy-Unionville Travel Management Plan/Amendment (USDI-BLM 2000b).
- Whitetail-Pipestone Travel Management Plan/Amendment (USDI-BLM 2003b).
- Suitability Report and EIS for Wilderness Designation of Humbug Spires Instant Study Area (USDI-BLM 1980).
- Sleeping Giant and Sheep Creek Wilderness Study Areas EIS (USDI-BLM 1991a).
- Fire/Fuels Management Plan Environmental Assessment/Plan Amendment for Montana and the Dakotas (USDI-BLM 2003a).

## OTHER NATIONAL, STATEWIDE, AND FIELD OFFICE PLANS

- Vegetation Treatments Using Herbicides on BLM Lands in Seventeen Western States (USDI-BLM 2007).
- Bull Mountains Exchange Final EIS/ROD (USDI-BLM 1991b).
- The Montana Weed Management Plan (Duncan 2005).
- Northwest Area Noxious Weed Control Program Final Environmental Impact Statement (USDI-BLM 1985).
- Montana Statewide Wilderness Study Report (USDI-BLM 1991c).
- National Fire Plan and 2001 Federal Fire Policy.
- Oil and Gas Environmental Assessment of BLM Leasing Program, Butte District (USDI-BLM 1981b).

- Draft National BLM Sage Grouse Habitat Conservation Strategy (USDI-BLM 2003e).
- Healthy Forests Restoration Act.
- Interim Bull Trout Habitat Conservation Strategy and Implementation (USDI-BLM 1996a).

## RELATED PLANS

BLM planning regulations require that BLM plans be consistent with officially approved or adopted resource related plans of other federal, state, local, and tribal governments as long as those plans are consistent with federal laws and regulations applicable to public lands. Plans formulated by federal, state, local, and tribal governments that relate to the RMP have been reviewed and no proposed management in this RMP is known to be inconsistent with these plans:

- Canadian Lynx Conservation Assessment and Strategy (Ruediger *et al.* 2000).
- Forest Plan – Helena National Forest (USDA-FS 1986a).
- Forest Plan – Beaverhead National Forest (USDA-FS 1986b).
- Forest Plan – Deerlodge National Forest (USDA-FS 1987).
- Grizzly Bear Recovery Plan (USFWS 1993).
- Grizzly Bear Management Plan for Southwestern Montana (MFWP 2002a).
- Northern Rocky Mountain Wolf Recovery Plan (USFWS 1987).
- Montana Bald Eagle Management Plan (USBOR 1994).
- Pacific Bald Eagle Recovery Plan (USFWS 1986).
- Final PEIS on Wind Energy Development on BLM Administered Lands in the Western US, June 2005.
- Montana Gray Wolf Conservation and Management Plan (MFWP 2004a).
- Montana Nonpoint Source Management Plan (MDEQ 2007).

## POLICY

No proclamations or legislative designations that would influence decisions or constrain the alternatives have been issued within the Decision Area.

Implementing the RMP begins when the Montana BLM State Director signs the ROD for the RMP. Decisions in the RMP would be implemented tied to the BLM budgeting process. An implementation schedule would be developed, providing for the systematic accomplishment of decisions in the approved RMP.

## COLLABORATION

There are no formally designated cooperating agencies for the Butte RMP planning process. Collaboration and consultation with federal, state, and local agencies, and tribal governments is discussed further in Chapter 5.

## CHANGES FROM THE DRAFT RMP TO THE PROPOSED RMP

Changes from the Draft RMP to the Proposed RMP are indicated with gray shading. Changes related to correcting typographical or grammatical errors, and other similar adjustments were considered minuscule and not to have any effect on alternative proposals or analyses. Such changes are not shaded in the document.

As a result of public comment and internal review of the Draft RMP/EIS, Alternative B (the Preferred Alternative in the Draft RMP/EIS) has been adjusted and represents the BLM's Preferred Alternative in the Proposed RMP/Final EIS. Changes regarding alternatives focused on adjustments to "Management Common to Action Alternatives" sections and for Alternative B in order to address public concerns and internal reviews while continuing to meet the BLM's legal and regulatory mandates. Changes are a result of:

- Adjustments to Management Common to Action Alternatives in some areas
- Adjustments to Alternative B
- Clarifications to better explain the management proposed in the Draft RMP/EIS
- Updates to information based on inventory updates after August 2005
- Updates to maps
- Other minor corrections

Some public comments suggested that alternatives to maximize particular uses or to maximize protection of certain resources should be analyzed in detail. While these types of alternatives were considered, they were not analyzed in detail because they did not meet BLM's multiple use and sustained yield mandate established in the FLPMA or the planning criteria set out in the Draft RMP/EIS. Other comments suggested consideration of items outside the scope of the BLM's decision authority. These items were not considered in this plan.

Other suggested modifications were within the range of alternatives analyzed by the BLM. The following descriptions of changes to proposed management in the Proposed RMP/Final EIS were within the range of the alternatives analyzed in the Draft RMP/EIS. Proposed management changes are indicated in Chapter 2. However, additional minor clarifications of analyses of effects have occurred in some places in Chapter 4 relative to changes to proposed management. These changes are

located in the pertinent sections of Chapter 4 relative to the type of proposed management changed.

## ADJUSTMENTS TO "MANAGEMENT COMMON TO ACTION ALTERNATIVES" – RMP LEVEL DECISIONS

Proposed "Management Common to Action Alternatives" for RMP decisions have been added or revised as follows.

Under Vegetation Communities in the Management Common to Action Alternatives section, under Forests and Woodlands, the following prescription has been added in the Proposed RMP/Final EIS: "The BLM would strive to maintain and/or restore stands with old forest structure within historic range of variability to maintain and/or enhance habitat for old growth dependent species."

Under Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species, the following prescriptions have been added under Management Common to Action Alternatives:

- "The BLM would emphasize providing habitat of sufficient quantity and quality, including connectivity and wildlife movement corridors, habitat complexity, forest openings, edges, and ecotones, to enhance biological diversity and provide quality, sustainable habitat for native wildlife species."
- "The BLM would emphasize maintaining and/or restoring the structure, composition, and function of aquatic ecosystems to support a diversity of aquatic plant and animal species and emphasize hydrologic connectivity within watersheds to maintain and/or restore habitat and connectivity needs for populations of aquatic dependent species."
- "The BLM would restore and/or maintain riparian structure, composition, and processes, including physical integrity of riparian ecosystems, amount and distribution of woody debris to sustain physical and biological complexity, adequate summer and winter thermal regulation, water quality and hydrologic processes, distribution and diversity of riparian vegetative communities and source habitats for riparian dependent species."

Under Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species, a newly developed prescription for managing big game security habitat has been included in the Management Common to Action Alternatives section which reads: "Functional Blocks of security habitat for big game species would be maintained across the landscape. Where minimum-size blocks of security habitat (250 acres), as described by Hillis et al. (1991), are located, they would be retained in a suitable condition during project planning and implementation. Protection of larger blocks of security habitat would also be addressed during project or watershed

level planning. Where security habitat is limited or fragmented across the landscape, the BLM would emphasize improving habitat through vegetation treatments and road closures (including seasonal closures) to increase security habitat for big game species.” This prescription replaces alternative-specific prescriptions for Alternatives B, C, and D presented in the Draft RMP/EIS.

Under Travel Management and Access, the following prescriptions have been added in the Management Common to Action Alternatives section:

- “The BLM would emphasize management of the transportation system to reduce impacts to natural resources from authorized roads and trails. The BLM would also stress closing and restoring unauthorized user created roads and trails to prevent resource damage. Ecologically sensitive areas within 300 feet of roads and trails could be closed to dispersed camping if resource damage is found to be occurring in these areas.”
- “Snowmobile use would be subject to restrictions outline in specific travel plans. It is the rider’s responsibility to avoid locations where wind or topographic conditions may have reduced snow depth and created situations where damage to vegetation or soils could occur, or where vegetation is taller than the protective snow cover. Ecologically sensitive areas could be closed to snowmobiling if resource damage caused or exacerbated by snowmobile activity is found to be occurring in these areas.”

Under Lands and Realty, in the Land Ownership Adjustment section, Management Common to Action Alternatives, the potential disposal acreage has been revised from 7,472 acres in the Draft RMP/EIS to 8,901 acres in the Proposed RMP/Final EIS through identification of additional isolated parcels of land that may be suitable for disposal.

Under Leasable Fluid Minerals, the Reasonable Foreseeable Development Scenario for oil and gas leasing has been changed for all action alternatives to the following: “Based on the analysis in the RFD scenario, it was estimated that up to 19 conventional oil and gas wildcat wells (exploratory wells drilled in an area with no existing production) might be drilled in the PA in the next 15 to 20 years. Of these 19 wells, it is estimated that 13 would be “dry” holes. Dry holes would be plugged and abandoned with surface reclamation occurring shortly afterward. It is further estimated that six of the wells could be completed for production. Each of the discovery wells would probably prompt additional step-out wells. A “step-out well” is a well drilled adjacent to or near a proven well to establish the limits and continuity of the oil or gas reservoir or to assist with production. It was estimated that 12 step-out wells would be drilled, two for each discovery. For analysis purposes seven of the producing wildcat and step-out wells are assumed to

be BLM.” This is a slight increase in the forecasted activity compared to the Draft RMP/EIS. Additional changes in the fluid minerals appendix (Appendix M of Proposed RMP/Final EIS) have also been made to reflect this slight increase.

## **ADJUSTMENTS TO ALTERNATIVE B – RMP LEVEL DECISIONS**

Key proposed management that would be adopted through RMP decisions have been adjusted for Alternative B as follows based on public comment and internal review:

Under Vegetation Communities, in the Wildland Fire Management section, Fire Management Unit (FMU) polygon mapping has been adjusted to provide more flexibility for managing fire and fuels in the Big Hole River watershed in the vicinity of Wise River and Dewey. Approximately 9,000 acres that were identified in the C category in the Draft RMP/EIS have been moved to the B category.

Under Vegetation Communities, in the Noxious Weed Management section, the management prescription pertaining to aerial spraying of herbicides to treat noxious weeds has been modified to eliminate the provision for a 300-foot no-spray zone near riparian areas described in the Draft RMP/EIS. This prescription in the Proposed RMP/Final EIS now indicates that standard operating procedures and mitigation measures identified in the newly finalized Record of Decision for Vegetation Treatments using herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement would be followed under Alternative B.

Under Travel Management and Access, the prescription pertaining to competitive motorized events has been revised as follows to provide more management flexibility: “Organized competitive and non-competitive motorized events would be considered and evaluated on a case-by-case basis for the Pipestone area only (existing management). Non-competitive motorized events would not be allowed outside Pipestone. However, competitive motorized events (timed/speed based) proposed on BLM lands outside Pipestone would be considered, but only if held in conjunction with use of adjacent lands (public or private).”

Under Recreation Management, under Alternative B the prescription pertaining to outfitter guides has been changed to the following to ensure consistency with BLM policy: “Day-use Special Recreation Permits would be issued for commercial fishing and floating uses at BLM river access sites. Outfitters would be annually billed an advance flat fee (currently \$90.00) established by the Director based on the Implicit Price Deflator Index. In the long-term, the BLM would continue to coordinate with MFWP to enhance river/corridor land management and to develop a multi-

agency statewide fee system for the commercial uses of river access sites.”

Under Recreation Management, under Alternative B the prescription pertaining to variances to the 14-day camping limitation has been changed as follows to provide for management flexibility: “Variances to the 14-day camping limit during the hunting season would be considered on a case-by-case basis subject to the following considerations: resource impacts, social conflicts, sanitation concerns, no livestock, or commercial activities would be involved. Preference will be given to developed recreation sites during this low use period since they provide hardened camping units, toilet facilities, and good access.”

Under Special Designations, The Spokane Creek potential ACEC has been dropped from Alternative B because the BLM believes that it can adequately manage the values in this area without the ACEC designation.

Under Special Designations, boundaries of the Elkhorns potential ACEC have been modified for Alternative B to exclude the Graymont Mine permitted area, the proposed expansion area for Graymont Mine, and the proposed Montana Army National Guard withdrawal area. The boundary was also expanded under this alternative to include the newly acquired Iron Mask property. These changes have altered the size of this potential ACEC from 53,439 acres in the Draft RMP/EIS to 50,431 acres in the Proposed RMP/Final EIS under Alternative B.

Under Leasable Fluid Minerals, an additional stipulation has been added to Alternative B for no surface occupancy within ½-mile for streams identified as having high restoration potential for native fish species. No such streams have been identified at this point for the Butte Field Office, but this could change in the future.

Under Locatable Minerals, the proposed mineral withdrawal for Muskrat Creek (180 acres in the riparian area) has been dropped from Alternative B because the BLM believes that aquatic resources there can be adequately protected using the existing mining regulations found at 43 CFR 3809 in the context of the proposed inclusion of this area in the Elkhorn Mountains ACEC as well as the proposed finding of suitability of Muskrat Creek for Wild and Scenic River designation.

## ADJUSTMENTS TO ALTERNATIVE B – IMPLEMENTATION DECISIONS

A number of changes have been made to Alternative B for three of the five site-specific travel plans being analyzed with this RMP revision. These are implementation decisions and are described in detail in the Travel Management and Access section, Activity Level Planning for Five High Priority Travel Planning Areas in Chapter 2.

In the Helena Travel Planning Area, Alternative B has been changed to essentially close the interior of the Scratchgravel Hills to wheeled motorized use year-round

with the exception of a few right-of-way routes and routes needed for residential access. This change has been made to minimize ongoing illegal activity and reduce user conflicts associated with this area.

In the Boulder/Jefferson City Travel Planning Area, Alternative B has been slightly modified to provide an additional open route (with seasonal restrictions).

In the Upper Big Hole Travel Planning Area, a number of route-specific changes have been made to Alternative B to address public comments and management needs on the ground.

## ADDRESSING GLOBAL CLIMATE CHANGE

A section on global climate change has been added to Chapter 3 (under the Air Quality heading, Climate sub-heading) to describe global climate change and its potential effects on resources and resource uses in the Planning Area. A Global Climate Change section has also been added to Chapter 4 (after the Cumulative Effects on Social and Economic Conditions section) to discuss potential effects of BLM activities associated with the Butte RMP on global climate change.

## CLARIFICATIONS/MINOR CHANGES

A number of text changes have been made to clarify certain aspects of specific proposed management prescriptions under the alternative descriptions in Chapter 2. These are highlighted in Chapter 2 where they appear. An example of this is additional specification on how forage reserve allotments would be managed in the Livestock Grazing section.

Under Recreation Management, in the Special Recreation Management Area (SRMA) section, some minor changes have been made to SRMA boundaries and titles under all the action alternatives. None of these changes have a marked effect on management of these areas compared to the Draft RMP/EIS.

Two additional appendices have been added: **Appendix B**, Laws, and **Appendix N**, Implementation and Monitoring.

**Appendix A** has been revised to include additional discussion of the process used by the BLM in developing site-specific travel plan alternatives.

The Biological Opinion received from the U.S. Fish and Wildlife Service as part of the Endangered Species Act consultation for this RMP revision has been added to **Appendix G**, Wildlife.

## UPDATES TO DATA

Data and inventory information was frozen in August 2005 to ensure consistent analysis in the Draft RMP/EIS. Since then, there have been revisions to the BLM sur-

face land acreage total as a result of various land acquisitions/transactions as follows:

Draft RMP surface lands – 302,034 acres.

Proposed RMP surface lands – 307,309 acres.

The majority of newly acquired acres are in the Iron Mask acquisition in the Elkhorn Mountains, adjacent to pre-existing BLM lands.

Minor changes have been made throughout Chapter 2 by RMP alternative to address the increase in surface lands to account for management of newly acquired lands. Changes have been made to proposed travel management area designation acres, Fire Management Unit acreages, Visual Resource Management acreages, and Recreation Opportunity Spectrum acreages to match and be consistent with proposed management for adjacent BLM lands nearby the newly acquired acres.

There has also been refinement to the federal mineral estate acreage used in the Draft RMP/EIS based on some of the surface land administration changes as well as improved GIS information.

Draft RMP federal mineral estate – 678,189 acres.

Proposed RMP federal mineral estate – 652,194 acres.

Changes associated with the refined acreage of federal mineral estate have been made in Chapters 2 and 4 whenever analyses and discussion associated with acres available for oil and gas leasing, or acreages associated with specific oil and gas stipulations are involved. While most of these actual acreages have changed, there have been no substantive changes to proposed oil and gas stipulations that have caused any substantial relative changes in available acres compared to the Draft RMP.

A section on Wild Horses and Burros was added to Chapter 2 to describe that while the Butte Field Office does not have any wild horses or burros, there is a congressionally designated herd area in the Butte Field Office that would not be actively managed under all alternatives.

Information must continue to be considered dynamic and will continue to be updated as the plan is implemented. The BLM is required to continue inventorying public lands and to maintain the best available current information.

## MAP CHANGES

The Proposed RMP/Final EIS is designed to be used in conjunction with map information provided in the Draft RMP/EIS. Only maps that have changed since release of

the Draft RMP/EIS have been produced for the Proposed RMP/Final EIS. In cases where maps have been produced for less than all of the alternatives in the Proposed RMP/Final EIS, readers should refer back to analogous maps in the Draft RMP/EIS for comparison with currently depicted management proposals on maps in the Proposed RMP/Final EIS.

Maps 2, 3, 4, and 5 have all been adjusted for the Proposed RMP/Final EIS to display mapping only for the BLM surface acres, including the newly acquired Iron Mask property near Townsend. Map 3 has been adjusted to reflect the change in FMU designations described above in the Big Hole River watershed.

Map 7 has been adjusted to reflect changes to Alternative B for the Helena Travel Planning Area.

Map 11 has been produced to display a change in Alternative B to the Ward Ranch trailhead location in the East Helena Travel Planning Area compared to its initial proposed location under this alternative in the Draft RMP/EIS.

Map 19 has been adjusted to reflect changes to Alternative B for the Boulder/Jefferson City Travel Planning Area.

Map 23 has been adjusted to reflect changes to Alternative B for the Upper Big Hole River Travel Planning Area.

Maps 26, 27, and 28 have been adjusted to reflect surface land adjustments in proposed management for Recreation Opportunity Spectrum.

Map 30 has been adjusted to reflect minor boundary and name changes to Special Recreation Management Areas under Alternatives B and C.

Map 32 has been reproduced to provide additional clarifying information on potential ACECs.

Maps 37, 38, and 39 have been adjusted to reflect surface land adjustments in proposed Visual Resource Management designations under Alternatives B, C, and D.

Map 41 has been updated to show additional mapped parcels for potential disposal.

Maps 42, 43, 44, and 45 have all been adjusted to reflect refinements to the federal mineral estate lands.

Map 46 has been adjusted to reflect the dropping of the Muskrat Creek mineral withdrawal proposal from Alternative B.

A new map, Map 47 has been created to depict a wild horse/burro herd area that exists in the Butte Field Office.

## CHAPTER 2 ALTERNATIVES

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### INTRODUCTION

This chapter describes alternative ways of resolving the planning issues and sustaining the long-term health, diversity, and productivity of public lands in the Planning Area. The range of alternatives includes different approaches to balancing demands on public land, managing and protecting resource values, and reducing conflicts.

This chapter contains the following sections:

- **Developing the Range of Alternatives** – describes the process and key concepts used to develop the range of alternatives considered in detail.
- **Overview of the Alternatives** – briefly describes each of the key components of the four alternatives considered in detail, and includes a description of why Alternative B was identified as the Preferred Alternative.
- **Alternatives Considered in Detail** – includes a summary of the major components of each alternative and a more detailed description of each alternative by issue category.
- **Alternatives Considered but Not Analyzed in Detail** – briefly describes alternatives that were considered, but not in detail with rationale.
- **Comparison of the Alternatives** – describes the measures used to compare alternatives and includes tabular comparison of the alternatives considered in detail.
- **Comparison of Impacts** – describes the impacts of the alternatives and includes tabular comparison of impacts for the alternatives considered in detail.

### DEVELOPING THE RANGE OF ALTERNATIVES

The development of management alternatives for the Butte Resource Management Plan/Environmental Impact Statement was guided by provisions of the Federal Land Policy and Management Act (FLPMA) and the National Environmental Policy Act (NEPA) as well as planning criteria listed in Chapter 1. Other laws, as well as Bureau of Land Management (BLM) planning regulations and policy, also directed alternative considerations and focused the alternatives on appropriate land use plan-level decisions. Field Office-wide goals and desired future conditions for individual resource and resource use programs were identified by the planning team in consideration of public comment received through scoping as well as direction established by Bureau-wide

initiatives and mandates. The goals would apply to all alternatives.

Four management alternatives were developed to address the major planning issues and to provide direction for resource programs influencing land management. The alternatives vary in how they emphasize different combinations of resource uses and management activities to address issues and resolve conflicts among uses. As a result, program goals are met in varying degrees across the alternatives. Management activities and prescriptions for management concerns or programs not tied to major planning issues often contain few or no differences in management between alternatives.

Alternative A, continuation of current management or No Action, is based on existing planning decisions that remain valid and current direction and policy. The remaining alternatives were developed with input received during scoping. Site-specific travel plan alternatives (site-specific implementation decisions) were developed by the planning team with the assistance of community-based working groups sponsored by Lewis and Clark County for three of the five travel plan areas addressed in this plan.

Vegetation management and treatment proposals were developed through the use of a model called SIMPPLLE—Simulating Patterns and Processes at Landscape scales. This model allowed the planning team to establish an approximate picture of historic vegetative conditions in the context of natural disturbance regimes (such as wildland fire, insect outbreaks, etc.) upon which to base proposed vegetation treatments. Additional information on use of the SIMPPLLE is detailed in **Appendix D**.

### OVERVIEW OF THE ALTERNATIVES

There are four alternatives considered in detail. This section provides a brief overview of each of those alternatives. Alternatives considered in detail include one “No Action” Alternative (Alternative A), and three “action” alternatives (Alternatives B-D) that would reflect various levels of change from the existing Headwaters RMP and Dillon MFP direction.

All alternatives include pre-existing management direction that is being carried forward in this RMP revision. This direction is presented in the section “Management Common to All Alternatives” and is not described in this overview. Continued management direction reflects the following categories:

1. Management Direction from legal statute, regulation, or manual direction. This management direc-

tion may not have been specifically included in the Headwaters RMP or Dillon MFP but includes management direction for things such as restricted uses near bald eagle nests or current regional decisions on noxious weed abatement techniques.

2. Management Direction from the Headwaters RMP/Dillon MFP, including amendments by subsequent modifications from other decisions that are not being revised by the Butte RMP.

Some of the issues identified early in this planning process were resolved using one approach in the “action alternatives”. These are identified under the category “Management Direction Common to Action Alternatives” in the Alternatives Considered in Detail section. This management guidance represents areas where there was little controversy over the best way to resolve the issue. One example of this approach is the common management direction for the “action” alternatives to maintain or improve habitat conditions for special-status plant species by altering or removing trees and shrubs, prescriptive livestock grazing, prescribed and managed wildland fire, and planting. These components are not included in this overview.

Federal and state laws, regulations, and permitting requirements established to protect natural resources would be followed under all alternatives.

## ALTERNATIVE A – NO ACTION

Alternative A is the continuation of present management, referred to as “No Action”. This alternative would continue present management practices based on existing land use plans and other management decision documents. Direction contained in the Headwaters Resource Management Plan and the Dillon Management Framework Plan would continue to be implemented. Direction contained in existing laws, regulations, and policies would also continue. The current levels, methods, and mix of multiple use management would continue, and resource values would receive attention at present levels with relatively little specific management direction or priorities compared to other alternatives. Motorized access and motorized recreational opportunities would not change from the current condition. One ACEC (Sleeping Giant – 11,679 acres) would continue to be managed as such. Eligible Wild and Scenic River segments would continue to be managed to protect the values that make them eligible.

## ALTERNATIVE B – PREFERRED ALTERNATIVE

This alternative emphasizes moderate levels of resource protection, use, and restoration. Alternative B places a priority on vegetative restoration. Quantities of forest-based commodity resources from vegetation restoration activities would be similar to Alternative A with a more

holistic vegetative community perspective, greater than in Alternative C, but less than in Alternative D. Project-level wildlife habitat and riparian management measures would be greater than in Alternatives A and D due in part to establishment of Riparian Management Zones (RMZs) where managing for riparian values would be the focus, but less than in Alternative C where RMZs would be wider and with more protective management than under Alternative B.

Alternative B emphasizes more of a balance of motorized and non-motorized recreation and access opportunities compared to the other action alternatives (C and D). Four ACECs would be designated, totaling about 70,644 acres. Two rivers would be recommended as “suitable” for Wild and Scenic River designation. There would be more oil and gas leasing management measures than in Alternatives A and D, but less than in Alternative C. Alternative B represents the mix and variety of actions that in the opinion of BLM, best resolves the issues and management concerns and is therefore considered BLM’s Preferred Alternative.

## ALTERNATIVE C

Alternative C emphasizes a lesser degree of vegetative restoration than any of the other alternatives. Production of forest-based commodity resources from vegetation restoration activities would be lowest of all alternatives. This alternative emphasizes a greater degree of project-level wildlife habitat and riparian management measures (wider Riparian Management Zones than Alternative B, no RMZs under Alternatives A or D) than in any other alternative.

Alternative C emphasizes non-motorized recreation opportunities more than the other alternatives. All potential ACECs (87,893 acres) would be designated with this alternative. All four river segments eligible for Wild and Scenic status would be found suitable and recommended for Wild and Scenic designation. Alternative C provides for the most oil and gas leasing management measures of any alternative.

## ALTERNATIVE D

Of all the alternatives, Alternative D emphasizes the greatest degree of active management to restore vegetative communities and would produce the greatest quantities of forest products from vegetation restoration activities of all alternatives. Alternative D features fewer wildlife habitat and riparian management measures than Alternatives B and C, but more than Alternative A. This alternative emphasizes motorized access and recreation opportunities more than Alternatives B and C. Three ACECs would be designated (23,695 acres). No river segments eligible for Wild and Scenic status would be found suitable or recommended for Wild and Scenic designation with this alternative. Alternative D would have the fewest oil and gas leasing management measures of all the alternatives.

## GOALS COMMON TO ALL ALTERNATIVES FOR ALL BLM ACTIVITIES

Throughout the BFO, BLM authorized activities associated with all resource and resource use programs would meet or move toward meeting the following standards to the extent practicable:

- Uplands are in proper functioning condition;
- Riparian and wetland areas are in proper functioning condition;
- Water quality meets state standards;
- Air quality meets state standards; and
- Provide habitat as necessary, to maintain a viable and diverse population of native plant and animal species, including special status species.

These standards were originally described as rangeland health standards (USDI BLM 1997), but would be applied to all BLM authorized activities as “Land Health Standards.” More detailed descriptions of characteristics associated with these standards can be found in the Standards for Rangeland Health and Guidelines for Livestock Grazing Management Butte District section of the publication *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota, and South Dakota*, BLM (1997).

## VEGETATION COMMUNITIES

Management of vegetative communities includes grasslands and shrublands, forests and woodlands (including forestry and forest products), riparian vegetation, livestock grazing, wildland fire management, wildlife habitat, and noxious weeds.

### Vegetation Goals

**Goal 1** – Maintain and/or improve ecological site potential on woodland communities for sustainability and diversity.

**Goal 2** – Manage dry forest types to contain healthy stands of site-appropriate species; stands relatively open, and reproduce desired vegetation species.

**Goal 3** – Manage moist forest types to contain healthy stands that combine into a diversity of age classes, densities, and structure (including dead and down material).

**Goal 4** – Manage old forest structures in a sustainable manner. (Note: old forest structures are defined by the following: large, old trees; large standing dead trees [snags]; fallen trees or logs on the forest floor; multiple canopy layers; and a developed, patchy understory. In forest types subject to frequent, low-intensity fire such as dry Douglas-fir or ponderosa pine, old forest structure

is typically characterized by relatively open understories and fewer large fallen trees.)

**Goal 5** – Manage upland vegetation communities to move toward or remain in proper functioning condition, including a full range of herbaceous and shrub species.

**Goal 6** – Maintain or enhance communities of priority species or habitats (for example, mountain mahogany, sagebrush, bitterbrush) to provide desired ecological functions and values. Additional specific goals are included for specific types of management of vegetation communities.

### *Forests and Woodlands*

**Goal 1** – Restore and/or maintain the health and productivity of public forests, to provide a balance of forest and woodland resource benefits, as well as wildlife and watershed needs to present and future generations.

**Goal 2** – Manage forestry resources to provide a sustained flow of local economic benefits and protect non-market economic values.

### *Riparian Vegetation*

**Goal 1** – Manage riparian and wetland communities to move toward or remain in proper functioning condition. When at this condition, these areas have the appropriate composition, density, and age structure for their specific area. These communities are generally sustainable and provide physical stability and adequate habitat for a wide range of aquatic and riparian dependent species.

**Goal 2** – Manage wetland and riparian habitats to support healthy, diverse and abundant populations of fish and associated aquatic and riparian dependent species.

### *Livestock Grazing*

**Goal 1** – Manage for a sustainable level of livestock grazing while meeting or progressing toward Land Health Standards.

**Goal 2** – Maintain, restore, or enhance BLM rangelands to meet the Land Health Standards.

**Goal 3** – Manage livestock grazing to provide a sustained flow of local economic benefits and to protect non-market economic values.

### *Wildland Fire Management*

**Goal 1** – Provide an appropriate management response to all wildland fires, emphasizing firefighter and public safety.

**Goal 2** – Move toward restoring and maintaining desired ecological conditions consistent with appropriate fire regimes.

**Goal 3** – Minimize the adverse effects of fire on resources, resource uses, and wildland-urban interface.

**Goal 4** – Promote seamless fire management planning across jurisdictions within the boundaries of the BFO.

**Goal 5** – Protect life and property by treating hazardous fuels on BLM lands near WUI.

### ***Noxious Weed Management***

**Goal** – Minimize infestations of invasive plants and noxious weeds.

## **General Approach of Vegetation Management Activities**

The following discussion describes the approach that would be used for vegetation management activities within vegetation types found in the Decision Area under all alternatives. While in most cases vegetation treatments would be geared toward meeting historic vegetation conditions, it is recognized that this would not necessarily be the case in Wildland Urban Interface (WUI) areas where more substantial fuels reductions may be needed to meet site-specific conditions.

### ***Grassland and Shrublands***

Prior to effective fire suppression, foothill grasslands were maintained free of invading trees and shrubs by periodic fires. With successful fire suppression, many grasslands are becoming woodlands or shrublands, and many shrublands are being converted to woodlands. These vegetation types would be treated to remove conifer encroachment and move towards a more desired ecological condition of open grasslands and shrublands with a low density of trees species. Grasslands and shrublands would also be assessed to ensure that uplands are in properly functioning condition. If these habitat types are not in properly functioning condition due to management activities, management would be modified to improve conditions.

### ***Forest and Woodlands***

#### **Dry Forest Types**

Lower to mid-elevation dry forests are dominated by Douglas-fir and ponderosa pine. These forest types are typically interspersed with limber pine, Rocky Mountain juniper, grasses, and shrubs. Fire suppression and historic grazing practices have resulted in unusually high tree densities on many sites as well as excessive wildland fuels.

Treatments would be designed to mimic pre-fire suppression conditions and promote healthy and diverse forest ecosystems and wildlife habitat. Smaller diameter thinning along with low intensity understory burning would occur in seedling, pole and some medium (9 to 15 inch diameter at breast height (DBH)) sized trees to open the canopy and allow understory vegetation to become re-established. In the WUI, treatment emphasis would include mechanical or hand thinning, while prescribed burning would be minimized to lessen smoke impacts to local communities. Where burning is restricted, material could be mechanically reduced and left on site or mechanically reduced and removed. Outside the urban

interface, prescribed burning would be emphasized except when not economically feasible or when the effects could be detrimental to vegetation or soils.

Mechanical treatments, which may include harvest of trees, would be used to accomplish restoration and thinning of dry forests. Trees in the small to large size classes would produce commercial forest products including lumber, posts and poles, and biomass.

### **Cool, Moist Forest Types**

Cool, moist forest types are found at mid to high elevation and are dominated by Douglas-fir, lodgepole pine, subalpine fir and spruce. These forest types usually have higher tree densities with open parks and grass or shrub dominated meadows interspersed. Examination of BLM forest inventory data and analysis using the SIMPPLLE model indicates that the overall character of the forests found on BLM lands have changed over time with a reduction in the size and age class diversity within the majority of forest stands, and a reduction in the number and sizes of forest openings.

Treatments would focus on protecting healthy and diverse forest systems by reducing stem densities and creating appropriate openings to mimic pre-fire suppression conditions. In lodgepole pine stands, mechanical treatments which may include timber harvest would be used to create openings to mimic stand-replacing fire events and to regenerate lodgepole pine.

### ***Riparian Types***

Riparian habitat can include vegetation such as aspen, cottonwood, willows, dogwood, and alder as well as a variety of other riparian dependant species. Riparian habitat can also consist of conifers such as Douglas-fir, lodgepole pine, ponderosa pine, and spruce. Riparian areas occur throughout all forest types, grasslands, and shrublands and have experienced many of the same effects of long-term fire suppression as described above. Some riparian habitats in the PA have also been degraded due to inappropriate historic grazing, mining, timber harvest, and road construction. Some riparian areas contain aspen clones that are being lost due to conifer encroachment or grazing by livestock and/or big game. Where conifers are outcompeting or precluding regeneration of aspen, potential aspen or cottonwood stands, conifers would be removed to provide suitable habitat for expansion of these species.

The emphasis for riparian areas would be on protection and restoration. Treatments in riparian areas would focus on re-establishing willows, aspen, and cottonwood stands as well as other riparian vegetation and to move towards pre-fire suppression stem densities in conifer stands. Riparian areas would continue to be evaluated using Land Health Standards and grazing practices would be modified when necessary.

## Vegetation Management Tools

A number of different vegetation management tools or activities would be common to all alternatives in implementing the approach described above.

Mechanical treatments would include tree removal through the use of ground based equipment, horses, helicopters, or any other appropriate methods. This would include thinning/removing medium (9 to 15 inch DBH) and large (greater than 15 inch DBH) trees and obtaining commercial wood products, thinning non-commercial-sized trees, and cutting non-commercial conifers that have “encroached” into grassland or sagebrush habitats. It would also include mechanical on-site treatments of non-commercial trees and biomass (vegetative materials that are by-products of management including 4 to 8 inch DBH trees) such as chipping, grinding, piling, or portable biomass/energy production. Mechanical treatments would be used to restore vegetative communities to desired future conditions as well as to reduce fuels in Wildland Urban Interface (WUI) areas.

The amount of forest products harvested would vary by alternative. This is due to different geographic priorities, acreage of vegetative treatments, and associated access development needed for successful treatment completion by alternative. Commercial uses of materials from vegetation management activities would be considered in all cases where appropriate.

Prescribed burning would be used to treat forest, grassland, or shrubland vegetation types. In grasslands or shrublands, prescribed burning would be used to kill encroaching conifers, removing dead finer fuels created by years of grass or shrub growth, and stimulating grass and shrub re-growth. In forests, prescribed burning would be used to reduce fuels generated by mechanical treatments and to thin understories, recycle nutrients, eliminate ladder fuels, create small openings or create and maintain a more savannah-like habitat, in stands dominated by medium and large-sized trees.

Noxious weed treatments would include, but not be limited to, hand-pulling; chemical spray; use of biological agents such as insects, goats, or sheep; cultural treatments such as modifying timing or intensity of other management activities; and public outreach. Other appropriate methods would be applied as they are developed and approved for use.

Changing grazing management or prescription grazing would also be used as a vegetative treatment. Management may include changing the season of use, the intensity of the use, or the kind of livestock.

### General Summary of Alternative Emphasis for Vegetative Communities

Alternative A would continue current management. Project-specific objectives and treatment types would be

as described under “Actions Common to All.” Projects would stem largely from reducing fuels in the WUI, performing silvicultural treatments, and deriving forest products from stand by stand management on a sustained yield basis. Some projects to improve grassland and shrubland habitats in big game winter range areas would also occur.

Alternative B would emphasize maintaining and restoring healthy, diverse, and productive native plant communities appropriate to local site conditions. This alternative would identify opportunities to actively restore vegetation on the landscape to conditions more consistent with landform, climate, biological, and physical components of the ecosystem. Vegetation structure, density, species composition, patch size, pattern, and distribution would be managed to provide habitat for a variety of wildlife species while reducing the risk of uncharacteristically large and severe disturbances (such as forest insect epidemics, wildland fires). Actions would maintain or mimic natural disturbance regimes to provide for diverse and sustainable ecosystems so that plant communities would be resilient to periodic outbreaks of insects, disease and wildland fire.

The major emphasis areas under Alternative B would be fuels reduction in the urban interface, reduction of conifer encroachment in grasslands and shrublands particularly in big game winter range areas, restoration of sagebrush habitat, enhancement of bighorn sheep habitat, and restoration of dry forest types. Treatments of cool, moist forests have lower priority under this alternative. Priority for restoration and protection treatments would be given to forested areas with heavy fuel concentrations, limited vegetative diversity, and declining in health. Areas with an increasing risk of insect infestation or loss of important habitat values would also be given precedence for treatment. Priority areas for treatment under Alternative B include the Jefferson, Upper Missouri, and Big Hole watersheds.

Alternative C would provide for ecosystem health and diversity by focusing efforts on maintenance and protection of current conditions. As with the other action alternatives, vegetative treatments would still allow for restoration of habitats that are substantially outside the range of the historic condition, which are based on 500 year vegetative habitat trends from an analysis of current vegetation in the SIMPPLLE computer model. (**Appendix D – SIMPPLLE Model**) High priority habitats would include dry forest habitat and grasslands and shrublands in big game winter range areas. Treatment of the WUI to reduce the risk of fire would also be high priority for this alternative. In general, treatments for ecosystem health, habitat patch size and treatments to reduce the threat of wildland fire in the urban interface would be smaller under Alternative C than the other two action alternatives.

The priority treatment areas in Alternative C would be forested locations that have existing road access and the

Upper Missouri watershed due to higher urban interface concerns there.

Alternative D would have a similar emphasis and approach as Alternative B, but would include areas requiring a greater degree of vehicular access development. The major focus areas under Alternative D would be fuels reduction in the urban interface, reduction of conifer encroachment in grasslands and shrublands, restoration of dry forest types, and maintenance of existing “healthy” forests (such as open, “savannah” dry forest types). Priority areas for restoration and protection treatments include Jefferson, Upper Missouri, and Big Hole watersheds.

Historic vegetative acres generated by the SIMPLLE Model (**Appendix D**) for each major watershed were used as a “guide” to determining the number of acres proposed for treatment in different habitat types.

For each action alternative, vegetative treatment acres were further refined by taking into consideration the following factors; adjacent land ownership and management, recreation sites, urban interface, designated semi-primitive areas, access to public lands, the existing road system, past treatments, wildlife habitat, wildfires, weed infestations, and topographical features. Current and past budgets were also used to verify the potential treatment acres by alternative. With the exception of noxious weed treatments, no Wilderness Study Areas were identified for treatments.

Proposed vegetation management actions described below refer to “project area” and “treatment area”. A project area is a large area within which some type of management activity would occur and encompasses a region defined by logical boundaries such as; watersheds, ridges, highways or blocks of BLM lands. The project area can be both the analysis area and a starting point to determine where treatments should occur. A treatment area is a smaller block of land within the project area. A treatment area is the boundary of the area where the actual management activity, such as timber harvest or burning, would occur.

Proposed vegetation treatments are characterized below by numbers of acres (ranges) per decade. Multiple activities could occur within a single treatment area, concurrently or over time. For example, if 500 acres of grassland are proposed for treatment in an alternative, then there could be a conifer removal, or “slashing” treatment on these acres, followed by a separate prescribed burning treatment on the same acres, but since these treatments were applied to the same acres they would be considered as 500 acres of treatment in the context of RMP implementation.

## Management Common to All Alternatives

### *Forests and Woodlands*

Vegetation structure, density, species composition, patch size, pattern, and distribution would be managed in a manner to reduce the occurrence of unnaturally large and severe wildland fires and forest insect outbreaks.

Stands with characteristics indicating a substantial risk of developing epidemic levels of forest insects and/or disease would be high priority for treatments to reduce risk.

The forest product small sale program would continue to maintain a balance between public demand and the health and productivity of native and desired vegetation communities. Small forest product sales include over-the-counter sales of firewood, Christmas trees or other products for personal use, small amounts of materials removed as a result of other authorizations such as rights-of-way, road use agreements, grazing leases or other land uses, and public demand sawtimber or salvage sales. These activities usually take place in small areas or on scattered or isolated parcels often concurrent with similar activities on adjacent private lands.

Other products would include: house logs, posts and poles, vegetative cuttings, conifer boughs, wildings and ornamentals, grape stakes, juniper products, specialty cuttings, and wildflowers.

Salvage of forest products resulting from wildland fire, prescribed fire, forest insects and disease, weather induced or other forest mortality events would be considered.

Timber salvage project areas would consist of small openings, thinning between openings, and retention patches. In the context of large-scale wildland fire or forest insect and disease outbreaks, patches of dead and dying forest would be maintained for wildlife dependent upon this habitat.

In all areas with dead and dying trees (including retention patches), tree cutting would be allowed for human safety, fire rehabilitation and stabilization, and forest or stream restoration activities.

Silvicultural prescriptions would be consistent with accepted methods related to site, species, habitat types, and the individual requirements of the forest stand. Tractor logging generally would be limited to slopes with average gradients of less than 40 percent and the season of logging would be limited to reduce soil compaction and rutting (**Appendix E – BMPs**).

Adequate access would be maintained for management activities and treatments. Road locations would be determined on the basis of topography, drainage, soil type, and other natural features to minimize erosion. Skid roads would be rehabilitated by appropriate methods that

disperse runoff, reduce erosion, and promote revegetation as needed.

Slash disposal would be conducive to revegetation and advantageous to the passage of big game. Slash would be burned when necessary. All mechanical and prescribed burn treatments would be in conformance with Best Management Practices (see **Appendix E –BMPs**).

Mechanical treatments would be laid out to minimize the risk of windthrow, and shelterwood harvests would be made to improve genetic composition of the regenerated stand. Whenever possible, openings larger than 20 acres in size resulting from forest treatment or large scale events in forested habitats would be planted when natural regeneration does not become established to desired levels within 15 years or cannot be reasonably expected in five to fifteen years.

### ***Riparian***

At the Field Office scale, management would restore and improve riparian areas and wetlands. Riparian areas that are functioning at risk would be a high priority for restoration.

Authorized activities within riparian areas would strive to maintain and restore riparian structure and function, benefit fish and riparian-dependant species, enhance conservation of organisms that depend on the transition zone between upslope and the stream, and maintain or improve the connectivity of travel and dispersal corridors for terrestrial animals and plants. When projects that cause detrimental effects on riparian resources cannot be located outside of riparian areas, short-term and long-term effects would be minimized.

Streams and riparian habitats that have been degraded or lost due to the effects of historic mining operations, including placer mining, would continue to be restored to improve water quality as well as aquatic and riparian habitats. The BLM HazMat/AML Program(s) would continue to cooperatively work on a watershed-by-watershed basis reducing exposures to human health and the environment from AML sites. Reclamation of these areas typically include; removing contaminated soils and tailings, preventing run-off of heavy metals, reconstructing/stabilizing streambeds and banks (including providing habitat features such as down woody material and planting or restoring riparian vegetation), reducing sedimentation, closing physical safety hazards, and closing/stabilizing roads. Following reclamation, sites would be monitored to evaluate if the reclamation risk reduction project goals were achieved, if additional restoration efforts are necessary to restore or improve aquatic and/or riparian habitats and the effectiveness of the project(s) to determine if a viable fishery has been or could be established.

Forested riparian habitats would be managed to accelerate the development of mature forest communities to promote shade, bank stability, and woody debris re-

cruitment. Late-successional riparian vegetation would be promoted in amounts and distribution similar to historic conditions.

Riparian and wetland management would be consistent with all state and federal laws and regulations. Actions would be taken to cooperatively conserve riparian/wetland habitat, minimize the impacts, loss or degradation of wetlands, and preserve values served by floodplains where occurring on public land while reducing hazards to human safety.

Site specific objectives and management strategies would be developed and applied through activity plans to meet the Standards for Rangeland Health. (**Appendix F – Land Health Standards**) Riparian protection would be provided by the Montana Streamside Management Zone Law (77-5-301 through 307 MCA). Streamside Management Zones (SMZs) provide regulation for the protection of water quality. Within SMZs, there are specific restrictions on certain forest activities, including; timber harvest design, timber cutting and removal (including clearcutting), the use of heavy equipment, slash disposal, broadcast burning, off-road vehicle operation, and road construction (unless necessary for stream crossing). SMZs also address the handling, storage, application, or disposal of hazardous or toxic substances. The SMZ is defined as “the stream, lake, or other body of water and an adjacent area of varying width where management practices that might affect wildlife habitat or water quality, fish, or other aquatic resources need to be modified.” The SMZ encompasses a strip at least 50 feet wide on each side of a stream, lake, or other body of water, measured from the ordinary high water mark, and extends beyond the high water mark to include wetlands and areas that provide additional protection in zones with steep slopes or erosive soils. The SMZ provides the minimum regulatory standards for forest practices in riparian areas.

Ephemeral drainages and some mapped intermittent streams would not be covered by the SMZs under the definitions in the state regulations. These areas, however, could be covered by management restrictions commonly known as Best Management Practices (**Appendix E – BMPs**). Consistent with the SMZ law, forest and fuel management activities would be allowed in the riparian ephemeral areas and intermittent stream areas to meet riparian restoration or maintenance objectives and only if adequate woody material remains in the riparian area. In these situations, forest management activities would follow BMPs.

Riparian communities, habitat, and associated uplands would be treated and restored through implementation of livestock grazing guidelines to meet Rangeland Health Standards, as well as AML reclamation.

### ***Livestock Grazing***

Objectives for livestock grazing would be to meet the Standards for Rangeland Health and Guidelines for

Livestock Grazing Management Butte District section of the publication *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota, and South Dakota*, BLM (1997), which would be incorporated into livestock grazing permits and leases.

Allotment Management Plans and Coordinated Resource Management Plans would continue to be implemented, including utilization objectives and associated range improvement projects.

Land Health Standards would be used with Best Management Practices for livestock grazing that meet or exceed those approved by the State of Montana in order to maintain, restore, or enhance water quality when authorizing grazing along with site-specific vegetation objectives.

Cooperatively managed allotments with the USFS, Missoula, and Dillon Field Offices would continue under existing Memoranda of Understanding. Cooperative management of the Bull Mountain Game Range would continue with the USFS.

Applications for unleased allotments and vacant available lands (areas of land not segregated into allotments open to leasing by qualified applicants) would be considered on a case-by-case basis.

Existing utilization objectives set through interdisciplinary NEPA, Allotment Management Plan, or Coordinated RMP planning processes would continue in effect.

Adjustments to livestock management practices or livestock numbers, including increases or decreases, would be made based on results of monitoring studies, rangeland health assessments, allotment evaluations, and interdisciplinary review.

The health and integrity of riparian areas and wetlands would be maintained and improved by using tools such as livestock fencing, alternate upland water sources or livestock grazing adjustments (timing and stocking rates).

Functional wildlife escape ramps would be installed and maintained on all water tanks on BLM lands.

Grazing practices in riparian areas (accessibility of riparian areas to livestock, length of grazing season, stocking levels, timing of grazing, etc.) that retard or prevent attainment of riparian goals or proper functioning condition would be modified. Where livestock grazing is the cause of degraded conditions, grazing would be suspended on a case-by-case basis if adjusting practices is not effective in meeting riparian goals or proper functioning condition.

New fences would be built to standard BLM wildlife specifications to allow wildlife passage, with the exception of fences built specifically to keep ungulates out of an area or fences built to meet specific public safety or other administrative purposes. Existing fences not meet-

ing standard BLM wildlife specifications would be modified to meet the standard when reconstruction is done.

Wildlife habitat, grassland, sagebrush, and shrubland health of individual allotments would be assessed. Livestock grazing guidelines would be implemented to maintain or improve conditions when degradation due to grazing has been identified. Livestock grazing guidelines for residual cover and monitoring forage utilization in new or revised Allotment Management Plans would be developed.

No new term grazing permits would be authorized on river islands because of fencing issues, and to reduce conflicts between recreational use and grazing use as well as improving water quality.

Water developments for livestock generally would not be established in areas where significant conflicts for wildlife forage and habitat could occur.

Range improvements generally would be designed to achieve both wildlife and range objectives.

Sufficient forage and cover would be provided for wildlife on seasonal habitat.

### ***Wildland Fire Management***

The Beaverhead-Deerlodge National Forest, Helena National Forest, Gallatin National Forest, and the State of Montana DNRC would implement fire preparedness, prevention, and suppression on BLM administered lands through the interagency offset and six party fire protection agreements.

Use of retardant in Wilderness Areas or WSAs would be avoided and would require line officer approval.

Use of heavy equipment would be restricted to areas outside of Wilderness or WSAs.

Minimum Impact Suppression Tactics would be used when working in a Wilderness Area or WSAs, following the Interim Management Policy and Guidelines for Lands under Wilderness Review (BLM Handbook H-8550-1).

BLM would manage naturally ignited wildland fires in the Elkhorn Mountain units under the prescription guidelines established in the Elkhorn Mountains Fire Management Plan.

Fire Management activities (wildland fire, fuels, and fire mitigation, education and prevention) would be prioritized by their risk of life and property across the Planning Area. Fires that are adjacent to or near WUI would have highest priority for fire suppression.

Fire management activities would be designed and implemented in a manner that meets, or moves toward meeting Land Health Standards. Wildland fire management activities would be conducted to meet or move toward meeting Land Health Standards when compliant with the standards for fire operations.

Planned prescribed fire unit size would be determined by an interdisciplinary team through site specific NEPA analysis.

BLM would use the BLM's Emergency Fire Rehabilitation Handbook (H-1742-1) outlining the process for implementing emergency fire rehabilitation projects following wildland fires and wildland fire use.

Emergency fire rehabilitation funds may be used to:

- Protect life, property, and soil, water and vegetation resources;
- Prevent unacceptable onsite or offsite damage;
- Facilitate meeting land use plan goals and other Federal laws; and
- Reduce the invasion and establishment of undesirable or invasive vegetation.

Incident bases, camps, helibases, staging areas, and other incident management activities would be located outside of riparian areas. If unavoidable, an exemption could be made by a resource advisor.

BLM would implement management actions that maintain or move plant communities to the historic fire regime and condition classes. In areas where the environment has changed substantially and a return to historic conditions is not possible or ecologically desirable, the appropriate fire regime would be determined based on current management.

Following large wildland fires, burned areas would be evaluated for appropriate biological, salvage, and physical rehabilitation activities.

Provide assistance to communities in developing and maintaining community wildland fire protection plans.

In all alternatives, fire management objectives would be associated with Fire Management Units (FMUs). The Planning Area would be divided into FMUs and BLM lands would be designated into fire management categories described below.

### **Category A Areas**

Wildland fire is not desired in these areas. The fire management emphasis should be placed on prevention, detection, rapid response, use of appropriate suppression techniques and tools, and non-fire fuels treatments. Fire suppression may be required to prevent unacceptable resource damage or to prevent loss of life or property. Emphasis would be focused on those actions that would reduce unwanted ignitions and reduce losses from unwanted wildland fire.

### **Category B Areas**

These are areas where unplanned fire (natural or human-caused) is likely to cause negative effects, but these effects can be minimized or avoided through fuels management (e.g., prescribed fire), prevention of human

caused fire, or other strategies. Prevention and mitigation programs to reduce unwanted fire ignitions and resource threats would be emphasized. Fire suppression would be the objective for unplanned wildland fire. Fire and non-fire fuels treatments reduce the effects of unplanned wildland fire. Restorative treatments would consist of multiple non-fire treatments before the use of fire would be considered.

### **Category C Areas**

These are areas where wildland fire use and prescribed fire is desired to manage ecosystems but there are substantial constraints that must be considered for its use. These constraints would include critical wildlife habitat, air quality, or Threatened and Endangered species. Resource consideration would be described in terms of maximum acreage, time of year or burned acres per decade from all types of fire. These areas would receive lower suppression priority in multiple wildland fire situations. Fire and non-fire fuels treatments would be utilized to ensure constraints are met or to reduce any hazardous effects of unplanned wildland fire.

### **Category D Areas**

These are areas where fire is desired, with no constraints associated with resource condition or social economic or political consideration (i.e. where natural and management-ignited fire may be used to achieve desired objectives, such as to improve vegetation or watershed condition). These areas offer the greatest opportunity to use the full range of options available for managing wildland fire under the appropriate management response.

### **Noxious Weed Management**

BLM would manage Montana state and county designated noxious weeds and invasive plants according to the principles of Integrated Weed Management, Partners Against Weeds: An Action Plan for the BLM (USDI-BLM 1996b), *Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States* (USDI-BLM 2007), the Montana Weed Management Plan (Duncan 2005), the Noxious Weed Control Plan, Bureau of Land Management, Butte District, Headwaters Resource Area (USDI-BLM 1986b) or the most current BFO noxious weed control plan, and other applicable federal, state, and local laws, statutes, plans, and regulations.

BLM would continue cooperative agreements with County and State entities. Management efforts would be coordinated with other Federal, State, and County agencies, weed management areas, and private landowners and organizations.

Under all alternatives, BLM would focus prevention of weed spread along roads, trails, waterways, recreation sites, and disturbed sites due to project implementation.

BLM would continue to use a combination of cultural, physical, chemical, and biological treatments for weed control. Chemical and biological treatment techniques

would conform to BLM guidelines and state and federal laws.

Weed seed free forage would be used on BLM lands. Forage subject to this rule would include hay, grains, cubes, pelletized feeds, straw, and mulch.

Weed management prescriptions would be included in all new treatment projects and incorporated where possible in all existing contracts, agreements, and land use authorizations that would result in ground-disturbing activities.

Monitoring would be conducted to determine if weed treatment strategies are effective at the project level and Planning Area- and Decision Area-wide.

Approximately 10 to 15 percent of proposed weed treatment acres by alternatives are expected to be newly treated acres. Most of the treated acres would be repeated treatments on the same areas because successful weed control usually requires multiple treatments and/or combinations of treatment methods.

## **Alternative A – No Action**

### ***Grasslands and Shrublands***

BLM would continue to assess the health of herbaceous and shrub species during rangeland health assessments with priority given to wooded riparian and upland broad-leaf shrub communities. Fire restoration and rehabilitation standards would continue to be compatible with landscape resource management objectives and long-term (25-year) vegetation health protection and fuel management. Under Alternative A, the objective would be to treat approximately 5,250 acres of grassland and shrubland per decade, primarily to reduce conifer encroachment into these areas.

### ***Forests and Woodlands***

The forestry program would continue to address forest stand management and development, as well as insect and disease detection and control. Forest stand harvesting and treatments would enhance or maintain healthy structure, density, species composition, pattern, and distribution to promote forest productivity and reduce the occurrence of forest disease and insect outbreaks. Forest stands would be managed to be resilient when periodic fire events occur and products would be salvaged from such events.

Forest and woodland treatment objectives under Alternative A would be as follows. Approximately 3,600 acres of dry forest types that are medium to large size with high tree densities would be treated per decade. Approximately 400 acres of treatments per decade would take place in similarly structured cool and moist forest types. Because the forest management program was not functioning at its present level until 1996, acreage estimates are based on forest management activities since 1996.

Thinning, forest product removal, and prescribed burning methods to reduce the amount of forest or wooded area with the potential for high severity wildland fire would continue. No mechanical treatments specifically targeting limber pine would occur.

Adequate access for management activities would be maintained. If needed, up to 5.5 miles of new, permanent roads could be constructed per year to provide access for treatments.

### **Forest and Woodland Products**

A full range of forest management activities, including timber production, would occur on high priority forest management areas, consistent with the Timber Production Capability Classification. Forest condition assessment activity plans or landscape analysis would be required. Landscape analysis may also be used to incorporate multiple resource considerations into general forest management activities.

Objectives for the Probable Sale Quantity (PSQ) would be at current levels of 12 million board feet (MMBF) per decade or 40,000 hundred cubic feet (CCF). This could range as high as 27 MMBF (97,000 CCF) per decade if forest treatments are increased up to 750 acres per year as allowed under the 1984 Headwaters RMP. All sales would be required to conform to guidelines developed in the Dillon Sustained Yield Unit Timber Management Plan (USDI-BLM 1977). BLM forest planners would continue to use information gathered through forest inventory, landscape analysis, and regeneration surveys to manage for production of forest products and initiate forest development and artificial reforestation projects.

A full range of forest management activities would occur on low priority forest management areas. Forest activity plans would continue to be adjusted for intensity with timber production a secondary consideration where other substantial resource values are identified. Public land within set-aside areas would generally not be harvested.

The Sleeping Giant, Scratchgravel Hills, and Muskrat Creek area within the Elkhorn Mountains would not be available for forest management activities.

The small sale program would continue to be permitted on forestland that is available for harvest. Occasional free use may be authorized to clean up concentrations of debris or to serve other public purposes such as education, material needs by public agencies or recognized charitable, non-profit activity support, provided the free-use materials are not later offered for sale by the receiving party. The forestry program would provide the estimated quantities of permits and products under the small sale program shown in **Table 2-23**.

Personal use firewood permits valid for wood collection from both BLM and Forest Service lands in Western Montana would continue to be offered by BLM in cooperation with the Forest Service.

Removal of dead and down trees would be allowed for firewood gathering. Use of live trees for firewood gathering by the public or for commercial purposes would also continue under other BLM authorities, authorized on a case by case basis after review and compliance with NEPA.

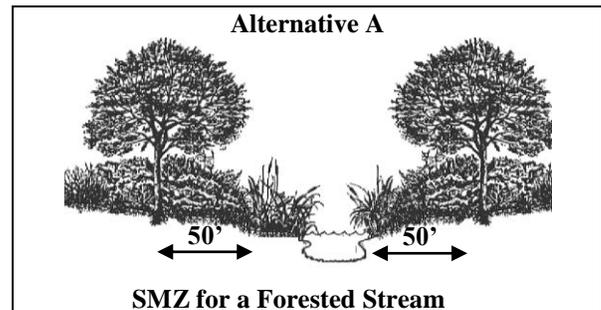
The Silvicultural Guidelines and Harvesting Management Practices outlined below would continue.

- Roads constructed for timber harvests would be to minimum standards necessary to remove timber, unless the roads are needed for other public purposes requiring a higher standard.
- Forest activity plans would incorporate the Guidelines from the Montana Cooperative Elk Logging Study (Lyons *et. al.* 1985).
- Snag management would be implemented for cavity-nesting and denning habitat.
- The Elkhorns area would be managed as per the Elkhorn Mountains Landscape Analysis and the South Elkhorn Implementation Project Analysis. Timber harvest in the Elkhorn Wildlife Management Area (RMP management unit #36 in 1984 Headwaters RMP) in the Nursery Creek area would be allowed only for wildlife habitat improvement. This plan includes the following management objectives and guidelines:
  - a. Management activities would be designed to maintain or improve elk, mule deer, and moose habitat, with primary emphasis on elk summer habitat and calving areas.
  - b. Management activities would be designed to maintain or enhance opportunities for dispersed recreation, to the extent permitted by wildlife habitat objectives.
  - c. The existing road network generally would remain open on routes designated in the Elkhorn Mountains Travel Management Plan. Seasonal restrictions may be imposed on forest treatment activities to minimize impacts on big game values and during elk calving season (April 15 to June 30).
  - d. Timber harvest and prescribed burning may be used to improve wildlife habitat conditions. New roads needed for the removal of forest products would be kept to a minimum. New roads would be physically closed to public use following completion of forest management activities.
- Any subsequent management activities involving harvests of more than 250 MBF, construction of new access into roadless elk summer or fall range, or critical, crucial, or essential wildlife habitat would be coordinated with the Montana Department of Fish, Wildlife and Parks (MFWP).

- The approach used in developing the large scale salvage and restoration projects for the Bucksnot and Boulder Complex Wildfires of 2000 and the Landscape Analysis and South Elkhorn Implementation Project provides the framework for design and analysis of future emergency stabilization and forest restoration activities in other areas.
- Commercial forestland in areas with completed landscape analysis, the Boulder-Clancy, and the Marysville areas would be high priority for forest management. Special harvest restrictions would be applied in key elk seasonal use areas.

**Riparian**

Riparian and wetland areas would be in properly functioning conditioning or would be moving toward properly functioning condition. Properly functioning condition includes; the presence of all age classes (seedling, sapling, pole, mature, decadent, and dead) of tree and shrub species where the potential exists, diverse composition of vegetation, species that indicate maintenance of riparian soil moisture, riparian plants with high vigor, adequate vegetative cover to protect banks and dissipate energy during high flows, and plant communities to provide for large woody material in streams and riparian areas.



BLM would continue to implement projects to restore and improve riparian areas and wetlands. Up to 30 acres of riparian areas would be treated by burning or mechanical means per decade to improve vegetative conditions. (This treatment figure is a continuation of what has occurred, however the current plan allows treatment in all riparian areas subject to other management constraints.) Opportunities would be identified to minimize impacts or enhance riparian and wetland resources during project planning. Existing livestock exclosures along streams, wetlands, and riparian areas would be maintained as long as needed to meet management objectives.

Management actions within floodplains and wetlands would include measures to preserve, protect, and, if necessary, restore their natural functions.

BLM would continue to evaluate wooded riparian communities when conducting rangeland health assessments.

### ***Livestock Grazing***

Livestock grazing would be allowed on about 278,000 acres. The amount of forage available on these lands would be 25,677 Animal Unit Months (AUMs). About 29,000 acres would not be available for livestock grazing. **Table 2-23** shows how the grazing availability in a number of allotments would vary by alternative. Grazing allotments are displayed on electronic maps (Grazing Allotment Map 1.PDF through Grazing Allotment Map 10.PDF) in the Grazing Allotment Maps folder on the enclosed compact disc. A table called Grazing Allotment Table.PDF, also enclosed in the same folder, can be used to cross-reference allotment numbers on the maps with allotment names in the table.

After the current permittee ceases livestock grazing, the McMaster Hills and Spokane Hills individual allotments would become vacant and available to qualified applicants per the grazing regulations. These allotments would be administered like all other existing allotments.

The existing Indian Creek allotment (2,215 acres and 376 AUMs) would be expanded up to an additional 5,566 acres and 700 AUMs by the Iron Mask Acquisition. The Indian Creek allotment would be available to qualified applicants per the grazing regulations. This allotment would be administered like all other existing allotments.

The Medicine Rock (Northeast Helena) riparian area would remain closed to livestock grazing and would not be available for prescription livestock grazing (authorized grazing use designed to accomplish a specific purpose. Controlling noxious weeds by grazing goats would be an example).

Allotments where grazing preference is relinquished (an allotment where an existing permittee or lessee gives up his or her grazing preference causing the allotment to become unleased) would remain available for livestock grazing leases or permits.

To reduce the potential for interactions between wild and domestic sheep, existing Instruction Memorandum 98-140 (USDI-BLM 1998b) would be followed to protect wild sheep. To minimize physical contact between domestic and wild sheep, buffer strips would be identified between new sheep and goat allotments as well as for those allotments with conversions from cattle to sheep and goats. Buffer strips may not be necessary or may be smaller where topographic features or other barriers exist that minimizes contact between wild and domestic sheep. Buffer strips could range up to 9 miles but the size could vary as developed through a cooperative agreement.

Rest from livestock grazing in vegetation treatment areas would be determined through site-specific interdisciplinary planning and NEPA processes.

Forage and cover requirements would be incorporated into allotment management plans and would be specific to areas of primary wildlife use.

Applications for unleased allotments and vacant available lands would be considered on a case-by-case basis.

### ***Wildland Fire Management***

BLM would continue to manage vegetation under the Fire/Fuels Management Plan Environmental Assessment/Plan Amendment for Montana and the Dakotas (USDI-BLM, 2003a). Fire management categories and associated treatment acreages under the No Action Alternative are presented in **Table 2-1** and **Map 2**.

<b>FMU</b>	<b>Category<sup>1</sup></b>	<b>BLM Acres<sup>2</sup></b>
Absoraka Foothills	C	3,900
Big Belt Mountain	C	7,200
Big Hole River Corridor	C	11,100
Blackfoot (See Missoula FO)	C	0
Boulder River	B	14,300
Clancy/ Marysville	C	28,200
Elkhorn Mountains	C	68,900
Fleecer Mountain	C	18,100
McCartney/ Rochester	C	28,100
North Hills	B	6,300
Pipestone	C	41,000
Scratchgravel Hills	B	7,900
Sleeping Giant/ Sheep Creek	C	20,500
Spokane Hills and North	B	6,800
Three Forks	C	31,200
Wise River Town site	B	1,400
Bozeman/Livingston Scattered Tracts	A	7,300

<sup>1</sup> Category and associated treatments only apply to BLM land within each zone.

<sup>2</sup> Acres are approximate and rounded to nearest 100.

BLM would continue to manage the fire program to control all wildland fires burning on or threatening public land within the first burning period. Modified fire suppression areas would continue to be based on values at risk, fire behavior, fire occurrence, beneficial fire effects including reduction of fuel loading, fire suppressions costs, and consistency with other agency plans and policies. Appropriate fire suppression actions would be implemented in the WUI and areas identified as possessing significant values that could be significantly altered by wildland fire.

Wildland fire use would continue to be allowed in areas identified as being acceptable in the Fire Management Plan, where there are approved wildland fire use plans

(Elkhorn Mountains), or upon completion of approved wildland fire use plans. The Elkhorn Mountains Fire Management Plan would be kept under current guidance.

### ***Noxious Weed Management***

All grazing allotment agreements for the Planning Area would continue to address weed control by chemical treatment and adjusting livestock use in response to reduced forage availability.

Weeds would continue to be treated near roads and trails, urban interface and recreation areas. Areas currently under a multi-year treatment plan would continue to be treated. Treatments would include a combination of cultural, chemical, and biological treatments for weed control.

Under Alternative A, the objective would be to treat an estimated 20,000 acres of weeds per decade, not including biocontrol measures such as insect releases, grazing, or use of pathogens.

## **Management Common to Action Alternatives (B, C, and D)**

### ***Grasslands and Shrublands***

When necessary, sagebrush and grassland distribution and vigor would be restored through vegetative treatments such as reducing conifer encroachment, reducing noxious weeds, and ensuring proper grazing practices (season or use or intensity).

Management of sagebrush habitats will be a priority based on concerns over the conservation status of sage grouse, pygmy rabbit, and other species associated with sagebrush and grassland habitats.

The current acres of shrublands and grasslands shown by major watershed in **Table 2-23** at the end of this chapter are approximations with built-in limitations associated with distinguishing between these two habitat types during mapping. The current and proposed treatment acres of these two habitat types were separated to provide an indication of the relative amount of these habitats. However, due to the limitations in mapping these habitat types, the total number of shrubland and grassland acres proposed for treatment by alternative should be considered in combination. Objectives for proposed treatment acres include only those acres that would be treated to reduce conifer encroachment.

Under the action alternatives, an objective would be to treat up to 850 acres of crested wheatgrass seedlings, agriculture fields, and weed infestations in the McMasters and Ward Ranch acquisitions to convert their communities from non-native vegetation to native vegetation.

### ***Forests and Woodlands***

Forest and woodland health assessments would be incorporated into Land Health Standards at the activity plan level to determine forest health conditions in project areas. Forest health is defined as the degree to which the biological and physical components of forest stands and their associated ecosystems and relationships are present, functioning, and capable of self-renewal.

Natural disturbance regimes would be maintained or mimicked so that plant communities are resilient when periodic outbreaks of insects, disease, and wildland fire occur.

Vegetation planning would be coordinated with managers of federal or state lands adjacent to site-specific proposals for a collaborative approach.

Vegetation manipulation projects would be designed to minimize impacts to wildlife habitat and improve it when possible.

To maintain site productivity (organic matter and nutrients), provide for special wildlife features, and discourage cross-country motorized travel, much of the fine materials not utilized (seedlings, saplings, tops, and branches less than 4 inches in diameter, cull logs and identified down woody material) would be left scattered on the forest floor where it would not contribute to ladder fuels.

Forest management would emphasize old forest structures, snag management, and large diameter trees for cavity nesters where appropriate. Existing and developing old forests would be retained and protected from uncharacteristically severe natural disturbances such as; stand replacing wildland fire, and insect and disease epidemics.

The BLM would strive to maintain and/or restore stands with old forest structure within historic range of variability to maintain and/or enhance habitat for old growth dependent species.

BLM would design fire restoration/rehabilitation standards on a case-by-case basis, compatible with landscape resource management objectives and long-term (25-year) vegetation health protection and fuel management.

### **Forest and Woodland Products**

In all action alternatives, commercial harvest of forest products would normally be associated with vegetative restoration (including forest health) and fuels treatments and would be designed to meet objectives for forest management, wildlife habitat management, fire hazard reduction, hazard tree removal, special status species management, visuals, recreation, and travel management.

Raw material for a variety of forest products would be made available in all alternatives.

Special forest and range products would be managed according to sustainability limits and where consistent with other resource management objectives. These products would be harvested under the appropriate written, BLM approved authorization only.

Residual stands left by disturbance events would be maintained to provide for natural regeneration and diversity of forest systems.

### ***Riparian***

Riparian areas would be managed to provide the amount and distribution of large, woody material characteristic of natural aquatic and riparian ecosystems. Trees may be felled in riparian areas when they pose a safety risk or are needed to enhance riparian function/condition. Felled trees would be kept on site when needed to meet woody debris objectives.

Riparian and wetland areas would be assessed and monitored for proper functioning condition and other specific objectives, by using proper functioning condition and/or other appropriate stream survey methodologies. For proper functioning condition in streams, entrenchment, width/depth ratio, sinuosity, channel substrate, and slope should be within the range identified for channel types.

BLM would cooperate with federal, tribal, and state wildlife management agencies and private landowners to identify activities that prevent meeting riparian standards. In cooperation with those agencies, projects or management measures would be designed to minimize impacts.

Mechanical or hand cutting and/or prescribed burning would be used to remove competing conifers from riparian ecosystems, including aspen clones. Commodity removal of juniper would be encouraged.

### ***Livestock Grazing***

For allotments without specific management objectives set through an interdisciplinary planning process, the utilization objective as measured at the end of the grazing season would be 55 percent on non-native seedlings and 45 percent on native herbaceous forage plants, on a pasture average basis. (These utilization percentages would maintain or enhance most plant communities found in the Decision Area to achieve or make progress toward meeting Rangeland Health Standards.) Lower or higher utilization objectives may be acceptable when set through an interdisciplinary planning or NEPA process to achieve resource objectives.

Grazing uses on lands proposed for acquisition would be considered on a case-by-case basis based on the values identified for the acquisition.

No new kind of livestock conversions from sheep or cattle to horses would be allowed on existing allotments smaller than 160 acres. No new horse permits or leases would be offered on available vacant parcels less than 160 acres in size. Exceptions may be granted in rare

cases of intermingled ownership where rangeland health standards are met.

BLM would develop and implement appropriate grazing strategies in grizzly bear distribution zones.

### ***Wildland Fire Management***

Any wildland fire that is eligible for Wildland Fire Use (WFU) will require a site-specific Wildland Fire Implementation Plan (WFIP) before it can be managed as such.

Fire Management Unit (FMU) boundaries are based on watershed boundaries. In each action alternative more FMUs are created within the watershed boundaries to take in consideration for known areas of wildland urban interface.

Priority of fire management activities would be placed on fuels reduction in WUI areas in conjunction with completed Community Wildfire Protection Plans.

Fire management activities outside of the WUI areas would use Fire Regime, Condition Class (FRCC) to determine level of fuels treatments.

Fire management would focus on maintaining fire dependent ecosystems and restoring or maintaining those areas outside their natural balance through mechanical, chemical, and/or prescribed fire treatments.

For all prescribed fire projects, BLM would evaluate habitat type, soils, fuel conditions, project objectives, and risk when determining seasonality for burning.

Spread of non-native invasive aquatic species as well as additional resource values would be addressed in the Butte Field Office Fire Management Plan to be revised after finalization of this RMP.

### ***Noxious Weed Management***

Noxious weed control using domestic sheep and/or goats in occupied bighorn sheep habitat would be prohibited.

Treatments using biological controls (including but not limited to grazing, insect releases, and pathogens) which have been documented to damage existing desired plant or wildlife species would be prohibited.

BLM would actively conduct noxious weed outreach and education for BLM personnel, public land users, and the general public. Outreach and education would consist of identification, prevention and control methods, and the benefits of restoration.

BLM would encourage the development of weed management areas where the landowners and users are cooperatively working to manage noxious weeds within designated areas.

Where applicable, plant communities would be restored to promote resistance to weed invasion, using accepted management techniques, methods, and procedures.

All contractor and BLM equipment would be power-washed to remove weed seed before entering ground disturbing project areas.

## **Alternative B – Preferred Alternative**

### ***Grasslands and Shrublands***

Priority areas for treatment would include big game winter range, sagebrush, bighorn sheep habitat, and the Wildland Urban Interface.

Objectives for treating grasslands and shrublands under Alternative B are as follows. The total amount of grassland proposed for conifer reduction per decade would be 2,750 to 11,800 acres. The total amount of shrubland proposed for conifer reduction per decade would be 1,000 to 3,650 acres. These acres are displayed by major watershed in **Table 2-23**.

Native or low impact, non-invasive seed mixtures would be used when restoring vegetation on disturbed ground.

### ***Forests and Woodlands***

For the action alternatives, Forests and Woodlands are further subdivided into dry forest types, cool and moist forest types, late and old structure forest, while forest products includes a subheading for timber salvage.

#### **Dry Forest Types**

The objective for total amount of dry forest treatments per decade under Alternative B would be 4,150 to 14,750 acres. These acres are displayed by major watershed in **Table 2-23**.

Restoration priorities would include dry forests with medium to large sized trees, with high tree densities. In dense, old, and mature Douglas-fir and ponderosa pine forests, stand density would be moved toward stands that consist of fewer trees per acre with a larger average diameter. Over time, treatments would produce a variety of stands with more open canopies of multiple age groups of native conifers and healthy and more diverse shrub, grass, and forb understories. A range of 3,350 to 10,750 acres per decade of medium to large sized tree-dominated stands of this forest type would be treated under Alternative B (subset of objective for total acreage treatments). Historically, these habitat types were more open “savannah” forests interspersed with grassland and shrubs. Dry forest stands that are in an ecologically “healthy” condition which can sustain the growth of the larger trees while successfully reproducing and maintaining the juvenile growth of the younger trees would also be maintained under Alternative B. Treatments would promote the large, overstory trees and natural regeneration that would provide diverse age and size classes. Maintenance of existing dry forests would be considered “moderate priority” with 400 to 2,000 acres per decade anticipated for treatment (subset of objective for total acreage treatments).

Under Alternative B, these treatments could also include thinning in limber pine, dry forest habitats amounting to approximately 100 to 1,000 acres per decade, and approximately 300 to 1,000 acres per decade of small diameter thinning of seedling/sapling and pole sized conifer stands.

The majority of ponderosa pine, dry forest treatments would occur in the Upper Missouri Watershed.

#### **Cool and Moist Forest Types**

Cool and moist forest types would be treated when necessary to maintain or improve stand conditions. Restoration of these habitat types may also be done to meet desired future conditions for ecosystem function and diversity as well as for wildlife habitat including creating forage for lynx in lodgepole pine forests.

The objective for total amount of cool and moist forest treatments per decade under Alternative B would be 450 to 3,750 acres. These acres are displayed by major watershed in **Table 2-23**.

Approximately 350 to 3,350 acres of stands dominated by medium to large sized trees, with high tree density in cool and moist forest would be treated in this alternative (subset of objective for total acreage treatments). Small diameter thinning would also occur on approximately 100 to 400 acres per decade in seedling/sapling and pole size cool and moist Douglas-fir and lodgepole pine forests.

Treatments in cool and moist forest types would include the creation of openings to allow for regeneration of lodgepole pine and Douglas-fir. Areas may also be pre-commercial or commercially thinned. Commercial products such as timber and biomass would be produced from these treatments.

Treatment in cool and moist forest types would be considered a low to moderate priority under Alternative B. The priority watershed for implementation of treatments in cool and moist forest is the Big Hole.

#### **Old Forest Structure**

Alternative B would provide direction to maintain and promote old forest structure and conditions through active treatments and restoration activities. Actions would be designed to develop and maintain stand structures that are relatively complex with highly variable tree densities, healthy and diverse understory composition, and abundant snags and downed logs. Where deficient on the landscape, snags and down woody material would be created in appropriate areas.

#### **Forest and Woodland Products**

The objective for quantities of forest products (PSQ) are based on the expected amount of treatment acres (including the WUI projects) and would be 33,000 to 91,000 CCF or 9 to 25 MMBF per decade under Alternative B.

Some new permanent roads may be built for long-term management of areas where multiple entries would be necessary to meet objectives. New and temporary road construction would be kept to a minimum. Temporary roads would be decommissioned (route would be closed and rehabilitated to eliminate resource impacts such as erosion, and is no longer useable for public or administrative uses) within one year of project completion. In addition, replacement, maintenance, or decommissioning of existing roads to meet transportation planning and management objectives could also occur during forest product removals or stewardship treatment projects conducted under Alternative B.

The small sale program (estimated quantities of permits and products shown in **Table 2-23**) would maintain the current types of activities as well as the development of treatment areas to help meet public demand for small sale products. The small sales would only occur where sufficient physical access currently exists. No new permanent roads would be constructed to meet the demands of the small sale program.

Personal use firewood permits valid for wood collection from both BLM and Forest Service lands in Western Montana would continue to be offered by BLM in cooperation with the Forest Service.

Unless specifically designated, only **standing** dead and dying wood would be allowed to be taken as firewood. The BLM, however, could designate specific areas for firewood cutting of live trees to meet other resource objectives or BLM authorized uses such as leases and rights-of-way.

To protect existing snag habitat for wildlife, no dead trees greater than 24 inches DBH would be allowed to be cut for firewood. Firewood cutting would not be allowed in WSAs.

Firewood cutting would not be allowed within 100 feet of live (yearlong flow) streams or within 50 feet of intermittent streams.

#### Timber Salvage

Numerous bird and mammal species require dead and dying forests for maintenance of viable populations. Methods of salvage that “homogenize” a stand such as selective removal of all trees of a certain size (usually a size required by disturbance dependant species), density and/or species would not maintain the structure or variety of microclimates required by bird and mammal species that use this type of habitat. When salvage is proposed in dead and dying forests, contiguous acres of undisturbed standing and down woody material would be retained in adequate amounts for those wildlife species that depend on this type of habitat.

Outside of the contiguous areas identified for retention, harvest treatments may include: 1) forest openings appropriate for the site and retention patches of uncut dead and dying trees; or 2) forest openings appropriate for the

site with selective thinning between openings and retention patches of uncut dead and dying trees; or 3) selective thinning and retention patches of uncut dead and dying trees.

Bark beetle suppression treatments, which may target large tree removal, would be permitted to contain out-breaks and to reduce the risk to other forest stands in the vicinity.

#### **Riparian**

At the Field Office scale, Alternative B would maintain, protect, and/or restore aquatic and riparian-dependent terrestrial resources. The emphasis in Alternative B would be to actively restore riparian habitats.

#### **Riparian Management Zones (RMZs)**

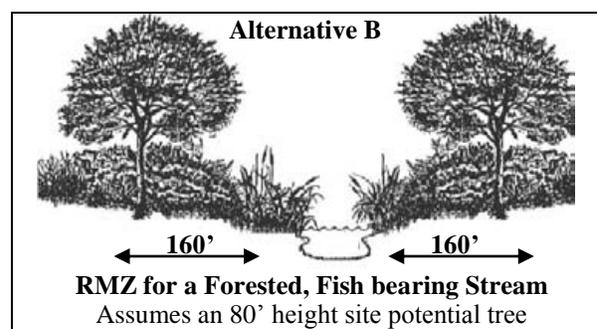
Riparian Management Zones are areas where riparian values would receive primary emphasis with all activities to the extent possible. Maintaining and restoring quality riparian habitat (including vegetation) is important for many wildlife species as well as to maintain water quality, appropriate woody material, and nutrient routing to aquatic habitats, and to maintain appropriate stream channel morphology.

Riparian Management Zones are intended to: maintain and restore riparian structures and functions; benefit fish and riparian-dependent resources; enhance conservation of organisms that depend on the transition zone between upslope and aquatic habitats; and improve connectivity of travel and dispersal corridors for terrestrial animals and plants, and aquatic organisms.

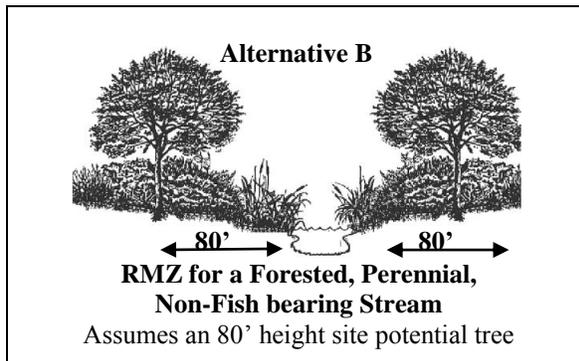
In addition to adhering to SMZ Law, Riparian Management Zones from the edge of the aquatic habitat would be established as follows.

#### Forested Areas

Streams, lakes, ponds, and reservoirs containing fish: The riparian management zone (RMZ) would consist of the water body and a zone located on all sides of the water body. This zone would extend from the outer edges of the bankfull channel, full pool, or adjacent wetland a distance equal to the height of two site-potential trees. (Site potential tree height – within forested areas, a site potential tree height would be the average maximum potential height of dominant trees, in the riparian management zone).



Perennial non-fish bearing streams: The RMZ would consist of the stream and a zone located on both sides of the channel. This zone would extend from the outer edges of the bankfull channel (or adjacent wetland) a distance equal to one site-potential tree height.

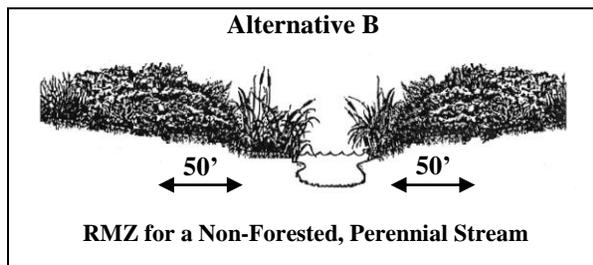


Non-fish bearing ponds, lakes, reservoirs, or wetlands greater than 1 acre: The RMZ would extend from the outer edge of the full pool or wetland a distance equal to one site-potential tree height or to the edge of seasonally saturated soil or wetland vegetation, whichever is greater.

Intermittent streams and wetlands less than 1 acre: The RMZ would consist of the water body and a zone located on all sides of the water body. This zone would extend from the outer edges of the bankfull channel or adjacent wetland a distance equal to at least 50 feet.

Non-forested Areas

For fish-bearing and non-fish bearing streams, lakes, ponds, and reservoirs, the RMZ would consist of the water body and a zone located on all sides of the water body. This zone would extend from the outer edges of the bankfull channel (average high-water mark), full pool, or adjacent wetland a distance that encompasses the active floodplain. The RMZ would extend 50 feet above the break in slope leading down from the lowest terrace to the floodplain, or in segments where trees are present, to a distance equal to one site-potential tree height from the edge of the feature, whichever is greatest.



For intermittent streams and wetlands less than 1 acre, RMZs would be 50 feet from the edge of wetland vegetation or active stream channel as indicated by riparian vegetation, saturated soil, or water. The criteria for se-

lecting the width may be different for each side of the water body. Riparian livestock use and vegetative treatment would occur under Alternative B within RMZs. The condition and importance of riparian resources to natural systems locally would serve as primary emphasis for management activities and uses. At the Field Office scale, projects in RMZs would generally be designed to protect or restore the ecological function of riparian areas and streams.

Because stream types and riparian functions significantly vary across the Planning Area, RMZs based on a minimum linear distance would not be applicable for every project. Although the minimum distances would always apply, the width necessary to protect the stream and riparian structure and function may be wider than the minimum distances and would be determined from site-specific analysis.

Each project would incorporate specific design features to maintain the key ecological function of the Riparian Management Zones.

The objective for total amount of riparian vegetation habitat proposed for mechanical and/or prescribed burning treatments per decade under Alternative B would be 200 to 700 acres (this includes vegetative treatments and not changes in grazing practices). These acres are displayed by major watershed in **Table 2-23**.

Commercial timber harvest would be allowed in Riparian Management Zones to meet riparian restoration or maintenance objectives and only if adequate woody material remains in the riparian area to meet site-specific (project level) riparian objectives.

Where the primary project objective is aspen restoration, treated aspen stands would be fenced from livestock and wildlife when recovery could be suppressed by grazing and browsing. Fencing could consist of using native, on-site materials as barriers. All fences (with the exception of barriers created from native, on-site materials) would be maintained and removed within 10 years or when the aspen is fully re-established or recovered.

**Livestock Grazing**

Livestock grazing would be allowed on about 270,000 acres of public land. Approximately 37,000 acres of public land would be unavailable for grazing permits or leases (**Table 2-2**). (The allotments unavailable for grazing permits are unleased at this time generally because they lack forage or water, are small, are on steep terrain, are covered with timber, are adjacent to subdivisions, or lack infrastructure.) The amount of forage available on these lands would be 24,710 AUMs active use and 1,312 AUMs forage reserve, temporary non-renewable AUMs.

After the current permittee ceases livestock grazing, the McMaster Hills and Spokane Hills individual allotments would be established as forage reserve allotments (An allotment without a term grazing permit that is grazed on a temporary nonrenewable basis. This type of allotment

**Table 2-2  
Grazing Availability For Special Allotments Varying By Alternative**

Allotment Name	Allotment Number	Alt. A	Alt. B	Alt. C	Alt. D
Indian Creek	20233	Available for grazing permit	Forage Reserve Allotment	Unavailable for grazing permit	Available for grazing permit
Spokane Hills	7720	Available for grazing permit	Forage Reserve Allotment	Forage Reserve Allotment	Available for grazing permit
McMasters Hills	7721	Available for grazing permit	Forage Reserve Allotment	Forage Reserve Allotment	Available for grazing permit
Centennial Gulch	7715	Available for grazing permit	Unavailable for grazing permit; prescription grazing	Unavailable for grazing permit; no prescription grazing	Available for grazing permit
Free Coinage	20254	Available for grazing permit	Unavailable for grazing permit	Unavailable for grazing permit	Available for grazing permit
Alder Creek	351	Available for grazing permit	Unavailable for grazing permit	Unavailable for grazing permit	Available for grazing permit
Charcoal Mountain Cust.	10363	Available for grazing permit	Unavailable for grazing permit	Unavailable for grazing permit	Available for grazing permit
Dickie	20364	Available for grazing permit	Unavailable for grazing permit	Unavailable for grazing permit	Available for grazing permit
Dog Paw	20365	Available for grazing permit	Available for grazing permit	Unavailable for grazing permit	Available for grazing permit
Maiden Rock Custodial	20367	Available for grazing permit	Unavailable for grazing permit	Unavailable for grazing permit	Available for grazing permit
Quinn Creek	5487	Available for grazing permit	Unavailable for grazing permit	Unavailable for grazing permit	Available for grazing permit
Sixmile Park County	5507	Available for grazing permit	Available for grazing permit	Unavailable for grazing permit	Available for grazing permit
Wineglass Mountain	15452	Available for grazing permit	Unavailable for grazing permit	Unavailable for grazing permit	Available for grazing permit

would be used to provide temporary grazing to rest other areas following wildfire, habitat treatments, or to allow for more rapid attainment of rangeland health). Forage reserve allotments would be managed to meet, or move toward meeting, land health standards. Use would be authorized on a temporary, nonrenewable basis. The amount of use would be determined by the BFO. Applicants would be required to meet qualifications per the grazing regulations, and show the ability and commitment to repair and maintain improvements and infrastructure. The BFO would rank qualified applicants according to the following criteria in priority order:

1. Implementing projects or vegetation management on BLM lands.
2. Facilitating a change in management to improve resource conditions on BLM allotments.
3. Accommodating permittees or lessees displaced by natural causes (i.e. wildland fire, drought, insect infestations, etc.)

The criteria found at 43 CFR §4130.1-2 (USDI-BLM 2006a) will be used to determine priority when conflicting applications are submitted.

The existing Indian Creek allotment would be expanded up to 5,566 additional acres and 700 AUMS by the Iron Mask acquisition. The allotment located in the Elkhorns Cooperative Management Area would be managed as a forage reserve allotment. The allotment would be managed to meet, or move toward meeting, land health standards. Use would be authorized on a temporary, nonrenewable basis. The amount of use would be determined by the BFO. Applicants would be required to meet qualifications per the BLM grazing regulations, and show the ability and commitment to repair and maintain improvements and infrastructure. The BFO would rank qualified applicants according to the following criteria in priority order:

1. Be a State or Federal permittee or lessee, or private landowner within the boundaries of the Elkhorns Cooperative Management Area (ECMA).

2. Implementing projects or vegetation management on ECMA lands.
3. Facilitating a change in management to improve resource conditions on ECMA lands.
4. Accommodating permittees or lessees displaced by natural causes (i.e. wildland fire, drought, insect infestations, etc.)
5. The criteria found at 43 CFR §4130.1-2 (USDI-BLM 2006a) when conflicting applications are submitted.

The Centennial Gulch (Ward Ranch) allotment and Medicine Rock (Northeast Helena) riparian area would be available for prescription livestock grazing to meet specific resource objectives as determined through a site-specific interdisciplinary planning and NEPA process.

Allotments where grazing preference is relinquished would be evaluated for suburban/urban interface issues, critical wildlife habitat, riparian values, or recreational considerations before re-offering the grazing preference on the allotment for permit or lease.

Areas identified for prescribed burning would be rested from livestock grazing up to one year prior to treatment, if necessary, to produce fine fuels to carry the burn. Treatment areas would be rested for a minimum of two growing seasons following treatment to promote recovery of vegetation. Livestock rest for more or less than two growing seasons could be justified on a case-by-case basis.

Range projects would be maintained as long as needed to meet management objectives. Maintenance would be assigned to grazing permittees, other authorized public land users, or the BLM. Routine maintenance would be completed according to the maintenance schedule per the terms and conditions of existing cooperative agreements.

Under Alternative B, no change in livestock conversions from cattle to domestic sheep or goats would be allowed in allotments within occupied wild sheep habitat. New sheep and goat allotments or conversions from cattle to sheep or goats would be permitted a minimum of 5 miles from known bighorn sheep habitat. This distance would be greater if deemed necessary through site-specific analysis or a cooperative agreement with other federal or state agencies. Goats and sheep could be used for weed control on winter ranges when wild sheep are absent. To minimize contact with bighorn sheep, domestic sheep, and goats used for weed control would only be allowed to graze for up to 1 month near occupied bighorn sheep habitat and there would be a minimum buffer of 2 miles between domestic and wild sheep. Bedding grounds would be a minimum of 4 miles from known bighorn sheep habitat. The use of domestic sheep and goats would only be allowed from May 1 to July 31 unless coordinated with MFWP. A herder would be required to be on site at all times and be able to communicate with

the BLM, the herd owner and MFWP. If bighorn sheep and domestic sheep and goats come into contact, the herder would be required to contact the BLM and MFWP immediately.

**Wildland Fire Management**

BFO administered lands would be broken into nine FMUs. The FMUs would have B and C designations applied. Approximately 52,000 acres would be designated in category B and 255,000 acres in Category C (Table 2-3 and Map 3). The FMUs follow watershed boundaries with the following two exceptions: The Missouri and the Big Hole watersheds would each be broken into two FMUs due to the urban interface areas surrounding Helena and Wise River. The Missouri watershed FMUs would be Central Missouri and Missouri, and the Big Hole watershed FMUs would be Big Hole and Wise River.

<b>FMU</b>	<b>Category<sup>1</sup></b>	<b>BLM Acres<sup>2</sup></b>
Big Hole	C	51,000
Blackfoot	B	1,000
Central Missouri	B	37,000
Gallatin	B	2,000
Jefferson	C	82,000
Missouri	C	115,000
Upper Clark Fork	B	1,000
Wise River	B	10,000
Yellowstone	C	8,000

<sup>1</sup>Category and associated treatments only apply to BLM land within each zone.

<sup>2</sup>Acres are approximate and rounded to nearest 1000.

Fire management activities would correspond to the FMU designations. Management-ignited prescribed fire would not be conducted between May 1<sup>st</sup> and August 30<sup>th</sup> to protect nesting migratory birds unless breeding bird surveys document low potential impact to breeding birds.

In grassland and shrubland habitats, BLM would plan for prescribed burns that do not consume above-ground vegetation on more than 80 percent (on average) of each unit by surface area.

Delivery of chemical retardant, foam or additives to live streams would be avoided. Fish screens (1/8 inch diameter holes) on hoses would be required when removing water from fish bearing streams during fire management activities. Maps of fish bearing streams would be included in the BFO Fire Management Plan for use in initial attack of wildland fires.

**Noxious Weed Management**

In addition to the priorities identified under Management Common to All Alternatives, prevention and control of

weed infestations in special designation areas and Weed Management Areas (areas with agreements between landowners to cooperatively manage for weeds) would be a high priority under Alternative B.

Under Alternative B, the objective would be to treat an estimated 21,000 to 50,000 acres of weeds per decade, not including biocontrol measures such as insect releases, grazing, or use of pathogens.

To minimize the risk of inadvertently spraying desirable riparian vegetation and waterways, aerial spraying of herbicides or pesticides would not occur when eye-level winds are greater than 6 miles per hour or within a **minimum of 100 feet from** streams or wetlands or in occupied or high value habitat for sensitive species of plants or animals. Aerial spraying would be conducted in a way that minimizes the effects on native forbs, grasses, and shrubs. Additionally, no herbicides or pesticides which may negatively affect sagebrush would be used aerially in sensitive sagebrush habitats. **Standard operating procedures described in the Record of Decision for the Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement would be used.**

To prevent special status plants from being sprayed with herbicides, BLM, county, and contractor personnel participating in weed treatment activities would be provided with training to identify special status plants and maps of special status plant populations associated with weed treatment areas.

Outreach/education on noxious weeds would be provided to the public at campgrounds and trailheads.

## Alternative C

### *Grasslands and Shrublands*

Priority areas for treatment would include big game winter range, Wildland Urban Interface, and current sage grouse habitat.

Objectives for grassland and shrubland treatments under Alternative C are as follows. The total amount of grassland proposed for conifer reduction per decade would be 1,250 to 2,000 acres. The total amount of shrubland proposed for conifer reduction per decade would be 250 to 750 acres. These acres are displayed by major watershed in **Table 2-23**.

Only native seed species would be used in restoring vegetation on disturbed ground.

### *Forests and Woodlands*

#### **Dry Forest Types**

Compared to the other action alternatives, the management emphasis would be on treating smaller areas than in the other alternatives and allowing for more “natural” disturbances across the landscape. Stand density would

be higher and average diameter of trees would be generally be smaller under this alternative than with Alternatives A, B, or D. Alternative C would treat fewer acres than the other alternatives.

The objective for total amount of dry forest treatments per decade under Alternative C would be 2,050 to 4,800 acres. These acres are displayed by major watershed in **Table 2-23**.

The emphasis for restoration would be the same as Alternative B and D with focus on dry forests that have medium to large sized trees and have high tree density. A range of 2,050 to 4,800 acres per decade would be treated (subset of objective for total acreage treatments). As with Alternatives B and D, vegetative treatments would also open up stands of dry Douglas-fir and ponderosa pine with multiple canopy layers and a diverse grass and shrub understory. Dry forest stands that are currently in an ecologically “healthy” condition would be protected from land management actions that would degrade this forest type but very few acres would be maintained under Alternative C. Maintenance of existing dry forest habitat types would be considered “low priority” and fewer than 500 acres per decade would be expected to be treated (subset of objective for total acreage treatments).

#### **Cool and Moist Forest Types**

Cool and moist forest types would be treated when necessary to maintain or improve stand conditions but treatments would be less under Alternative C than the other action alternatives, but more than in Alternative A.

Treatment of cool and moist forest types would be considered a low priority under Alternative C. Treatments in cool and moist forest types would include the creation of small openings (10 acres or smaller) to allow for regeneration of lodgepole pine, Douglas-fir, subalpine fir or spruce. Areas may also be pre-commercial or commercially thinned.

The objective for total amount of cool and moist forest treatments per decade under Alternative C would be 50 to 550 acres. These acres are displayed by major watershed in **Table 2-23**.

Approximately 50 to 500 acres per decade of medium to large, high density cool and moist forest would be treated in this alternative (subset of objective for total acreage treatments). Small diameter thinning would also occur on up to 50 acres per decade in seedling/sapling and pole size Douglas-fir and lodgepole pine forests.

#### **Old Forest Structure**

Alternative C would maintain and protect old forest structure and condition. Stands with old forest structure would be protected to maintain stand structures that are relatively complex with highly variable tree densities, healthy and diverse understory composition, and abundant snags and downed logs. Few snags and little down

woody material would be proactively recruited in Alternative C.

**Forest and Woodland Products**

The objective for Probable Sale Quantity under Alternative C would be 19,000 to 41,000 CCF or 5 to 12 MMBF per decade. Forest treatments would occur in areas already accessible by the current road system, although helicopter logging may be feasible in difficult to access areas. No new permanent roads would be constructed, and temporary road construction would be kept to a minimum. Temporary roads would be decommissioned within one year of project completion.

The small sale program (estimated quantities of permits and products shown in **Table 2-23**) would maintain the current types of activities but small sale activities involving medium to large trees would be restricted to areas where materials need to be removed due to authorizations such as rights-of-ways, road use agreements, grazing leases, and free use of materials by other agencies and charitable organizations.

Removal of **standing** dead or down trees or dead woody material for commercial or personal use firewood purposes would be authorized only in designated areas, and the personal use firewood permit currently issued by the BLM and USDA Forest Service for firewood gathering on either public or national forest lands would be dropped.

The BLM would designate areas where live trees could be taken as firewood to meet other resource objectives. No live trees greater than 20 inches DBH would be allowed to be removed as firewood. Firewood cutting would not be allowed in WSAs.

Firewood cutting would not be allowed within 200 feet of live (yearlong flow) streams or within 100 feet of intermittent streams.

Timber Salvage

Where contiguous acres of dead and dying forest exceed 1,000 acres, 50 percent of the area would be maintained as retention. Harvest treatments within the remaining project area may include: 1) creation of forest openings, 2) selective thinning between openings and 3) 50 percent total retention across the harvest treatment area.

**Riparian**

The emphasis in Alternative C would be placed on coordinating and integrating riparian restoration objectives through other high priority projects. When possible, the restoration and enhancement of aspen, cottonwood, willows, or other riparian dominant species would also be incorporated into other projects in the vicinity of riparian habitats. Riparian communities, including aspen clones, would be maintained, restored, or enhanced to provide vegetative diversity and structure of riparian areas and to benefit wildlife.

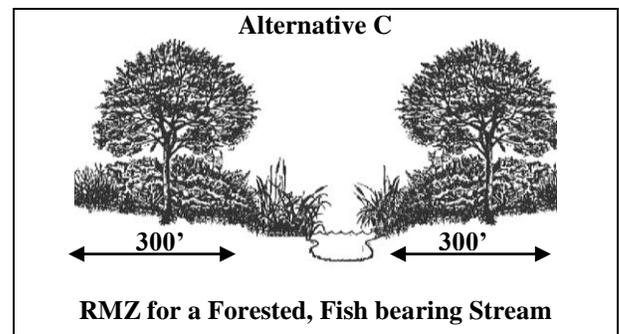
Riparian habitat would be opportunistically treated through other high priority forest and grassland treatments.

**Riparian Management Zones**

The Montana Streamside Management Zone Law would be followed. In addition to adhering to SMZ Law, Riparian Management Zones from the edge of the aquatic habitat would be established as follows:

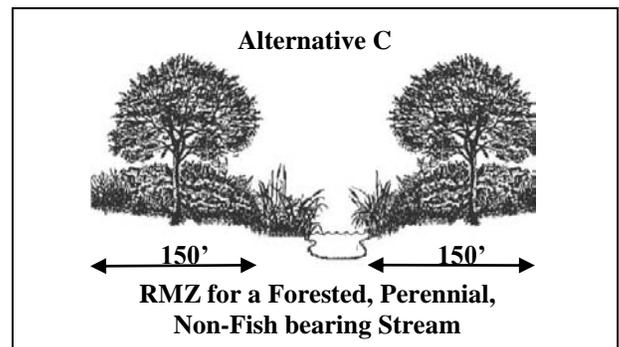
Forested Areas

Streams, lakes, ponds, and reservoirs containing fish: The RMZ would consist of the water body and a zone located on all sides of the water body. This zone would extend from the outer edges of the bankfull channel, full pool, or adjacent wetland a distance equal to the top of the inner gorge, the outer edge of the 100-year floodplain, or 300 feet slope distance, whichever is greatest.



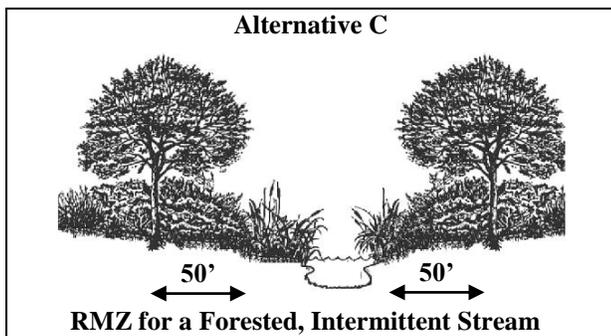
Perennial non-fish bearing streams – The RMZ would consist of the stream and a zone located on both sides of the channel. This zone would extend from the outer edges of the bankfull channel (or adjacent wetland) a distance equal to the top of the inner gorge, the outer edge of the 100 year floodplain, or 150 feet slope distance whichever is greatest.

Non-fish bearing ponds, lakes, reservoirs, or wetlands greater than 1 acre: The RMZ would extend from the outer edge of the full pool or wetland a distance of 150 feet slope distance. This area would also include all moderately and highly unstable areas.



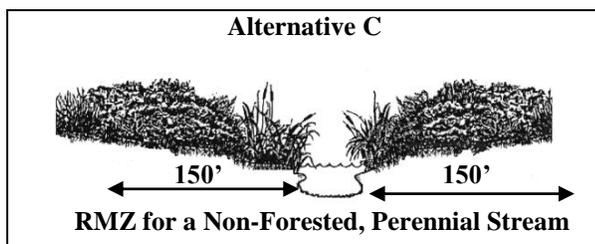
Intermittent streams and wetlands less than 1 acre: The RMZ would consist of the water body and a zone lo-

cated on all sides of the water body. This zone would extend from the outer edges of the bankfull channel or wetland at least 50 feet slope distance.

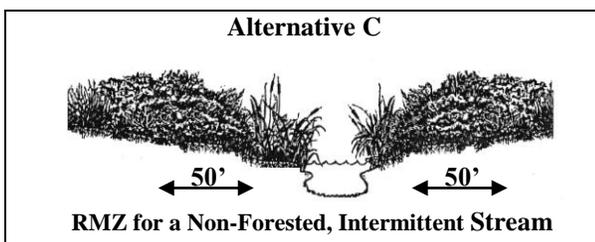


#### Non-forested Areas

Perennial fish-bearing and non fish-bearing streams or wetlands larger than 1 acre: The RMZ would consist of the water body and a zone located on all sides of the water body. This zone would extend from the outer edges of the bankfull channel, full pool, or adjacent wetland a distance that encompasses the active floodplain. RMZs would extend 150 feet above the break in slope leading down from the lowest terrace to the floodplain. The actual RMZ width may be different for each side of the water body depending on the locations of terrace features.



Intermittent streams and wetlands less than 1 acre: The RMZ would consist of the water body and a zone located on all sides of the water body. This zone would extend from the outer edges of the bankfull channel or wetland at least 50 feet slope distance.



The objective for total amount of riparian vegetation habitat proposed for mechanical and/or prescribed burning treatments per decade under Alternative C would be 75 to 200 acres (this includes vegetative treatments and not changes in grazing practices). These acres are displayed by major watershed in **Table 2-23**.

No commercial timber harvest would be allowed in RMZs. All woody material cut for restoration activities would be retained on site. If an adequate amount of down woody material exists, material may be removed for other riparian or stream restoration activities.

Under Alternative C, the structure and composition of aspen stands would be determined by natural processes or treated opportunistically through other projects. Treated aspen stands would be fenced from livestock grazing and, if necessary, wildlife grazing, and browsing. There would be an emphasis on using native, on-site materials for “natural” barriers. All fences (with the exception of native barriers) would be maintained and removed within 10 years or when the aspen is fully re-established or recovered.

#### Livestock Grazing

Livestock grazing would be allowed on about 262,000 acres of public land. Approximately 45,000 acres of public land would be unavailable for grazing permits or leases (**Table 2-23**). The amount of forage available on these lands would be 24,710 AUMs active use and 936 AUMs forage reserve, temporary non-renewable AUMs.

After the current permittee ceases livestock grazing, the McMaster Hills and Spokane Hills individual allotments would be established as forage reserve allotments as in Alternative B.

The existing Indian Creek allotment (2,215 acres and 376 AUMs) as well as any lands acquired from the Iron Mask acquisition would be unavailable for grazing lease or permit.

The Centennial Gulch (Ward Ranch) allotment and Medicine Rock (Northeast Helena) riparian area would be unavailable for prescription livestock grazing.

After the current permittee ceases livestock grazing, the McMaster Hills and Spokane Hills individual allotments would be established as forage reserve allotments (An allotment without a term grazing permit that is grazed on a temporary nonrenewable basis. This type of allotment would be used to provide temporary grazing to rest other areas following wildfire, habitat treatments, or to allow for more rapid attainment of rangeland health). Forage reserve allotments would be managed to meet, or move toward meeting, land health standards. Use would be authorized on a temporary, nonrenewable basis. The amount of use would be determined by the BFO. Applicants would be required to meet qualifications per the grazing regulations, and show the ability and commitment to repair and maintain improvements and infrastructure. The BFO would rank qualified applicants according to the following criteria in priority order:

1. Implementing projects or vegetation management on BLM lands.
2. Facilitating a change in management to improve resource conditions on BLM allotments.

3. Accommodating permittees or lessees displaced by natural causes (i.e. wildland fire, drought, insect infestations, etc.)

The criteria found at 43 CFR §4130.1-2 (USDI-BLM 2006a) when conflicting applications are submitted.

Areas identified for prescribed burning would be rested from livestock grazing up to one year prior to treatment, if necessary, to produce fine fuels to carry the burn. Treatment areas would be rested at a minimum of two full years following treatment to promote recovery of vegetation. Guidelines for residual ground cover would be developed in new Allotment Management Plans. Forage utilization would be monitored.

Currently existing enclosures would be maintained free of livestock grazing. Enclosures would be maintained annually before livestock turnout and would be monitored to compare differences between areas grazed and ungrazed by livestock.

Existing livestock enclosures along streams, wetlands, and riparian areas would be maintained as long as needed to meet management objectives. Maintenance of enclosures would be assigned to grazing permittees or other authorized public land users.

Under Alternative C, no change in livestock conversions from cattle to domestic sheep or goats would be allowed in allotments within occupied wild sheep habitat. New sheep and goat allotments or conversions from cattle to sheep or goats would be permitted a minimum of 9 miles from known bighorn sheep habitat. This distance would be greater if deemed necessary through site specific analysis or a cooperative agreement with other federal or state agencies. Goats and sheep could be used for weed control on winter ranges when wild sheep are absent. To minimize contact with bighorn sheep, domestic sheep, and goats used for weed control would only be allowed to graze for up to two weeks near occupied bighorn sheep habitat and there would be a minimum buffer of 4 miles between domestic and wild sheep. Bedding grounds would be a minimum of 6 miles from known bighorn sheep habitat. The use of domestic sheep and goats would only be allowed from May 15 to July 15 unless coordinated with MFWP. A herder would be required to be on site at all times and be able to communicate with the BLM, the herd owner and MFWP. If bighorn sheep and domestic sheep and goats come into contact, the herder would be required to contact the BLM and MFWP immediately.

**Wildland Fire Management**

BFO administered lands would be broken into ten FMUs. The FMUs would have A, B and C designations applied. Approximately 41,000 acres would be designated in category A; 23,000 acres in category B; and 243,000 acres in category C (Table 2-4 and Map 4). The FMUs follow watershed boundaries with the following two exceptions: the Missouri watershed would be

broken into three FMUs (Missouri, Central Missouri, and NW Missouri) and the Big Hole watershed would be broken into two FMUs (Big Hole and Wise River) due to the urban interface areas surrounding Helena and Wise River.

<b>FMU</b>	<b>Category<sup>1</sup></b>	<b>BLM Acres<sup>2</sup></b>
Big Hole	C	60,000
Blackfoot	A	1,000
Central Missouri	A	37,000
Gallatin	A	2,000
Jefferson	C	82,000
Missouri	C	101,000
NW Missouri	B	14,000
Upper Clark Fork	B	1,000
Wise River	A	1,000
Yellowstone	B	8,000

<sup>1</sup>Category and associated treatments only apply to BLM land within each zone.

<sup>2</sup>Acres are approximate and rounded to nearest 1000.

Fire management activities would correspond to the FMU designations. Vegetation treatments, including management-ignited prescribed fire and mechanical treatments would not be conducted between May 1<sup>st</sup> and August 30<sup>th</sup> to protect nesting migratory birds unless breeding bird surveys document low potential impact to breeding birds. In grassland/shrubland habitats, BLM would plan for prescribed burns that do not consume aboveground vegetation on more than 60 percent (on average) of each unit by surface area.

Use of chemical retardant foam, or additives over live streams would only be allowed if there were a risk to human life and safety. Fish screens (1/8 inch diameter holes) on hoses would be required when removing water from fish bearing streams during fire management activities. Maps of fish bearing streams would be developed in the BFO Fire Management Plan for use in initial attack of wildland fires.

**Noxious Weed Management**

Under Alternative C, less aggressive weed management would be needed in response to the decreased ground disturbance in the Decision Area. Suppression and control of weed infestations in special designation areas would be a moderate priority.

The objective under Alternative C would be to treat an estimated 16,000 to 38,000 acres of weeds per decade, not including biocontrol measures such as insect releases, grazing, or use of pathogens.

Aerial spraying of herbicides or pesticides would not occur.

To prevent special status plants from being sprayed with herbicides, BLM personnel would be provided with maps of special status plant populations associated with weed treatment areas.

Outreach/education on noxious weeds would be provided to the public at campgrounds and trailheads.

## **Alternative D**

### ***Grasslands and Shrublands***

Priority areas for treatment would include big game winter range, Wildland Urban Interface and current and historic sagebrush habitat, forest meadows and parks, and bighorn sheep habitat.

Objectives for treating grasslands and shrublands under Alternative D are as follows. The total amount of grassland proposed for conifer reduction per decade would be 5,500 to 19,050 acres. The total amount of shrubland proposed for conifer reduction per decade would be 1,850 to 6,800 acres. These acres are displayed by major watershed in **Table 2-23**.

As in Alternative B, native or low impact, non-invasive seed mixtures would be used when restoring vegetation on disturbed ground.

### ***Forests and Woodlands***

#### **Dry Forest Types**

The objective for total amount of dry forest treatments per decade under Alternative D would be 7,300 to 18,200 acres. These acres are displayed by major watershed in **Table 2-23**.

As with Alternatives B and C, the emphasis for restoration would focus on dry forests with medium to large sized trees, and with high tree densities. In dense, old, and mature Douglas-fir and ponderosa pine forests, stand density would be moved toward stands that consist of fewer trees per acre with a larger average diameter. A range of 5,600 to 12,200 acres per decade of dry forest habitat type with medium to large sized trees and high tree densities would be treated under Alternative D (subset of objective for total acreage treatments). Dry forest stands that are in an ecologically “healthy” condition which can sustain the growth of the larger trees while successfully reproducing and maintaining the juvenile growth of the younger trees would also be maintained under Alternative D. Maintenance treatments in forests would promote the large, overstory trees and natural regeneration that would provide diverse age and size classes. Maintenance of existing dry forest habitat types would be considered “moderate priority” with 1,000 to 3,500 acres per decade proposed for treatment (subset of objective for total acreage treatments).

Approximately 500 to 1,500 acres per decade of small diameter thinning of seedling/sapling and pole size dry forest would also occur with Alternative D (subset of objective for total acreage treatments). A small amount of pure limber pine habitat would also be treated under Alternative D, approximately 200 to 1,000 acres per decade. The majority of ponderosa pine treatments would occur in the Upper Missouri Watershed.

#### **Cool and Moist Forest Types**

Cool and moist forest types would be managed the same as in Alternative B. Restoration of these habitat types may also be done to meet desired future conditions for cool and moist forest ecosystems and wildlife habitat including the creation of forage for lynx in lodgepole pine forests.

Treatment of cool and moist forest types would be considered a moderate priority under Alternative D. The priority watershed for implementation of treatments in cool and moist forest is the Big Hole.

The objective for total amount of cool and moist forest treatments per decade under Alternative D would be 1,000 to 5,050 acres. These acres are displayed by major watershed in **Table 2-23**. Approximately 800 to 4,450 acres per decade of stands with medium to large sized trees and with high tree densities in cool and moist forest types would be treated in this alternative. Small diameter thinning would also occur on approximately 200 to 600 acres per decade in seedling/sapling and pole size cool and moist Douglas-fir and lodgepole pine forests. These acreages are subsets of the objective for total acreage treatments.

Treatments in cool and moist forest types would include the creation of openings to allow for regeneration of lodgepole pine and Douglas-fir. Areas would also be pre-commercial or commercially thinned. Commercial products such as timber and biomass would be produced from these treatments.

#### **Old Forest Structure**

Old forest structure would be managed the same as in Alternative B.

#### **Forest and Woodland Products**

Based on the expected amount of treatment acres (including the WUI projects), the objective for PSQ would be 36,000 to 107,000 CCF or 10 to 30 MMBF per decade under Alternative D.

Some new permanent roads may be built for long-term management of areas where multiple entries would be necessary to meet objectives. New road construction, however, would be kept to a minimum. Some new permanent roads could be “open” to the public if travel plan objectives for the area are met. Temporary road construction would be kept to a minimum.

The small sale program would provide the estimated quantities of permits and products shown in **Table 2-23**. Access for small sales would be developed as needed. Alternative D would also promote and encourage biomass utilization and encourage and promote the use of woody material in local businesses such as landscaping and furniture building.

Personal use firewood permits valid for wood collection from both BLM and Forest Service lands in Western Montana would continue to be offered by BLM in cooperation with the Forest Service.

Standing dead and down wood would be allowed to be taken as firewood. BLM could designate specific areas for firewood cutting of live trees to meet other resource objectives. No dead trees greater than 24 inches DBH would be allowed to be cut for firewood.

Firewood would not be allowed to be cut within 100 feet of live (yearlong flow) streams or within 50 feet of intermittent streams or within the SMZ, whichever width is greatest.

**Timber Salvage**

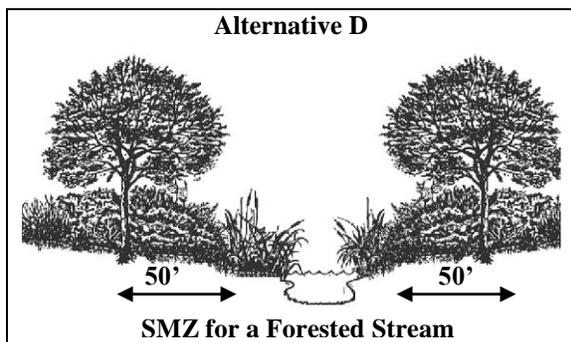
Where contiguous acres of dead and dying forest exceed 1,000 acres, 30 percent of the area would be maintained as retention. Harvest treatments within the remaining project area may include: 1) creation of forest openings, 2) selective thinning between openings, and 3) no retention requirements within harvest treatment area.

Bark beetle suppression treatments, which may target large tree removal, would be permitted to contain out-breaks and to reduce the risk to other forest stands in the vicinity.

**Riparian**

The emphasis in Alternative D would be to actively restore riparian habitats. When possible, the restoration and enhancement of aspen, cottonwood, willows, or other riparian dominant species along with channel improvement would also be incorporated into other projects in the vicinity of the riparian habitats.

Under Alternative D, riparian protection would be provided by Streamside Management Zones.



The objective for total amount of riparian vegetation habitat proposed for mechanical and/or prescribed burning treatments per decade under Alternative D would be 300 to 1,700 acres (this includes vegetative treatments and not changes in grazing practices). These acres are displayed by major watershed in **Table 2-23**.

Forest and fuels management activities including commercial timber harvest would be allowed in SMZs to meet riparian restoration or maintenance objectives and only if adequate woody material remains in the riparian area.

Where the primary project objective is aspen restoration, treated aspen stands would be fenced from livestock and wildlife grazing and browsing. Fencing could consist of native, on-site materials to create barriers to livestock and wildlife. All fences (with the exception of barriers created from native, on-site material) would be maintained and removed within 10 years or when the aspen is fully re-established or recovered.

**Livestock Grazing**

Livestock grazing would be allowed on about 278,000 acres of public land. Under Alternative D, approximately 29,000 acres of public land would be unavailable for grazing permits or leases (**Table 2-23**). The amount of forage available on these lands would be 25,677 AUMs active use.

After the current permittee ceases livestock grazing, the McMaster Hills and Spokane Hills individual allotments would be available to qualified applicants per the grazing regulations. These allotments would be administered like all other existing allotments.

The existing Indian Creek allotment would be expanded up to an additional 5,566 acres and 700 AUMS by the Iron Mask Acquisition. The Indian Creek allotment would be available to qualified applicants per the grazing regulations. This allotment would be administered like all other existing allotments. The Centennial Gulch (Ward Ranch) allotment would be available to qualified applicants per the grazing regulations.

Allotments where grazing preference is relinquished would remain available for livestock grazing leases or permits.

Areas identified for prescribed burning would be rested from livestock grazing prior to treatment, if necessary, to produce fine fuels to carry the burn. Treatment areas would be rested at a minimum of two full years following treatment to promote recovery of vegetation.

Grazing practices would be adjusted to protect or enhance fish and wildlife habitat when livestock grazing is a contributing factor to not meeting Land Health Standards.

Currently existing exclosures would be maintained free from livestock grazing as long as needed to meet objectives. Exclosures would be checked and maintained

every five years. Maintenance would be accomplished as per the terms and conditions of existing cooperative agreements.

Existing livestock exclosures along streams, wetlands, and riparian areas would be maintained as long as needed to meet management objectives. Exclosures would be checked and maintained per the terms and conditions of existing cooperative agreements or every five years.

As with Alternative A, the existing Instruction Memorandum 98-140 (USDI-BLM 1998b) would be followed to protect wild sheep. As with Alternative B, goats and sheep could be used for weed control on winter ranges when wild sheep are absent. To minimize contact with bighorn sheep, domestic sheep, and goats used for weed control would only be allowed to graze for up to 1 month near occupied bighorn sheep habitat and there would be a minimum buffer of 2 miles between domestic and wild sheep. Bedding grounds would be a minimum of 4 miles from known bighorn sheep habitat. The use of domestic sheep and goats would only be allowed from May 1 to July 31 unless coordinated with MFWP. A herder would be required to be on site at all times and be able to communicate with the BLM, the herd owner and MFWP. If bighorn sheep and domestic sheep and goats come into contact, the herder would be required to contact the BLM and MFWP immediately.

**Wildland Fire Management**

BFO administered lands would be broken into ten FMUs. The FMUs would have B, C, and D designations applied. Approximately 42,000 acres would be designated in category B; 82,000 acres in category C; and 183,000 acres in category D (Table 2-5 and Map 5).

<b>FMU</b>	<b>Category<sup>1</sup></b>	<b>BLM Acres<sup>2</sup></b>
Big Hole	C	60,000
Blackfoot	B	1,000
Central Missouri	B	37,000
Gallatin	B	2,000
Jefferson	D	82,000
Missouri	D	101,000
NW Missouri	C	14,000
Upper Clark Fork	B	1,000
Wise River	B	1,000
Yellowstone	C	8,000

<sup>1</sup>Category and associated treatments only apply to BLM land within each zone.

<sup>2</sup>Acres are approximate and rounded to nearest 1000.

The FMUs follow watershed boundaries with two exceptions: the Missouri watershed is broken into three FMUs (Missouri, Central Missouri, and NW Missouri) and the Big Hole watershed would be broken into two FMUs (Big Hole and Wise River) due to the urban interface areas surrounding Helena and Wise River.

Fire management activities would correspond to the FMU designations. There would be no restriction on timing of vegetation treatments; and planned management-ignited prescribed fire units size would be determined by an interdisciplinary team through site-specific NEPA analysis. In grassland/ shrubland habitats, BLM would plan for prescribed burns that do not consume above-ground vegetation on more than 90 percent (on average) of each unit by surface area.

Delivery of chemical retardant, foam or additives to live streams would be avoided.

**Noxious Weed Management**

Under Alternative D, more aggressive weed management would be needed in response to the increased use and ground disturbance in the Decision Area. Prevention and control of weed infestations in special designation areas, Weed Management Areas (areas with agreements between landowners to cooperatively manage weeds), and areas currently under a multi-year treatment plan would be considered a moderate priority.

The objective under Alternative D would be to treat an estimated 25,000 to 61,000 acres of weeds per decade, not including biocontrol measures such as insect releases, grazing, or use of pathogens.

Aerial spraying of herbicides or pesticides would not occur when eye-level winds are greater than 6 miles per hour or within 100 feet of streams or wetlands. Aerial spraying would be conducted in a way that minimizes the effects on native forbs, grasses, and shrubs.

To prevent special status plants from being sprayed with herbicides, BLM, county, and contractor personnel participating in weed treatment activities would be provided with training to identify special status plants and maps of special status plant populations associated with weed treatment areas.

Outreach/education on noxious weeds would be provided to the public at campgrounds, trailheads, to specific user groups, at schools, fairs, and community events.

**WILDLIFE, FISH, WILDLIFE HABITAT, SPECIAL STATUS AND PRIORITY PLANT AND ANIMAL SPECIES**

**Goal 1** – Manage to provide a variety of well-distributed plant communities to support a diversity of habitats.

**Goal 2** – Conserve, enhance, restore, or minimize impacts to areas of important wildlife habitat such as rare or limited seasonal habitats, corridors, blocks of intact functional habitat across the landscape, areas of low road-density, foraging areas, and riparian areas.

**Goal 3** – Conserve, enhance, or restore special habitat features or minimize impacts to special habitat features including, but not limited to caves, cliffs, riparian areas, wetlands, snags, and down woody material.

**Goal 4** – Management prescriptions or authorizations conserve, enhance, restore, minimize impacts, or contribute to the recovery of threatened, endangered, or candidate plant or animal species.

**Goal 5** – Management prescriptions or authorizations conserve or enhance habitat or minimize negative effects to habitat of BLM sensitive plant and animal species to prevent the federal listing of these species.

**Goal 6** – Special-status species and habitats are conserved through collaboration and cooperation.

**Goal 7** – Protect, maintain, restore, and rehabilitate sagebrush habitat in occupied or historic sage grouse habitat (as mapped by MFWP).

## Management Common to All Alternatives

All alternatives would emphasize actions that would promote conservation of special status wildlife species and the ecosystems on which they depend. All alternatives would emphasize maintaining and supporting healthy, productive, and diverse populations and communities of native plants and animals (including big game species such as deer, elk, and bighorn sheep) appropriate to soil, climate, and landform.

One key objective under all alternatives would be for BLM to conserve federally listed and recently de-listed species. BLM would implement recovery activities for these species by complying with and adopting current and future recovery plans (such as Grizzly Bear Recovery Plan (USFWS 1993), Ute’s Ladies’ Tresses Recovery Plan, Grizzly Bear Management Plan for Southwest Montana (MFWP 2002a), Interim Bull Trout Habitat Conservation Plan Strategy, Montana Gray Wolf Conservation and Management Plan (2004), Northern Rocky Mountain Wolf Recovery Plan (USFWS 1987), Lynx Conservation Assessment and Strategy (see **Appendix G – Wildlife**), and the Montana Bald Eagle Management Plan (MBEWG 1994).

Another objective under all alternatives would be for BLM to conserve sensitive species. BLM would manage habitat for sensitive terrestrial and aquatic species in a manner consistent with current and future restoration, conservation and recovery plans, and conservation agreements (westslope and Yellowstone cutthroat trout, Arctic grayling and prairie dog). Management activities would be designed and implemented consistent with

adopted conservation strategies, including Montana’s Comprehensive Fish and Wildlife Conservation Strategy (MFWP 2005b), and current, accepted science for special status and priority species.

Fish and wildlife would continue to be evaluated on a case-by-case basis as part of project level planning. Such evaluation would consider the significance of the proposed project and the effects to fish and wildlife habitat. Measures to reduce impacts would be attached as appropriate to assure compatibility of projects with management objectives for fish and wildlife habitat.

Habitat improvement projects would be implemented where necessary to restore wildlife habitat and/or to improve unsatisfactory or declining wildlife habitat.

Important blocks of hiding, security, and thermal cover for big game would be considered during project planning.

For all alternatives, all new fences would be built to standard BLM wildlife specifications (USDI – BLM 1989b, Bureau of Land Management Fencing Handbook, H-1741-1) to allow wildlife passage with the exception of fences built specifically to keep native ungulates out of an area unless site specific analysis indicates other specifications are necessary.

Consistent with the requirements of the Endangered Species Act (1973) and BLM policy, all alternatives would ensure that actions are consistent with the conservation needs of special status species. The BLM would seek opportunities to conserve and improve special status species habitats and habitats for native plants and wildlife in project level planning and in other BLM authorized, funded, or approved activities (BLM Manual 6840 – Special Status Species Management, Endangered Species Act).

BLM would determine the distribution, abundance, and management needs of special-status plant and animal species and species of local interest occurring on BLM administered lands and evaluate needed management for the conservation of these species.

As per Executive Order 13443, the BLM would facilitate the expansion of hunting opportunities and management of game species and their habitats.

BLM would cooperate and collaborate with federal, tribal, and state wildlife management agencies as well as private landowners to improve habitat for wildlife (including game species as per Executive Order 13443) and special status plants.

Conservation actions, inventories, and monitoring for special status wildlife and aquatic species would be prioritized based on habitats at risk and rarity.

Timing restrictions may be used in special status species habitat. Human activities that disrupt special status species habitats during their seasons of use, particularly

during the breeding and winter seasons would be avoided or minimized.

Sage grouse management activities would be designed and implemented to be consistent with adopted conservation strategies such as The National and Montana Management Plan and Conservation Strategies for Sage Grouse in Montana (MSGWG 2005) and current, accepted science.

Vegetation altering activities could occur in sage grouse habitat where it does not result in long-term loss of habitats or contribute to the need to list. Sufficient sagebrush densities and cover would be retained in sage grouse habitat.

BLM would coordinate the fisheries program with other programs to improve aquatic habitat.

Populations of special-status plants would be monitored to assess their condition and trend.

BLM would maintain and improve critical or essential habitat to prevent deterioration and provide recovery for federally listed plant species.

Field inspections would be conducted to identify special-status plant species prior to authorized surface disturbing activities. Waivers for on-the-ground inventory may be granted in areas determined to have low potential based on previous research.

### **Alternative A – No Action**

MFWP and the USFWS would be consulted prior to implementing projects that may affect habitat for threatened and endangered species.

Management actions would be consistent with the guidelines that were developed through the Interagency Wildlife Monitoring Program for mineral exploration and development.

All management activities, including timber harvest and prescribed burning, in the Elkhorn Wildlife Management Area would be designed to maintain or improve wildlife habitat. New road construction would be kept to a minimum and all new roads would be closed to the public.

Guidelines from the Montana Cooperative Elk-Logging Study (Lyons *et al.* 1985) would continue to be used in formulation of forest activity plans affecting occupied grizzly bear and elk habitat including: managing public vehicle access to maintain effectiveness of security cover and key seasonal habitat for deer and elk; maintaining adequate untreated peripheral zones around important moist sites; maintaining adequate thermal and security cover in deer and elk habitat, particularly within timber stands adjacent to primary winter foraging areas; ensuring slash depth in clear cuts does not exceed 1.5 feet; and generally discouraging thinning immediately adjacent to clear cuts.

The MFWP would be consulted in advance of timber harvest activities involving: construction of new access roads into unroaded elk summer and fall range; critical, crucial, or essential wildlife habitat; and sales of over 250 MBF.

Wildlife reintroduction proposals would be evaluated and recommendations would be made to the MFWP.

Animal control projects would be coordinated with the USFWS and Wildlife Services, and in the case of aerial gunning with the Montana Department of Livestock.

Seasonal timing restrictions on projects that cause disturbance would continue to be applied where they are needed to minimize the impacts of human activities on important seasonal wildlife habitat. The major types of seasonal wildlife habitat and the time periods which restrictions may be needed are: elk, mule deer, moose and bighorn sheep winter and spring range (12/1 to 4/30), elk, mule deer and bighorn sheep calving range/habitat (5/1 to 6/30), mountain goat winter range (12/1-4/30) and mountain goat spring range (5/1-6/30), grizzly bear spring and summer range (4/1 to 9/1), and grizzly bear denning habitat (10/1 to 4/30).

### **Management Common to Action Alternatives (B, C, and D)**

All federally listed and BLM sensitive species and their habitats would be considered priority species and habitats. Additional priority wildlife species would be based on public interest, density, diversity or population size including big game (such as elk, bighorn sheep, deer, and antelope) and migratory birds listed by USFWS and Level 1 and Level 2 species listed under the Montana Bird Conservation Plan (Partners in Flight 2000). Tier I and Tier II habitat and species from Montana's Comprehensive Fish and Wildlife Conservation Strategy (MFWP 2005b) would also be considered priority species and habitats. Priority habitats would include habitat for all special status species as well as riparian areas, dry savannah forest, special habitats including caves, cliffs, and snags and down woody material, sagebrush, bitterbrush communities and mountain mahogany communities.

Management techniques, including but not limited to prescribed and managed wildland fire, prescriptive livestock grazing, planting, exclusion to intense disturbance, timber harvest and other mechanical methods would be used to restore, maintain or improve the desired ecological conditions of vegetation communities for the purpose of improving forage, nesting, breeding, and security habitat, hiding cover and travel corridors for a wide diversity of terrestrial and aquatic species.

The BLM would emphasize providing habitat of sufficient quantity and quality, including connectivity and wildlife movement corridors, habitat complexity, forest openings, edges, and ecotones, to enhance biological diversity and provide quality, sustainable habitat for

native wildlife species. BLM would maintain suitable habitat conditions and minimize fragmentation in linkage corridors among habitats and priority species. BLM land would be managed to consider the relationship between large special status species populations and smaller isolated populations whenever possible. The intent would be to maintain the function and diversity of all habitats in large areas (patches) across the landscape and minimize long-term human disturbance to wildlife to provide habitat for wildlife movement, dispersal, and home ranges. In the context of wildlife habitat fragmentation, the size of the “patch” would be related to the size of the BLM parcel(s) and adjacent federal or state lands.

BLM would coordinate with MFWP to determine whether habitat and other conditions exist that would allow successful reintroduction of locally or regionally absent species, such as westslope cutthroat trout, sage grouse, beaver, bighorn sheep, mountain goat, and prairie dogs.

To the extent possible, BLM would: maintain large patches of high quality sagebrush in occupied or historic sage grouse habitat (as mapped by MFWP); maintain connections between sagebrush habitats and enlarge the size of sagebrush patches in occupied or historic sage grouse habitat.

During project level planning, key habitat components that would be emphasized would include: winter range, seasonal migration corridors, breeding sites, roosting sites, and foraging habitats adjacent to raptor nest sites.

Disturbance of crucial wildlife breeding areas such as known den sites or big game breeding or winter range would be minimized. Actions that cause disturbance would be minimized to reduce negative effects to special status and priority species during seasonally sensitive periods such as; the breeding, nesting, winter, and roosting seasons.

Seasonal timing restrictions on projects that cause disturbance would be applied where needed to minimize the impacts of human activities on important seasonal wildlife habitat. The major types of seasonal wildlife habitat and the time periods which restrictions may be needed are: big game winter and spring range (12/1 to 5/30), big game calving range/habitat (5/1 to 6/30), mountain goat nursery areas (5/1 to 7/15), mountain goat breeding areas (11/1 to 12/31), mountain goat winter range (10/15 to 5/15), grizzly bear spring and summer range (4/1 to 9/1), and grizzly bear denning habitat (10/1 to 4/30). These dates would be revised when new data becomes available.

One objective under all action alternatives would be to maintain functional blocks of security habitat for big game species across the landscape. Where minimum-size blocks of security habitat (250 acres), as defined by Hillis et al. (1991), are located, they would be retained in a suitable condition during project planning and imple-

mentation. Protection of larger blocks of security habitat would also be addressed during project or watershed level planning. Where security habitat is limited or fragmented across the landscape, the BLM would emphasize improving habitat through vegetation treatments and road closures (including seasonal closures) to increase security habitat for big game species.

BLM would close rock climbing on spires with active raptor nests and educate the public about the importance of avoiding such locations.

Within appropriate habitats, snags and down woody material would be managed to be well-distributed across the landscape in sufficient quantity and quality to support species dependent upon these habitats.

At the project level, dead and down woody material would be retained in amounts that are within the range of natural variability for the plant community, to the extent compatible with reforestation objectives, fire hazard reduction standards, and public safety.

In grasslands and shrublands undergoing vegetation treatments such as the removal of conifer encroachment through mechanical thinning or prescribed burning, all trees and snags with characteristics of old forest structure would be left standing to the extent practicable.

All action alternatives would emphasize protecting and restoring special habitat components or features that contribute to the productivity of bat species. These features include, but are not limited to, caves, cliffs, riparian areas and wetlands and snags and down wood.

Caves and abandoned mines would be surveyed and assessed for bat use of features. BLM would determine the need for closures or seasonal closures for activities affecting caves and abandoned mines. Hibernacula closure dates would be approximately October 15 to May 1 and maternity closure dates would be approximately April 15 to September 30.

Bat gates or other suitable measures would be used to protect bat habitat when bat use of caves or abandoned mines is determined. Public health and safety would take precedence over protection of bat habitat if hazardous mine openings cannot be remediated with installation of bat gates. Efforts would be made to safely remove resident bats prior to closure.

BLM would comply with the standards and guidelines in the Canada Lynx Conservation Assessment and Strategy (**Appendix G – Wildlife**).

BLM would develop and implement human food storage regulations and guidelines in grizzly bear distribution zones in coordination with MFWP and other agencies.

All action alternatives would emphasize maintaining diverse, healthy, productive, well-distributed aquatic habitats and communities to increase populations of native fish and other aquatic species.

The BLM would emphasize maintaining and/or restoring the structure, composition, and function of aquatic ecosystems to support a diversity of aquatic plant and animal species and emphasize hydrologic connectivity within watersheds to maintain and/or restore habitat and connectivity needs for populations of aquatic dependent species.

The BLM would restore and/or maintain riparian structure, composition, and processes, including physical integrity of riparian ecosystems, amount and distribution of woody debris to sustain physical and biological complexity, adequate summer and winter thermal regulation, water quality and hydrologic processes, distribution and diversity of riparian vegetative communities and source habitats for riparian dependent species. BLM would opportunistically enhance or restore habitat for westslope and Yellowstone cutthroat trout and Arctic grayling.

The distribution and abundance of native fishes and other aquatic species would be increased through the maintenance or restoration of habitat.

In select areas identified for native fish restoration, BLM would collaborate with MFWP to remove non-native fish species that out-compete or hybridize with native cutthroat trout.

Transportation system effects on fisheries resources would be reduced. To the extent possible, roads would be located, designed and maintained to reduce sedimentation, identify and remove unnatural barriers, eliminate fish passage barriers (when desired), and restore or maintain riparian vegetation.

Watershed restoration projects would be designed and implemented in a manner that promotes the long-term ecological integrity of ecosystems, conserves the genetic integrity of native species, and contributes to meeting riparian standards.

### **Alternative B – Preferred Alternative**

Alternative B would also emphasize protection and restoration of habitats for native wildlife, plants, and special status species. There would be a focus on biological diversity by restoring vegetation cover types and structural stages that have declined substantially including dry, open forest habitats with low tree densities, meadow habitats, shrub and hardwood dominated riparian systems, as well as open grasslands and shrublands with low tree densities. Using vegetative treatments described in the previous sections of this chapter, this alternative would restore vegetation to become more consistent with natural disturbance regimes and with the landform, climate, and biological and physical characteristics of the ecosystem. Management would emphasize moderate to large vegetation patch sizes and distribution to be more consistent with natural disturbance regimes and ecosystem characteristics.

At the Field Office scale, the intent would be to maintain, protect, and restore habitat for priority wildlife species including but not limited to: deer, elk, pronghorn, bighorn sheep, and sage grouse.

Alternative B would maintain, improve, and restore habitats to support healthy, productive, and diverse wildlife populations and communities of native plants and animals. Where consistent with habitat capabilities and national conservation direction, Alternative B would contribute to meeting state wildlife species management objectives for deer, elk, pronghorn, bighorn sheep, and special status species.

One objective under Alternative B would be to minimize disturbance to big game and grizzly bears. There would be no net increase in permanent roads built in areas where open road densities are 1 mi/mi<sup>2</sup> or less in big game winter and calving ranges, and within the current distribution of grizzly bear unless not possible due to right-of-ways, leases, or permits. All practicable measures would be taken to assure that important habitats with low road densities remain in that condition. This alternative would also manage to reduce open road densities in big game winter and calving ranges, and within the current distribution of grizzly bear where they currently exceed 1 mi/mi<sup>2</sup>.

At the Field Office scale, BLM would enhance and improve big game winter range by protecting and restoring mountain mahogany stands where conifers have become established. Detrimental effects on mountain mahogany stands would be avoided with projects in big game winter range whenever possible. When detrimental effects are unavoidable, loss of mountain mahogany would be minimized. BLM would also proactively restore the distribution and vigor of bitterbrush stands through vegetative treatments designed to reduce competing plants, create a variety of age classes, and create conditions conducive to bitterbrush natural regeneration.

Alternative B would include an objective to manage for adequate numbers, species and sizes of snags and levels of downed wood to contribute to the needs of wildlife, invertebrates, fungi, bryophytes, saprophytes, lichens, other organisms, long-term soil productivity, nutrient cycling, carbon cycles and other ecosystem processes. To determine the "range of natural conditions" for snag densities, BLM would follow the "Northern Region Snag Management Protocol" (USDA-FS 2000a) until more current or site specific information becomes available. Prescribed fire, mechanical treatments, inoculation, or other appropriate methods would be used to create snags and down woody material, where deficient, in appropriate vegetation types across the landscape.

Management for wildlife values associated with large amounts of down wood and snags would be emphasized less in WUI areas to allow for fuels reduction projects that would reduce the potential for extreme wildland fire. Fences identified as barriers to wildlife movement

would be considered for removal or reconstruction to follow BLM fence specifications for wildlife.

Noise disturbance and management activities would be avoided or minimized within 0.5 miles of raptor nests during the nesting and brood rearing period.

Unoccupied raptor nests (on cliffs, rocky outcrops or in trees) would be protected from removal or destruction for 5 years, or the period a known preferred prey species fluctuates from population highs to lows. Nests would not have to be retained if physically damaged past the point of repair by raptors. In forested habitat types, a 0.25 mile buffer of suitable habitat around unoccupied nests would be maintained for 5 years.

Bald eagle nesting and roosting habitats would be actively protected from loss due to fire, insect, or disease by reducing vegetation competition and encroachment in these habitats.

Clearing of vegetation, except noxious weeds, would not be allowed within 250 feet of the entrance of caves and abandoned mines with populations of bats except when needed for public safety. Vegetation could be removed if necessary when installing bat gates, or when it becomes an obstruction to bat movement.

For habitat enhancement, fire rehabilitation and other restoration projects, a variety of techniques would be considered to protect plantings and seedlings from wildlife and domestic grazing including rest, fencing, netting, and wildlife repellants.

Alternative B would manage for diverse and well-distributed aquatic habitats to increase and maintain habitat for native and locally important fish.

Genetically pure and slightly hybridized (less than 20 percent hybridization) westslope cutthroat trout populations would be managed by maintaining or restoring high-quality habitats and by expanding populations. Under Alternative B, the BLM would work with MFWP to remove brook trout and other non-native aquatic species that out-compete or breed with westslope cutthroat trout through the use of electroshocking or other physical or chemical means.

To prevent spread of non-native, invasive aquatic species, BLM would post educational signage at all BLM boat ramps on waterborne invasive species.

### Alternative C

Alternative C would actively restore fewer acres of habitat through vegetative treatments for native wildlife and special status species than Alternatives B or D. Management would emphasize protecting small to large vegetation patch sizes.

Habitat for locally important wildlife species such as deer, elk, pronghorn, bighorn sheep, and sage grouse would be maintained or protected. Fewer acres of habitat for these species would be proactively restored with

Alternative C than the other action alternatives. Alternative C would emphasize protecting habitats to support healthy productive and diverse wildlife populations, and, where consistent with habitat capabilities and national conservation direction, contribute to meeting state wildlife species management objectives for deer, elk, pronghorn and bighorn sheep and other priority species.

Alternative C would restore fewer vegetation communities to become more consistent with natural disturbance regimes and with the landform, climate, and biological and physical characteristics of the ecosystem.

Like Alternative B, Alternative C would include the objective to minimize disturbance to big game and grizzly bears. There would be no net increase in permanent roads built in areas where open road densities are 1.5 mi/mi<sup>2</sup> or less in big game winter and calving ranges and within the current distribution of grizzly bear unless not possible due to rights-of-way, leases or permits. All practicable measures would be taken to assure that important habitats with low road densities remain in that condition. This alternative would also manage to reduce open road densities in big game winter and calving ranges and within the current distribution of grizzly bear where they currently exceed 0.5 mi/mi<sup>2</sup>.

Natural processes and continued fire suppression would determine the structure and composition of mountain mahogany where conifers have become established. Mountain mahogany stands would be restored or enhanced opportunistically through other higher priority projects. Bitterbrush would be protected or restored opportunistically through other projects.

Like Alternative B, Alternative C would include the objective of managing for adequate numbers, species, and sizes of snags and levels of down wood. To determine the "range of natural conditions" for snag densities, BLM would follow the "Northern Region Snag Management Protocol", January 2000, USDA Forest Service Northern Region, until more current or site specific information becomes available. Snags and down woody material would not be proactively created where deficient on the landscape but would be created opportunistically through other project work such as fuels reduction or ecosystem restoration. The focus would be snag and down wood protection instead of actively creating these features.

Fences identified as barriers to wildlife movement would be removed or reconstructed to follow BLM fence specifications for wildlife. Noise disturbance and management activities would be avoided or minimized within 1 mile of raptor nests during the nesting and brood rearing period.

Unoccupied raptor nests (on cliffs, rocky outcrops or in trees) would be protected from removal or destruction for 7 years, or the period a known preferred prey species fluctuates from population highs to lows. Nests would not have to be retained if physically damaged past the

point of repair by raptors. In forested habitat types, a 0.5 mile buffer of suitable habitat would be maintained around unoccupied nests for 7 years.

As with Alternative B, bald eagle nesting and roosting habitats would be actively protected from loss due to fire, insect or disease by reducing vegetation competition and encroachment in these habitats. As with Alternative B, clearing of vegetation, except noxious weeds, would not be allowed within 250 feet of the entrance of caves and abandoned mines with populations of bats except when needed for public safety. Vegetation could be removed when installing bat gates or when it becomes an obstruction to bat movement.

For habitat enhancement, fire rehabilitation and other restoration projects, plantings, and seedlings would be protected from the effects of wildlife and domestic grazing using methods such as rest, fencing, netting, and wildlife repellants.

All westslope cutthroat trout populations, regardless of hybridization, would be protected by maintaining high-quality habitats and by expanding populations.

BLM would work with MFWP to remove brook trout and other non-native aquatic species that out-compete or breed with westslope cutthroat trout through the use of electroshocking or other physical or chemical means.

To prevent spread of non-native, invasive aquatic species, BLM would post educational signage at all boat ramps on waterborne invasive species

## Alternative D

Alternative D would protect and restore habitat for native wildlife and special status species. Alternative D would restore more vegetative acres than Alternatives A, B, or C. Management would emphasize vegetation patch size and distribution to be more consistent with natural disturbance regimes and ecosystem characteristics.

Alternative D would have a focus on biological diversity by restoring vegetation cover types and structural stages that have declined substantially from the historical to the current time period. Vegetation would be restored to become more consistent with natural disturbance regimes and with the landform, climate, and biological and physical characteristics of the ecosystem. Habitats would be maintained or improved to support healthy, productive, and diverse populations and communities of native plants and animals (including species of local importance). Where consistent with habitat capabilities and national conservation direction, Alternative D would contribute to meeting state wildlife species management objectives for deer, elk, pronghorn, bighorn sheep, and other priority species.

Habitat for locally important wildlife species such as deer, elk, pronghorn, bighorn sheep, and sage grouse would be maintained, protected, and restored.

As with Alternative B, Alternative D would include the objective of minimizing disturbance to grizzly bears by allowing no net increase in permanent open roads in areas where open road densities are 1 mi/mi<sup>2</sup> or less within the current distribution of grizzly bear unless not possible due to rights-of-way, leases or permits. All practicable measures would be taken to assure that important habitats with low road densities remain in that condition. This alternative would also manage to reduce open road densities within the distribution of grizzly bear that currently exceed 1 mi/mi<sup>2</sup>.

Alternative D would also include the objective to minimize disturbance to big game. No net increase in permanent open roads would be allowed in areas where open road densities are 0.5 mi/mi<sup>2</sup> or less in big game winter and calving ranges unless not possible due to rights-of-way, leases or permits. All practicable measures would be taken to assure that important habitats with low road densities remain in that condition. Open road densities would be reduced in big game winter and calving ranges where they currently exceed 1.5 mi/mi<sup>2</sup>. BLM would enhance and improve big game winter range by protecting and restoring mountain mahogany stands where conifers have become established. BLM would proactively restore the distribution and vigor of bitterbrush stands through vegetative treatments designed to reduce competing plants, to create a variety of age classes, and to create conditions conducive to bitterbrush natural regeneration.

In concert with the timber management program, a snag management program would be implemented to enhance habitat for cavity nesting birds.

Fences identified as barriers to wildlife movement would be considered for removal or reconstruction on a case by case basis to follow BLM fence specifications for wildlife. Noise disturbance and management activities would be avoided or minimized within 0.25 mile of raptor nests during the nesting and brood rearing period.

Unoccupied raptor nests (on cliffs, rocky outcrops or in trees) would be protected from removal or destruction for 3 years, or the period a known preferred prey species fluctuates from population highs to lows. Nests would not have to be retained if physically damaged past the point of repair by raptors. In forested habitat types, a 0.25 mile buffer of suitable habitat would be maintained around unoccupied nests for three years.

Genetically pure and slightly hybridized (less than 10 percent hybridization) westslope cutthroat trout populations would be protected by maintaining or restoring high-quality habitats and by expanding populations.

To prevent spread of non-native, invasive aquatic species, BLM would install boat wash stations at all major boating access sites.

## TRAVEL MANAGEMENT AND ACCESS

Travel management and access is addressed at two levels. Proposed management is described at the Field Office level as part of the RMP decisions to be made. In addition, there are five Travel Planning Areas (TPAs) for which site-specific management by individual travel routes is proposed by alternative. Site-specific travel plan implementation decisions for each of these five areas will be made separately from the RMP level decisions.

The vision for travel management is to provide for a range of quality motorized and non-motorized opportunities.

**Goal** – Provide a balanced approach to travel management that provides a sustained flow of local economic benefits, minimizes user conflicts, safety concerns, and resource impacts while taking into consideration the unique attributes and values of the various Travel Planning Areas.

### FIELD OFFICE LEVEL

#### Management Common to All Alternatives

Regulations at 43CFR8340 through 43CFR8342.3 would be applied in identifying area designations Field Office-wide and in identifying route-specific management where activity plan level decisions would be made for specific travel routes.

Travel management would be conducted in a manner that would meet, or move toward meeting, Land Health Standards.

Areas within the Decision Area would be categorized as “Open”, “Closed”, and “Limited.” An “Open” area is where all types of vehicle use are permitted at all times, anywhere in the area. A “Closed” designation means all motorized use is prohibited.

In accordance with the 2003 Statewide OHV ROD (USDI-BLM 2003c), under the “Limited” designation, all cross-country motorized, wheeled travel (including big game retrieval) is prohibited unless otherwise managed. In the absence of other existing travel plan direction, all motorized wheeled travel is restricted to existing roads and trails. However, the ROD provides several exceptions to this rule (refer to ROD, pages 4-5). Examples include:

1. Any military, fire, search and rescue, or law enforcement vehicle for emergency operations;
2. Official BLM administrative business (prescribed fire, noxious weed control, range management, etc.);

3. Other government agency business (surveying, animal damage control, etc.);
4. Administration of a federal lease or permit (e.g., livestock permittee maintaining fence, delivering salt, etc.); and,
5. For dispersed camping within 300 feet of an existing open road. Site selection must be completed by non-motorized means, and accessed by the most direct route causing the least damage.

Comprehensive inventories of all existing routes would be used.

Travel Planning Areas that has existing travel plans are:

1. Elkhorn Mountains – “limited” area designation – (with the exception of an approximately 631.88 acre “open” OHV use area near Radersburg);
2. Clancy-Unionville – “limited” area designation;
3. Whitetail-Pipestone – “limited” area designation – (with the exception of an approximately 5 acre “open” motorized motorcycle hill climb area); and,
4. Sleeping Giant – “limited” area designation.

Additional travel planning has been completed for several smaller “sub-planning” areas; Confederate Gulch, Sawlog Creek, the Great Divide Ski area, and Nez Perce Ridge Road. Several “temporary area closures” are in effect as well, pending future travel planning. The temporary area closures include the North Hills, Sawmill Gulch, Ward Ranch, the McMasters, Spokane Hills, and Iron Mask. Each of these areas is being brought forward under the Limited area designation.

No site specific route management changes have been proposed for the Confederate Gulch, Great Divide Ski Area, Nez Perce Road, and Sawmill Gulch areas. However site specific route management changes have been proposed for the Sawlog Creek, North Hills, Ward Ranch, McMasters, and Spokane Hills. (See site specific activity travel plan alternatives).

In accordance with the 2003 Statewide OHV ROD and plan amendment, nine additional areas, all with “limited” area designations have been identified that need site-specific travel planning. The nine proposed areas are:

1. Helena (focus area – Scratchgravel Hills). High Priority;
2. East Helena (focus area – North Hills). High Priority;
3. Lewis and Clark Country Northwest (focus area – Marysville). High Priority;
4. Boulder/Jefferson City. High Priority;
5. Upper Big Hole River. High Priority;
6. Missouri River Foothills. Moderate Priority;

7. Jefferson County Southeast. Moderate Priority;
8. Broadwater County South. Moderate Priority; and,
9. Park/Gallatin. Moderate Priority

The five high priority areas are being addressed at the activity plan level concurrently with this RMP revision. Travel planning for high priority areas is supposed to be initiated within two years of the OHV ROD, and moderate priority areas within five years of the OHV ROD. (Refer to the OHV ROD for complete details).

Existing routes would be evaluated for adequacy, relevance, and impacts to resources and resource uses. A range of travel management opportunities that provide a balanced approach among motorized, mechanized, and non-motorized use would be developed.

BLM would use a range of route management options, including Open Yearlong, Open with Restrictions, Closed Yearlong, and Decommissioned (**Table 2-6**).

- Open Yearlong - open year-round to public and administrative uses.
- Open with Restrictions - open to public and administrative uses with seasonal and/or vehicle type limitations.
- Closed Yearlong - closed to motorized public access and subject to administrative or permitted uses

based on case-specific exceptions (such as for mining claimants with existing claims accessed by existing routes). Routes identified as closed would have a route bed left intact in case they are needed for valid existing rights only, or in the extended future for administrative purposes. Closed routes would be open to non-motorized use.

- Decommissioned - route is closed and rehabilitated to eliminate resource impacts (for example, to eliminate erosion or to restore a riparian area if route is located within a riparian area) and is no longer useable for public or administrative uses.

Opportunities would be sought to disperse or distribute users to help provide a quality recreational experience.

Easement agreements would be pursued as needed to gain agency and public access to BLM lands.

BLM would provide for interagency travel management consistency and route connectivity with adjoining public lands.

Throughout the course of implementing the RMP, site-specific route management decisions may need to be re-evaluated and adjusted by BLM in order to accommodate interagency (Forest Service) connectivity. Proposed changes would be addressed on a case-by-case basis by an interdisciplinary team.

Route Management Category	Alt. A miles	Alt. B miles	Alt. C miles	Alt. D miles
Administrative Access Only	0.8	0.8	0.8	0.8
Open Yearlong	471.8	263.0	244.3	304.8
Open/Restricted as Follows:				
Closed 2/14 to 4/16	0	3.3	0	0
Closed 9/1 to 12/1	0	0	0	3.6
Closed 10/2 to 5/15	0.7	0.7	0.7	0.7
Closed 10/15 to 12/1	34.8	2.1	2.1	1.9
Closed 10/15 to 5/15	12.1	19.1	7.1	13.0
Closed 12/2 to 4/15	2.2	2.2	1.9	0
Closed 12/2 to 5/15	100.8	117.9	109.0	144.3
Closed 12/2 to 6/15	5.0	5.8	5.4	7.6
Closed 12/2 to 7/15	0	0.8	0	0.9
Closed 12/2 to 10/5	1.9	1.9	1.9	1.9
Sub-Total Road Miles Open to Public	629.2	416.8	372.4	478.6
Closed Yearlong	172.0	317.7	375.2	266.2
Decommission	0	52.6	50.1	43.4
Snowmobile Only	0	4.3	3.5	4.6
Trails	14.5	14.5	14.5	14.5
Game Retrieval Only	10.7	18.9	10.7	17.8
Motorcycles Only	6.1	6.1	6.1	6.1
ATV Only	18.8	18.8	18.8	21.0
ATV Only Closed 10/15 to 12/1	0	1.5	0	0
ATV Only Closed 12/2 to 4/1	4.3	4.3	4.3	4.3
<b>Totals</b>	<b>856.4</b>	<b>856.4</b>	<b>856.4</b>	<b>857.3</b>

All Designated routes would be mapped and signed as Open, or Open with restrictions (seasonal use restriction, vehicle type use restriction, etc.), instead of taking the opposite approach and signing all closed routes as Closed. In other words, unless a route is specifically signed as Open (or Open with Restrictions), it is closed to motorized use, regardless of whether or not a route Closure sign is in place. This “Closed unless signed as Open” approach places a higher level of burden on the user to be cognizant of where, when, and how they are allowed to travel on public lands. It also eliminates a common act of vandalism, removing route closure signs in order to establish de facto “open” routes. Even so, BLM may still elect to use occasional route Closure signs as needed in areas experiencing compliance problems. Designated routes will be identified and signing using a combination of Portal signs, bulletin boards (posted travel plan maps), and designated route “arrow” symbols.

BLM would continue to participate with the Southwest Montana Interagency Travel Management Committee, maintaining map and sign consistency, and seasonal restrictions.

BLM would continue to partner with the State Trails Program, seeking opportunities to improve existing as well as future trails and facilities.

As roads and trails identified for decommissioning in site-specific travel plans are prioritized, site inventories would be conducted on cultural resources. To provide protection for known cultural resources and those yet to be discovered, sites would be evaluated to determine eligibility for National Register of Historic Places. Ineligible heritage sites would be preserved in place if possible. If adverse effects threaten a site (on roads proposed for closure or open roads), one or more mitigation measures would be employed to lessen or avoid those effects.

These may include:

- Abandon the project.
- Redesign the project to avoid adverse effect with protective measures such as signing, fencing, re-route, or closure of road/trail.
- Data recovery and analysis that could require temporary closure of the area.
- Avoidance by re-routing.

BLM roads within the travel area would continue to be available for a multitude of motorized vehicle travel (2-wheel, 4-wheel, motorcycles, all-terrain vehicles, and snowmobiles), provided safety concerns remain minimal. Should traffic volumes or user conflicts become prevalent and warrant restrictions, then priority would be given to vehicles legally registered to travel on public highways.

In accordance with interagency trail width guidelines, all BLM Designated OHV trails, bridges, and cattleguards are designed to accommodate OHV vehicles 50 inches in width or less. Vehicles wider than 50 inches will be unable to navigate BLM trails; and by default, will be in violation of the off road travel rule.

Variations to travel plan designations may be issued on a case-by-case basis to conduct essential agency administrative actions and site-specific approved uses such as casual use mineral exploration. (Refer to **Appendix A for details**)

Wheeled motorized vehicle travel would be allowed for any military, fire, search and rescue, or law enforcement vehicle for emergency operations.

Temporary routes could be constructed where needed and where other routes are not available under approved travel management plans. Construction of such routes would be to minimal standards, adhering to BMPs (**Appendix E – BMPs**). Temporary routes are not intended to be part of the permanent or designated transportation network system and must be reclaimed when their intended purpose has been fulfilled. Complete reclamation of all temporary routes may not be desired or necessary in all situations. However, unless they are specifically intended for public use, they should not be made available for that use.

BLM would minimize establishing travel routes in areas identified at risk for noxious weed infestations.

In areas with sensitive soils, BLM would minimize establishing new routes and would consider closure, restriction (season or type of use), mitigation (relocation, reconstruction, etc.), or administrative management of existing travel routes.

Travel analysis would be conducted on those routes documented during the inventory period. User-made routes determined to have been created since the inventory would not be brought forward for analysis and therefore are treated as if they are decommissioned.

Short, site-specific sections of road/trail re-alignment, or reconstruction would continue to be implemented as needed to minimize resource damage and/or provide minor reroutes around private property.

BLM manages a number of designated routes where public motorized access is contingent upon the governing consent of their adjoining landowner(s). In these situations, BLM will exercise a reciprocal “All or None road use policy”. This means that as long as the public is allowed access to these roads, no changes in travel management would occur. However, should the adjacent landowner refuse public access, then BLM would reciprocate by closing its roads to their use as well.

### Alternative A – No Action

All existing travel plans, including the sub-Planning Areas, temporary area closures, and the interagency cooperative mapping effort (Southwest Montana Interagency Visitor/Travel Map) would be brought forward and remain in effect. Travel management for the remainder of the BFO would continue in accordance with the 2003 Statewide OHV ROD.

The ROD did not address snowmobile use. Under Alternative A, all existing snowmobile management would remain in effect. Existing management varies, and includes: unrestricted area cross-country travel (conditions permitting), seasonally restricted area cross-country travel, travel on all wheeled designated routes (during the season of use, December 2 through May 15), and snowmobile use only routes.

Area designations of “Open”, “Closed”, and “Limited” under Alternative A are characterized in **Table 2-7**.

Designations		Acres <sup>1</sup>
<b>Wheeled Vehicles</b>		
Open		4,367
Closed		31,500
Limited		271,442
<b>Snowmobiles</b>		
Open		143,206
Closed		27,065
Limited		137,038

<sup>1</sup> Acres are approximate.

Applications for competitive, as well as non-competitive organized motorized events would continue to be evaluated on a case by case basis, subject to NEPA analysis. Areas not available to competitive motorized events would include those along lands along the Jefferson, Missouri Rivers, the Beartooth Game Range, the Sleeping Giant area, the Elkhorn Mountains, the Toston/Lombard area, Whitetail/Pipestone, Sheep Mountain, and all WSAs.

Cattle guards/gates would be installed on newly constructed roads/trails as needed.

Road and trail maintenance costs would be expected to continue at the same level.

### Management Common to Action Alternatives (B, C, and D)

Area designations Field Office wide would be the same for Alternatives B, C, and D for wheeled vehicles but would vary by alternative for snowmobiles as depicted in **Table 2-8**.

Designations	Acres <sup>1</sup>
<b>Wheeled Vehicles (Alternative B, C, and D)</b>	
Open	283
Closed	31,500
Limited	275,526
<b>Snowmobiles</b>	
<b>Alternative B</b>	
Open	112,682
Closed	54,706
Limited	139,921
<b>Alternative C</b>	
Open	26,148
Closed	65,270
Limited	215,891
<b>Alternative D</b>	
Open	139,138
Closed	31,282
Limited	136,889

<sup>1</sup> Acres are approximate.

BLM would maintain current management of existing TPAs and area designations, with the following three exceptions, and one qualification. The exceptions are:

1. The small, scattered open areas located within the Elkhorn Mountains would be converted from open to limited. Existing routes located within the converted areas would remain open to the public;
2. A small (less than one acre) “warm up” area located in the Whitetail-Pipestone Travel Planning Area would be converted from open to limited; and,
3. Approximately one half of the 632-acre Radersburg open OHV use area would be converted from open to limited.

Regarding the qualification, the motorcycle hill climb located in the Whitetail-Pipestone Travel Planning Area would continue to be managed as open, unless resource problems warrant a change in designation at a later time. In addition, the recently acquired Iron Mask property has been proposed to be managed under the limited area designation. If approved, site-specific travel management planning will need to be conducted subsequent to the limited area designation, and will require an amendment to the Elkhorns Travel Plan. These acres are not reflected in **Table 2-8** pending the RMP level decision and remaining pending land acquisition in this same area.

In the context of route-specific travel planning within individual TPAs, BLM's objective would be to use a systematic process that considers the unique resource issues and social environments of each TPA. Specific attributes analyzed would be based on written criteria developed from public and interdisciplinary team input. Areas or sub-areas not analyzed for route-specific management during the course of the RMP revision (due to complexity, controversy, lack of data, or time constraints) would be initiated within five years. Pending their completion, the BLM would, to the extent possible, provide preliminary maps and interim travel management guidelines.

Where private landowners have demonstrated willingness to provide public access across their lands, BLM has shown public access from BLM lands across such private lands in travel plans. Exceptions include routes that BLM has proposed as closed, or are known to be posted or otherwise closed to the public by private property owners. The public must realize that BLM has no control over private roads traveling through private land, and that access across private land is subject to change. A full range of management options would be used for limited designations. Site-specific route management options include: travel limited to designated routes, types or modes of travel such as foot, equestrian, bicycle, motorized; limited to time or season of use; limited to certain types of vehicles (motorcycles, all-terrain vehicles, high clearance, full-size street-legal, etc.); limited to permitted vehicles or users, limited to BLM administrative use only, and other types of limitations as needed. Some pre-existing routes would be closed or decommissioned based on route-by-route travel planning evaluations. Some decommissioned routes would be closed and rehabilitated to blend with the natural surroundings, while others would be permanently closed using earthen berms, fallen trees, or other techniques. All techniques used to decommission roads would eliminate resource impacts.

BLM would cooperate with the MFWP, adjusting seasonal travel restrictions in accordance with big game hunting season extensions.

Roads and trails closed yearlong that are not needed for specific authorized uses (fire prevention/suppression, mining claims, access to private lands, non-motorized travel, etc.) would be rehabilitated to blend into the surrounding area. Roads subject to special uses under authorized exceptions would be stabilized to prevent unnecessary and undue soil erosion and water quality degradation. A priority list for work would be developed after each travel plan is completed.

Travel route densities would conform to the management prescriptions in the wildlife section in the RMP.

Loop-road connections would be established, where appropriate, to enhance public access and enjoyment.

The BLM would emphasize management of the transportation system to reduce impacts to natural resources from authorized roads and trails. The BLM would also stress closing and restoring unauthorized user created roads and trails to prevent resource damage. Ecologically sensitive areas within 300 feet of roads and trails could be closed to dispersed camping if resource damage is found to be occurring in these areas.

Snowmobile use would be subject to restrictions outlined in specific travel plans. It is the rider's responsibility to avoid locations where wind or topographic conditions may have reduced snow depth and created situations where damage to vegetation or soils could occur, or where vegetation is taller than the protective snow cover. Ecologically sensitive areas could be closed to snowmobiling if resource damage caused or exacerbated by snowmobile activity is found to be occurring in these areas.

## Alternative B – Preferred Alternative

Opportunities for motorized access across the Planning Area (**Table 2-8**) would be less than with Alternatives A and D, but greater than with Alternative C.

Organized competitive and non-competitive motorized events would be considered and evaluated on a case-by-case basis for the Pipestone area only (existing management). Non-competitive motorized events would not be allowed outside Pipestone. However, competitive motorized events (timed/speed based) proposed on BLM lands outside Pipestone would be considered, but only if held in conjunction with use of adjacent lands (public or private).

With some exceptions (see site specific travel plan alternatives), cross-country snowmobile use would be allowed, as well as travel on all existing routes during the season of use (December 2 – May 15), snow conditions permitting.

BLM would actively seek agency and public easement agreements in order to maintain current access for popularly traveled routes, and seek additional site-specific opportunities as needed.

BLM would replace barbed wire gates (and similar closures) with cattle guards and/or easily operated metal gates wherever problems are known to occur.

The southern portion of Spokane Hills (East Helena TPA) would be available for motorized access by "hunters with a disability". See the Alternative B description for the East Helena TPA for details.

## Alternative C

A lower level of motorized access would be provided as Alternative B, with more yearlong closures than any other alternative (**Table 2-8**).

Competitive and organized motorized events would not be allowed.

Unless otherwise managed, snowmobile use would be restricted to designated routes only (open or open/restricted), during the season of use (12/2 to 5/15), snow conditions permitting.

BLM would seek public access easements as needed for new road or trail construction.

Cattle guards/gates would be installed on newly constructed roads/trails as needed.

With the exception of site specific road/trail realignment or reconstruction to minimize resource damage, no new road or trail construction is anticipated.

## Alternative D

Opportunities for motorized access Field Office-wide would be less than for Alternative A, but more than for Alternatives B and C (**Table 2-8**).

Management for organized motorized events (competitive and non-competitive) would be the same as for Alternative B.

With some exceptions (see site-specific travel plan alternatives), cross-country snowmobile use would be allowed, as well as travel on all existing routes during the season of use (12/2 to 5/15), snow conditions permitting.

BLM would seek agency and public access easements for all locations where BLM routes are accessed either from, or cross private property.

BLM would replace barbed wire gates (and similar closures) with cattle guards and/or easily operated metal gates wherever they currently exist.

Increased levels of reconstruction and new construction would be necessary to restore deteriorated routes and provide additional loop routes.

## ACTIVITY LEVEL PLANNING FOR FIVE HIGH PRIORITY TRAVEL PLANNING AREAS

Nested within the Field Office-wide alternatives for travel planning, there are five TPAs for which site-specific travel plan alternatives have been developed. These areas include: Helena, East Helena, Lewis and Clark County NW, Boulder/Jefferson City, and Upper Big Hole River. The following discussion describes these site-specific travel plan alternatives by RMP alternative.

*With this document there are two different map formats for site-specific travel plan alternatives. Hard copy **Maps 6 through 25** in the map packet show one travel plan alternative for one Travel Planning Area per map. Due to size and scale limitations however, the hard copy maps do not include route numbers or snowmobile management because they would be too small to read.*

*Readers interested in viewing or commenting on numbered routes or snowmobile management will need to refer to the electronic maps on the enclosed compact disk, using the enclosed Adobe Reader software. These maps are located in the "Travel Plan Maps" folder on the disk. In addition to individual route numbers, the electronic maps display geographical locations (road names, towns, streams, mountains, etc.) that will help orient the reader to the Travel Planning Area. The Adobe Reader software allows the reader to search for specific route numbers, "pan" the map, and zoom in on selected features as needed. For both the Helena and Boulder/Jefferson City Travel Planning Areas, each alternative for each of these areas is represented by one electronic map. However, due to the size of the other Travel Planning Areas and scattered distribution of BLM lands there, the remaining Travel Planning Areas are subdivided into sub-areas with one electronic map for each alternative for each sub-area. The East Helena Travel Planning Area is subdivided into four sub-areas. The Upper Big Hole River Travel Planning Area is subdivided into three sub-areas, while the Lewis and Clark County NW Travel Planning Area is subdivided into two sub-areas.*

*The electronic maps are not numbered, but are instead titled by Travel Planning Area name, sub-area name if needed, and alternative. For example, the title of the electronic map for Alternative B of the Ward Ranch sub-area of the East Helena Travel Planning Area is "East Helena Ward Ranch Alt B.PDF". Names of sub-areas are provided in site-specific descriptions of travel plan alternatives below.*

## General Overview of Alternative A for Site-Specific Plans

Any existing travel planning for the five TPAs would be brought forward. Existing planning includes "sub-planning" for the Big Hole (Southwest Interagency mapping effort), Sawlog Creek, Great Divide Ski area, and Nez Perce Ridge Road areas. Several "temporary area closures" are in effect as well, including the North Hills, Sawmill Gulch, Ward Ranch, the McMasters, and Spokane Hills.

Additional travel management would continue in accordance with the 2003 Statewide OHV ROD (refer to "Field Office Level Alternative A" for details). Under the ROD, in the absence of other existing travel plan direction, all motorized wheeled travel is restricted to existing roads and trails. An exception allows for motorized wheeled cross-country travel during any military, fire, search and rescue, or law enforcement emergency. The ROD did not address snowmobile use. Under Alternative A, existing snowmobile management would remain in effect. Under the existing management, cross country area use is allowed as well as travel on all existing routes during the season of use (12/2-5/15), snow conditions permitting.

Travel management costs (implementation, routine maintenance, and monitoring) would remain the same.

### Working Group Proposal Development

In an effort to help BLM develop site-specific travel management alternatives agreeable to the public as well as the agency, *community based collaborative working groups* were initiated. Two working groups representing a wide, “balanced” range of public land users were recruited and managed under the direct supervision and guidance of the Lewis and Clark County Board of Commissioners. One of the groups was assigned to assist with travel planning for the Helena (Scratchgravel Hills) and East Helena (North Hills) TPAs, and the other for the Lewis and Clark County NW (Marysville) TPA. Membership criteria included: Montana residency, familiarity with the Travel Planning Area(s), and a willingness to work collaboratively with people of differing viewpoints. Members were selected from three different interest categories (in accordance with the Western Montana Resource Advisory Council criteria) in order to provide for balanced representation.

Refer to **Appendix A – Travel Planning** for further details on membership selection, and working group process. Each group held a series of five or six meetings. The meetings were attended by BLM representatives available to answer questions, provide information and feedback from the BLM’s interdisciplinary team, and provide written materials and maps as needed. Group recommendations for route-specific management were based on consensus. In the end, the working groups arrived at complete consensus for the Marysville (subset of Lewis and Clark County NW TPA) and North Hills

(subset of East Helena TPA) areas, but only partial consensus for the Scratchgravel Hills (subset of Helena TPA) area. BLM incorporated working group recommendations into Alternative B for the three TPAs.

### Helena Travel Planning Area

**Maps 6 through 9** are the hard copy maps for the Helena TPA alternatives. Electronic maps by alternative showing route numbers are located in the Travel Planning Maps folder on the enclosed disk.

#### Alternative A – No Action

Other than the 2003 Statewide OHV ROD, there is no existing travel plan management for the Helena Travel Planning Area. Under the ROD, all existing routes would continue to be open yearlong to wheeled motorized travel (**Map 6**). The ROD did not address snowmobile use; area wide cross-country snowmobile use would continue to be allowed as well as travel on all existing routes during the season of use (December 2-May 15), snow conditions permitting. Alternative A would provide the greatest amount of open roads in the Helena TPA (**Table 2-9**).

#### Alternative B – Preferred Alternative

Travel planning for the Helena TPA focused on the Scratchgravel Hills area. BLM received numerous verbal, as well as written comments during two public scoping meetings for the Scratchgravel Hills area. Many of the comments concerned conflicts between motorized and non-motorized use. Due to the high degree of user conflicts and illegal activity taking place, the BLM has modified the Preferred Alternative for the Scratchgravel

	Alt. A	Alt. B	Alt. C	Alt. D
Area available for wheeled, motorized use (in Acres)				
Open	0	0	0	0
Closed	0	0	0	0
Limited	10,164	10,164	10,164	10,164
Miles of wheeled motorized route:				
Open Yearlong	52.2	9.8	7.0	21.9
Seasonally Restricted	0	0	0	0
Closed	0	36.0	40.7	27.7
Decommissioned	0	6.5	4.6	3.1
Area availability for snowmobile use (in Acres)				
Open	10,164	10,164	0	10,164
Closed	0	0	0	0
Limited	0	0	10,164	0
Miles of motorized routes available to snowmobile travel	52.2	52.2	7	52.2
Miles of motorized routes available for snowmobile travel only	0	0	0	0
Miles of routes available for big game retrieval	0	0	0	0
Miles of routes available for disabled hunter access	0	0	0	0
Miles of non-motorized trails available	0	38.6	45.3	30.8

Hills area so that all interior roads in the Scratchgravel Hills would be closed to public wheeled motorized travel yearlong at the five proposed trailheads, with the exception of a few perimeter right-of-way routes and routes to private residences (Table 2-9, Map 7). The BLM believes that the revised Preferred Alternative would reduce problems with dumping and illegal activities after dark, and would be more manageable and enforceable than the nighttime closure previously considered for this area in the Draft RMP/EIS.

Cross-country snowmobile use would be allowed, as well as travel on all existing routes during the season of use (December 2 – May 15), snow conditions permitting.

### Alternative C

Motorized access to the Scratchgravel Hills area would be restricted to the five existing trailheads (Table 2-9, Map 8). No motorized use would be allowed beyond the trailheads. No snowmobile use would be allowed, including the trailhead access routes.

### Alternative D

Approximately 41 percent of the existing routes would be available for motorized access.

The majority of the designated routes would be located in the Scratchgravel Hills area. Several new connector routes would need to be constructed; and several existing routes would require reconstruction (Table 2-9, Map 9).

Cross-country snowmobile use would be allowed, as well as travel on all existing routes during the season of use (12/2 – 5/15), snow conditions permitting.

## East Helena TPA

Maps 10 through 13 are the hard copy maps for the entire East Helena TPA alternatives. Electronic maps showing route numbers are located in the Travel Planning Maps folder on the enclosed compact disk. There are four sub-areas for the East Helena TPA represented on electronic maps titled by alternative as: East Helena North Hills, East Helena Spokane Hills, East Helena Townsend, and East Helena Ward Ranch.

### Alternative A – No Action

Under Alternative A, with the exception of existing travel plan management, all existing routes would continue to be open yearlong to wheeled motorized travel as directed by the OHV ROD (Table 2-10, Map 10). Existing travel planning includes “temporary area closures” for the North Hills and the recent Ward Ranch, McMasters, and Spokane Hills acquisitions. The North Hills temporary area closure (interagency block hunting management area) restricts motorized access during the big game hunting season. The Ward Ranch, McMasters, and Spokane Hills temporary area closures restrict motorized access to several temporary trailheads, beyond which no motorized travel is allowed.

The ROD did not address snowmobile use. With the exception of the Ward Ranch, McMasters, and Spokane

**Table 2-10**  
**East Helena Travel Planning Area Miles of Road by Proposed Management Category for All Alternatives**

	Alt. A	Alt. B	Alt. C	Alt. D
Area available for wheeled, motorized use (in acres)				
Open	0	0	0	0
Closed	0	0	0	0
Limited	20,266	20,266	20,266	20,266
Miles of wheeled motorized route:				
Open Yearlong	36.6	13.7	12.0	36.0
Seasonally Restricted -				
Closed 10/15 to 12/1	7.7	0	0	0
Closed 9/1 to 12/1	0	0	0	1.95
Closed 2/14 to 4/16	0	3.3	0	0
Closed	26.4	41.9	54.6	29.7
Decommissioned	0	4.7	4.0	3.1
Area availability for snowmobile use (in acres)				
Open	15,066	6,362	0	14,461
Closed	1,588	13,904	0	5,805
Limited	3,612	0	20,266	0
Miles of motorized routes available to snowmobile travel (in “Limited” areas during season of use, 12/2 to 5/15)	44.3	21.50	12	47.5
Miles of motorized routes available for snowmobile travel only	0	0	0	0
Miles of routes available for big game retrieval	0	7.0	0	0
Miles of routes available for disabled hunter access	0	7.0	0	0
Miles of non-motorized trails available <sup>1</sup>	26.4	47.1	59.1	32.6

<sup>1</sup> includes all existing trails, as well as closed and decommissioned roads.

Hills temporary closures, the East Helena TPA would remain available to cross-country area snowmobile use, as well as travel on all existing routes during the season of use (December 2 – May 15), snow conditions permitting.

### ***Alternative B – Preferred Alternative***

The Alternative B proposal represents a combined (merged) effort between the BLM and the community based collaborative working group for the North Hills sub-area. (**Table 2-10, Map 11**). Motorized opportunities would decrease compared to Alternatives A and D. Route 516 would be open yearlong, providing primary access to a non-motorized trailhead at the junction with Route 517. The remaining road network would be seasonally restricted from February 14 to April 16 to prevent soil erosion. An additional non-motorized trailhead would be established at the end of Route 50108. The existing interagency block management hunting area would continue to be managed as in Alternative A. (See electronic map **East Helena North Hills Alt B.PDF**)

With a few minor changes, the Alternative B proposal for the Ward Ranch, McMasters, and Spokane Hills areas would continue in accordance with the existing temporary area closures.

Minor changes for the Ward Ranch area include: Routes 050134 and 050137 would be open yearlong to the public up to the private property boundaries.

The Ward Ranch Trailhead would be brought forward as managed under Alternative A; with no motorized use allowed beyond the current trailhead location. For the McMasters area, motorized access would continue to be restricted to three established, non-motorized trailheads, per the existing temporary closure. Motorized access for the area located on the west side of Prickly Pear Creek (south of Black Sandy) would be restricted to several, primary residential access routes and two recreation use access routes (EH025, EH034). Motorized access to the “Big Bend” area (located northwest of Devils Elbow) would be restricted to route EH037. A non-motorized trailhead would be constructed on the ridge top, near the end of EH 037. (See electronic map **East Helena Ward Ranch Alt B.PDF**)

With the exception of two changes, management for the Spokane Hills area would continue in accordance with the temporary area closure. Under the existing temporary closure, motorized access is restricted to a non-motorized trailhead at the end of route EH087A. The two changes are as follows:

- The southern portion of Spokane Hills would be available for motorized access during the big game hunting season for persons with disabilities. During a two week period, a limited number of hunters possessing a valid Montana State Disabled Conservation License or Permit to Hunt from a Vehicle may be allowed to access the southern Spokane Hills

area using identified routes. This access program would be managed through a permit system. The permit requirements or restrictions would be coordinated with the Montana Department of Fish, Wildlife and Parks to ensure hunter safety and a quality hunting experience.

- Outside the special hunt period, the general public would be allowed to use these same identified routes for game retrieval as identified in the East Helena Spokane Hills Travel Management Plan. One route would be available for public access in the Townsend sub-area.

Snowmobile management under Alternative B would be as follows: cross-country travel would be allowed, as well as travel on all existing routes (during the season of use 12/2 – 5/15, snow conditions permitting), for the North Hills, Dana’s Bar, and the area located to the west of Prickly Pear Creek (refer to map). The remaining areas (e.g., McMaster Hills, Ward Ranch, and Spokane Hills, etc.) would be closed to all cross-country travel, including travel on existing roads and trails.

### ***Alternative C***

Alternative C would provide the least amount of motorized access (**Table 2-10, Map 12**).

Routes 0516A and 0516 would provide yearlong access to the North Hills. No other motorized routes would be available in that sub-area. (See electronic map **East Helena North Hills Alt C.PDF**)

Motorized access for the Ward Ranch area would be the same as for Alternative B, except Route 050133A would remain closed at its current location, regardless if the Ward Ranch is vacated in the future. Visitors would park at the current motorized closure area, and walk approximately 0.25 mile to visit the ranch complex. (See electronic map **East Helena Ward Ranch Alt C.PDF**)

As in Alternative B, motorized access for the McMasters area would continue to be restricted to three established, non-motorized trailheads, per the existing temporary closure. There would be no motorized access to the “Big Bend” area. Motorized access for the area located on the west side of Prickly Pear Creek (south of Black Sandy) would be restricted to the primary residential access routes.

Access to the Spokane Hills area would be in accordance with the existing temporary area closure, where, motorized access is restricted to a non-motorized trailhead established at the end of route EH087A. (See electronic map **East Helena Spokane Hills Alt C.PDF**) As in Alternative B, the Townsend sub-area has one route available for public access.

Under Alternative C, snowmobile use would be restricted to designated routes during the season of use (12/2 – 5/15), snow conditions permitting.

### **Alternative D**

Alternative D provides the highest level of motorized access for the North Hills area of the action alternatives, and includes several designated routes not found under Alternative B (**Table 2-10, Map 13**). All of the designated routes would be open yearlong. A number of additional designated routes would be available yearlong, as well as one seasonally restricted route. (See routes EH502, EH050133A, EH057, and EH047). (See electronic map **East Helena North Hills Alt D.PDF**)

Motorized access for the McMasters area would increase as well. Under Alternatives A, B, and C, motorized access would be restricted to three established, non-motorized trailheads, however, under Alternative D, a yearlong motorized loop route would be available, accessed from the existing northeast area trailhead. (See routes EH065, EH068A/B, EH068, and EH070 for details). (See electronic map **East Helena Ward Ranch Alt D.PDF**) Motorized access for the area located on the west side of Prickly Pear Creek (south of Black Sandy) would be the same as for Alternative B, with one exception. Under Alternative D, route EH036 (located at the tip of Dana's Bar) would be open yearlong. (See electronic map **East Helena Ward Ranch Alt D.PDF**) Alternative D would provide two designated access routes for the "Big Bend" area. (See routes EH037 and EH041). (See electronic map **East Helena Ward Ranch Alt D.PDF**)

Alternative D would provide changes for the Spokane Hills area. Under Alternative D, routes EH 84, 85, 86, and 87 would be open yearlong. The existing trailhead would be relocated to a level bench top area near the end of route EH 084. (See electronic map **East Helena Spokane Hills Alt D.PDF**)

Alternative D would provide two additional, yearlong motorized routes for the Townsend sub-area (see routes EH095 and 96). (See electronic map **East Helena Townsend Alt D.PDF**)

Snowmobile management under Alternative D would be as follows: Cross-country travel would be allowed, as well as travel on all existing routes (during the season of use, 12/2 – 5/15, snow conditions permitting) for the North Hills, Dana's Bar, the area located to the west of Prickly Pear Creek, McMasters Hills, Spokane Hills, and Townsend area (refer to East Helena PDF maps). The Ward Ranch and the Big Bend areas would be closed to all cross-country snowmobile use as well as travel on designated routes.

### **Lewis and Clark County NW TPA**

**Maps 14 through 17** are the hard copy maps for the entire Lewis and Clark County NW TPA alternatives. Electronic maps showing route numbers are located in the Travel Planning Maps folder on the enclosed compact disk. There are two sub-areas for the Lewis and Clark County NW TPA represented on electronic maps

titled by alternative as: Lewis and Clark Lincoln, and Lewis and Clark Marysville.

### **Alternative A – No Action**

With the exception of existing travel management for the Great Divide Ski (lease) Area, all existing routes would be open yearlong to wheeled motorized travel as directed by the OHV ROD (**Table 2-11, Map 14**). Under current management, with the exception of one or two designated routes, routes located within the Great Divide Ski area would continue to be closed to wheeled vehicles as well as snowmobiles to prevent damage to the ski slopes and prevent conflicts with skiers. The ROD did not address snowmobile use, therefore, outside the Great Divide Ski Area, cross-country snowmobile use would continue to be allowed as well as travel on all existing routes during the season of use (12/2 – 5/15), snow conditions permitting.

### **Alternative B – Preferred Alternative**

The Marysville sub-area represents a combined effort between the BLM and the community-based collaborative working group. Under Alternative B, with the exception of a portion of the northwest corner of the Marysville area, all major motorized access routes would remain available to the public (**Table 2-11, Map 15**). The routes within the upper northwest portion would be closed to help provide big game security and protection for threatened and endangered species (grizzly bear, Canada lynx). Cross-country snowmobile travel would be allowed throughout the entire travel planning area, with two exceptions, within the Great Divide Ski area (existing management), and the area identified in the northwest portion of the TPA. Snowmobile use in these areas would be restricted to designated routes only during the season of use (12/2 – 5/15), snow conditions permitting.

The majority of routes in the Sieben Ranch area would remain available for public access, while most of the routes located in the Stemple Pass and Lincoln areas would be closed due to lack of public access and resource impact issues.

### **Alternative C**

There would be no motorized access allowed in the northwest portion of the Marysville area (**Table 2-11, Map 16**).

This alternative provides the least amount of motorized access throughout the TPA of all the alternatives. Snowmobile use would be restricted to designated routes (no cross country use allowed) during the season of use (12/2 – 5/15), snow conditions permitted. With the exception of one change for the Sieben Ranch area, motorized access for the Sieben Ranch, Stemple Pass, and Lincoln areas would be the same as Alternative B.

	Alt. A	Alt. B	Alt. C	Alt. D
Area available for wheeled, motorized use (in Acres)				
Open	0	0	0	0
Closed	0	0	0	0
Limited	16,997	16,997	16,997	16,997
Miles of wheeled motorized route:				
Open Yearlong	57.5	13.8	8.0	19.6
Seasonally Restricted (Closed 12/2 to 5/15)	6.7	14.3	11.7	14.5
Closed	3.4	26.8	41.6	20.3
Decommissioned	0	10.9	5.2	8.8
Area availability for snowmobile use (in Acres)				
Open	16,112	12,649	0	12,649
Closed	888	888	888	888
Limited	0	3,463	16,112	3,463
Miles of motorized routes available to snowmobile travel	56.5	49	8	49
Miles of motorized routes available for snowmobile travel only	0	1.8	1.1	2.0
Miles of routes available for big game retrieval	0	0	0	0.5
Miles of routes available for disabled hunter access	0	0	0	0
Miles of non-motorized trails available <sup>1</sup>	5.3	37.7	46.7	29.1

<sup>1</sup> includes all existing trails, as well as closed and decommissioned roads

**Alternative D**

This alternative provides the greatest amount of motorized access in this area than any of the other alternatives. Under Alternative D, several additional routes would be available for motorized access in the Marysville area (Table 2-11, Map 17). Examples include a yearlong ATV Only route and a game retrieval route (see routes 63, 65, and 050109 on electronic **Lewis and Clark Marysville Alt D.PDF** map). There would be an additional 2.2 miles of ATV Only route available in this alternative than the other alternatives. Cross-country snowmobile travel would be allowed throughout the entire travel planning area, with two exceptions: within the Great Divide Ski Area and within the area identified in the northwest portion of the TPA. Snowmobile use in these areas would be restricted to designated routes only during the season of use (12/2 to 5/15), snow conditions permitting.

Several additional open yearlong routes would be available for the Stemple Pass and Lincoln areas.

**Boulder/Jefferson City Travel Planning Area**

Maps 18 through 21 are the hard copy maps for the Boulder/Jefferson City TPA. Electronic maps for the entire TPA showing route numbers are located in the Travel Planning Maps folder on the enclosed CD.

**Alternative A – No Action**

Other than the OHV ROD, there is no existing travel management for the Boulder/Jefferson City Travel Planning Area. Under the ROD, all existing routes would continue to be open yearlong to wheeled motorized travel (Table 2-12, Map 18, electronic map **Boulder Jefferson City Alt A.PDF**). The ROD did not address snowmobile use; area wide cross-country snowmobile use would continue to be allowed as well travel on all existing routes (December 2 – May 15), snow conditions permitting.

**Alternative B – Preferred Alternative**

Under Alternative B, most major motorized access routes would remain available to the public. (Table 2-12, Map 19, electronic map **Boulder Jefferson City Alt B.PDF**), though fewer routes would be open than in Alternative A. Area wide cross-country snowmobile use would continue to be allowed, and travel on all existing routes during the season of use (12/2 – 5/15), snow conditions permitting.

**Alternative C**

Alternative C provides slightly fewer motorized access opportunities than Alternative B (Table 2-12, Map 20, electronic map **Boulder Jefferson City Alt C.PDF**). The main difference would be for the southwest corner of the Travel Planning Area, where a number of routes are proposed for closure to enhance non-motorized recreation opportunities (see routes 5115, 510122, 510123A, and BJ040). Snowmobile use would be re-

stricted to designated routes during the season of use (December 2 – May 15), snow conditions permitting.

### **Alternative D**

Alternative D provides for the highest level of motorized access for the Boulder/Jefferson City TPA of the action alternatives, approximately 33 percent more routes than Alternative B (**Table 2-12, Map 21**, electronic map **Boulder Jefferson City Alt D.PDF**). Area wide cross-country snowmobile use would continue to be allowed, and travel on all existing routes during the season of use (12/2 – 5/15), snow conditions permitting.

## **Upper Big Hole River Travel Planning Area**

**Maps 22 through 25** are the hard copy maps showing the entire Upper Big Hole River TPA by alternative. Electronic maps showing route numbers are located in the Travel Planning Maps folder on the enclosed compact disk. There are three sub-areas for the Upper Big Hole River TPA represented on electronic maps titled by alternative as: Upper Big Hole Fishtrap, Upper Big Hole Humbug Spires, and Upper Big Hole Jimmie New.

### **Alternative A – No Action**

Existing management for the Upper Big Hole TPA includes the 1996 revised Southwest Montana Interagency Visitor/Travel Map agreement and the 2003 Statewide OHV ROD. The Visitor/Travel Map agreement is a coordinated interagency mapping effort, not a travel planning document per se. The map depicts area wide management as well as site-specific route management

for wheeled vehicles as well as snowmobile use (see map). Under Alternative A, the Southwest Travel Plan continues to remain in effect with the exception of several areas, originally designated in 1993 as open to wheeled cross-country (off road) travel. In accordance with the ROD, these open designated areas **have been converted to Limited**. All existing routes located within these limited areas would continue to be managed as open yearlong to wheeled vehicles. Snowmobiles use within these same Limited areas would continue to be managed as open to area wide cross-country use as well as use on all existing routes during the season of use (12/2 – 5/15), snow conditions permitting (**Table 2-13, Map 22**).

### **Alternative B – Preferred Alternative**

Existing management under the Southwest Interagency travel plan would remain in effect in some sub-areas of the Upper Big Hole TPA, but would change in other areas. Several sub-areas of the Southwest Interagency travel plan, originally designated in 1993 as open to wheeled cross country (off road) travel, have been converted to a limited designation in accordance with the 2003 Statewide OHV ROD. By default, all existing routes within these converted limited areas are currently managed as open yearlong to wheeled vehicles. In many cases the management for these routes would change from open yearlong, to seasonally restricted (as needed) in order to maintain consistency with the Southwest Interagency travel plan (see **Table 2-13, Map 23**).

Under Alternative B, all major motorized access routes located between Humbug Spires and Camp Creek would

**Table 2-12**  
**Boulder/Jefferson City Travel Planning Area Miles Of Road**  
**by Proposed Management Category For All Alternatives**

	<b>Alt. A</b>	<b>Alt. B</b>	<b>Alt. C</b>	<b>Alt. D</b>
Area available for wheeled, motorized use (in Acres)				
Open	0	0	0	0
Closed	0	0	0	0
Limited	14,487	14,487	14,487	14,487
Miles of wheeled motorized route:				
Open Yearlong	60.5	3.7	3.0	5.3
Seasonally Restricted (Closed 12/2 to 5/15)	0	25.1	20.5	32.8
Closed	0	29.0	34.2	20.6
Decommissioned	0	2.7	2.7	2.7
Area availability for snowmobile use (in Acres)				
Open	14,487	14,487	0	14,487
Closed	0	0	0	0
Limited	0	0	14,487	0
Miles of motorized routes available to snowmobile travel	60.5	60.5	3	60.5
Miles of motorized routes available for snowmobile travel only	0	0	0	0
Miles of routes available for big game retrieval	0	0	0	0
Miles of routes available for disabled hunter access	0	0	0	0
Miles of non-motorized trails available <sup>1</sup>	0	33.2	36.9	23.3

<sup>1</sup> includes all existing trails, as well as closed and decommissioned roads

remain available to the public. Some existing seasonal use restrictions would be changed to enhance high elevation hunting opportunities (refer to routes 0200, 010113, 0115, and 0150). (See electronic map **Upper Big Hole Humbug Spires Alt B.PDF**)

Under Alternative B, most major motorized access routes located in the Jimmie New Creek area would remain available to the public. Existing management for the Nez Perce Ridge Road and the “temporary area closure” for Sawmill Gulch would remain in effect. Changes from Alternative A include a moderate reduction in road density for the area located north of Highway 43, bounded by the Johnson and Jerry Creek access routes. The reduction in road density would help provide big game security as well as enhanced opportunities for non-motorized recreation. (See electronic map **Upper Big Hole Jimmie New Alt B.PDF**)

For the Fishtrap Creek area, the most notable change from Alternative A concerns Sawlog Gulch, a popular big game hunting area located approximately 2 miles southwest of the Fishtrap fishing access site on the south side of the Big Hole River. Under existing management (Alternative A), yearlong motorized access is allowed (fording the river). Under Alternative B, motorized wheeled vehicle access would be seasonally restricted (closed 12/2 to 7/15). (See Route 189009B on electronic map **Upper Big Hole Fishtrap Alt B.PDF**)

This change would help prevent resource damage by minimizing the number of vehicular crossings of the Big Hole River, improve big game security, and help provide public safety during high water conditions (spring runoff).

Note: If possible, in the future BLM would like to close route #189009b, and provide alternate access to the Sawlog area via route BH252 or routes BH189003 and BH001. Route BH252 is the preferable alternate access route. BH252 provides a safer river crossing and quicker access to the higher elevations that most users (big game hunters) seek. Access via route BH252 will require USFS and State cooperation; the USFS has already indicated its cooperation. Routes BH189003 and BH001 eliminate the need for a river crossing; but require several miles of travel in order to reach the Sawlog area. Access across these routes is largely dependent on private property cooperation.

Under Alternative B, existing snowmobile management would continue to remain substantially in effect as represented by the 1996 Southwest Interagency Visitor/Travel Map. However, several additional areas would be closed to cross-country travel, and others restricted to existing designated routes and trails during the season of use (December 2 – May 15), snow conditions permitting. Proposed cross-country closures include the area located between the Soap Gulch and Camp Creek roads, the Goat Mountain / Maiden Rock area and the Sawmill

	<b>Alt. A</b>	<b>Alt. B</b>	<b>Alt. C</b>	<b>Alt. D</b>
Area available for wheeled, motorized use (in acres)				
Open	0	0	0	0
Closed	0	0	0	0
Limited	63,249	63,249	63,249	63,249
Miles of wheeled motorized route:				
Open Yearlong	70.6	26.9	19.2	26.8
Seasonally Restricted (Total)	88.0	57.9	40.8	70.6
Closed 9/1 to 12/1	0	0	0	1.6
Closed 10/15 to 12/1	25.2	0.2	0.2	0
Closed 10/15 to 5/15	10.5	17.6	5.5	11.4
Closed 12/2 to 4/15	2.2	2.2	1.9	0
Closed 12/2 to 5/15	50.2	34.6	32.8	54.1
Closed 12/2 to 6/15	0	0.9	0.4	2.6
Closed 12/2 to 7/15	0	0.8	0	0.9
Closed	7.4	49.2	69.3	33.2
Decommissioned	0	27.7	33.5	25.7
Area availability for snowmobile use (in acres)				
Open	31,600	13,243	0	31,600
Closed	31,607	46,932	31,607	31,607
Limited	0	3,032	31,600	0
Miles of motorized routes available to snowmobile travel	90.2	53	14	90.2
Miles of motorized routes available for snowmobile travel only	0	2.5	2.4	2.5
Miles of routes available for big game retrieval	0	1.1	0	6.6
Miles of routes available for disabled hunter access	0	0	0	0
Miles of non-motorized trails available <sup>1</sup>	11.0	83.5	106.9	62.9

<sup>1</sup>Includes all existing trails, as well as closed and decommissioned roads

Gulch/Nez Perce Ridge area. Snowmobile use in the Dewey area would be restricted to designated routes and trails during the season of use (12/2 – 5/15), snow conditions permitting.

### **Alternative C**

Alternative C would provide moderately fewer motorized access opportunities than for Alternative B (**Table 2-13, Map 24C**). Under Alternative C, big game security and non-motorized recreational opportunities would be enhanced through additional route closures.

Most major motorized access routes located in the Humbug Spires area would remain available to the public. Differences from Alternatives A and B include additional yearlong closures for the high elevation routes located between the Soap Gulch and Camp Creek travel corridors. Examples include routes 0110, 010119, 127, 010115, 138, and 139. (See electronic map **Upper Big Hole Humbug Spires Alt C.PDF**)

Most major motorized access routes located in the Jimmie New Creek area would remain available to the public. Existing management for the Nez Perce Ridge Road; and the “temporary area closure” for Sawmill Gulch would remain in effect. Differences include additional yearlong closures for the area located north of Highway 43, bounded by the Johnson and Jerry Creek access routes. See routes 10109 and 033. (See electronic map **Upper Big Hole Jimmie New Alt C.PDF**)

The reduction in road density would help provide Big Game security as well as enhanced opportunities for non-motorized recreation. For the Fishtrap Creek area, the most notable change from Alternatives B and C concerns Sawlog Gulch. Under Alternative C, the Sawlog Gulch route (189009B) would be closed yearlong. (See electronic map **Upper Big Hole Fishtrap Alt C.PDF**) For areas open to snowmobile use under the Southwest Montana Interagency Visitor/Travel Map, travel would be restricted to designated routes only. No cross-country travel would be allowed.

### **Alternative D**

Alternative D provides the highest level of motorized access for the Planning Area of all the action alternatives, approximately 33 percent more routes than found under Alternative B (**Table 2-13, Map 25**).

Several additional routes would be available compared to Alternatives B and C for the Humbug Spires area. Other differences include adjusting existing seasonal route restrictions to allow for high elevation big game hunting access. Examples include routes 0110, 010119, 122, 123, 141, and 148. (See electronic map **Upper Big Hole Humbug Spires Alt D.PDF**)

Under Alternative D, several additional routes would be available for the Jimmie New Creek area, including game retrieval routes. Notable examples include routes 010100, 032, 010101, 010102, 010110, 189012, 189016,

026, and 051. (See electronic map **Upper Big Hole Jimmie New Alt D.PDF**)

For the Fishtrap Creek area, the Sawlog Gulch route (189009B) would be managed the same as under Alternative B, open/restricted, with a seasonal closure from 12/2 to 7/15. (See electronic map **Upper Big Hole Fishtrap Alt D.PDF**)

Snowmobile management would be the same as described for Alternative A.

## **TRANSPORTATION AND FACILITIES**

**Goal 1** – Maintain facilities, roads, and trails to provide for public and/or administrative use and safety while mitigating impacts to resources.

### **Management Common to All Alternatives**

Transportation and road management activity would meet, or move toward meeting Land Health Standards.

Comprehensive assessments would be conducted for all maintained roads and facilities and maintenance actions would be implemented as needed.

Roads and trails would be maintained in accordance with Travel Management Plan guidance and BLM policy. After site-specific travel plan decisions are made, roads included in the transportation system would be assigned maintenance levels, if needed. Roads would be managed in accordance with assigned maintenance levels and in consideration of resource issues. All roads and trails would be maintained in accordance with standards and guidelines in BLM Handbook 9113-2 and **Manual Section 9114** respectively. Roads and trails would be inspected on an established schedule in accordance with the Bureau’s Condition Assessment guidance.

Recreation sites, administrative sites, buildings, and bridges would be maintained within Bureau standards to reduce deferred maintenance costs; meet public health and safety requirements; provide universal accessibility as appropriate and to enhance visitor experiences. These activities would be coordinated with other federal, state, and local government agencies, private landowners and the general public as needed.

New roads and trails determined to be necessary for permanent or long-term use as part of BLM’s transportation system would be constructed subject to NEPA and approved engineering standards. Consideration would be given to use demands, location, safety, and resource constraints when determining the level of road necessary, in accordance with **Manual Section 9113**. Where a new permanent road would provide better access, existing routes in the vicinity would be identified for closure and decommissioning in order to meet travel plan guidance and resource mitigation concerns (wildlife dis-

placement, habitat fragmentation, VRM, ROS, soil stability, water quality, etc).

### **Management Common to Action Alternatives (B, C, and D)**

Roads would be built to the minimum standard necessary that allows reasonable access and has the least impact on resource values.

If an existing road is substantially contributing to the standards not being met, the road would be considered for redesign, closure, or decommissioning to minimize the adverse impacts.

#### **Alternative B – Preferred Alternative**

Road designs would include at a minimum:

- Minimizing road and landing locations in Riparian Management Zones;
- Minimizing sediment delivery to streams from road surfaces;
- Outsloping roadway surfaces where possible, except in cases where outsloping would increase sediment delivery to streams or where outsloping is infeasible or unsafe;
- Routing road drainage away from potentially unstable stream channels, fills and hill slopes;
- Minimizing disruption of natural hydrologic flow paths; and,
- Minimizing sidcasting of soil or snow.

Roads would be designed and maintained in a manner that provides for water quality protection by controlling placement of fill material, keeping drainage facilities open, installing and maintaining appropriately-sized culverts at stream crossings, and by repairing ruts and failures to reduce erosion and sedimentation of aquatic habitats.

#### **Alternative C**

Road design considerations would include the same items listed above in Alternative B.

Roads would be designed and maintained in a manner that provides for water quality protection by controlling placement of fill material, keeping drainage facilities open, installing and maintaining stream crossings capable of accommodating 100-year storm events including associated sediment and debris, and by repairing ruts and failures to reduce erosion and sedimentation of aquatic habitats.

#### **Alternative D**

Transportation and road management activity would meet, or move toward meeting Land Health Standards. Road designs would consider at a minimum:

- Minimizing road and landing locations in Stream-side Management Zones;
- Minimizing sediment delivery to streams from roads surfaces;
- Outsloping roadway surfaces where possible, except in cases where outsloping would increase sediment delivery to streams or where outsloping is infeasible or unsafe;
- Routing road drainage away from potentially unstable stream channels, fills and hill slopes;

Roads would be designed and maintained in a manner that provides for water quality protection by controlling placement of fill material, keeping drainage facilities open, installing and maintaining appropriately-sized culverts at stream crossings, and by repairing ruts and failures to reduce erosion and sedimentation of aquatic habitats.

## **RECREATION MANAGEMENT**

**Goal 1** – Provide a diverse array of recreational opportunities while maintaining healthy public land resources.

**Goal 2** – Establish, manage, and maintain quality recreation sites and facilities to meet a broad range of public needs subject to resource constraints.

**Goal 3** – Manage commercial, competitive, or special events with special recreation permits that eliminate or minimize impacts on resources and conflicts with other users.

**Goal 4** – Manage recreation opportunities to provide a sustained flow of local economic benefits and protect non-market economic values.

### **Management Common to All Alternatives**

“Leave No Trace” and “Tread Lightly” practices would be promoted to enhance the sustainability of resource-based activities.

BLM would support events that emphasize collaborative outreach and public awareness such as National Public Lands Day, National Fishing Week, Great Outdoors, National Trails Day, and others to promote public stewardship.

BLM would support and utilize volunteer participation and recruit and train volunteers to provide effective visitor contact assistance.

BLM would continue to provide a diverse range of quality recreation opportunities and experiences within the BFO commensurate with public demands, resource considerations, and management capabilities.

The BFO would follow BLM program direction for managing recreation on public lands by incorporating

“The BLM’s Priorities for Recreation and Visitor Services”, applicable sections of Appendix C of the Land Use Planning Handbook (USDI-BLM 2005a), and other BLM directives that are related to recreation management.

Comparable, cost effective and value based fee systems would be established for services and facilities provided to public users in accordance with the Butte Field Office Recreation Fee Area (MT-02) Business Plan, BLM directives and the Federal Lands Recreation Enhancement Act. BLM would strive to update the above Business Plan every five years to ensure site fees are appropriate over time using fair market values and cost recovery assessments.

There are no known significant caves or karsts in the Decision Area. Should these resources be discovered, BLM would develop management plans that address management, marketing, monitoring and administrative needs appropriate for the specific resource in accordance with Bureau directives.

Recreation users would be limited to 14-day camping stays with the following exceptions:

- The 7-day camping limit at Holter Lake Sites (Holter Dam, Holter Lake, Log Gulch, and Departure Point) would continue during the high-use fee season (Memorial Day to Labor Day) weekends.
- The 7-day rule would be implemented, as needed, at other sites if camping demands frequently exceed capacities during the high-use fee season (Memorial Day to Labor Day) weekends.
- Comply with Bureau directives governing dispersed camping in undeveloped areas throughout the Field Office.

Personal property of recreational users could not be unattended for more than 24 hours at recreation sites or for more than 72 hours on other BLM lands.

BLM would establish and maintain information kiosks with site maps, brochures, interpretive and educational information, important contacts, and site regulations at recreation sites.

BLM would maintain and develop a web-site of BLM recreation sites and areas that provides access information and available opportunities.

BLM would conduct periodic visitor satisfaction surveys and distribute annual fee collection and accomplishment reports to the public and encourage continual feedback from visitors.

BLM would strive to enhance voluntary compliance among recreation users through effective public education outreach efforts.

BLM would continue to conduct periodic accessibility, safety, and condition assessments in accordance with Bureau policy at developed recreation sites. Prioritize

available funds to resolve deferred and corrective maintenance needs.

BLM would conduct annual evaluations of all fee sites that address project needs, support equipment, visitor services, public comments, administrative needs, fees, site regulations, and conflict concerns.

Continue to establish partnership agreements that are mutually beneficial to BLM and the public and maintain them to enhance comprehensive planning, collaborative management, and collective funding.

- The highly successful partnership with Pennsylvania Power and Light – Montana (PPLM) would be continued during the life of the project license within the Missouri River corridor and agreements made under the Missouri/Madison Comprehensive Recreation Plan would be fulfilled.
- Challenge Cost Share opportunities and grants to offset funding shortages would be sought and utilized.
- Working relationships with tourism organizations, recreation interest groups, and local/state/other federal governments would be maintained and expanded to enhance visitor services, management efficiencies, and recreation opportunities.
- BLM would strive to maintain the existing agreement with FWP that establishes partnership efforts and responsibilities to collectively manage the Black and White Sandy sites on Hauser Lake.
- BLM would pursue opportunities to expand day-use parking capacities on Holter Lake in cooperation with the Missouri/Madison Comprehensive Recreation Plan.

BLM would continue to issue special recreation use permits as appropriate for non-motorized commercial, competitive, and special events subject to 2930 Handbook guidance, resource capabilities, social conflict concerns, professional qualifications, public safety, and public needs. New permits that directly conflict with established special recreation use permits would not be authorized. Existing permittees would be given preference. (Organized motorized events are addressed in the Travel Management section.)

BLM would continue to prioritize funding and management efforts at developed recreation sites that receive the heaviest visitation rates. Sites that cannot be managed to acceptable health and safety standards would be closed until deficiencies are corrected.

## Alternative A

No fees would be charged for commercial fishing and floating outfitters using developed BLM river access sites.

Variations (extensions) to the 14-day camping limit would be considered on a case-by-case basis subject to the following considerations: resource impacts, social conflicts, sanitation concerns, no livestock, or commercial activities would be involved.

BLM would continue to allow recreational activities including motorized vehicle uses within the Scratchgravel Hills 24 hours/day.

Authorization of commercial camping activity would be considered throughout the Field Office on a case-by-case basis subject to resource constraints, management capabilities, social conflicts, and public health and safety concerns.

Permit requests by outfitter and guide hunters would be considered on a case-by-case basis throughout the Field Office subject to environmental, social, and public health and safety concerns.

Boat-in camping would continue to be allowed on BLM shoreline lands on Hauser and Holter Lakes subject to current regulations only.

### **Management Common to Action Alternatives (B, C, and D)**

BLM would establish designated boat-in camp sites along the shoreline of Holter Lake and consider a similar designation effort for the Hauser Lake shoreline, should resource concerns warrant.

In accordance with policy guidance (IM No. 2004-150), a greater priority would be placed on extending appropriate, reoccurring permits from five years to 10 years.

BLM would coordinate with MFWP to manage appropriate uses at BLM launch sites as necessary to ensure quality recreation opportunities and experiences on State waters and affected BLM lands are collectively managed.

New sites would be developed commensurate with public demand, resource constraints, and management capabilities. Priority would be given to new sites that have partnership funding strategies and are consistent with established ROS and SRMA management guidelines.

If an existing developed recreation site significantly contributes to Land Health Standards not being met, the impacts from the site would be minimized to the extent possible.

All new recreation sites would be designed, constructed, and managed to meet, or move toward meeting, Land Health Standards.

### **Alternative B – Preferred Alternative**

Day-use Special Recreation Permits would be issued for commercial fishing and floating uses at BLM river access sites. Outfitters would be annually billed an advance flat fee (currently \$90.00) established by the Di-

rector based on the Implicit Price Deflator Index. In the long-term, the BLM would continue to coordinate with MFWP to enhance river/corridor land management and to possibly develop a multi-agency statewide fee system for the commercial uses of river access sites.

Variations to the 14-day camping limit during the hunting season would be considered on a case-by-case basis subject to the following considerations: resource impacts, social conflicts, sanitation concerns, no livestock, or commercial activities would be involved. Preference will be given to developed recreation sites during this low use period since they provide hardened camping units, toilet facilities, and good access.

The interior portions of the Scratchgravel Hills area would be closed to motorized vehicle use yearlong except on limited routes needed for residential access. Signs and gates would be installed at appropriate access points to notify users of the closures.

Commercial camping permits within developed fee sites would not be allowed during the fee season (Memorial Day to Labor Day).

In order to reduce user conflicts and resource impacts, special recreation use permits during the hunting season would be limited to day-use activities with the exception that camping uses would be considered within developed recreation sites with hardened camping units during the non-fee season.

Boat-in camping at dispersed sites (excluding Beartooth Landing) on BLM lands along the east shoreline of Holter Lake would be limited to designated sites only. Site availability would be determined through field evaluations by an interdisciplinary team. Suitable sites where impacts to other important resources (wildlife, cultural resources, riparian, vegetation, etc.) are acceptable would be designated, signed, and available to the public on a first-come, first-served basis. A similar management system would be undertaken for BLM lands on Hauser Lake should conditions warrant.

Under Alternative B, human food storage regulations would be developed and implemented for all recreation sites with high potential and/or known encounters between people and bears.

### **Alternative C**

Day-use Special Recreation Permits would be issued for each commercial fishing and floating outfitter that uses developed BLM river access sites. Outfitters would be billed in advance at a rate of \$90.00 per year. Final bills would be assessed based on actual use reports and established BLM policies. An estimated additional 200 to 300 permits per year would need to be processed.

No variations to 14-day camping limits would be allowed.

Commercial camping permits within developed fee sites would not be allowed during the fee season (Memorial Day to Labor Day).

Special recreation use permits during the hunting season would be limited to day-use activities only.

The entire BLM shoreline along Hauser and Holter Lakes excluding developed sites would be closed to camping.

Like in Alternative B, human food storage regulations would be developed and implemented for all recreation sites with high potential and/or known encounters between people and bears.

### Alternative D

BLM would postpone fees for commercial fishing and floating outfitters using developed BLM river and lake sites accessing state waterways until a multi-agency statewide fee system is established. Under this system BLM would receive a portion of collections based on a percentage of total sites under the statewide system. This system would be customer friendly and would ensure interagency coordination for managing uses on state waterways.

Like Alternative B, variances to the 14-day camping limit would be considered on a case-by-case basis subject to the following considerations: resource impacts, social conflicts, sanitation concerns, no livestock, or commercial activities would be involved. Preference will be given to developed recreation sites during this low use period since they provide hardened camping units, toilet facilities, and good access.

Motorized and non-motorized recreational uses would be allowed 24 hours/day in the Scratchgravel Hills area in accordance with the travel management plan.

Authorization of commercial camping activity would be considered throughout the Field Office on a case-by-case basis subject to resource constraints, management capabilities, social conflicts, and public health and safety concerns.

Permit requests by outfitter and guide hunters would be considered on a case-by-case basis throughout the Field Office subject to environmental, social, and public health safety concerns.

Boat-in camping along the BLM shoreline on Hauser and Holter Lakes would continue under current regulations.

## RECREATION SITES

### Management Common to All Alternatives

Recreation sites and facilities would be maintained and managed to promote resource value protection, public safety and health, quality facilities, visitor experiences,

management efficiency, and value based returns. These sites are listed by recreation management areas in Chapter 3. The location of these sites is displayed on AMS Figures 2-24a, 2-24b, and 2-24c.

## RECREATION OPPORTUNITY SPECTRUM

### Alternative A – No Action

There would be no ROS classifications to identify and map essential landscape settings to meet public preferences and manage recreation-related experience expectations. Recreation opportunities would be evaluated on a case-by-case basis as part of project planning.

### Management Common to Action Alternatives (B, C, and D)

Under the action alternatives, an objective would be to manage ROS classes for desired recreation opportunities, experience levels, facility developments, and other resource uses. **Appendix H – Recreation Opportunity Spectrum** contains a description of ROS categories.

### Alternative B – Preferred Alternative

Recreation settings and opportunities would be managed in accordance with the classifications in **Table 2-14** and **Map 26**. This alternative emphasizes slightly more motorized recreation than Alternative C but less than Alternative D.

ROS Class	Acres <sup>1</sup>
Semi-Primitive Non-Motorized	36,800
Semi-Primitive Motorized	71,800
Roaded Natural	171,100
Roaded Modified	16,600
Rural	11,000

<sup>1</sup> Acres are approximate and rounded to nearest 100.

### Alternative C

Recreation settings and opportunities would be managed in accordance with the classifications in **Table 2-15** and **Map 27**. This alternative provides for the greatest amount of non-motorized recreation, and less motorized recreation than any of the action alternatives.

ROS Class	Acres <sup>1</sup>
Semi-Primitive Non-Motorized	63,700
Semi-Primitive Motorized	66,900
Roaded Natural	158,100
Roaded Modified	15,900
Rural	2,700

<sup>1</sup> Acres are approximate and rounded to nearest 100.

## Alternative D

Recreation settings and opportunities would be managed in accordance with the classifications in **Table 2-16** and **Map 28**. This alternative provides for the greatest amount of motorized recreation, and the least amount of non-motorized recreation than any of the alternatives.

<b>ROS Classes</b>	<b>Acres<sup>1</sup></b>
Semi-Primitive Non-Motorized	30,000
Semi-Primitive Motorized	37,600
Roaded Natural	186,100
Roaded Modified	19,600
Rural	34,000

<sup>1</sup> Acres are approximate and rounded to the nearest 100.

## SPECIAL RECREATION MANAGEMENT AREAS (SRMAS)

### Management Common to All Alternatives

The management objective for Special Recreation Management Areas would be to meet the needs for their primary recreation tourism markets, needed recreation management zones, Recreation Opportunity Spectrum, and primary recreation opportunities. Special Recreation Management Areas would be designated under all alternatives to guide recreation management priorities. The remaining BLM lands not designated as SRMAS would be managed as an Extensive RMA. This area would be managed on a lower priority basis with a few exceptions at some specific sites/locations due to use concentrations, resource concerns, and/or public demand.

### Alternative A – No Action

Planning efforts, recreation opportunities and management would continue to be prioritized at the five Special Recreation Management Areas (Holter Lake/Sleeping Giant, Lewis & Clark National Trail, Upper Big Hole River, Humbug Spires, and Scratchgravel Hills) displayed on **Map 29**. The remainder of the field office, identified as the Headwaters Extensive Recreation Management Area, would be managed on a custodial or lower priority basis with a few exceptions at some specific sites.

### Management Common to Action Alternatives (B, C, and D)

Implementation plans for Special Recreation Management Areas (SRMAS) and delineated Recreation Management Zones would be developed where specific management, marketing, monitoring and administrative guidance is needed.

Although designation of SRMAS varies under the action alternatives by alternative, if designated, **Table 2-17** indicates the primary recreational management strategy (primary recreation tourism market, needed recreation management zones, ROS, and primary recreation opportunities) for each of the potential SRMAS.

### Alternative B – Preferred Alternative

Nine SRMAS would be designated for priority management. This alternative would establish two new areas (Pipestone and Sheep Mountain); split the Holter Lake/Sleeping Giant SRMA into two separate areas (Sleeping Giant/Missouri River and Lower Holter Lake/Missouri River given their distinctly separate Recreation Tourism Markets (RTMs)); and replace the Lewis & Clark Trail with two priority areas (Hauser Lake and Uppermost Missouri River).

These nine SRMAS are depicted on **Map 30**. These areas are:

- Lower Holter Lake/Missouri River,
- Sleeping Giant/Missouri River,
- Hauser Lake,
- Uppermost Missouri River,
- Scratchgravel Hills,
- Sheep Mountain,
- Pipestone,
- Upper Big Hole River, and
- Humbug Spires.

Two new areas, Pipestone and Sheep Mountain, would be designated as SRMAS. Planning guidance would include area specific travel management plans, recreation site plans, ROS and VRM classifications and other directives.

### Alternative C

The same nine SRMAS designated in Alternative B would also be designated in Alternative C. These SRMAS are depicted on **Map 30**.

### Alternative D

Five SRMAS would be designated for priority management. Management would focus on the most developed and heavily used BLM areas. These five SRMAS are depicted on **Map 31**. The areas are:

- Lower Holter Lake/Missouri River,
- Hauser Lake,
- Uppermost Missouri River,
- Pipestone, and
- Upper Big Hole River.

<b>SRMA</b>	<b>Recreation Tourism Market</b>	<b>Recreation Management Zones</b>	<b>ROS</b>	<b>Primary Recreation Opportunities</b>
Lower Holter Lake/Missouri River	Community	One	Rural	Developed camping and day-use activities, lake access for motorized boating, fishing, swimming, picnicking, and group gatherings.
Sleeping Giant/Missouri River	Undeveloped	Two subunits: Sleeping Giant ACEC/Preliminarily WSR reach of Missouri R. above Holter Lake and non-ACEC portion of Sleeping Giant	ACEC/Eligible W&SR Lands; Semi-Primitive, Non-motorized Non-ACEC; Semi-primitive, Motorized	ACEC Eligible W&SR Lands; Primitive shoreline camping, fishing, hiking, hunting, horseback riding and natural viewing. Non-ACEC; Limited motorized travel, pleasure driving, hunting, horseback riding and natural viewing.
Lewis & Clark National Trail	Community	One	Primarily Roded Natural	Developed camping and day-use activities, lake access for boating/floating, fishing, swimming, picnicking, and group gatherings.
Scratchgravel Hills	Community	One	Rural	Hiking, mountain biking, horseback riding, hunting, and driving for pleasure.
Pipestone	Community	One	Roded Natural	OHV riding, driving for pleasure, semi-developed camping, hunting, horseback riding, hiking and mountain biking.
Upper Big Hole River	Destination	One	Primarily Roded Natural	Semi-developed camping, limited motorized pleasure driving, river access for floating and fishing, fall hunting, hiking and natural viewing.
Humbug Spires	Undeveloped	One	Semi-primitive, Non-motorized	Hiking, backpacking, rock climbing, primitive camping, fishing, and hunting.
Hauser Lake	Community	One	Hauser Lake: primarily Roded Natural	Hauser Lake: Developed camping, lake access for boating, fishing, swimming, picnicking, and group gatherings.
Uppermost Missouri River	Community	One	Primarily Rural	Semi-Developed camping, lake access for motorized and non-motorized boating, fishing, picnicking and upland hunting.
Sheep Mountain	Community	Two sub-units separated by Sheep Mountain Access road	Northern sub-unit; Semi-primitive, Non-motorized Southern sub-unit; Roded Natural	Northern sub-unit; Hiking, rock climbing, hunting and natural viewing. Southern sub-unit; OHV riding, driving for pleasure, semi-developed camping, and hunting.

## SPECIAL DESIGNATIONS

**INCLUDING AREAS OF CRITICAL ENVIRONMENTAL CONCERN (ACECS), NATIONAL TRAILS, WILD AND SCENIC RIVERS AND WILDERNESS STUDY AREAS (WSAs)**

### ACECs

**Goal** – Designate ACECs where special management attention is required to protect important and relevant values.

### Management Common to All Alternatives

The Sleeping Giant ACEC would continue to be managed as an ACEC. While this ACEC was identified as being 11,609 acres when it was originally designated, more accurate GIS calculations based on its original boundaries indicate a size of 11,679 acres.

### Alternative A – No Action

No new ACECs would be established. The pre-existing Sleeping Giant ACEC (11,679 acres) would continue to be managed under the original management plan.

### Management Common to Action Alternatives (B, C, and D)

Information on the relevant and important values evaluations of the five potential ACECs reviewed in this planning process is summarized in **Table 2-18**, Chapter 3, and **Appendix I – ACECs**. The general location of the five Potential ACECs is shown on **Map 32**. Boundaries of Sleeping Giant, Humbug Spires, Spokane Creek, and Ringing Rocks potential ACECs would be the same (as shown on **Map 32**) in all alternatives in which they are individually proposed. **Map 32** displays proposed ACEC designations under Alternative C in which all potential

ACECs would be proposed. Boundaries of the Elkhorns potential ACEC vary by alternative as described and shown below.

In discussions of each individual ACEC below, general management direction is characterized by major management activity category. Special management prescriptions are designated as such:

❖ *special management prescriptions*

Relevant and important values in areas not proposed for ACEC designation under a given RMP alternative would be managed in accordance with the direction specified for each resource or program under that particular alternative.

In the event that WSAs designated as ACECs become designated as wilderness, ACEC management would be dropped upon development of wilderness management plans.

### *Sleeping Giant ACEC*

Sleeping Giant ACEC (11,679 acres) would be managed as an ACEC under all action alternatives under its original management plan with the following modifications. Management direction is characterized by major management category in the existing plan.

- ❖ *Area would be closed to all new rights-of-way. Maintenance of the existing Towhead/Falls Gulch Power line would be allowed. Future upgrades would be authorized provided impacts to the ACEC resources are not degraded.*
- ❖ *Discretionary management actions would only be allowed to protect or enhance ecosystems, and long-term ACEC values (naturalness, primitive and unconfined forms of recreation, solitude experiences, visual resources, native wildlife, and cultural resources).*

<b>Table 2-18 Potential ACECs</b>	
<b>ACEC</b>	<b>Relevant and Important Values</b>
Sleeping Giant	<ul style="list-style-type: none"> <li>• Outstanding scenic qualities.</li> <li>• Diverse upland and aquatic habitat for wildlife and fish.</li> </ul>
Elkhorn Mountains	<ul style="list-style-type: none"> <li>• Important cultural/historic sites.</li> <li>• Diverse upland and aquatic habitat for wildlife and fish.</li> <li>• Unique National management area.</li> </ul>
Spokane Creek	<ul style="list-style-type: none"> <li>• Natural aquatic and riparian habitat.</li> <li>• Critical fish spawning stream for Hauser Lake.</li> </ul>
Ringing Rocks	<ul style="list-style-type: none"> <li>• Rare and unique geological rock feature.</li> </ul>
Humbug Spires	<ul style="list-style-type: none"> <li>• Outstanding scenic qualities.</li> <li>• Unique geological features.</li> <li>• Diverse upland and aquatic habitat for plants, animals, and fish.</li> </ul>

- ❖ *For the entire river/lake shoreline, the existing livestock grazing restrictions outlined in the current grazing lease and Oxbow Allotment Management Plan would continue to be implemented. BLM would cooperatively work with the lessee to restrict and/or manage livestock grazing along the river/lake shoreline from Memorial Day weekend through Labor Day weekend to enhance primitive recreation experiences, soil/water quality conditions, visual resources, and natural values.*
- BLM would seek opportunities to allow for prescribed natural fires and develop a coordinated management plan if appropriate.
- In addition to controlling noxious weeds through chemical and biological means, mechanical (hand pulling) efforts would also be utilized where practical.
- ROS management for the ACEC would be semi-primitive non-motorized.
- With the exception of the Beartooth Landing Site, docks would not be authorized at the primitive shoreline sites.
- ❖ *Cutting of dead and down material for firewood would not be allowed unless specifically authorized.*
- ❖ *Aerial spraying along the streams and river (300 feet from water) would be prohibited.*

### ***Humbug Spires Potential ACEC***

The Humbug Spires potential ACEC (8,374 acres) would be managed as an ACEC under all action alternatives under the following management guidance. Management direction is characterized by critical resource and resource use categories below.

#### **Recreation Opportunity Spectrum**

- ACEC would be managed for Semi-Primitive Non-motorized experiences.

#### **Motorized Travel Management**

- Area would be closed yearlong to all motorized travel in order to protect natural and scenic values.
- ❖ *No new roads or motorized trails would be authorized.*
- Motorized route closures would be managed within the area in accordance with the Upper Big Hole River Travel Plan.

#### **Visual Resource Management**

- ACEC would be managed for VRM Class II objectives.

#### **Land Ownership/Adjustment**

- All BLM lands would be retained in the ACEC.

- ❖ *High priority would be given to acquiring inholding lands or interests and adjacent lands along Moose Creek on east boundary from willing landowners to enhance management and ACEC values.*

- ❖ *Area would be classified as not suitable for Recreation and Public Purposes patent actions.*

#### **Land Use Authorizations**

- ❖ *Area would be closed to all new rights-of-way and 2920 Permits and Leases.*
- ❖ *Area would be classified as not suitable for Recreation and Public Purposes lease actions.*

#### **Leasable Minerals (Oil and Gas)**

- ❖ *Oil and Gas activities would be subject to No Surface Occupancy (would apply if the Humbug Spires WSA were released from wilderness consideration).*
- ❖ *Area would be unavailable to all other mineral leases.*

#### **Locatable Minerals**

- ACEC values would be protected from undue and unnecessary degradation.
- A Plan of Operations would be required for any surface disturbing activity greater than casual use in the ACEC.

#### **Salable Minerals**

- The area would be unavailable to salable minerals.

#### **Vegetation Management**

- ❖ *Management activities would be allowed to restore ecosystems provided natural, primitive recreation, native wildlife and scenic values are protected.*

#### **Fire**

- BLM would seek opportunities with surrounding landowners (private/FS) to allow natural fires to burn when they are within established prescriptions and beneficial to ACEC values.
- Prescribed fires would only be used in situations that would benefit ACEC values.

#### **Livestock Grazing**

- ❖ *Management would ensure against unauthorized livestock grazing (maintain/build boundary fences, cattle guards and closely monitor livestock trailing).*
- Management activities would only be allowed to protect or enhance ecosystems and ACEC values.

#### **Additional Special Management**

- ❖ *BLM would assess alternatives and implement measures to minimize visitor encounters and enhance solitude experiences along the established hiking trail.*

- ❖ *The existing trail would be rerouted/maintained to address erosion and water quality concerns.*
- ❖ *Outfitter camping use within 200 feet of existing trail would be eliminated.*
- ❖ *Special permit uses would be eliminated during summer holiday weekends if conflicts arise with other public visitors.*
- ❖ *BLM would close rock climbing on spires with active raptor nests to outfitter uses and educate the public about the importance of avoiding such locations.*
- ❖ *The interpretative information displayed at the Moose Creek Trailhead would be improved to:*
  - *Describe the area and its important/relevant characteristics.*
  - *Educate visitors about resource protection and Leave No Trace principles.*
  - *Display a quality map of the area.*

### ***Elkhorns Potential ACEC***

The Elkhorns potential ACEC would be managed as an ACEC in all action alternatives. The size of this potential ACEC would vary by alternative as described for each alternative below. Management direction is characterized by major management activity categories by alternative.

### **Alternative B – Preferred Alternative**

Four potential ACECs would be designated totaling 70,644 acres. These areas are Sleeping Giant (11,679 acres), Elkhorns (50,431 acres), Humbug Spires (8,374 acres), and Ringing Rocks (160 acres). The Elkhorns ACEC would include priority wildlife and primitive recreation lands as a subset of the area described in the interagency MOU as the Elkhorn Mountains Cooperative Wildlife Management Unit boundary (**Map 33**). Therefore the Elkhorns ACEC boundary in Alternative B does not match the area described as the cooperative management unit in the interagency MOU.

Proposed management of Sleeping Giant and Humbug Spires is described in “Management Common to Action Alternatives” above.

### ***Ringing Rocks Potential ACEC (160 acres)***

The Ringing Rocks withdrawal was established in 1965. The Montana Bureau of Mining and Geology evaluation concluded that while the greater surrounding area has high mineral potential, the Ringing Rocks withdrawal area has low to no mineral potential.

The Ringing Rocks is a geologic feature resulting from a combination of chemical composition and jointing patterns which chime when struck. Rocks removed from the formation do not ring. The only other ringing rocks

formation known in the United States is located in Pennsylvania.

If the Ringing Rocks feature was changed in any way, including mining, it could not be reclaimed to the extent that the rocks would once again ring.

### **Salable Minerals**

- ❖ *The area would be unavailable to salable minerals.*

### **Vegetation Management**

- ❖ *Vegetation treatments would be planned to ensure that the visual qualities of the 160-acre area are not adversely impacted.*

### **Additional Special Management**

BLM would manage the area as follows.

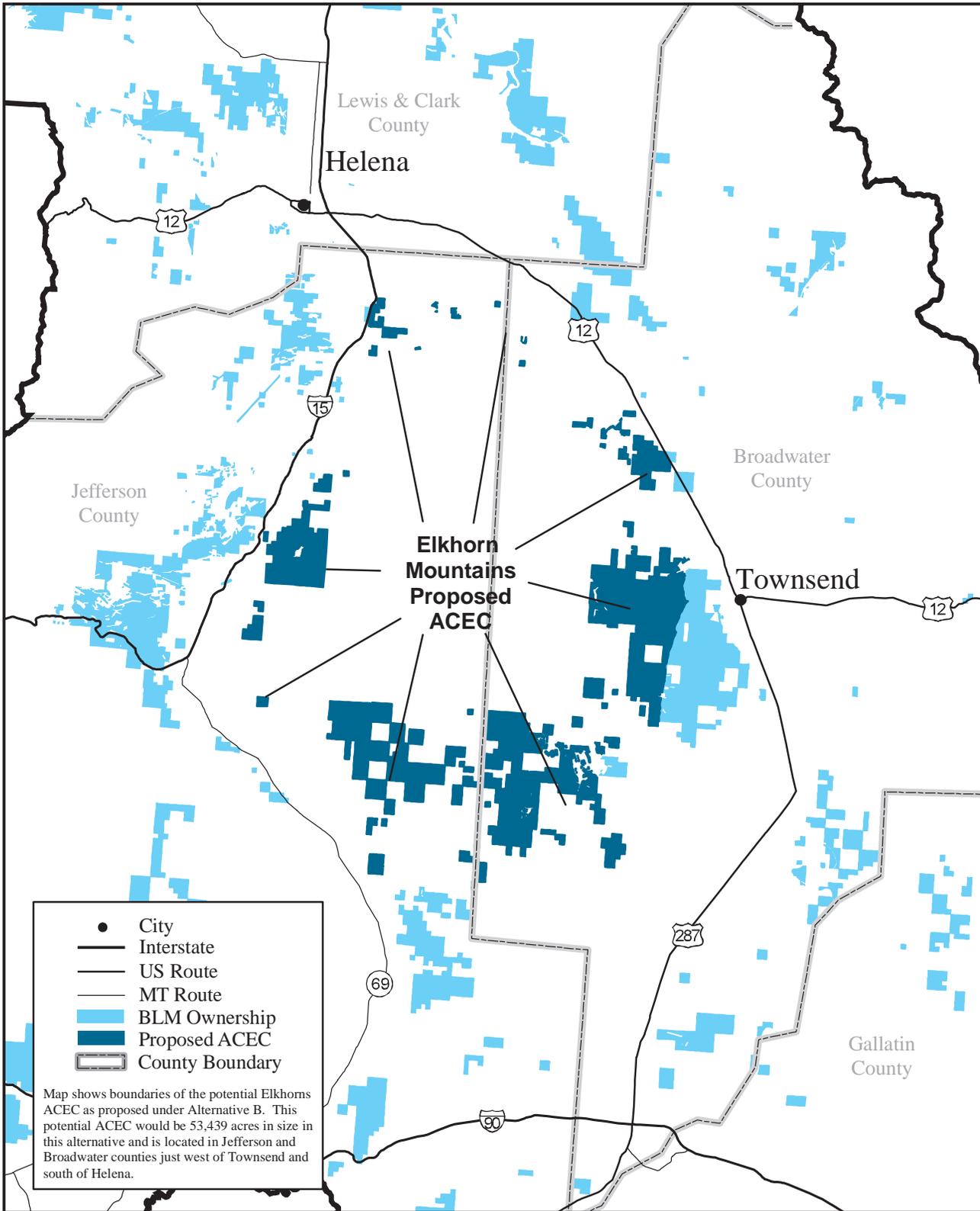
- ❖ *Improve interpretative information displayed at the site to:*
  - *Discuss the uniqueness of the rock formation.*
  - *Educate visitors about the importance of protecting the rock features*
  - *Describe the cultural / mining history of the area*
- ❖ *Collection/removal of rocks within the formation would not be allowed.*
- ❖ *Reclaim the nearby abandoned mine shaft.*
- ❖ *Protect any cultural features at risk.*

### ***Elkhorns Potential ACEC (50,431 acres)***

The Elkhorns potential ACEC boundary was developed based on modifications to the geographic area described for management of the Elkhorns Cooperative Wildlife Management Unit in the interagency MOU. Modifications to that boundary are proposed in this alternative to focus most on areas important to wildlife and non-motorized recreation (**Map 33**). Management direction for the Elkhorns ACEC by major management categories is described below.

### **Recreation Opportunity Spectrum**

- Majority of the area would be managed as Roded Natural.
- Elkhorns Tack-on WSA would be managed as Semi-Primitive Non-motorized.
- Wood-Horse Gulch area North of BPA road would be managed as Semi-Primitive Motorized.
- Nursery-Golconda Creek area northwest of WSA would be managed as Semi-Primitive Motorized.
- Parcels between Dutchman and Prickly Pear Creek would be managed as Semi-Primitive Motorized.



● City  
 — Interstate  
 — US Route  
 — MT Route  
 ■ BLM Ownership  
 ■ Proposed ACEC  
 □ County Boundary

Map shows boundaries of the potential Elkhorns ACEC as proposed under Alternative B. This potential ACEC would be 53,439 acres in size in this alternative and is located in Jefferson and Broadwater counties just west of Townsend and south of Helena.

0 12 Miles  
 Map Scale 1:1,500,000

Map generated by the Butte Field Office in February 2007  
 Albers Equal Area, NAD83 Projection



**Map 33: Elkhorn Mountains Proposed Areas of Critical Environmental Concern (ACEC) Under Alternative B**

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Butte Field Office  
 Proposed RMP/Final EIS

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- Johnny-Keating area would be managed as Roaded Modified.

### Motorized Travel Management

- Motorized travel would be “limited” to designated routes in order to protect wildlife and non-motorized recreation values.
- No new permanent roads or motorized trails would be authorized for public use (road relocation would be allowed to protect resources, maintain access and/or protect human safety).
- Existing road closures would be maintained and enforced per the 1995 Elkhorns travel plan. BLM would re-evaluate and/or monitor routes to determine if changes to existing plan are required.
- ❖ *Non-motorized recreation would be promoted and emphasized.*

### Visual Resource Management

- The majority of the area would be managed as VRM Class III and IV.
- The Elkhorns Tack-on WSA would be managed as VRM Class II.
- High visibility lands along Missouri River, canyon cliffs along Indian Creek and scattered parcels adjacent to FS north and west boundaries would be managed as VRM Class II.

### Land Ownership/Adjustment

- ❖ *All BLM lands within the ACEC would be retained in BLM public ownership.*
- ❖ *Areas would be classified as not suitable for Recreation and Public Purposes patent actions.*
- ❖ *Priority would be given to acquire lands (fee title/easements) to “block up” BLM lands within and adjacent to the ACEC to enhance relevant and important values, manageability and public access to or within the area.*

### Land Use Authorizations

- ❖ *The ACEC would be open to new rights-of-way and 2920 Permits and Leases with restrictions to protect area values.*
- ❖ *Area would be classified as not suitable for Recreation and Public Purposes lease actions.*

### Leasable Minerals (including Oil and Gas)

- No Surface Occupancy would be allowed in Muskrat Creek Watershed.
- No Surface Occupancy would be allowed in Crow Creek Campground.
- No Surface Occupancy would be allowed in sensitive plant population locations.

- Remaining area would be subject to stipulations for oil and gas exploration for Alternative B.

### Locatable Minerals

ACEC lands would be open to operations under the Mining Laws. An approved Plan of Operations would be required for surface disturbing activity greater than casual use.

### Salable Minerals

- Salable minerals sales would be allowed in a way that minimizes impacts to wildlife and recreation.

### Vegetation Management

- ❖ *The Elkhorns would be managed as an ecological unit across political boundaries for the purpose of sustaining ecological systems, including the full range of potential biological diversity and ecosystem processes.*
- ❖ *No timber salvage would be allowed unless beneficial to ACEC values or needed for human safety.*

### Wildlife

- ❖ *Current direction outlined in the Memorandum of Understanding (MOU) signed by MFWP, USFS, and BLM would be followed within a modified boundary from the one described in the MOU.*
- Wildlife and wildlife habitats would be managed to support populations of species associated with endemic vegetative communities, with emphasis on providing the necessary habitat components for those species with special needs.
- Management activities would have long-term benefits to wildlife and would minimize short-term impacts (with the exception of mining).
- The BLM would seek opportunities to convert sheep allotments to cattle allotments at the time an allotment is vacated, sold, or transferred. Existing sheep allotments would remain in effect unless the permittee is interested in working with the BLM to convert to cattle.
- BLM would continue to actively participate in partnerships.
- ❖ *BLM would continue to work with MFWP and the USFS to resolve issues in the Elkhorn Mountain Range.*
- Activity timing restrictions for burning, noise and ground disturbance would be enforced.

### Fire

- BLM would seek opportunities with surrounding landowners (private/FS) to allow natural fires to burn when within established prescriptions.

- BLM would continue following the existing Elkhorns Fire Management Plan but evaluate all opportunities for natural fire use.

### Livestock Grazing

- BLM would provide priority management to ensure against unauthorized livestock grazing (maintain/build boundary fences, cattle guards and closely monitor livestock trailing).
- Management activities would be allowed only to maintain or enhance ecosystems, natural qualities, and scenic values.

### Cultural

- BLM would refrain from developing any additional roads to prevent further degradation to historic ditches, dams, and reservoirs.

### Alternative C

All five potential ACECs would be designated totaling 87,893 acres. These areas are Sleeping Giant (11,679 acres), Elkhorns (67,665 acres), Humbug Spires (8,374 acres), Spokane Creek (14 acres), and Ringing Rocks (160 acres). The Elkhorns ACEC would be enlarged to include all BLM lands within the interagency MOU boundary (**Map 34**).

Management direction for Sleeping Giant and Humbug Spires would be the same as that described in “Management Common to Action Alternatives” above. Management direction for Spokane Creek and Ringing Rocks would be the same as that described for Alternative B.

#### *Elkhorns Potential ACEC (67,665 acres)*

The proposed boundary for this ACEC in this alternative incorporates the geographic boundary described in the interagency Elkhorns Wildlife Management Unit MOU. Management direction for the Elkhorns ACEC would be the same as that described for Alternative B with the following variations.

#### Motorized Travel Management

- Motorized travel would be “Limited” to designated routes in order to protect wildlife and non-motorized recreation values (except for play area near Radersburg).
- ❖ *Non-motorized recreation would be emphasized and promoted except in the Radersburg play area.*

#### Wildlife

- ❖ *The current direction outlined in MOU signed by MFWP, the USFS and the BLM would be followed within the entire boundary around the Elkhorn Mountain Range as described in the MOU.*

### Cultural

- BLM would conduct thorough research on the Hassel Canyon flume with the intent of interpreting the structure at some point in the future.

### Locatable Minerals

- ❖ *Approximately 180 acres in riparian areas of the Muskrat and Nursery Creek drainages would be recommended for withdrawal from mineral entry.*

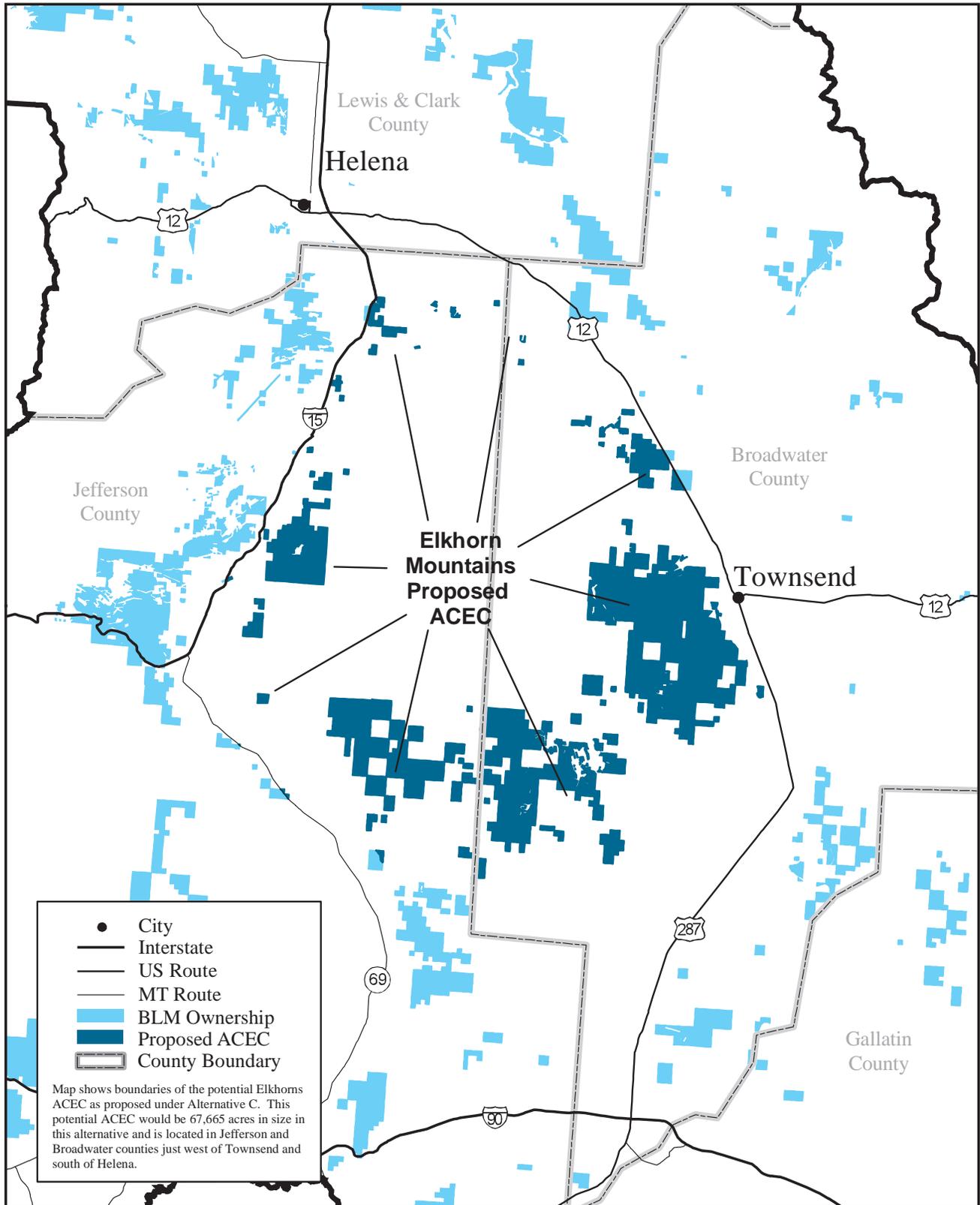
Westslope cutthroat trout have declined in abundance, distribution, and genetic diversity throughout their native range. In the Missouri River drainage of Montana genetically pure westslope cutthroat trout are estimated to persist in less than 5 percent of the habitat they once occupied. To prevent listing under the Endangered Species Act, federal and state managers need to ensure conservation of local populations, preservation of genetic diversity and work towards the long-term, self-sustaining persistence of westslope cutthroat trout (MFWP 1999).

Muskrat Creek has importance to westslope cutthroat trout restoration beyond the local level because after a ten year, \$50,000 restoration effort, its population is now used as a donor source to re-establish westslope cutthroat trout in a number of different locations in the State of Montana. Montana Fish, Wildlife and Parks has identified Muskrat Creek as the most secure and having the strongest population of westslope cutthroat trout in the entire Elkhorn Mountain range.

The 180 acres proposed for the Muskrat/Nursery Creek withdrawal would provide the minimum amount of protection to water quality, stream morphology, and riparian function to protect the restored and unique population of westslope cutthroat trout.

This withdrawal would protect the genetically pure westslope cutthroat trout population in Muskrat Creek by preventing loss of riparian vegetation, streambed and bank destabilization, erosion and sedimentation, loss of floodplain vegetation, alteration of floodplain morphology, and alteration of stream channel morphology that could occur in association with locatable mineral activity, particularly placer mining. Another key impact that placer mining (including casual use) could have on westslope cutthroat trout, is excavation, crushing, or disturbance of streambed gravels during the critical period when trout are spawning and eggs are incubating/hatching. If mining operations cause a decline in the population, the population may no longer be able to function as a donor source for Montana and impede restoration efforts.”

Muskrat and Nursery Creek are located in the southern Elkhorn WSA which was evaluated in the joint Bureau of Mines and USGS report Mineral Summary Bureau of Land Management Wilderness Study Areas in Montana (1990). In the Muskrat and Nursery Creek areas the report concluded that there is high resource potential for



● City  
 — Interstate  
 — US Route  
 — MT Route  
 ■ BLM Ownership  
 ■ Proposed ACEC  
 □ County Boundary

Map shows boundaries of the potential Elkhorns ACEC as proposed under Alternative C. This potential ACEC would be 67,665 acres in size in this alternative and is located in Jefferson and Broadwater counties just west of Townsend and south of Helena.

0 ————— 12 Miles  
 Map Scale 1:1,500,000

Map generated by the Butte Field Office in February 2007  
 Albers Equal Area, NAD83 Projection

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**Map 34: Elkhorn Mountains Proposed Areas of Critical Environmental Concern (ACEC) Under Alternative C**

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copper, molybdenum and tungsten with a certainty level of D (available information clearly defines the level of mineral resource potential, the highest level of confidence), as well as a moderate mineral resource potential for uranium and thorium with a certainty level of C (Available information gives a good indication of the level of resource potential, US DOI Bureau of Mines and USGS, 1990).

No potential for placer mining has been identified in either Muskrat or Nursery Creek; therefore there is a very low probability of any proposals being submitted to the BLM. In the absence of a mineral withdrawal, should a miner propose to conduct placer mining in these drainages, timing stipulations could be attached to the permit to protect critical periods of spawning and incubation/hatching. Should lode mining be proposed for any of resources identified in the Bureau of Mines report mining practices, BMPs, reclamation/rehabilitation techniques, and bonding would be applied. If unavoidable impacts were to occur they would be mitigated through restoration at the conclusion of mining to the extent practicable. In spite of these measures, minerals operations that substantially reduce the size of the westslope cutthroat trout population and/or have long-term substantial adverse effects on aquatic habitat could eliminate the ability to use this fish population as a donor source to re-establish other populations.

The remaining ACEC lands would be open to operations under the Mining Laws. An approved Plan of Operations would be required for surface disturbing activity greater than casual use.

## Alternative D

Three potential ACECs would be designated in Alternative D totaling 23,628 acres. These areas are Sleeping Giant (11,679 acres), Elkhorns (3,575 acres), and Humbug Spires (8,374 acres). The Elkhorns ACEC boundary would be reduced to include only the WSA lands within the MOU boundary (**Map 35**).

Management direction for Sleeping Giant and Humbug Spires would be the same as that described above.

### *Elkhorns Potential ACEC (3,575 acres)*

In this alternative the Elkhorns potential ACEC would only include the 3,575 acre WSA boundary. Proposed management for this area by major management category is described below.

### Recreation Opportunity Spectrum

- The area would be managed as Semi-Primitive Non-motorized.

### Motorized Travel Management

- Motorized travel would be “limited” to designated routes in order to protect wildlife and non-motorized recreation values.

- No new permanent roads or motorized trails would be authorized for public use (road relocation would be allowed to protect resources, maintain access and/or protect human safety).
- Existing road closures would be maintained and enforced in accordance with the 1995 Elkhorns travel plan. BLM would re-evaluate and/or monitor routes to determine if changes to existing plan are required.
- Non-motorized recreation would be emphasized and promoted within the ACEC.

### Visual Resource Management

- The area would be managed as VRM Class II.

### Land Ownership/Adjustment

- ❖ *All BLM lands within the ACEC would be retained in BLM public ownership.*
- ❖ *Area would be classified as not suitable for Recreation and Public Purposes actions.*
- ❖ *Priority would be given to acquire lands (fee title/easements) to “block up” BLM lands within and adjacent to the ACEC to enhance relevant and important values, manageability and public access to or within the area.*

### Land Use Authorizations

- The ACEC would be open to new rights-of-way and 2920 Permits and Leases with restrictions to protect area values.

### Leasable Minerals (including Oil and Gas)

- No Surface Occupancy would be allowed in Muskrat Creek Watershed.

### Locatable Minerals

- ACEC lands would be open to operations under the Mining Laws. An approved Plan of Operations would be required for surface disturbing activity greater than casual use.

### Salable Minerals

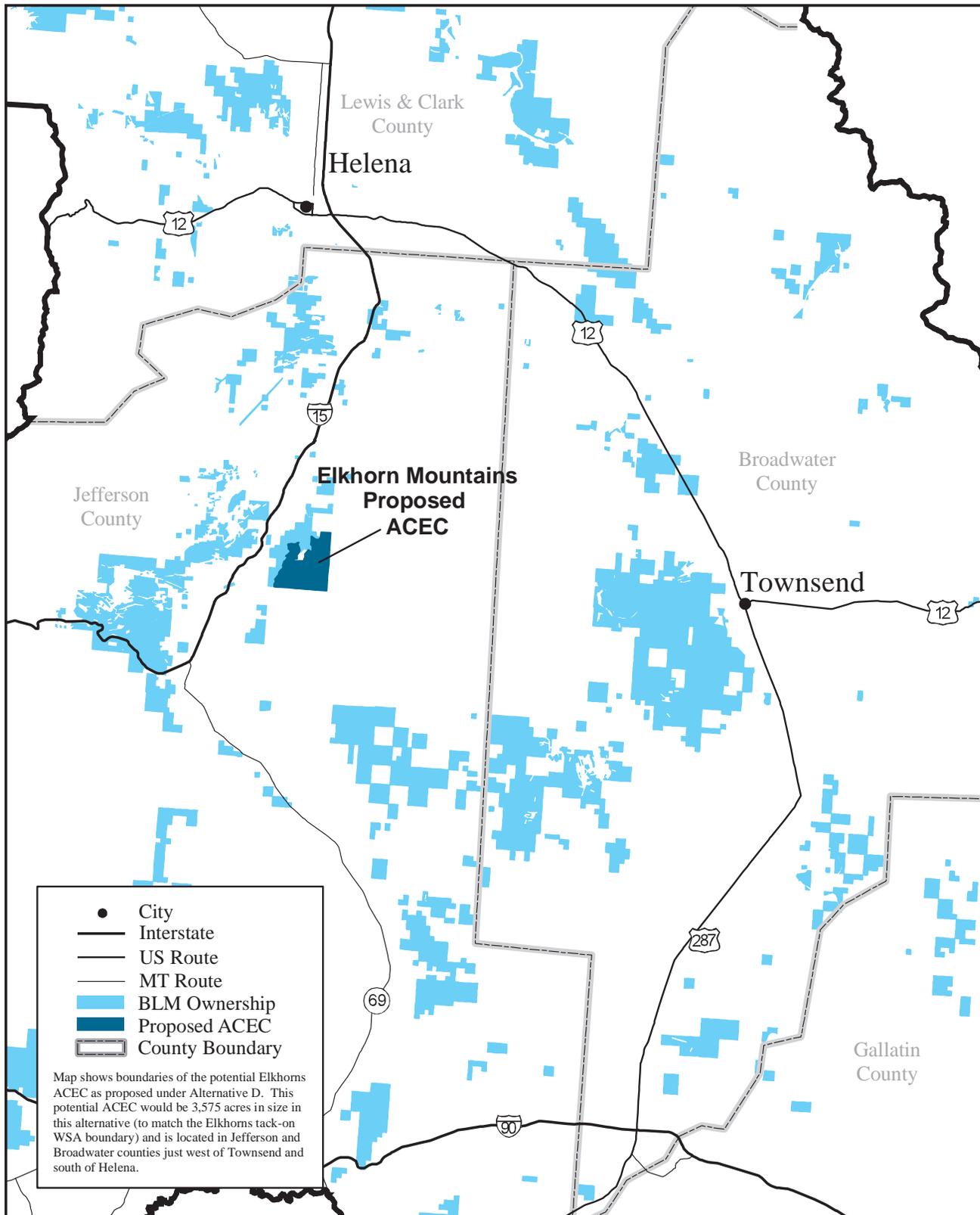
- Salable minerals sales would be allowed in a way that minimizes impacts to wildlife and recreation.

### Vegetation Management

- ❖ *No timber salvage would be allowed unless beneficial to ACEC values or needed for human safety.*

### Wildlife

- ❖ *The current direction outlined in MOU signed by MFWP, the USFS and the BLM would be followed within the existing WSA boundary.*
- The Muskrat and Nursery Creek drainages would be managed as an ecological unit for the purpose of sustaining ecological systems, including the full



● City  
 — Interstate  
 — US Route  
 — MT Route  
 ■ BLM Ownership  
 ■ Proposed ACEC  
 □ County Boundary

Map shows boundaries of the potential Elkhorns ACEC as proposed under Alternative D. This potential ACEC would be 3,575 acres in size in this alternative (to match the Elkhorns tack-on WSA boundary) and is located in Jefferson and Broadwater counties just west of Townsend and south of Helena.

0 12 Miles  
 Map Scale 1:1,500,000

Map generated by the Butte Field Office in February 2007  
 Albers Equal Area, NAD83 Projection

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**Map 35: Elkhorn Mountains Proposed  
 Areas of Critical Environmental Concern  
 (ACEC) Under Alternative D**  
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 Proposed RMP/Final EIS

range of potential biological diversity and ecosystem processes.

- ❖ *Wildlife and wildlife habitats would be managed to support populations of species associated with endemic vegetative communities, with emphasis on providing the necessary habitat components for those species with special needs.*
- Management activities would have long-term benefits to wildlife and would minimize short-term impacts (with the exception of mining where long-term impacts could potentially occur).
- BLM would seek opportunities to convert sheep allotments to cattle allotments to protect bighorn sheep populations.
- BLM would continue to actively participate in partnerships.
- Activity timing restrictions with burning, noise and ground disturbance would be enforced to protect wildlife.

### Fire

- ❖ *BLM would seek opportunities with surrounding landowners (private/FS) to allow natural fires to burn when within established prescriptions.*
- BLM would continue following the existing Elkhorns Fire Management Plan but would evaluate all opportunities for natural fire use.

### Livestock Grazing

- BLM would provide priority management to ensure against unauthorized livestock grazing (maintain/build boundary fences, cattle guards and closely monitor livestock trailing).
- Management activities would only be allowed to maintain or enhance ecosystems, natural qualities, and scenic values.

### Cultural

- BLM would refrain from developing any additional roads to prevent further degradation to historic ditches, dams, and reservoirs.

## NATIONAL TRAILS

**Goal** – Manage National Trails to promote public enjoyment and protect their designated values.

### Management Common to All Alternatives

The Continental Divide Trail would be managed cooperatively with the USFS in accordance with national policy guidelines. The Lewis and Clark Historic Trail would be managed cooperatively with the National Park Service (NPS) in accordance with national policy guidelines.

BLM would seek opportunities to cooperatively manage National Trails through partnerships.

BLM would continue cooperative efforts with PPLM and other partners to collectively manage the Lewis and Clark National Historic Trail under the Missouri/Madison Comprehensive Recreation Plan. All recreation sites within the trail corridor would continue to be managed in a manner that promotes public accessibility, resource protection, visitor safety, and interpretive education.

### Alternative A – No Action

No ROS, VRM, or specific travel management plans (with the exception of Sleeping Giant) would be developed to guide the future management of the two National Trails (Continental Divide National Scenic Trail and Lewis and Clark National Historic Trail). Protective measures for these trail settings and associated experiences would continue to be applied through resource use project plans. The Continental Divide Trail segment would continue to be managed for both motorized and non-motorized uses.

### Management Common to Action Alternatives (B, C, and D)

The two National Trails (Continental Divide National Scenic Trail and Lewis and Clark National Historic Trail) would be managed to protect natural resource values, minimize recreation conflicts, and enhance recreation opportunities and experiences. Lands within these extensive corridors would be retained in public ownership. Additional management guidance would be established in accordance with the ROS classes, VRM classes, travel plan direction, and oil and gas stipulations established under the action alternatives.

BLM would evaluate opportunities to re-route the Continental Divide Trail segment in coordination with the USFS to enhance non-motorized opportunities; reduce current needs for use easements/acquisitions through private lands; and remove motorized conflicts associated with the motorized road.

## WILD AND SCENIC RIVERS

**Goal** – Identify river segments suitable for inclusion in the National Wild and Scenic River System.

### Management Common to All Alternatives

In cooperation with other agencies, local governments, and special interest groups, management would be conducted in a manner to protect and enhance the outstanding remarkable values for each suitable river segment. **Table 2-19** depicts the outstanding remarkable values and tentative classifications of the four eligible Wild and Scenic River segments. Additional information

is provided in **Appendix J – National Wild and Scenic Rivers**.

<b>WSR Segment Name</b>	<b>Outstanding Remarkable Values</b>	<b>Tentative Classification</b>
Upper Big Hole River	Recreational, Fish	Recreational
Missouri River	Recreational, Wildlife, Scenic	Scenic
Moose Creek	Recreational, Scenic	Scenic
Muskrat Creek	Fish	Scenic

**Alternative A – No Action**

The suitability study of the four river segments in the Field Office determined to be eligible for designation in the National Wild and Scenic River System (**Map 36**) would not be completed and protective management would continue indefinitely on all four river segments (Upper Big Hole River - 2.3 miles, Missouri River – 3.1 miles, Moose Creek – 4.0 miles, and Muskrat Creek – 2.6 miles). Protective management would be subject to valid existing rights and to actions within BLM’s authority. A case-by-case review of proposed activities would be completed to ensure that Wild and Scenic River eligibility and tentative classification would not be affected. Protective management objectives would include:

- Free-flow characteristics would not be modified by stream impoundments, diversions, channelization, or riprapping.
- Each segment would be managed to protect identified outstandingly remarkable values, and to the extent practicable such values would be enhanced. Development of the eligible river and its corridor would not be modified to the extent that the eligibility or tentative classification would be affected.

**Management Common to Action Alternatives**

Suitability studies were conducted for the four eligible river segments (Big Hole River, Missouri River, Moose Creek, and Muskrat Creek) to determine whether any or all of these areas should be recommended to Congress for inclusion into the NWSRS. These suitability recommendations vary under the three action alternatives. See **Appendix J** for additional information about these areas and the study process.

**Alternative B - Preferred Alternative**

Under Alternative B, Muskrat Creek (2.6 miles) would be recommended as suitable for inclusion in the National Wild and Scenic Rivers System (NWSRS). Missouri

River (3.1 miles) would be found preliminarily suitable, but would only be recommended for inclusion in the NWSRS pending USFS (Helena National Forest) concurrence and coordination. This river segment is bordered by BLM lands on one side and Helena National Forest lands on the other. A joint recommendation by BLM and the USFS would be necessary to forward the Missouri River segment as suitable for inclusion in the NWSRS. The Upper Big Hole River and Moose Creek would be identified as non-suitable for inclusion.

The following protective management under the Wild and Scenic Rivers Act would be applied to Muskrat Creek until it is either designated by Congress or released to multiple use. This management would also be applied to the Missouri River until the possibility of recommending it for NWSRS designation is resolved with the USFS. The direction would continue to apply if the Forest Service supports recommending a designation. Protective management would be subject to valid existing rights and to actions within BLM’s authority. A review of proposed activities would be completed to ensure that Wild and Scenic River eligibility and tentative classification would not be affected.

Protective management objectives would include:

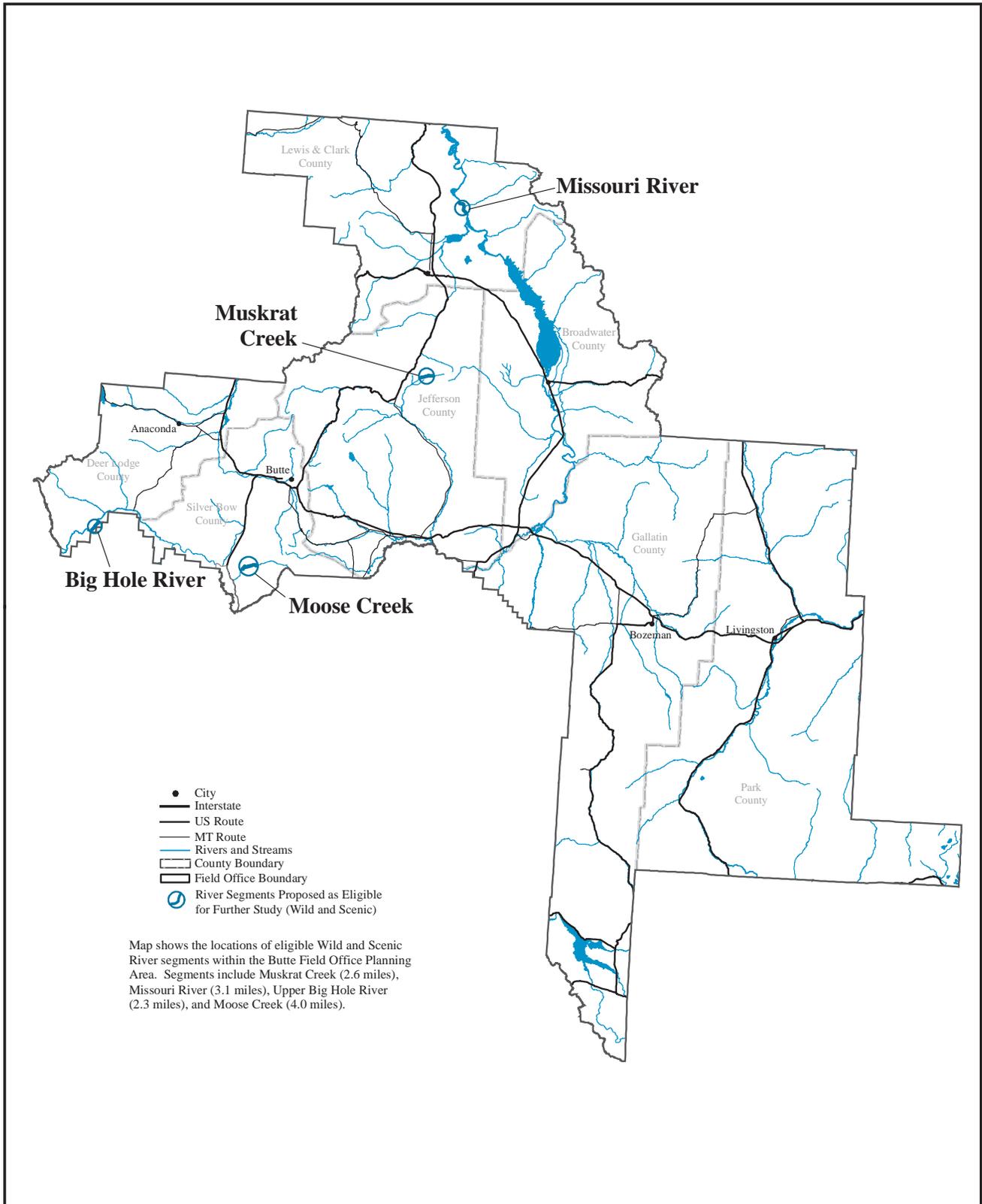
- Free-flow characteristics would not be modified by stream impoundments, diversions, channelization, or riprapping.
- Each segment would be managed to protect identified outstandingly remarkable values, and to the extent practicable such values would be enhanced.
- Development of the eligible river and its corridor would not be modified to the extent that the eligibility or tentative classification would be affected.

**Alternative C**

Under Alternative C all four eligible river segments (totaling 12 miles) would be recommended as suitable for inclusion in the National Wild and Scenic Rivers System.

The following protective management under the Wild and Scenic Rivers Act would be applied to these rivers until they are either designated by Congress or released to multiple use. Protective management would be subject to valid existing rights and to actions within BLM’s authority. A case-by-case review of proposed activities would be completed to ensure that Wild and Scenic River eligibility and tentative classification would not be affected. Protective management objectives include:

- Free-flow characteristics would not be modified by stream impoundments, diversions, channelization, or riprapping.
- Each segment would be managed to protect identified outstandingly remarkable values, and to the extent practicable such values would be enhanced.



Map Scale 1:1,500,000

Map generated by the Butte Field Office in February 2007  
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**Map 36: National Wild and Scenic River System Eligible Segments**

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**Butte Field Office  
Proposed RMP/Final EIS**

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Development of the eligible river and its corridor would not be modified to the extent that the eligibility or tentative classification would be affected.

## **Alternative D**

Under Alternative D all four of the eligible river segments would be identified as non-suitable for inclusion in the National Wild and Scenic River System. These river segments and their associated corridors would be managed in accordance with the prescriptions described throughout Alternative D rather than under the protective management objectives for eligible or suitable rivers.

## **WILDERNESS STUDY AREAS**

**Goal** – Manage Wilderness Study Areas (WSAs) to maintain their suitability for potential wilderness designation.

### **Management Common to All Alternatives**

All BLM lands were evaluated to determine whether additional lands other than existing WSAs have wilderness characteristics (blocks of land at least 5,000 acres in size with naturalness and opportunities for primitive and unconfined recreation). Lands obtained through acquisitions since previous wilderness reviews were considered in concert with pre-existing BLM lands. No additional BLM lands were identified as having wilderness characteristics because no areas with naturalness and opportunities for primitive and unconfined recreation met the size criteria.

All six WSAs (Humbug Spires – 11,320 acres, Sleeping Giant – 6,666 acres, Sheep Creek – 3,801 acres, Black Sage – 5,917 acres, Elkhorn Tack-on – 3,575 acres, and Yellowstone River Island – 69 acres) would continue to be managed under the Interim Management Policy and Guidelines for Lands under Wilderness Review (BLM Handbook H-8550-1 dated 1995) until such time as Congress either designates them as wilderness or releases them from further consideration as wilderness. The wilderness characteristics (naturalness, outstanding opportunities for solitude, and outstanding opportunities for primitive and unconfined recreation) of each of the six WSAs would continue to be protected under the IMP directives.

Those areas designated wilderness by Congress would be managed per the Wilderness Act of 1964, as amended, Public Law 88-577 (16 United States Code 1131-1136). In addition, an area-specific wilderness management plan would be developed.

WSAs would continue to be managed in accordance with the established monitoring and sign plans for each WSA.

In addition to the Interim Management Protection mandates, both the Sleeping Giant and the Sheep Creek WSAs would continue to be managed as part of the Sleeping Giant ACEC and management plan written in 1988.

### **Alternative A – No Action**

All six WSAs would continue to be managed under the Interim Management Policy and Guidelines. This alternative assumes that no Congressional action would occur to designate or release these WSAs.

All areas are under consideration by Congress. Portions of Humbug Spires, all of Sleeping Giant, and all of Sheep Creek were recommended to Congress as suitable for wilderness designation. The Black Sage and Yellowstone River Island Wilderness Study Areas were recommended by BLM as unsuitable. The Elkhorn Tack-on WSA has not been studied for wilderness suitability, and its existence under the wilderness review process is dependent upon the adjoining USFS lands which are under wilderness review. BLM would complete a suitability study for this WSA if the FS recommends its adjacent lands for wilderness through its Land Use Plan. No recommendation currently exists.

### **Management Common to Action Alternatives (B, C, and D)**

WSAs released from further consideration as wilderness would be managed consistent with surrounding lands and prescriptions identified in the land use plan alternatives. Release management is described for each WSA in the specific alternative descriptions below.

Under all action alternatives the Sleeping Giant, Sheep Creek, Humbug Spires, and Elkhorns Tack-on WSAs would be managed as ACECs. These administrative designations would promote continued protection of the existing wilderness characteristics for these four areas.

In the event that WSAs designated as ACECs become designated as wilderness, ACEC management would be dropped upon development of wilderness management plans. See ACEC section for detailed descriptions of proposed ACEC management of these areas.

Should the FS lands adjacent to the Elkhorns Tack-on be removed from wilderness review, this Section 202 (FLPMA) WSA would be dropped from further wilderness consideration. This small WSA is not capable of providing outstanding opportunities for solitude or primitive and unconfined recreation on its own.

Protection of the wilderness characteristics for Black Sage and the Yellowstone River WSAs varies under each of the action alternatives.

### **Alternative B – Preferred Alternative**

The Black Sage and Yellowstone River Island WSAs would continue to be managed under the Interim Man-

agement Policy Guidance for WSAs. In the event that Congress releases these two areas from wilderness consideration, these areas would be managed as described below for Alternative B.

### ***Black Sage – MT-075-115***

The Black Sage WSA would continue to be managed to provide semi-primitive, motorized recreation opportunities. Motorized travel within the area would be limited and the availability of established routes would be determined through an area-specific travel management plan. New permanent roads would not be authorized although re-routes may be considered to minimize resource impacts, public safety issues, or access concerns. The visual resource classification of the area would be modified from VRM Class I to VRM Class II management.

Land ownership would be managed for retention and exchanges would be considered to improve its configuration and manageability. The area would be open to rights-of-way subject to mitigations. Management would emphasize restoration and maintenance of natural processes and conditions when considering the appropriateness of other resource uses. Locatable minerals would be open and subject to undue or unnecessary degradation as per discussion below for the island. All salable and leasable minerals with the exception of oil and gas would remain unavailable. Oil and gas development would be subject to Field Office wide stipulations developed for Alternative B. All other resources and uses would be managed in accordance with Alternative B management direction.

### ***Yellowstone River Island – MT-075-133***

The Yellowstone Island would continue to be managed to provide semi-primitive, non-motorized recreation opportunities. The island would remain closed to motorized travel. The visual resource classification of the area would be modified from VRM Class I to VRM Class II management. Land ownership would be managed for retention and would be closed to rights-of-way.

The island would be open to locatable mineral entry subject to requirements to prevent unnecessary and undue degradation. Oil and gas development activities would be subject to stipulations described Field Office wide for Alternative B. This area would be closed to all other leasable and salable mineral actions. Livestock grazing and forest management practices would not be allowed. All other resources and uses would be managed in accordance with Alternative B management direction.

## **Alternative C**

The Black Sage and Yellowstone River Island WSAs would continue to be managed under the Interim Management Policy Guidance for WSAs. In the event that Congress releases these two areas from wilderness con-

sideration, these areas would be managed as described below for Alternative C.

### ***Black Sage – MT-075-115***

Management would be the same as described under Alternative B for ROS, motorized travel, VRM, land ownership, and salable and leasable minerals other than oil and gas. Oil and gas stipulations described Field-Office wide for Alternative C would apply. All other resources and uses would be managed in accordance with Alternative C management direction.

### ***Yellowstone River Island – MT-075-133***

Management would be the same as described under Alternative B for ROS, motorized travel, VRM, land ownership, rights-of-ways, minerals, livestock grazing and forest management. Oil and gas development activities would be subject to stipulations described Field Office wide for Alternative C. All other resources and uses would be managed in accordance with Alternative C management direction.

## **Alternative D**

The Black Sage and Yellowstone River Island WSAs would continue to be managed under the Interim Management Policy Guidance for WSAs. In the event that Congress releases these two areas from wilderness consideration, management of these areas is described below for Alternative D.

### ***Black Sage – MT-075-115***

The area would be open to salable and leasable minerals including oil and gas. Oil and gas development activities would be subject to stipulations described Field Office wide for Alternative D. Management would be the same as described under Alternative B for ROS, motorized travel, VRM, land ownership, and rights-of-way. All other resources and uses would be managed in accordance with Alternative D management direction.

### ***Yellowstone River Island – MT-075-133***

The island would be available for land adjustment, and salable and leasable minerals. Oil and gas development activities would be subject to stipulations described Field Office wide for Alternative D. Management would be the same as described under Alternative B for ROS, motorized travel, VRM, rights-of-way, locatable minerals, oil and gas, livestock grazing and forest management. All other resources and uses would be managed in accordance with Alternative D direction.

## **MANAGEMENT CONCERNS**

### **AIR QUALITY**

**Goal** – Ensure BLM authorizations and management activities protect the local quality of life and sustain economic benefits by complying with tribal, local, state,

and federal air quality regulations, requirements and implementation plans.

### Management Common to All Alternatives

BLM would continue to participate in local, state, and federal ambient air quality monitoring programs, as required. Management of non-attainment areas within the Planning Area would be guided by the state.

BLM would comply with local, state, and federal regulatory requirements.

All resource uses would meet the Land Health Standards for air quality.

Management would minimize or prevent air quality degradation throughout the Planning Area by applying mitigation measures to projects.

Air resources would continue to be evaluated on a case-by-case basis as part of project level planning to ensure compliance with local, state, and federal regulatory requirements. Evaluations would consider the significance of the proposed project and the sensitivity of air resources in the affected area. Mitigation measures would be developed as appropriate to ensure compatibility of projects with air resource management.

Before approval of an application for permit to drill (APD) for oil and gas or a Sundry Notice application that would involve surface disturbance, the appropriate level of NEPA analysis (in most cases an EA) would be completed. This document would analyze effects on all appropriate resources and resource uses including air quality as identified.

### SOIL RESOURCES

**Goal 1** – Manage uses to minimize accelerated soil erosion and compaction and maintain surface soil water infiltration based on site-specific conditions.

**Goal 2** – Maintain or improve soil health and fertility, prevent or minimize erosion and compaction while supporting multiple use management.

### Management Common to All Alternatives

Soil management objectives would include:

- Reduce soil erosion associated with steeper slopes, granitic soils, and high recreational use areas.
- Reduce sediment delivery to creeks and streams.
- Reduce soil mass movement (primarily from accelerated water erosion) resulting from burned areas, aboveground disturbances (primarily roads), and accelerated streambank erosion.

BLM would continue to implement soil conservation and BMPs to meet these management objectives. Exam-

ples of BMPs that would be applied throughout the BFO include:

- Seasonal or yearlong closures of specific road and trail sections to reduce soil erosion.
- Design, enhancement, and maintenance of vegetated filter strips along critical waterways.
- Integration of soil, groundwater, and surface water management to minimize stream channel degradation and improve groundwater and surface water quality.

Soil conservation practices and soil BMPs would provide the basis for maintaining soil productivity, fertility, and stability, and maximizing infiltration of natural precipitation and minimizing runoff, soil erosion, and sedimentation.

Consideration of soil conditions and types and their influence on management actions would occur on a case-by-case basis. Best Management Practices and mitigation measures would be implemented at the site-specific project level to maintain or improve the soil resource. Soils susceptible to compaction and erosion would receive greater consideration when assessing proposed activities.

Soil compaction and erosion problems would be diagnosed using Land Health Standards.

Appropriate mitigation or seasonal restrictions would be applied to activities in areas with significant soil compaction or accelerated erosion.

### Management Common to Action Alternatives (B, C, and D)

BLM would reseed disturbed areas where needed.

### WATER RESOURCES

**Goal 1** – Restore and/or maintain the chemical, physical, and biological integrity of water resources to protect designated beneficial uses and achieve water quality standards.

**Goal 2** – Maintain existing or acquire new water rights land in the Decision Area to ensure water availability for multiple-use management.

**Goal 3** – Minimize erosion and subsequent sedimentation for improved stream and watershed health.

**Goal 4** – Maintain or improve morphological conditions to a stable state that can fully support beneficial uses.

**Goal 5** – Protect water quality for municipal, industrial, agricultural, recreation, and residential purposes by adopting protective measures to meet tribal, state, and local water quality requirements.

## Management Common to All Alternatives

Management would seek to prevent water quality degradation, and improve watershed function throughout the Planning Area.

The objective on Decision Area lands would be for water bodies to have measurable attributes within site-specifically appropriate ranges (including meeting state, tribal, and local water quality standards). From a morphological standpoint these ranges may be based on reference conditions or other scientifically accepted methods. For proper functioning condition in streams, entrenchment, width/depth ratio, sinuosity, channel substrate, and slope should be within the ranges identified for channel types.

The Land Health Standards would be implemented to ensure water quality meets state standards and beneficial uses are protected or restored. BMPs would be used to prevent non-point source water pollution and mitigation measures would be applied on a case-by-case basis. Permits pertaining to projects affecting water quality, wetlands, or streams would be obtained, and outside applicants would be required to provide copies of pertinent permits prior to BLM authorization.

BLM would continue to coordinate and cooperate with Montana Department of Environmental Quality (MDEQ) and communities in the development of Water Quality Restoration Plans and Source Water Protection Plans.

BLM would use the State of Montana BMPs to address non-point source water pollution (**Appendix E – BMPs**).

BLM would comply with the non-degradation provisions of the Montana Water Quality Act.

Projects would be reviewed on a case-by-case basis to minimize impacts to water quality. BLM would use “reasonable land, soil, and water conservation practices” to prevent harm to public health, recreation, safety, welfare, livestock, wild animals, birds, fish, or other wildlife prior to the adoption of a water quality restoration and TMDL plans.

Water rights and instream flow reservations would be maintained subject to Montana water law. BLM would participate in the Montana Statewide water adjudication process and comply with Montana law for water rights.

### Alternative A – No Action

There is no additional management in this alternative beyond that described above in “Management Common to All Alternatives.”

## Management Common to Action Alternatives (B, C, and D)

Existing water rights would be maintained to ensure water availability for multiple-use management and proper functioning riparian and upland areas.

Water quality would be monitored to establish baseline conditions, identify areas of concern, and document progress from mitigation measures.

BLM would participate in the development, implementation and monitoring of water quality restoration plans and TMDL plans in watershed Planning Areas in which BLM is a significant land manager or water user.

### Alternative B – Preferred Alternative

BLM would examine “Water Quality Restoration Plans” (Plans) to determine if reduction targets of pollutants (TMDLs) are reasonable and attainable. Plans would be implemented as funding becomes available.

BLM would consider acquiring water rights from willing sellers.

Burned areas would be monitored for weed infestations and accelerated soil erosion. Where sedimentation impacts adjacent streams, erosion would be remediated.

### Alternative C

BLM would reduce pollutants in streams to levels indicated in “Water Quality Restoration Plans.” Plans would be implemented as funding becomes available.

BLM would consider acquiring water rights from willing sellers.

Burned areas would be monitored for weed infestations and accelerated soil erosion. Accelerated soil erosion and sedimentation in burned areas would be remediated.

### Alternative D

BLM would continue present levels of stream restoration activities. Progress of past actions to improve water quality would be monitored.

## VISUAL RESOURCES

**Goal 1** – Manage visual resources in accordance with VRM classifications described in **Appendix C – VRM**.

## Management Common to All Alternatives

Under all alternatives, visual resources would be managed according to established guidelines for VRM classes as described in **Appendix C – VRM**.

Visual resource design techniques and best management practices would be used to minimize short and long-term visual impacts.

Contrast ratings would be completed for proposed projects in Class I and II areas, and for proposed projects in Class III and IV that are high impact projects or located in highly sensitive areas.

VRM Class I objectives for all WSAs would be maintained.

### Alternative A – No Action

Visual resources would continue to be evaluated as part of activity and project planning. Such evaluation considers the significance of the proposed project and the visual sensitivity of the affected area. Mitigation measures would be attached as appropriate to assure compatibility of projects with management objectives for visual resources.

Under the continuation of current management, visual resources in the Decision Area would be managed as follows:

Approximately 31,500 acres, including the six WSAs, would be managed as VRM Class I.

All lands along the Yellowstone River, Missouri River (Upper Holter Lake to Spokane Hills), Upper Big Hole River Corridor (0.5 miles from each bank) and the Sleeping Giant ACEC totaling about 25,400 acres, would continue to be managed as VRM Class II.

All remaining lands totaling about 250,400 acres would be managed as VRM Class III and IV. This acreage increased since release of the Draft RMP due largely to the recent acquisition of the Iron Mask property near Townsend. These areas would continue to be evaluated and protected on a case-by-case basis through project/activity plans.

### Management Common to Action Alternatives

Management classifications would be established for all BLM lands based on visual resource characteristics (scenic quality, sensitivity level and distance zones) and management considerations. Generally, areas that have lower VRM classifications have higher visual resource values and protection measures. (Note: Under all action alternatives, 5,300 acres have been added to the VRM Class II category between the Draft RMP and the Proposed RMP. These acres are predominantly newly acquired lands in the Iron Mask acquisition near Townsend.)

### Alternative B - Preferred Alternative

Under Alternative B, the majority of lands in the Decision Area would be managed under VRM Class III. VRM Class II would be increased by 18,200 acres while VRM Classes III and IV would be decreased accordingly as compared to Alternative A. Under Alternative B, objectives for visual resources would be to manage

Decision area lands in accordance with the following acreages by VRM classes:

- Approximately 31,500 acres would be managed as VRM Class I. These lands include all six WSAs.
- Approximately 48,900 acres would be managed as VRM Class II.
- Approximately 125,200 acres would be managed as VRM Class III.
- Approximately 101,700 acres would be managed as VRM Class IV.

Map 37 depicts the location of these classes throughout the Decision Area.

### Alternative C

Under Alternative C, objectives for visual resources would be to manage Decision Area lands as follows:

- Approximately 31,500 acres would be managed as VRM Class I, including all WSAs.
- Approximately 67,600 acres would be managed as VRM Class II.
- Approximately 151,700 acres would be managed as VRM Class III.
- Approximately 56,500 acres would be managed as VRM Class IV.

Map 38 depicts the location of these classes throughout the Decision Area. This alternative promotes additional protection of visual resources and therefore has the highest acreages proposed under VRM Classes I and II.

### Alternative D

Lands managed under VRM Class IV would increase in comparison to Alternatives B and C, but would still be less than under Alternative A, while VRM Classes II and III would decrease slightly.

Under Alternative D, objectives for visual resources would be to manage Decision Area lands as follows:

- Approximately 31,500 acres would be managed as VRM Class I, including all WSAs.
- Approximately 6,600 acres would be managed as VRM Class II.
- Approximately 142,900 acres would be managed as VRM Class III.
- Approximately 126,300 acres would be managed as VRM Class IV.

This alternative has the highest acres proposed under Classes III and IV. Map 39 depicts the location of these classes throughout the Decision Area.

## CULTURAL RESOURCES, TRADITIONAL CULTURAL PROPERTIES AND PALEONTOLOGICAL RESOURCES

**Goal 1** – Identify cultural resource sites, traditional cultural properties, and paleontological localities and mitigate impacts from natural or human-caused deterioration.

**Goal 2** – Preserve and protect eligible cultural resource sites, traditional cultural properties, and paleontological localities to ensure that they are available for appropriate uses by present and future generations.

### Management Common to All Alternatives

#### *Cultural Resources and Traditional Cultural Properties*

At the project level, the BLM would conduct inventories for the purpose of gathering resource information, as per Section 106 of the National Historic Preservation Act, in order to avoid disturbance to cultural resources in the Area of Potential Effect (APE). The BFO would continue Section 106 compliance by working through the State Protocol Agreement with the Montana State Historic Preservation Office. BLM would continue to make determinations of eligibility or non-eligibility for historic properties on land it manages and document all inventories and decisions effecting cultural resources in an annual report. If the project cannot be redesigned to avoid disturbance, the sites would be evaluated for their eligibility for listing on the National Register for Historic Places. If eligible sites cannot be avoided, the BLM would, in consultation with the Montana State Historic Preservation Office, facilitate mitigation to recover data that would otherwise be lost. The BLM would also conduct inventories to gather information about cultural resources, as per Section 110 of the National Historic Preservation Act.

BLM's consultation process for historic mining sites would continue in accordance with the Historic Placer and Lode Mining Properties Programmatic Agreement that among other things specifies creation of a historic preservation plan to organize and compile what is known about various historic mining districts.

BLM would continue to work with Native American tribal governments and their representatives, as well as those members who are recognized cultural leaders, elders, and Tribal Historic Preservation Officers. In addition to cultural resource specialists, the BLM would include other tribal resource specialists who may have an interest in project planning and management issues. Tribal consultation would be most frequent with those entities who historically occupied the Planning Area. Meeting with tribal representatives would be conducted

at least once a year to coordinate consultation requirements and to maintain a good working relationship.

All recorded sites would be assigned a use category to facilitate management of those cultural resources. See Definitions of Use Categories in **Appendix K – Cultural Resources**, section .42, A-F.

#### *Paleontological Resources*

Fossil localities would be afforded the same consideration as historic sites in project planning, and if localities are in the Area of Potential Effect, then projects would be redesigned where feasible in accordance with FLPMA and BLM Manual Section 8270 (USDI-BLM 1998). If projects cannot be redesigned to avoid fossil localities, then specimens would be excavated by permitted paleontologists. Assistance from permitted institutions and/or individuals would be routinely sought in order to properly map and record fossil localities.

Opportunities for public outreach and education would be pursued as staffing and funding resources permit.

### Alternative A – No Action

#### *Cultural Resources and Traditional Cultural Properties*

BLM would continue a dedicated program to inventory 100 acres per year to meet obligations under Section 110 of the National Historic Preservation Act.

BLM would continue to provide public outreach and interpretive information on Montana prehistory and history at developed areas, and recreational and interpretive opportunities at significant historic sites with easy access to the public.

#### *Paleontological Resources*

At the project level, BLM would continue to map fossil localities so as to avoid those localities during project implementation. If the locality cannot be avoided, permitted institutions or individuals would be contacted to properly map, record, and/or recover, if necessary, paleontological resources. Public education and outreach would be conducted as time and funding permit.

### Management Common to Action Alternatives

During the oil and gas leasing process, the following stipulation IM 2005-003 will be attached to lease parcel review documents: This lease may be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders. The BLM would not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA

and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized, or mitigated.

## **Alternative B – Preferred Alternative**

### ***Cultural Resources and Traditional Cultural Properties***

As an inventory objective, BLM would identify areas with a high potential for various archeological/historical site types, and conduct 200 acres of proactive inventory in those areas each year. One hundred acres of low potential areas would be inventoried each year for comparison.

Educational and public outreach programs on cultural resources would be provided as requested.

Eligible historic buildings would be maintained consistent with National Park Service standards as funding permits. Deteriorating cultural resources falling under the Experimental or Scientific Use Categories eligible for listing on the National Register of Historic Places would be mitigated by intensive recordation or data recovery.

### ***Paleontological Resources***

Direction for managing paleontological resources would be the same as Alternative A.

## **Alternative C**

### ***Cultural Resources and Traditional Cultural Properties***

As an inventory objective, BLM would identify areas with a high potential for various archeological/historical site types, and conduct 1,000 acres of proactive inventory in those areas. Three hundred acres of low potential areas would be inventoried each year for comparison.

Educational and public outreach programs would be provided for cultural and paleontological resources.

BLM would develop volunteer agreements with local universities and interest groups to sponsor research and assist with fieldwork and maintenance responsibilities.

Eligible historic buildings would be maintained consistent with National Park Service standards as funding permits.

### ***Paleontological Resources***

At the project level, BLM would continue to map fossil localities so as to avoid those localities during project implementation. If the locality cannot be avoided, permitted institutions or individuals would be contacted to properly map, record, and/or recover, if necessary, paleontological resources. BLM would cooperate with

permitted institutions and/or individuals to map and record fossil localities.

## **Alternative D**

### ***Cultural Resources and Traditional Cultural Properties***

BLM would conduct proactive inventories of archeological/historical sites as time permits.

Educational and public outreach programs would be provided as requested.

### ***Paleontological Resources***

Direction for managing paleontological resources would be same as for Alternatives A and B.

## **LANDS AND REALTY**

**Goal 1** – Look for opportunities to acquire non-federal land or interest in non-federal land with important resources and resource uses.

**Goal 2** – Provide land-use opportunities contributing to a sustained flow of economic benefits and meet local infrastructure needs while protecting or minimizing adverse impacts to resources and resource uses.

## **LAND USE AUTHORIZATIONS**

### **Management Common to All Alternatives**

Land uses would be authorized by various means such as right-of-way grants, road use agreements and associated temporary use permits under several different authorities; leases, permits, and easements under section 302 of the Federal Land Policy and Management Act of 1976 (FLPMA); airport leases under the Act of May 24, 1928; and Recreation and Public Purposes (R&PP) leases. R&PP transfers are handled below under the *Land Ownership Adjustment* section.

Requests for land use authorizations would be analyzed and mitigation measures applied on a case-by-case basis in compliance with the NEPA process. Interim management policy and guidelines for land use authorizations in WSAs would be followed as appropriate. In accordance with current policy, land use authorizations would not be issued for uses which would involve the disposal or storage of materials which could contaminate the land (hazardous waste disposal sites, landfills, rifle ranges, etc.). Rights-of-way, leases, permits, or easements would not be required for those activities that are considered casual use of public lands.

New right-of-way facilities would be located within or adjacent to existing rights-of-way, to the extent practicable, in order to minimize adverse environmental impacts and the proliferation of separate rights-of-way. Right-of-way applications across roads that have been closed or

have seasonal restrictions would be analyzed on a case by case basis.

New communication site users would be grouped into existing facilities at established communication sites to reduce impacts and expedite application processing. Site plans would be completed prior to authorizing communication site uses in new areas. The use of alternative power sources would be considered where electric power is not available.

Section 368 of the Energy Policy Act of 2005 directs that the Secretary of the Interior, Department of Energy (DOE), USDA, Department of Commerce, and Department of Defense work together to identify energy corridors on federal land in the 11 western states. BLM is co-lead with DOE in the preparation of the Interagency West-wide Energy Corridor Programmatic EIS (PEIS) which is currently being prepared by an Interagency Corridor Planning Team. The Final PEIS will provide plan amendment decisions that will address numerous energy corridor related issues, including the utilization of existing corridors (enhancements and upgrades), identification of new corridors, supply and demand considerations, and compatibility with other corridor and project planning efforts. Decisions from this PEIS would be followed and implemented on Decision Area lands.

BLM would provide recreation and public purposes leases or patents on BLM land that meets classification criteria.

Proposals for renewable energy development would be considered on a case-by-case basis. No proposals for alternative energy development, other than wind power are anticipated to occur in the foreseeable future. Two areas, one near Whitehall and one near Livingston, are anticipated to have wind energy development in the future (**Map 40**). Guidelines and Best Management Practices (BMPs) from the Wind Energy Development Programmatic EIS (ROD signed December 2005) would be used when considering wind energy projects on BLM land. The latest version of *Suggested Practices for Raptor Protection on Power Lines* (APLIC 1996) would be implemented in the construction and operation of right-of-way facilities.

Owners of non-Federal land surrounded by public land managed under FLPMA would be allowed a degree of access across public land which would provide for the reasonable use and enjoyment of the non-Federal land.

The use of certain rights-of-way constructed on public lands prior to FLPMA would be recognized as a valid use even though the laws under which they were authorized were repealed by FLPMA. Recent regulations state that BLM would not renew grants issued before FLPMA. The holders of these authorizations must apply for a new FLPMA grant.

## Alternative A – No Action

There would be no utility corridors formally designated under the No Action alternative. The Headwaters RMP designated avoidance areas for utilities in the Scratch-gravel Hills, Sleeping Giant/Holter Lake, and Limestone Hills areas. Generally, areas of high public recreation use, high scenic and wildlife values, and residential areas would be avoided. Under this alternative 74,489 acres would remain designated as avoidance and 952 acres would be identified as “windows” where existing major facilities cross avoidance areas.

## Management Common to Action Alternatives (B, C, and D)

The existing Communication Sites at Boulder, Bull Mountain, Limestone Hills, Montana City, Mt. Belmont, Toston, and Wickes would be formally designated as communication sites for the BFO. BLM would consider applications for new communications facilities and limit those uses to the designated sites. **Map 40** shows the existing sites. Any new facilities to be located within the designated sites would be required to conform to the existing site plans and the designated uses identified on **Table 3-28** in Chapter 3. Once the designated communications sites are filled to near capacity, new site location(s) may be authorized after site management plans and appropriate site-specific NEPA analyses are completed.

No new rights-of-way would be authorized in identified exclusion areas (approximately 27,361 acres). New rights-of-way in identified avoidance areas would not be allowed unless there are no other routing options (approximately 75,626 acres). Valid existing rights-of-way in avoidance areas would be recognized and holders of such authorizations would be allowed to maintain their facilities (**Map 40**).

Two of the existing right-of-way corridors delineated in the 1992 “Western Regional Corridor Study”, (updated in 2003), would be designated where they cross public lands. The corridors are each currently occupied by electrical transmission lines. Nominal corridor width for the north-south oriented corridor would be 1,320 feet in width either side of the centerline of the existing facilities. The east-west oriented corridor would be 660 feet in width either side of the centerline of the existing facilities. Applicants for electrical transmission lines 69kV and larger and pipelines 10 inches in diameter and greater would be encouraged to locate such facilities within these two designated corridors. Each corridor would be designated for power lines (above ground and buried), telephone lines, fiber optic lines, pipelines, access roads, and other linear type right-of-ways. Specific proposals would require site-specific environmental analysis and compliance with permitting processes. Right-of-way facilities would not be placed adjacent to each other if

safety, incompatibility issues, or conflicts were identified.

Access to and along right-of-way corridors and use areas necessary to maintain existing facilities and construct new facilities would be provided across public lands. Other uses of right-of-way corridors and use areas would be permitted to the extent that they did not interfere with or preclude the use of these locations for their intended purpose and were consistent with other portions of the plan.

New leases, permits, rights-of-way, and easements would be authorized in a manner consistent with meeting Land Health Standards and applicable Best Management Practices. Renewals of existing authorizations would be analyzed, and if required, special stipulations would be added to meet or move toward meeting Land Health Standards. In addition, an attempt would be made to negotiate changes in existing authorizations which would meet or move toward meeting Land Health Standards.

## WITHDRAWALS AND CLASSIFICATIONS

### Management Common to All Alternatives

In compliance with Section 204(1) of FLPMA, existing withdrawals would be reviewed prior to the end of the withdrawal period or as otherwise required by law to determine if they should be extended, revoked, or modified. Withdrawals no longer needed, in whole or in part, for the purpose for which they were withdrawn would be recommended for revocation or modification. Other agency requests for withdrawal relinquishments, extensions, or modifications would be considered.

Department of Interior and BLM policy will be followed in the consideration of any new withdrawals. New withdrawal proposals would be considered where land would transfer from one federal agency to another or where resource values or agency investments are best protected by withdrawal. Lands proposed to be withdrawn should be the minimum area required for the intended use and where applicable alternative prescriptions such as the use of rights-of-way, leases, permits, or cooperative agreements are inadequate to protect the resource values.

A Legislative Environmental Impact Statement is currently being prepared by the Department of Army, in cooperation with the BFO, for the withdrawal of approximately 20,000 acres of BLM land in the Limestone Hills west of Townsend. These lands were segregated from the public land laws by the Federal Register Notice of August 13, 2007, and are not currently open to surface entry or mining for a period of two years from the date of publication of the notice. Under all alternatives, the Congressional action resulting from this proposal/Legislative Environmental Impact Statement would subsequently amend the Butte RMP.

Land classifications are required to determine the suitability of public lands for retention or transfer out of Federal ownership under a number of public land laws (Recreation and Public Purposes Act, Carey Act, Indian Allotments, Desert Land Entries, State Selections). The only one of these laws applicable in this Planning Area is the Recreation and Public Purposes Act. Classifications are essentially determinations of a parcel's greatest value, or highest utilization, and are based on criteria in 43 CFR 2400.

Land classifications, as "de facto" withdrawals, would also be reviewed to determine if they should be continued or terminated. Any remaining Classification and Multiple Use Act retention classifications would be terminated.

All new classifications would comply with the requirements of 43 CFR 1600 and criteria in 43 CFR 2400. There is a "Recreation and Public Purpose" classification on 200 acres at the old Deep Creek Ski Area in T2N, R12W, Section 20: E $\frac{1}{2}$ SW $\frac{1}{4}$ , W $\frac{1}{2}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ SE $\frac{1}{4}$ . This area is no longer being used for recreation purposes and therefore this classification would be terminated. The Last Chance Handgunners at Boulder have expressed interest in a patent, under the Recreation and Public Purposes Act, to their shooting range in T6N, R5W, Section 24: Lot 2 and Section 25: NE $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ . This parcel has already been classified as suitable for R&PP lease. Under all alternatives the R&PP classification would be revised to allow for R&PP patent.

A total of approximately 6,300 acres of land are withdrawn from locatable mineral entry (with some exceptions primarily for Public Water Reserves described in Chapter 3). These withdrawals include the Devil's Elbow (142 acres), Holter Lake (80 acres) and Ringing Rocks (160 acres) recreation areas, totaling 382 acres that would remain in effect under all alternatives in order to safeguard infrastructural investments; protect resource values; and ensure quality visitor use experiences.

### Alternative A – No Action

Withdrawals would be considered on a case-by-case basis, in accordance with current withdrawal and mineral policy.

### Alternative B

Priority for new withdrawals would be for all developed recreation sites followed by new acquisitions through exchange or purchase, and in ACECs to protect resources and values as needed, in accordance with current withdrawal and mineral policy.

Specific sites recommended for withdrawal from mineral entry are identified in the Locatable Minerals section, under Alternative B and C. Eight priority recreation sites are identified for withdrawal due to special existing or planned conditions such as exclusive public recreation

uses for camping and day-use activities, high level of infrastructural development, highly concentrated visitation, and limited size.

### **Alternative C**

Priority for new withdrawals would be for all developed recreation sites followed by new acquisitions through exchange or purchase, and in ACECs to protect resources and values as needed, in accordance with current withdrawal and mineral policy.

Specific sites recommended for withdrawal from mineral entry are identified in the Locatable Minerals section, under Alternative B and C. Eight priority recreation sites are identified for withdrawal due to special existing or planned conditions such as exclusive public recreation uses for camping and day-use activities, high level of infrastructural development, highly concentrated visitation, and limited size. Riparian areas in the Muskrat Creek drainage are also proposed for locatable mineral withdrawal to protect an important westslope cutthroat trout population.

### **Alternative D**

Withdrawals would be considered on a case-by-case basis in accordance with current withdrawal and mineral policy.

## **LAND OWNERSHIP ADJUSTMENT**

### **Management Common to All Alternatives**

Land ownership adjustment refers to those actions that result in the disposal of BLM-administered land and/or the acquisition of non-federal land or interests. In this context, BLM land is categorized as either “retention” or “disposal”. Generally, lands in the retention category would be retained and managed by BLM and lands in the disposal category would be available for land ownership adjustment. Methods of adjustment include exchanges, sales, transfers, fee acquisition, and donation. Land ownership adjustments would be considered on a case-by-case basis.

Public lands with high resource values would generally be retained in federal ownership. All proposed land ownership adjustment actions would be analyzed in project specific environmental reviews.

Public access would be maintained or improved through all land ownership adjustment transactions. Land transfers to other public agencies would be considered where improved management efficiency would result. BLM lands could be made available for community expansion if there are no other lands available to communities.

Direct purchase would be limited to cases where no practical alternatives exist and high public values would be acquired. Land and interests in lands obtained with LWCF appropriation would not be available for disposal

by any means, nor would it be open to mineral entry or mineral leasing.

The need to protect newly acquired lands would be considered as part of the analysis prior to acquisition. If withdrawn, acquired lands would be managed under the terms and conditions of the withdrawal. Disposal parcels would be made available for all means of disposal (sale, exchange, R&PP, etc.). Some lands identified for disposal could be retained in public ownership based on site-specific application of the land ownership adjustment criteria. (See **Appendix L – Lands**)

In addition to meeting the disposal criteria, lands to be sold would meet the following disposal criteria from FLPMA:

- Such land must be difficult and uneconomic to manage as part of the public land base, and must not be suitable for management by another federal department or agency.
- Such land must have been acquired for a specific purpose and must no longer be required for that or any other federal purpose.
- Disposal of such land would serve important public objectives that can only be achieved prudently or feasibly if the land is removed from public ownership and if these objectives outweigh other public objectives and values that would be served by maintaining such land in federal ownership.
- If land status updates identify additional parcels administered by BLM, those lands would be managed in the same manner as adjacent parcels or those in the same vicinity in regard to retention or disposal.
- Federal minerals underlying non-Federal surface would generally be retained in federal ownership. However, an exchange of this type of mineral estate may be considered on a case-by-case basis if found to be in the public interest. The sale of this type of mineral interest under section 209(b) of FLPMA could be considered only if the requirements of the same were met.

No BLM lands in the BFO are suitable for Desert Land Entry.

### **Alternative A – No Action**

Planning guidance with respect to land ownership adjustment would be the same as that provided by the 1984 Headwaters RMP and the 1979 Dillon MFP. Further and more specific guidance would be provided by the “Land Pattern and Land Adjustment, Supplement to the State Director Guidance for Resource Management Planning in Montana and the Dakotas, 1984” (USDI-BLM 1984b). This guidance was later amended by the 1989 State Director’s guidance pertaining to access. This direction established land exchange as the predominant

method of land ownership adjustment. It also established retention, disposal, and acquisition criteria to be used in categorizing public land. Criteria in the supplement were used to identify retention and disposal zones within the Butte Planning Area. These zones would be applied in this alternative.

State Director Guidance for resource management planning in Montana and the Dakotas (USDI-BLM 1984b) provides criteria for retention or disposal, and for identifying acquisition priorities. Principle considerations would include public resource values, current use, and location, proximity to other agencies, manageability, and compatibility with adjacent land uses.

Non-Federal land to be acquired by the BLM through exchanges generally would be located in retention areas. BLM administered land to be sold would meet the disposal criteria identified in State Director Guidance and the criteria derived from FLPMA. The method of sale would be determined on a case-by-case basis with the goal of avoiding unnecessary hardships on current public land users and surrounding or adjacent landowners.

### **Management Common to Action Alternatives (B, C, and D)**

Lands would be categorized as either retention or disposal for management purposes. Specific land ownership adjustment criteria developed for retention, disposal, and acquisition would be followed. (See **Appendix L – Lands**)

Lands identified for retention and disposal are displayed on **Map 41**. Approximately 298,408 acres would be in the retention category. These are lands that would generally not be subject to land ownership adjustments. High priority lands for retention and potential future acquisition by the BLM would include those in and immediately adjacent to special designation areas (ACECs, WSRs, WSAs, National Trail Corridors, SRMAs, and recreation sites) as well as habitat for priority and special status species. The goal of potential acquisitions in these areas would be to enhance the following attributes: resource values identified for the area, public access to and within the area, recreation opportunities that are compatible with the specific area, manageability of the area or sites, and wildlife habitat. Land acquisitions in these areas would be considered to be consistent with this RMP and therefore plan amendments would not be required.

Approximately 8,901 acres of land would be identified as available for disposal. These lands would be available for exchange or sale, subject to the criteria described in **Appendix L – Lands**. Legal descriptions of these parcels are located in **Appendix L – Lands**. Lands leased or conveyed under the Recreation and Public Purposes Act, would be classified for such disposal under Sec 7 of the Taylor Grazing Act (42 USC 315f) and 43 CFR 2400.

Right-of-way holders would be issued perpetual easements for their facilities prior to the disposal of any BLM parcels.

### **ACCESS**

#### **Management Common to All Alternatives**

For the purposes of this section, access refers to the physical ability and legal right of the public, agency personnel, and authorized users to reach public land. BLM would acquire legal public access and administrative access to BLM land from willing landowners. Methods of accomplishing this would be through fee purchase, exchange, donation, and/or long-term land use agreements. Easement acquisition would be the predominant method of obtaining legal access. If necessary, when BLM parcels are patented in land ownership adjustments, existing access could be retained using appropriate patent reservations. Methods of accomplishing this would be through fee purchase, exchange, donation, reciprocal rights-of-way, and/or long-term land use agreements.

#### **Alternative A – No Action**

Access would continue to be sought based on planning guidance provided by the Headwaters RMP/EIS as supplemented by the State Director Guidance on Access (USDI-BLM 1989a). Legal public or administrative access would be obtained from willing landowners on a case-by-case basis as the need or opportunity arises using the criteria in the State Director’s guidance. (See **Appendix L – Lands**)

In accordance with guidance in this latter document, the BFO would focus its access acquisition efforts on:

- Larger blocks of BLM-administered land which are designated for retention in BLM ownership.
- Areas with important resource values.
- Areas where public demand for access is high.
- Areas with substantial BLM investments.

#### **Management Common to Action Alternatives (B, C, and D)**

BLM would follow specific access criteria outlined in **Appendix L – Lands** for obtaining new access and managing existing access to BLM administered lands. Acquisition efforts would be focused on those routes designated as “open” in the travel plan that lack legal public access.

## **UNAUTHORIZED LAND USE**

### **Management Common to All Alternatives**

BLM would abate realty-related unauthorized use through prevention, detection, and resolution. Unauthorized use of BLM administered land would be resolved through termination, short or long-term authorization, sale, or exchange as appropriate. Resolution of trespasses would require settlement of trespass liabilities and reclamation of any resource damage.

Resolution of trespasses would be conducted in accordance with 43 CFR 9230.

## **ENERGY AND MINERALS**

**Goal 1** – Ensure that federal minerals are available for energy and mineral exploration and development.

**Goal 2** – Manage exploration and development of mineral resources and ensure they are conducted in an environmentally sound manner.

**Goal 3** – Where possible, conserve significant or unique geological features.

### **Management Common to All Alternatives**

The BLM Energy and Non-Energy Mineral Policy, which references several existing acts, recognizes the nation's need for domestic sources of minerals, energy, and other resources and the responsibilities concerning the discovery, development, production and acquisition of minerals and metals. All Energy and Minerals exploration, development, and production activities would be managed to prevent unnecessary or undue degradation.

### **Alternative A – No Action**

Mineral operations permits would identify requirements and BMP's necessary to avoid or minimize adverse effects on natural resources.

### **Management Common to Action Alternatives (B, C, and D)**

For all exploration and mining proposals BLM would ensure operations take all practical measures to maintain, protect, or minimize disturbances to resources.

Mineral activity would be managed to meet, or move toward meeting, Land Health Standards.

Future changes to ESA listings of species or occupied habitats may require changes or modifications of proposed activities to comply with the requirements of the act.

## **Alternative B – Preferred Alternative**

Where no alternative to road construction exists, roads (including roads in riparian areas) would be kept to the minimum necessary for the approved mineral activity. Roads and facilities would be closed and the landscape rehabilitated when no longer required for mineral or land management activities.

## **Alternative C**

No new or existing mineral operations (salable, leasable, and locatable) would be allowed to construct new structures, support facilities, or roads inside Riparian Management Zones.

## **Alternative D**

New and existing mineral operations (salable, leasable, and locatable) would be allowed to construct structures, support facilities, and roads within riparian areas using stipulations and BMPs when necessary. Roads and facilities no longer required for mineral or land management activities would be reclaimed to the best extent possible.

## **LEASABLE SOLID MINERALS**

### **Management Common to All Alternatives**

BLM would consider proposals for developing leasable minerals (coal, phosphate, sodium, potash, sulphur, oil shale, native asphalt, and solid and semi-solid bituminous rock) under the administration of the federal government on a case by case basis. Site specific environmental analysis would be required to lease these minerals.

## **LEASABLE FLUID MINERALS**

### **Management Common to All Alternatives**

#### ***Oil and Gas***

Federal oil and gas leasing authority for public lands is found in the Mineral Leasing Act of 1920, as amended; and for acquired lands in the Acquired Lands Leasing Act of 1947, as amended. Leasing of federal oil and gas is affected by other acts such as the National Environmental Policy Act of 1969, the National Historic Preservation Act of 1966, FLPMA (1976), the Wilderness Act of 1964, the Endangered Species Act of 1973, as amended, and the Federal Onshore Oil and Gas leasing Reform Act of 1987. Regulations and other guidance governing federal oil and gas leasing and lease operations are contained in 43 CFR Group 3100, Onshore Operating Orders, Notices to Lessees, and BLM handbooks, manuals and instruction memorandums. Regulations governing geophysical exploration are found at 43 CFR 3150.

An oil and gas lease grants the lessee the right to explore for, extract, remove, and dispose of oil and gas deposits that may be found on the leased lands. The lessee may exercise the rights conveyed by the lease, subject to lease terms and any lease stipulations (modifications of the lease), and permit approval requirements.

The terms of existing oil and gas leases cannot be changed by the decisions in this document. When the lease expires, the area would be managed for oil and gas according to the decisions reached in this document.

The BLM planning process determines availability of federal mineral estate lands for oil and gas leasing (**Table 2-20**). For federal oil and gas where the surface is managed by another federal agency, the BLM would consult with that agency before issuing leases. In areas where oil and gas development may conflict with other resources, the areas may be closed to leasing in accordance with decisions made from this document. Regulations at part 43 CFR 3100.0-3(d); the Secretary’s general authority to prevent the waste and dissipation of public property; and the Attorney General’s Opinion of April 2, 1941 (Vol. 40 Op. Atty. Gen 41) allow the BLM to lease lands that are otherwise unavailable for leasing if oil and gas is being drained from such lands. If the unavailable lands were under the jurisdiction of another agency, leasing of such lands would only occur following consultation, and consent if necessary, from the surface managing agency.

Unavailable lands for this RMP (**Table 2-20**) would be leased only if a state or fee well is proposed or completed within the same spacing unit, or if the lands are within a producing unit. These lands would be leased with a no surface occupancy and no subsurface occu-

pancy stipulation with no waiver, modification or exception provisions. There would only be a paper transaction with no physical impacts on the unavailable lands. There would be no exploration or development (drilling or production) within the unavailable lands. After issuance of a lease, the lease would be committed to a communitization agreement and the United States would then receive revenue in proportion to its acreage interest as it bears to the entire acreage interest committed to the agreements.

Areas where oil and gas development could coexist with other resource uses would be open to leasing under standard lease terms or with added stipulations. Stipulations are a part of the lease only when environmental and planning records show the need for them. Three types of stipulations describe how lease rights are modified: no surface occupancy, timing limitation (seasonal restriction), and controlled surface use. (For descriptions, see “Leasing Process” in the “Oil and Gas” section of **Appendix M – Fluid Minerals**) Stipulations may be changed by application of waivers, exceptions, or modifications. The decision whether to grant waivers, exceptions, or modifications generally occurs during the Application for Permit to Drill approval process. If the authorized officer determines the change to be substantial, the preferred alternative would be subject to a 30-day public review period. Waivers are a permanent exemption from a lease stipulation. This occurs when the resource does not require the protection of stipulation. Exceptions are granted on a case-by-case basis. Each time the lessee applies for an exception, the resource objective of the stipulation must be met. Modifications are fundamental changes to the provisions of a lease stipulation either temporarily or for the term of the lease.

	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Acres Available for Oil and Gas Leasing<sup>1</sup></b>	<b>597,384</b>	<b>623,420</b>	<b>71,812</b>	<b>615,788</b>
No Surface Occupancy	251,779	280,312	23,903	93,288
Timing Limitations	285,993	286,800	0	436,410
Controlled Surface Use	27,701	38,365	30,893	32,011
Standard Lease Terms	31,911	17,943	17,016	54,079
<b>Acres Unavailable for Oil and Gas Leasing</b>	<b>54,810</b>	<b>28,774</b>	<b>580,382</b>	<b>36,406</b>
Non-discretionary	28,774	28,774	28,774	28,774
Discretionary	26,036	0	551,608	7,632

<sup>1</sup> - Acreages by subcategory were calculated such that each column of subcategories under each alternative adds up to the total available acres for leasing based on the following general concepts where multiple stipulations overlapped: No Surface Occupancy stipulations override and are more restrictive than Timing Limitations, Controlled Surface Use, and Standard Lease Terms. Timing Limitation stipulations override and are more restrictive than Controlled Surface Use and Standard Lease Terms. Controlled Surface Use stipulations override and are more restrictive than Standard Lease Terms. Non-overlapping individual stipulation-specific acreages are displayed by alternative in Chapter 4 in Tables 4-23, 4-27, 4-30, and 4-33.

On Bureau of Reclamation lands, in addition to the resource specific stipulations under each alternative (e.g., wildlife, recreation); stipulations that are recommended by the Bureau of Reclamation would be used (see Oil and Gas section in **Appendix M – Fluid Minerals**).

Additional information can be provided to the lessee in the form of a lease notice. This notice does not place restrictions on lease operation, but does provide information about applicable laws and regulations, and the requirements for additional information to be supplied by the lessee.

New information may lead to changes in existing resource inventories. New use areas and resource locations may be identified or use areas and resource locations that are no longer valid may be identified. These resources usually cover small areas requiring the same protection or mitigation as identified in this plan. Identification of new areas or removal of old areas that no longer have those resource values would result in the use of the same lease stipulation identified in this plan. These areas would be added to the existing data inventory without a plan amendment. In cases where the changes constitute a change in resource allocation outside the scope of this plan, a plan amendment would be required.

After lease issuance, the lessee may conduct lease operations with an approved permit. Proposed drilling and associated activities must be approved before beginning operations. The operator must file an Application for Permit to Drill or Sundry Notice that must be approved according to (1) lease stipulations, (2) Onshore Oil and Gas Order, and (3) regulations and laws. (See “Permitting” in the “Oil and Gas” section of **Appendix M – Fluid Minerals**)

Development of coal bed natural gas in and around Bozeman Pass in Gallatin County would be constrained by the zoning regulations developed for the Bozeman Pass Zoning District recently established by Gallatin County. These regulations established coal bed natural gas development as a “Natural Resources Conditional Use.” These uses are allowed upon obtaining a Natural Resource Conditional Use Permit through the county as described in the zoning district regulations.

None of the lands within the Sheep Creek, Black Sage, Sleeping Giant, Elkhorns Tack-on, Humbug Spires, or Yellowstone Island Wilderness Study Areas would be available for oil and gas leasing under any of the alternatives unless they are released from their existing status, at which point they would be managed under the terms and conditions of the selected alternative identified from this RMP.

### ***Geothermal***

Lands in the Planning Area would be available for geothermal leasing, unless located within wilderness or WSAs or in instances where it is determined that issuing

the lease would cause unnecessary or undue degradation to public lands or resources. There are Known Geothermal Resource Areas in the Planning Area at Boulder Hot Springs, Corwin Springs, and Marysville. A site-specific environmental analysis would be prepared should interest be expressed in exploring for or developing geothermal resources in the Planning Area. This analysis would address the application of stipulations and develop any additional mitigating measures over and above the lease stipulations required.

Stipulations developed in this document for oil and gas leases would be applied to any geothermal lease issued if appropriate. Geothermal exploration and production activity is sufficiently different from oil and gas that the stipulations developed for oil and gas may not be appropriate and could be modified.

### ***Geophysical Exploration***

Oil and gas geophysical activity which is administered by the BLM is governed by regulations found at 43 CFR Subparts 3150, 3151, and 3154. Additional guidance is found in BLM Manual Section 3150 and Handbook 3150. For additional information on geophysical operations and the BLM’s procedures and regulations see the “Geophysical Operations” portion of the oil and gas section of the **Appendix M – Fluid Minerals**.

The BLM would review Notices of Intent to Conduct Geophysical Exploration in the Planning Area and develop appropriate mitigation measures so as not to create undue and unnecessary degradation. A site-specific environmental analysis would be prepared for each NOI filed.

### **Alternative A – No Action**

Under the continuation of current management, approximately eight percent (54,810 acres) of BLM subsurface ownership administered by the BFO would not be available for oil and gas leasing (**Table 2-20**). This includes the Sleeping Giant, Sheep Creek, Elkhorns Tack-on, Black Sage, Humbug Spires, and Yellowstone Island WSAs. Other areas unavailable for oil and gas leasing in this alternative include core areas of state wildlife management areas.

The remainder of federal mineral estate lands would be available for leasing, subject to the stipulations specified in **Table 2-21**, **Appendix M – Fluid Minerals**, or under Standard Lease Terms. **Map 42** depicts lands available and unavailable for leasing under Alternative A.

### **Alternative B – Preferred Alternative**

Approximately four percent (approximately 28,774 acres) of BLM-administered federal mineral estate lands in the Planning Area would not be available for oil and gas leasing (**Table 2-20**). This includes the Sleeping Giant, Sheep Creek, Elkhorns Tack-on, Black Sage, Humbug Spires, and Yellowstone Island Wilderness Study Areas. The remainder of federal mineral estate

lands in the Planning Area would be available for leasing, subject to the stipulations specified in **Table 2-21, Appendix M – Fluid Minerals**, or to Standard Lease Terms. **Map 43** depicts lands available and unavailable under Alternative B.

The timing limitation applied to sage grouse breeding habitats would be based on a three mile buffer for the BFO area rather than a more generally accepted two mile buffer. Radio telemetry studies in southwest Montana indicate that some populations of sage grouse are migratory and move considerable distances during their annual life cycle, including during their nesting season.

In addition, habitat in the Planning Area is unevenly distributed. Based on the most current research examined in the Western Association of Fish and Wildlife Agencies' guidelines (Connelly et al. 2000), a five kilometer buffer is recommended for unevenly distributed habitats (thus the three miles for the BFO). The timing restriction applies to potentially suitable sage grouse habitat (sagebrush areas with adequate sage cover for nesting); therefore, not all acres within the three-mile buffer would be affected by the stipulation. Timeframes for the timing limitation have also been adjusted to limit use from March 1 through June 30 rather than March 15 through June 15. This is because higher elevations in the southwest part of Montana (in comparison to eastern Montana) result in later use of breeding and nesting areas in certain portions of the Planning Area, while information from radio telemetry studies show use of low elevation leks as early as March 1.

### Alternative C

Under Alternative C, approximately 89 percent (580,382 acres) of BLM subsurface ownership administered by the BFO would not be available for oil and gas leasing (**Table 2-20**). This includes the WSAs identified in Alternative B, plus lands in these additional locations:

- Prairie Dog Towns
- Sage Grouse Winter/Spring Range

- Lands within 0.5 mile of Sage Grouse Strutting Grounds (leks)
- State Wildlife Management Areas
- Big Game Winter/Spring Range
- Elk Calving/Big Game Birthing Areas
- Lands within 1 mile of Bald Eagle Nesting/Breeding areas
- Lands within 0.5 mile of Raptor Breeding Areas
- Lands within 1 mile of peregrine falcon breeding territories
- Lands within 0.5 mile of ferruginous hawk breeding territories
- Lands within 1 mile of 99 to 100 percent pure westslope cutthroat trout habitats
- Yellowstone Cutthroat Habitat
- Municipal Watersheds
- Lands recently acquired with LWCF funds.

The remainder of mineral estate in the Planning Area would be available for leasing, subject to the stipulations specified in **Table 2-21, Appendix M – Fluid Minerals** or to Standard Lease Terms. **Map 44** depicts lands available and unavailable under Alternative C.

### Alternative D

Under Alternative D, approximately six percent (36,406 acres) of BLM subsurface ownership administered by the BFO would not be available for oil and gas leasing, including the WSAs (**Table 2-20**) and lands recently acquired with LWCF funds. The remainder of mineral estate in the Decision Area would be available for leasing, subject to the stipulations specified in **Table 2-21, Appendix M – Fluid Minerals** or to Standard Lease Terms. **Map 45** depicts lands available and unavailable under Alternative D.

**Table 2-21  
Lease Terms and Stipulations by Alternative**

<b>Key</b>				
TL	Timing Limitation Stipulation	NSO	No Surface Occupancy Stipulation	
CSU	Controlled Surface Use Stipulation	NL	No Lease	
SLT	Standard Lease Terms	NA	Not Applicable	
Distances are enumerated and those equal or greater than 100 are feet and those 3 or less are miles. Time periods are month/day.				
Resource	Alt A	Alt B	Alt C	Alt D
<b>Wildlife</b>				
Grizzly Bear – Recovery Zone	CSU	NSO	NSO	CSU
Grizzly Bear – Denning Habitat (Distribution Zone)	CSU	TL 4/1-6/30, 9/15-10/15	NSO	CSU
Gray Wolf Dens – Former NW MT Recovery Area	CSU	TL 4/15-6/30 1	NSO 1	CSU
Prairie Dog Towns	NSO ¼	NSO	NL	NSO
Sage Grouse Winter/Spring Range	TL 3/1-6/30	TL 12/1-5/15	NL	TL 12/1-5/15
Sage Grouse Strutting Grounds (leks)	NSO 500	NSO ¼	NL ½	NSO ¼
Sage Grouse Breeding Habitat	TL 3/1-6/30 ¼	TL 3/1-6/30 3	NSO 3	TL 3/1-6/30 3
Wildlife Management Areas	NL/NSO	NSO	NL	NSO
Big Game Winter/Spring Range	TL 12/1-5/15	TL 12/1-5/15	NL	TL 12/1-5/15
Elk Calving/Big Game Birthing Areas	TL 5/1-6/30	TL 4/1-6/30	NL	SLT
Bighorn Sheep Yearlong Range	TL 12/1-5/15	TL 11/1-6/30	NL	TL 11/1-6/30
Bighorn Sheep Core Areas	TL 12/1-5/15	NSO	NL	SLT
Bald Eagle Nest Sites/Breeding Habitat	NSO ½ +	NSO ½ +	NL 1	NSO ½ +
	TL 2/1-8/31 1	TL 2/1-8/31 1		TL 2/1-8/31 1
Raptor Breeding Territories (Golden eagle, Prairie falcon, Swainson’s Hawk)	NSO ¼	TL 3/1-7/31 ½	NL ½	SLT
Peregrine Falcon Nest Sites/Breeding Habitat	NSO ¼	NSO 1	NL 1	NSO 1
Ferruginous Hawk Breeding Territories	NSO ¼	NSO ½	NL ½ + TL 3/1-8/31 1	TL 3/1-7/31 ½
Threatened and Endangered Species	CSU	CSU	CSU	CSU
<b>Fisheries</b>				
Westslope Cutthroat Trout Habitat (90-99% pure)	NSO ¼	NSO ½	NSO ½	CSU ½
Westslope Cutthroat Trout Habitat (99-100% pure)	NSO ¼	NSO ½	NL ½	NSO ½
Fluvial/Adfluvial Arctic Grayling Habitat	NSO ¼	NSO ½	NSO ½	CSU ½
Bull Trout Habitat	CSU ½	NSO ½	NSO 1	NSO ½
Yellowstone Cutthroat Trout Habitat (90-100% pure)	NSO ¼	NSO ½	NL ½	CSU ½
Streams with High Restoration Potential – Native Fish	NA	NSO ½	NA	NA
Class 1 Fisheries (Blue Ribbon)	NSO 1000	NSO ½	NSO 1	CSU ½
<b>Recreation</b>				
Developed Sites	NSO 300	NSO ¼	NSO ½	CSU ¼
Special Recreation Management Areas	SLT	CSU	NSO	SLT
<b>Cultural and Paleontological Resources</b>				
Cultural and Paleontological Resources Inventory Requirement	CSU	CSU	CSU	CSU
National Register of Historic Places Eligible Properties/Districts and Paleontological Localities	NSO 300	NSO 300	NSO 300	NSO 300
Traditional Cultural Properties	SLT	NSO ½	NSO ½	NSO ½
<b>Visual Resources</b>				
VRM Class II, III & IV Areas	CSU	CSU	CSU	SLT
Vegetation, Wetlands, Riparian and Water Quality				

<b>Table 2-21 Lease Terms and Stipulations by Alternative</b>				
<b>Key</b>				
TL	Timing Limitation Stipulation	NSO	No Surface Occupancy Stipulation	
CSU	Controlled Surface Use Stipulation	NL	No Lease	
SLT	Standard Lease Terms	NA	Not Applicable	
Distances are enumerated and those equal or greater than 100 are feet and those 3 or less are miles. Time periods are month/day.				
Resource	Alt A	Alt B	Alt C	Alt D
Wetlands, Floodplains and Riparian Areas	NSO 500, 1000	NSO	NSO	NSO
Special Status Plant Habitats	CSU	CSU	CSU	CSU
Known or Discovered Special Status Plants or Populations	NSO ¼	NSO ¼	NSO ½	NSO
Municipal Watersheds	SLT	NSO	NL	CSU
<b>Soils</b>				
Areas of mass wasting, unstable land areas, slopes >20 percent on Boulder Batholith Soils or >30 percent on non-Boulder Batholith Soils	CSU	CSU	CSU	SLT
<b>Trails, Rivers and Special Designations</b>				
Continental Divide National Scenic Trail (Marysville)	NSO 300	NSO ½	NSO ½	SLT
Lewis & Clark National Historic Trail	SLT	NSO ½	NSO 1	SLT
Rivers Suitable for WSR Designation	NSO 1000	NSO ½	NSO 1	NA
<b>Lands &amp; Realty</b>				
Lands Acquired with Land and Water Conservation Funds	NA	NSO	NA	NA
R&PPs and 2920 Authorizations	SLT	NSO	NSO	NSO

## LOCATABLE MINERALS

### Management Common to All Alternatives

The BLM recognizes that public lands are an important source of the Nation’s energy and non-energy mineral resources. The BLM is responsible for making public lands available for orderly and efficient development of these resources under principles of Multiple Use Management, and the concept of Sustainable Development.

BLM would provide opportunities for mineral exploration and development.

BLM would ensure accessibility to mineralized areas for exploration and development.

No casual use areas of concern or suction dredge use areas would be identified or designated.

BLM would strive to provide for timely permit evaluation and processing of federal energy and solid mineral exploration and development proposals.

A Plan of Operations would always be required (instead of a Notice) when there are lands or waters known to contain federally proposed or listed threatened or endangered species or their proposed or designated critical habitat, unless BLM allows for other action under a formal land-use plan or threatened or endangered species

recovery plan. Land tracts where resource values (i.e., sensitive status or priority species, visual corridors, adjacent land restrictions, substantial cultural resource sites and fossil localities, etc.) may require special measures to prevent unnecessary or undue degradation during mineral exploration (and geophysical exploration) and development would be identified.

BLM would develop and implement measures to prevent unnecessary and undue degradation from exploration, mining, and reclamation activities. BLM would also develop conditions of approval and implementation guidelines (BMPs) to minimize impacts to natural resources including significant cultural resource sites and fossil localities caused by locatable mineral development.

Reclamation and restoration activities would be monitored to determine effectiveness of the practices.

For locatable minerals, placer mining operations, reclamation activities would be required to restore the stream channel and riparian habitat to functioning condition as close to pre-mining conditions as possible.

As information becomes available, known areas of geological hazards (for example landslide prone areas, avalanche areas, rock fall areas and unstable ground) would be mapped.

A total of approximately 6,300 acres of land are withdrawn from locatable mineral entry (with some exceptions primarily for Public Water Reserves described in Chapter 3). These lands would remain withdrawn under all alternatives.

The Devil's Elbow and Holter Lake recreation areas totaling 171 acres located on Hauser Lake would continue to be withdrawn due to their high level of visitation, development, and exclusive use for concentrated recreation activities. These recreation areas include four developed sites (Devil's Elbow, Clark's Bay, Two Camps Vista, and Holter Lake).

The Ringing Rocks area totaling 160 acres would continue to be withdrawn from mineral entry in order to protect this unique geological feature.

Approximately 5,700 acres of land acquired with Land and Water Conservation Funds since development of the Headwaters RMP and Dillon Management Framework Plan would not be opened to locatable mineral entry.

### Alternative A – No Action

No additional areas would be proposed for mineral withdrawal.

Locatable minerals would be managed as described under "Management Common to All Alternatives."

### Alternative B

Locatable minerals would be managed as described under "Management Common to All Alternatives" and "Management Common to Action Alternatives" under Energy and Minerals.

Under Alternative B, in addition to the approximately 6,300 acres previously described as withdrawn under "Management Common to All Alternatives", approximately 198 acres would be proposed for withdrawal from mineral entry. These acres would be in highly visited and developed recreation sites that are exclusively used and constitute substantial financial investments by BLM (Table 2-22, Map 46).

<b>Site Name</b>	<b>Approximate Acres</b>
Departure Point	5
Divide Bridge	8
Divide Campground	17
French Bar	44
Holter Dam	13
Log Gulch	39
Spokane Bay	8
White Sandy	64
<b>Total Acres</b>	<b>198</b>

### Alternative C

Locatable minerals would be managed as described under "Management Common to All Alternatives" and "Management Common to Action Alternatives" under Energy and Minerals.

Under Alternative C, in addition to the 6,300 acres previously described as withdrawn under "Management Common to All Alternatives", and the 198 acres in recreation sites proposed for withdrawal under Alternative B (Table 2-22), approximately 180 acres of riparian areas in Muskrat Creek and Nursery Creek would also be proposed for withdrawal from mineral entry (Map 46). Under Alternative C an additional total of 378 acres would be proposed for mineral withdrawal compared to the existing withdrawal acreage.

The Muskrat/Nursery Creek proposed withdrawal is intended to protect habitat for a genetically pure westslope cutthroat trout population (sensitive species) that has undergone a successful interagency restoration project over the past 10 years. Funding and labor from the USDA Forest Service, BLM, MFWP, Montana State University, and Trout Unlimited have successfully eradicated non-native brook trout from Muskrat Creek, thus creating a currently thriving genetically pure westslope cutthroat trout population. Muskrat Creek has importance to westslope cutthroat trout restoration beyond the local level because after the ten year, \$50,000 restoration effort, its population is now used as a donor source to re-establish westslope cutthroat trout in a number of different locations in the State of Montana. Montana Fish, Wildlife and Parks has identified Muskrat Creek as having the most secure and strongest population of westslope cutthroat trout in the entire Elkhorn Mountain range (Lee Nelson, MFWP Fisheries Biologist, personal communication 2006).

Westslope cutthroat trout have declined in abundance, distribution, and genetic diversity throughout their native range. In the Missouri River drainage of Montana genetically pure westslope cutthroat trout are estimated to persist in less than 5 percent of the habitat they once occupied. To prevent listing under the Endangered Species Act, federal and state managers need to ensure conservation of local populations, preservation of genetic diversity and work towards the long-term, self-sustaining persistence of westslope cutthroat trout (MFWP 1999b).

The 180 acres proposed for the Muskrat/Nursery Creek withdrawal would provide the minimum amount of protection to water quality, stream morphology, and riparian function to protect the restored and unique population of westslope cutthroat trout. This withdrawal would protect the genetically pure westslope cutthroat trout population in Muskrat Creek by preventing loss of riparian vegetation, streambed and bank destabilization, erosion and sedimentation, loss of floodplain vegetation, alteration of floodplain morphology, and alteration of

stream channel morphology that could occur in association with locatable mineral activity, particularly placer mining. Another key impact that placer mining (including casual use) could have on westslope cutthroat trout, is excavation, crushing or disturbance of streambed gravels during the critical period when trout are spawning and eggs are incubating/hatching (June 15 through August 31). If mining operations cause a decline in the population, the population could no longer be able to function as a donor source for Montana and impede restoration efforts.

Muskrat and Nursery Creek are located in the southern Elkhorn WSA which was evaluated in the joint Bureau of Mines and USGS report Mineral Summary Bureau of Land Management Wilderness Study Areas in Montana (1990). In the Muskrat and Nursery Creek areas the report concluded that there is high resource potential for copper, molybdenum and tungsten with a certainty level of D (available information clearly defines the level of mineral resource potential, the highest level of confidence), as well as a moderate mineral resource potential for uranium and thorium with a certainty level of C (Available information gives a good indication of the level of resource potential, US DOI Bureau of Mines and USGS, 1990).

No potential for placer mining has been identified in either Muskrat or Nursery Creek; therefore there is a very low probability of any proposals being submitted to the BLM. In the absence of a mineral withdrawal, should a miner propose to conduct placer mining in these drainages, timing stipulations could be attached to the permit to protect critical periods of spawning and incubation/hatching. Should lode mining be proposed for any of resources identified in the Bureau of Mines report mining practices, BMPs, reclamation/rehabilitation techniques, and bonding would be applied. If unavoidable impacts were to occur they would be mitigated through restoration at the conclusion of mining to the extent practicable. In spite of these measures, minerals operations that substantially reduce the size of the westslope cutthroat trout population and/or have long-term substantial adverse effects on aquatic habitat could eliminate the ability to use this fish population as a donor source to re-establish other populations.

### Alternative D

A total of approximately 6,300 acres would remain withdrawn from mineral entry. Many acres of BLM administered lands along the Missouri River Chain of lakes are included in Power Site Reserve and Power Project withdrawals. Many of these lands are adjacent to existing reservoirs and power projects. No additional areas would be proposed for mineral withdrawal.

Locatable minerals would be managed as described under “Management Common to All Alternatives” and as described under “Management Common to Action Alternatives” under Energy and Minerals.

## SALABLE MINERALS

### Management Common to All Alternatives

BLM would dispose of salable minerals on unpatented mining claims only for a public purpose when no reasonable alternative exists. Salable mineral sites would have an approved mining and reclamation plan and an environmental analysis prior to being opened. Mineral material would be sold at a fair market value to the public, but would be free to state, county, or other local governments when used for public projects. Mineral material sales would be processed on a case-by-case basis.

### Alternative A – No Action

The BLM would authorize the purchase of salable minerals (common varieties of sand, stone, gravel, pumice, cinders, clay, and petrified wood) from the federal government through a contract of sale (by the ton or cubic yard) or a free-use permit unless specific circumstances dictate otherwise. Extraction of materials from previously disturbed sites would be encouraged and all impacts to natural resources would be minimized.

### Alternative B – Preferred Alternative

The BLM would continue to authorize the purchase of salable minerals (common varieties of sand, stone, gravel, pumice, cinders, clay, and petrified wood) from the federal government through a contract of sale (by the ton or cubic yard) or a free-use permit unless specific circumstances dictate otherwise. Extraction of materials from previously disturbed sites would be encouraged. All development and operating impacts to natural resources and local residence would be minimized.

### Alternative C

The BLM would not allow the purchase of salable minerals (common varieties of sand, stone, gravel, pumice, cinders, clay and petrified wood), unless desired by the state or counties, or within existing community pits.

### Alternative D

The BLM would authorize the purchase of salable minerals (common varieties of sand, stone, gravel, pumice, cinders, clay, and petrified wood) from the federal government through a contract of sale (by the ton or cubic yard) or a free-use permit unless specific circumstances dictate otherwise.

## ABANDONED MINE LANDS

**Goal 1** – Reclaim AML sites on public land to improve water quality, plant communities, and diverse fish and wildlife habitat.

**Goal 2** – Reduce and/or eliminate risks to human health from hazardous mine openings.

**Goal 3** – Protect historic resources and wildlife habitat commonly associated with AML sites.

### **Management Common to All Alternatives**

To the extent possible on BLM lands, BLM would strive to meet state and federal water quality standards in watersheds impacted by historic mining.

BLM would assess level of risks at AML sites and prioritize for reclamation based on standardized risk assessment. Reclamation would be implemented at the highest risk sites first.

Where deemed appropriate by BLM personnel, BLM would restore severely impacted soils and watersheds as close as possible to pre-disturbed conditions that support productive plant communities and ensure properly functioning watersheds.

Closures of dangerous inactive and abandoned mine sites would be designed to reduce the risks to human health and safety, restore the environment, and protect geological and cultural resources and meet or move toward meeting Land Health Standards.

Restoration and reclamation activities and repositories would be monitored to determine effectiveness of reclamation practices.

Operation, maintenance, and evaluation activities would be conducted in a manner to ensure the effectiveness of the selected remediation.

To the extent possible on BLM lands, BLM would strive to meet state and federal air quality standards in the interest of protecting human health potentially impacted by fugitive dust emissions.

All resource activities would be required to reclaim and restore AML or hazard reduction sites to the extent necessary to protect work performed on the site.

### **HAZARDOUS MATERIALS MANAGEMENT**

**Goal 1** – Minimize threats and reduce risks to the public and environment from hazardous materials.

### **Management Common to All Alternatives**

BLM would comply with all appropriate laws and regulations regarding hazardous materials. Disposal of hazardous materials on public lands would not be permitted. When the use or storage of hazardous materials is authorized (i.e. in mining operations or other types of commercial activities) special stipulations would be applied to comply with appropriate laws, regulations, and policies. In the event of hazardous materials incidents on public land, standard operating procedures would be used to respond. Cleanups and reclamation

would be conducted in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan and the NEPA decision.

BLM would promote and support the appropriate use and recycling of hazardous materials in public facilities and on public land to prevent or minimize the generation and disposal of hazardous wastes.

BLM would minimize and remediate hazardous materials spills or incidents.

Environmental Site Assessments would be conducted for land acquisitions, land disposals, and for right-of-ways if applicable. Land uses would be authorized and managed to reduce the occurrence and severity of hazardous materials incidences on public land.

BLM would assess level of risk at hazard sites and conduct remediation at highest priority sites that are the greatest risks to the public and environment.

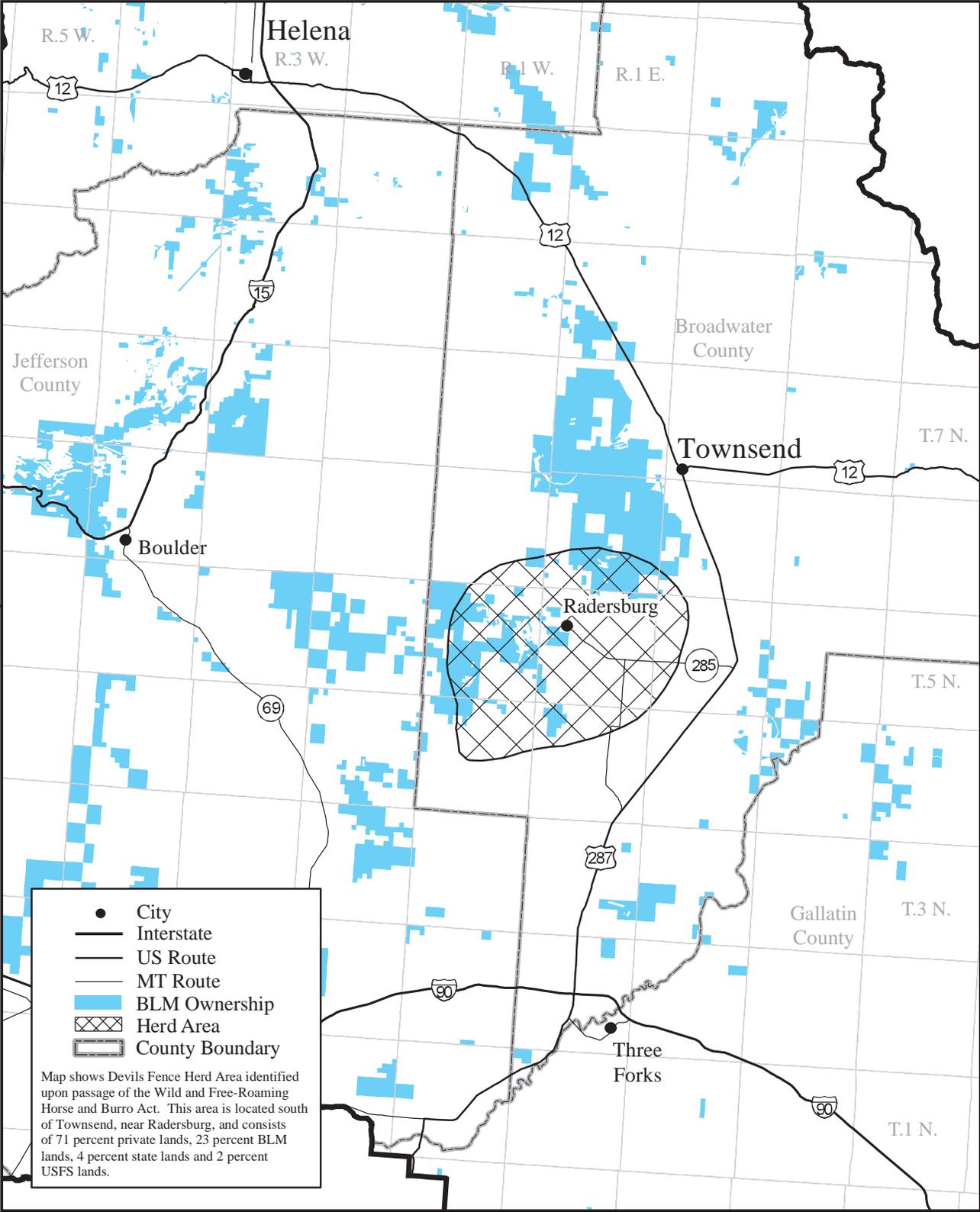
Pollutants, such as flammable liquids and lubricants, would be prevented from entering streams by storing outside of riparian areas, having a spill prevention and control plan, and not allowing refueling within riparian areas (with the exception of permitted mining activities, fire suppression activities, reclamation work and chain-saw re-fueling).

### **WILD HORSES AND BURROS**

### **Management Common to All Alternatives**

Herd areas are public lands identified as being habitat used by wild horses and burros at the time of passage of the Wild and Free-Roaming Horse and Burro Act. At the time of the passage of the Act, a Wild Horse Herd Area called the Devils Fence Herd Area was designated. This herd area is between Townsend and Radersburg (**Map 47**). The herd area is predominantly private and State of Montana lands intermingled with BLM and USFS lands dispersed in a fragmented manner throughout the area. Of the approximately 69,725 acres in the Devils Fence Herd Area, there are 49,592 acres of private lands (71 percent); 16,231 acres of BLM (23 percent); 2,868 acres of state land (4 percent); 1,032 acres of USFS land (2 percent), and 2 acres of local government land. Additionally, several fences partition this area among the many landowners which would further inhibit the free roaming nature of said horses. This area has not been used by, or managed to support wild horses since 1977 due to habitat limitations, and land ownership patterns. In 1977 the area was closed to wild horse use and twelve wild horses were gathered and removed in the Devils Fence area in compliance with the Act. Conditions have changed little since 1977 when this herd was eliminated.

Under the current situation as well as the foreseeable future, the Devils Fence Herd Area is not conducive for the long term maintenance and management of wild



● City  
 — Interstate  
 — US Route  
 — MT Route  
 ■ BLM Ownership  
 ▨ Herd Area  
 ▭ County Boundary

Map shows Devils Fence Herd Area identified upon passage of the Wild and Free-Roaming Horse and Burro Act. This area is located south of Townsend, near Radersburg, and consists of 71 percent private lands, 23 percent BLM lands, 4 percent state lands and 2 percent USFS lands.

0 12 Miles  
 Map Scale 1:1,500,000

Map generated by the Butte Field Office in April 2008  
 Albers Equal Area, NAD83 Projection

This map is intended for display purposes. No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data, or for purposes not intended by BLM. This map may not meet National Map Accuracy Standards. This product was developed through digital means and information may be updated without notification.



**Map 47: Devils Fence Herd Area**

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 Bureau of Land Management



Butte Field Office  
 Proposed RMP/Final EIS

horses that would result in healthy self-sustaining wild horses in a thriving natural ecological balance. In order to manage for wild horses in this area, private land owners would have to request that large portions of their private property be made available to the BLM, and private fences would have to be removed to allow animals to freely roam between land owners. Under all RMP alternatives the Devils Fence Herd Area would continue not to be managed for wild horse use, and therefore would not be designated herd management area (HMA) status.

## **SOCIAL AND ECONOMIC ENVIRONMENT**

**Goal 1** – Provide opportunities for economic benefits while minimizing adverse impacts on resources and resource uses.

**Goal 2** – Provide for a diverse array of activities that result in social benefits for local residents, businesses, visitors, interested citizens, and future generations, while minimizing negative social effects.

**Goal 3** – Sustain, and where appropriate, restore the health of forest, rangeland, aquatic, and riparian ecosystems administered by the BLM to provide a sustained flow of economic benefits within the capability of the ecosystem.

**Goal 4** – Protect visual quality, wildlife habitats, and recreation opportunities to sustain non-market values.

**Goal 5** – Make resource commodities available to provide a sustainable flow of economic benefits within the capability of the ecosystem.

### **Management Common to Action Alternatives (B, C, and D)**

Identified Special Recreation Management Areas and the remaining Extensive Recreation Management Areas would be managed for identified user markets, activities, and experience levels.

Collaborative and/or stewardship processes would be used in the analysis and treatment of all resources and uses, as possible.

BLM would provide opportunities for traditional and nontraditional uses of forest and forest products by incorporating sound ecological principles while contributing to the economic stability of the community.

Use of new and developing technologies and industries would be encouraged in achieving healthy forest, stewardship, biomass utilization, and fuel management goals.

### **ENVIRONMENTAL JUSTICE (EJ)**

**Goal** – Identify and remediate to the extent possible disproportionate negative effects to minority or low income populations per Executive Order 12898 – “Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations”. Evaluate

and disclose whether actions have negative consequence on EJ populations and avoid where practical.

### **Management Common to All Alternatives**

Under all alternatives, BLM would evaluate and disclose whether actions would place a disproportionate share of negative environmental consequences on any particular populations covered by the Executive Order, and where practical, avoid such consequences.

### **TRIBAL TREATY RIGHTS**

**Goal** – Accommodate treaty and legal rights of Native American groups in management of public lands. Tribal treaties affecting the Decision Area are contained in **Appendix K – Cultural Resources**.

### **Management Common to All Alternatives**

BLM would notify and consult with tribes on BLM actions. Consultation and coordination would be conducted on a government to government basis with federally recognized tribes.

## **ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL**

The following alternatives were considered but not analyzed in detail because they were outside of the technical or legal constraints of developing land use plans for public lands and resources.

### **INCREASED MOTORIZED ACCESS**

In the context of travel planning, an alternative was proposed to emphasize motorized recreation in the Scratchgravel Hills and Marysville areas beyond currently available motorized access. This alternative was not analyzed in detail because it did not meet the purpose and need for site-specific travel planning (to develop travel plans that meet the needs of public and administrative access, are financially affordable to maintain, and minimize user conflicts and natural resource impacts associated with roads and trails) and because it entailed promoting public use of a number of routes for which BLM currently lacks legal access through private lands for public use. Portions of this alternative were incorporated into Alternative D where BLM has legal access through private lands.

### **CONSTRUCTION OF A CAMPGROUND AND MOTORIZED TRAILHEAD IN THE MARYSVILLE AREA**

Construction of campgrounds and trailheads are generally activity plan decisions not regularly addressed at the RMP scale. Construction of these facilities could follow

in the future if they are found to be consistent and complementary to the travel plan and RMP decisions that will be made for the Marysville area with this RMP. Future decisions on whether to construct these facilities would consider the relative priority of these facilities compared to other facility construction and maintenance in the BFO.

### ADDITIONAL ACEC NOMINATIONS

Jerry Johnson Creek, City of Butte Big Hole River Diversion, Soap Gulch-Camp Creek, and High Ore Creek areas were nominated as ACECs. None of these areas were carried forward as potential ACECs because each failed to meet either relevance or importance criteria to qualify as potential ACECs (see **Appendix I – ACECs**).

During the public comment period for the Draft RMP/EIS, public comments were received suggesting ACEC expansions or new ACEC designations not previously received during public scoping, and therefore not considered in the Draft RMP/EIS. Due to the requirements for extended public review of new or expanded ACEC designations, the BLM suggested to commenters that these proposals be re-submitted after finalization of the Butte RMP and that they would be considered as potential RMP amendments in the future if deemed to meet criteria for ACECs.

### MORATORIUM ON LAND EXCHANGES

An alternative to place a moratorium on land exchanges was considered but eliminated from detailed study. Congress, through the passage of the Federal Land Policy and Management Act (43 U.S. C.1716), has determined that land exchanges are an appropriate land management tool to consolidate land ownership for more efficient management as long as individual exchanges are determined to be in the public interest and are done within regulatory constraints. **Appendix L – Lands** includes criteria that would be used in evaluating potential land parcels involved with land exchanges.

### REDUCED LIVESTOCK GRAZING

An alternative to substantially reduce the number of AUMs in some BLM grazing allotments (excluding allotments acquired through recent land acquisitions and exchanges) was considered as a means to minimize conflicts between livestock grazing and recreational users and wildlife. This alternative was not analyzed in detail because across all alternatives individual allotments would be assessed and managed through implementation of Standards for Rangeland Health and Guidelines for Livestock Grazing Management.

Adjustments to livestock management practices or livestock numbers, including increases or decreases, would be made in accordance with the results of rangeland health assessments, monitoring studies, and allotment evaluations and interdisciplinary review. (These deci-

sions are activity plan or implementation level decisions.)

### MORE OPEN ROADS/FEWER OPEN ROADS

During the public comment period for the Draft RMP/EIS, public comments were received suggesting development of additional travel management alternatives that provided for more open roads for motorized access. In contrast, comments were also received suggesting alternatives for fewer open roads to reduce motorized access and promote more greatly improved natural resource conditions. The BLM reviewed the travel management alternatives in the Draft RMP/EIS. After this review, the BLM believes that the process it followed (described in **Appendix A**) meets the direction described at 43 CFR 8342 for travel planning. While the Preferred Alternative for three travel planning areas was slightly modified, the BLM believes that a reasonable range of alternatives has been provided in this RMP and that additional travel management alternatives are not warranted.

### ACCELERATED TIMBER MANAGEMENT

During the public comment period for the Draft RMP/EIS, an alternative was suggested to accelerate timber management to remove dead and dying trees from forests and woodlands to a greater degree than what the BLM has proposed in any of its existing alternatives. In considering the specifics of the proposed alternative, the BLM determined that proposed treatment acres identified in existing alternatives would treat three to four times the acreage presumed in the comment. Given the greater degree of treatment in existing RMP alternatives than presumed in the proposal for the additional alternative, combined with the fact that an alternative that promotes the production of timber over other resources would conflict with the multiple use mandates of FLPMA, the BLM believes that an additional alternative is not warranted.

## COMPARISON OF ALTERNATIVES

**Table 2-23** presents a comparison of the main concepts which comprise the alternatives and the numerical contrast between alternatives in terms of acres affected by the various management prescriptions. This table is organized by issue and management concern as presented in Chapter 2.

## COMPARISON OF IMPACTS

The environmental impacts of the alternatives can be compared by examining the key components described in **Table 2-24**. Chapter 4, Environmental Consequences includes a detailed description of the probable outcomes.

**Table 2-23  
Comparison of Alternatives**

***ISSUE 1: Vegetation Communities***

***General Management***

**GENERAL APPROACH TO VEGETATION MANAGEMENT ACTIVITIES**

**Goals**

- Maintain and/or improve ecological health of woodland communities for sustainability and diversity.
- Manage dry forest types to contain healthy stands of site-appropriate species.
- Manage moist forest types to contain healthy stands that combine into a diversity of age classes and structure.
- Manage old growth forest structures in a sustainable manner.
- Minimize infestations of invasive plants and noxious weeds.
- Manage upland vegetation communities by including a full range of herbaceous and shrub species.
- Maintain or enhance communities of priority habitats to provide desired ecological functions and values.
- Manage riparian and wetland communities for the appropriate composition, density and age structure.
- Manage wetland and riparian habitats to support healthy, diverse and abundant populations of fish and associated aquatic and riparian dependent species.

**Management Common to All Alternatives**

- Treatments in dry forest types (Douglas-fir, ponderosa pine, interspersed with limber pine) would be designed to mimic pre-fire suppression conditions.
- Emphasis would be on mechanical or hand thinning treatments in Wildland Urban Interface (WUI) areas.
- Outside WUI areas prescribed burning would be emphasized except when not economically feasible or if effects could be detrimental to vegetation or soils.
- Treatments in cool, moist forest types (Douglas-fir, lodgepole pine, subalpine fir, and spruce) would be focused on reducing stem densities and creating appropriate openings to mimic pre-fire suppression conditions.
- In lodgepole pine stands, mechanical treatments (including timber harvest) would be used to create openings to mimic stand-replacing fire events and to regenerate lodgepole pine.
- Grassland and shrubland habitats would be treated to remove conifers that have encroached into these areas in part due to fire suppression.
- Riparian vegetation would be treated to re-establish pre-fire suppression conifer stem densities and distribution. In areas of aspen this would include removing conifers.

**Table 2-23  
Comparison of Alternatives**

**VEGETATION MANAGEMENT TOOLS**

**Management Common to All Alternatives**

- Mechanical treatments including thinning small and large diameter sized trees, chipping, grinding, or piling non-commercial sized trees would be used to restore vegetative conditions as needed in all vegetation types.
- Prescribed burning would be used to eliminate conifer encroachment and stimulate vegetative regrowth in grassland/shrubland habitats; and to reduce fuels, thin understories, recycle nutrients, and create small openings in forested vegetation types.
- Noxious weed treatments would include hand-pulling, chemical spray, biological treatments, cultural treatments, and public outreach.

***Grasslands and Shrublands – Priority Treatment Areas***

**Management Common to Action Alternatives (B, C, and D)**

- Sagebrush and grassland distribution and vigor would be restored through vegetative treatments.
- Conifer reduction treatments could result in commercial forest products such as biomass, post and poles, and firewood.
- Up to 850 acres of crested wheatgrass seedlings, agriculture fields and weed infestations in the McMasters and Ward Ranch acquisitions would be converted from non-native vegetation to native vegetation.

Alternative A - No Action	Alternative B - Preferred	Alternative C	Alternative D
	Priority treatment areas would include big game winter range, sagebrush, bighorn sheep habitat, and the Wildland Urban Interface.	Priority treatment areas would include big game winter range, Wildland Urban Interface, and current sage grouse habitat.	Priority treatment areas would include big game winter range, Wildland Urban Interface, current and historic sagebrush habitat, forest meadows and parks, and bighorn sheep habitat.

***Grasslands Objectives - Proposed Range of Grassland Treatment Acres Per Decade by Major Watershed***

Alternative A - No Action	Alternative B - Preferred	Alternative C	Alternative D
Big Hole - N/A	Big Hole -500 to 2,500 (of 16,344)	Big Hole - 100 to 250 (of 16,344)	Big Hole - 1,000 to 3,500 (of 16,344)
Blackfoot - N/A	Blackfoot - 0 to 50 (of <100)	Blackfoot – 0 (of <100)	Blackfoot - 0 to 100 (of <100)
Gallatin - N/A	Gallatin - 0 to 200 (of 860)	Gallatin – 0 (of 860)	Gallatin - 0 to 400 (of 860)
Jefferson - N/A	Jefferson - 500 to 3,000 (of 39,720)	Jefferson - 400 to 500 (of 39,720)	Jefferson - 1,000 to 6,000 (of 39,720)
Missouri - N/A	Missouri - 1,750 to 6,000 (of 73,965)	Missouri - 750 to 1,250 (of 73,965)	Missouri - 3,500 to 9,000 (of 73,965)
Yellowstone - N/A	Yellowstone - 0 to 50 (of 4,409)	Yellowstone – 0 (of 4,409)	Yellowstone - 0 to 50 (of 4,409)
Total - 5,250 (of 135,398)	Total - 2,750 to 11,800 (of 135,398)	Total - 1,250 to 2,000 (of 135,398)	Total - 5,500 to 19,050 (of 135,398)

**Table 2-23  
Comparison of Alternatives**

<b>Table 2-23 Comparison of Alternatives</b>			
<b><i>Grasslands and Shrublands continued</i></b>			
<b><i>Shrublands Objectives - Proposed Range of Shrubland Treatment Acres Per Decade by Major Watershed</i></b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Big Hole - N/A	Big Hole -550 to 2,000 (of 12,126)	Big Hole -150 to 450 (of 12,126)	Big Hole -1,100 to 4,000 (of 12,126)
Blackfoot - N/A (of < 100)	Blackfoot - 0 to 50 (of < 100)	Blackfoot – 0 (of < 100)	Blackfoot - 0 to 100 (of < 100)
Gallatin - N/A	Gallatin - 0 to 50 (of < 100)	Gallatin – 0 (of < 100)	Gallatin - 0 to 100 (of < 100)
Jefferson - N/A	Jefferson - 300 to 1,000 (of 5,452)	Jefferson - 75 to 200 (of 5,452)	Jefferson - 600 to 1,500 (of 5,452)
Missouri - N/A	Missouri - 150 to 500 (of 1,714)	Missouri - 25 to 100 (of 1,714)	Missouri - 150 to 1,000 (of 1,714)
Yellowstone - N/A	Yellowstone - 0 to 50 (of 366)	Yellowstone – 0 (of 366)	Yellowstone - 0 to 100 (of 366)
Total – 0 (of 19,858)	Total - 1,000 to 3,650 (of 19,858)	Total - 250 to 750 (of 19,858)	Total - 1,850 to 6,800 (of 19,858)
<b><i>Grasslands and Shrublands - Revegetation Seed Mix</i></b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Native Seed Mixture Unless Modified Through NEPA	Native or low impact, non-invasive seed mixtures would be used to restore vegetation on disturbed ground.	Only native seed species would be used to restore vegetation on disturbed ground.	Same as Alternative B.
<b><i>Forests and Woodlands</i></b>			
<b>Goals</b>			
<ul style="list-style-type: none"> <li>• Restore and/or maintain the health and productivity of public forests, to provide a balance of forest and woodland resource benefits to present and future generations.</li> <li>• Manage forestry resources to provide a sustained flow of local economic benefits and protect non-market economic values.</li> </ul>			
<b>Management Common to All Alternatives</b>			
<ul style="list-style-type: none"> <li>• Vegetation structure, density, species composition, patch size, pattern, and distribution would be managed in a manner to reduce the occurrence of unnaturally large and severe wildland fires and forest insect outbreaks.</li> <li>• Stands with characteristics indicating a substantial risk of developing epidemic levels of forest insects and/or disease would be high priority for treatments to reduce risk.</li> <li>• BLM would continue to provide personal use firewood and Christmas tree cutting permits offered cooperatively with the Forest Service, valid for wood collection from BLM and National Forest lands.</li> <li>• Salvage of forest products resulting from wildland fire, prescribed fire, forest insects, and disease, weather induced or other forest mortality events would be considered.</li> <li>• Timber salvage project areas would consist of small openings, thinning between openings, and retention patches. In the event of large-scale disturbances, patches of dead and dying forest would be maintained for wildlife dependent upon this type of habitat.</li> </ul>			

**Table 2-23  
Comparison of Alternatives**

- In all areas with dead and dying trees, tree cutting would be allowed to provide for human safety, fire rehabilitation, and forest or stream restoration activities.
- Tractor logging would generally be limited to slopes with average gradients of less than 40 percent and the season of logging would be limited to reduce soil compaction and rutting.
- Mechanical treatments would be laid out to minimize risk of windthrow, and shelterwood harvests would be made to improve genetic composition of regenerated stands.
- Whenever possible, openings larger than 20 acres resulting from forest treatments or disturbance events would be planted when natural regeneration does not occur at desired levels within 15 years or cannot be reasonably expected in 5 to 15 years.

**Management Common to Action Alternatives (B, C, and D)**

- Natural disturbance regimes would be maintained or mimicked so that plant communities are resilient when periodic outbreaks of insects, disease, and wild-land fire occur.
- Vegetation manipulation projects would be designed to minimize impacts to wildlife habitat and improve it when possible.
- Forest management would emphasize old forest structures, snag management, and large diameter trees for cavity nesters where appropriate.
- The BLM would strive to maintain and/or restore stands with old forest structure within historic range of variability to maintain and/or enhance habitat for old growth dependent species.
- BLM would design fire restoration/rehabilitation standards on a case-by-case basis, compatible with landscape resource management objectives and long-term (25-year) vegetation health protection and fuels management.

**FOREST PRODUCTS**

- In all action alternatives, commercial harvest of forest products would normally be associated with vegetative restoration (including forest health) and fuels treatments and would be designed to meet objectives for forest management, wildlife habitat management, fire hazard reduction, hazard tree removal, special status species management, visuals, recreation, and travel management.
- Special forest and range products would be managed according to sustainability limits and where consistent with other resource management objectives.
- Residual stands left by disturbance events would be maintained to provide for natural regeneration and diversity of forest systems.
- Firewood cutting would not be allowed in WSAs.

***Forests and Woodlands (Dry Forest) Objectives – Proposed Range of Dry Forest Treatment Acres Per Decade by Major Watershed***

<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Big Hole - N/A	Big Hole - 1,150 to 2,500 (of 19,905)	Big Hole - 250 to 650 (of 19,905)	Big Hole - 2,000 to 3,500 (of 19,905)
Blackfoot - N/A	Blackfoot - 0 to 100 (of 368)	Blackfoot – 0 (of 368)	Blackfoot - 0 to 200 (of 368)
Gallatin - N/A	Gallatin - 0 to 150 (of 533)	Gallatin – 0 (of 533)	Gallatin - 0 to 300 (of 533)
Jefferson - N/A	Jefferson - 1,000 to 4,000 (of 31,936)	Jefferson - 650 to 1,450 (of 31,936)	Jefferson - 2,000 to 5,000 (of 31,936)
Missouri - N/A	Missouri - 1,900 to 7,000 (of 59,988)	Missouri - 1,150 to 2,700 (of 59,988)	Missouri - 3,000 to 7,700 (of 59,988)
Yellowstone - N/A	Yellowstone - 100 to 1,000 (of 2,196)	Yellowstone – 0 (of 2,196)	Yellowstone - 300 to 1,500 (of 2,196)
Total - 5,100 (of 114,926)	Total - 4,150 to 14,750 (of 114,926)	Total - 2,050 to 4,800 (of 114,926)	Total - 7,300 to 18,200 (of 114,926)

**Table 2-23  
Comparison of Alternatives**

***Forests and Woodlands (Cool, Moist Forest) Objectives - Proposed Range of Cool, Moist Forest Treatment Acres Per Decade by Major Watershed***

<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Big Hole - N/A	Big Hole - 200 to 1,600 (of 9,868)	Big Hole - 20 to 200 (of 9,868)	Big Hole - 400 to 1,800 (of 9,868)
Blackfoot - N/A	Blackfoot - 0 to 100 (of <500)	Blackfoot - 0 (of <500)	Blackfoot - 0 to 150 (of <500)
Gallatin - N/A	Gallatin - 0 to 50 (of <100)	Gallatin - 0 (of <100)	Gallatin - 0 to 100 (of <100)
Jefferson - N/A	Jefferson - 50 to 300 (of 2,059)	Jefferson - 5 to 50 (of 2,059)	Jefferson - 50 to 500 (of 2,059)
Missouri - N/A	Missouri - 200 to 1,600 (of 7,165)	Missouri - 20 to 275 (of 7,165)	Missouri - 500 to 2,300 (of 7,165)
Yellowstone - N/A	Yellowstone - 0 to 100 (of 551)	Yellowstone - 5 to 25 (of 551)	Yellowstone - 50 to 200 (of 551)
Total - 2,400 (of 20,243)	Total - 450 to 3,750 (of 20,243)	Total - 50 to 550 (of 20,243)	Total - 1,000 to 5,050 (of 20,243)

***Forests and Woodlands (Forest Products Objectives) - Probable Sale Quantity***

<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Probable Sale Quantity would be 12 to 27 MMBF (40,000 to 97,000 CCF) per decade.	Probable Sale Quantity would be 9 to 25 MMBF (33,000 to 91,000 CCF) per decade.	Probable Sale Quantity would be 5 to 12 MMBF (19,000 to 41,000 CCF) per decade.	Probable Sale Quantity would be 10 to 30 MMBF (36,000 to 107,000 CCF) per decade.

***Forests and Woodlands (Forest Products) - Small Sales***

<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>The following permit types and estimated quantities would be anticipated to be permitted per decade under the small sales program:</p> <ul style="list-style-type: none"> <li>• 350 Permits:</li> <li>• 4,500 Christmas Trees</li> <li>• 750 Cords Firewood</li> <li>• 1,650 MBF Sawtimber (Included with PSQ)</li> <li>• 55 CCF Post, poles, biomass, other woody materials</li> </ul>	<p>The following permit types and estimated quantities would be anticipated to be permitted per decade under the small sales program:</p> <ul style="list-style-type: none"> <li>• 450 Permits:</li> <li>• 5,500 Christmas Trees</li> <li>• 1,000 Cords Firewood</li> <li>• 2,100 MBF Sawtimber (Included with PSQ)</li> <li>• 77 CCF Post, poles, biomass, other woody materials</li> </ul>	<p>The following permit types and estimated quantities would be anticipated to be permitted per decade under the small sales program:</p> <ul style="list-style-type: none"> <li>• 150 Permits:</li> <li>• 4,500 Christmas Trees</li> <li>• 50 Cords Firewood</li> <li>• 500 MBF Sawtimber (Included with PSQ)</li> <li>• 55 CCF Post, poles, biomass, other woody materials</li> </ul>	<p>The following permit types and estimated quantities would be anticipated to be permitted per decade under the small sales program:</p> <ul style="list-style-type: none"> <li>• 600 Permits:</li> <li>• 9,000 Christmas Trees</li> <li>• 1,500 Cords Firewood</li> <li>• 5,200 MBF Sawtimber (Included with PSQ)</li> <li>• 105 CCF Post, poles, biomass, other woody materials</li> </ul>

**Table 2-23  
Comparison of Alternatives**

<b><i>Forests and Woodlands (Forest Products) - Small Sales/Firewood Cutting</i></b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Removal of dead, down, or green trees for firewood could be allowed.	Unless specifically designated, standing dead or down wood may be taken as firewood. At times, BLM could designate specific areas for firewood cutting of live trees to meet other resource objectives.	No standing dead trees or down wood would be allowed to be removed for firewood unless authorized in designated areas. Live trees could be removed for firewood in designated locations, and the joint firewood permit system used by BLM and the USDA Forest Service could not be used.	Same as Alternative B.
No diameter limits for firewood cutting are prescribed.	No dead trees > 24" DBH would be allowed to be taken as firewood.	No live trees >20" DBH would be allowed to be taken as firewood.	Same as Alternative B.
No related action.	Firewood cutting would not be allowed within 100' of live (year-long flow) streams. Firewood cutting would not be allowed within 50' of intermittent streams.	Firewood cutting would not be allowed within 200' of live (year-long flow) streams. Firewood cutting would not be allowed within 100' of intermittent streams.	Firewood would not be allowed to be cut within 100 feet of live (yearlong flow) streams or within 50 feet of intermittent streams or within the Streamside Management Zone, whichever width is greatest.
<b><i>Forests and Woodlands (Forest Products) - Timber Salvage</i></b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Salvage may proceed without prescriptive restrictions for species dependant on dead and dying forests or species dependant on down woody materials, but will continue to be subject to other restrictions, resource protections or special management considerations required for all forest management activities under Alternative A.	When salvage is proposed in dead and dying forests, contiguous acres of undisturbed standing and down woody material would be retained in adequate amounts for those wildlife species that depend on this type of habitat.  Outside of the contiguous areas identified for retention, harvest treatments may include: 1) forest openings appropriate for the site and retention patches of uncut dead and dying trees; or 2) forest openings appropriate for the site with selective thinning between openings and retention patches of uncut dead and dying trees; or 3) selective thinning and retention patches of uncut dead and dying trees.	Where contiguous acres of dead and dying forest exceed 1,000 acres, 50 percent of the area would be maintained as retention. Harvest treatments within the remaining project area may include: 1) creation of forest openings, 2) selective thinning between openings and 3) 50 percent total retention across the harvest treatment area.	Where contiguous acres of dead and dying forest exceed 1,000 acres, 30 percent of the area would be maintained as retention. Harvest treatments within the remaining project area may include: 1) creation of forest openings, 2) selective thinning between openings, and 3) no retention requirements within harvest treatment area.

**Table 2-23  
Comparison of Alternatives**

<b>Forests and Woodlands (Forest Products) - Road Access</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Roads would be constructed to the minimum standards necessary to remove the timber, unless the roads would be needed for other public purposes requiring a higher standard.</p> <p>If needed, up to 5.5 miles of new permanent roads could be constructed per year to provide access for treatments.</p>	<p>Some new permanent roads may be built for long-term management of areas where multiple entries would be necessary to meet objectives. New road construction would be kept to a minimum. Temporary road construction would also be kept to a minimum, and temporary roads would be decommissioned within one year of project completion. Refer to temporary roads definition in glossary.</p>	<p>Forest treatments would occur in areas already accessible by the current road system. No new permanent roads would be constructed. Temporary road construction would be kept to a minimum. Temporary roads would be decommissioned within 1 year of project completion. Refer to temporary roads definition in glossary.</p>	<p>Some new permanent roads may be built for long-term management of areas where multiple entries would be necessary to meet objectives. New road construction, however, would be kept to a minimum. Some new permanent roads could be left open to the public if travel plan objectives for the area are met. Temporary road construction would be kept to a minimum. Refer to temporary roads definition in glossary.</p>
<b>Riparian Vegetation</b>			
<b>Management Common to All Alternatives</b>			
<ul style="list-style-type: none"> <li>At the Field Office scale, management would restore and improve riparian areas and wetlands. Riparian areas that are functioning at risk would be a high priority for restoration.</li> <li>Authorized activities within riparian areas would strive to maintain and restore riparian structure and function, benefit fish and riparian-dependant species, enhance conservation of organisms that depend on the transition zone between upslope and the stream, and maintain or improve the connectivity of travel and dispersal corridors for terrestrial animals and plants.</li> <li>Forested riparian habitats would be managed to accelerate the development of mature forest communities to promote shade, bank stability, and woody debris recruitment. Late-successional riparian vegetation would be promoted in amounts and distribution similar to historic conditions.</li> <li>The Montana Streamside Management Zone law would be followed as a minimum to protect riparian resources.</li> <li>Riparian communities, habitat, and associated uplands would be treated and restored through implementation of livestock grazing guidelines to meet Land Health Standards.</li> </ul>			
<b>Management Common to Action Alternatives (B, C, and D)</b>			
<ul style="list-style-type: none"> <li>Riparian areas would be managed to provide the amount and distribution of large, woody material characteristic of natural aquatic and riparian ecosystems. Trees may be felled in riparian areas when they pose a safety risk or are needed to enhance riparian function/condition. Felled trees would be kept on site when needed to meet woody debris objectives.</li> <li>BLM would cooperate with federal, tribal, and state wildlife management agencies and private landowners to identify activities that prevent meeting riparian standards. In cooperation with those agencies, projects or management measures would be designed to minimize impacts.</li> <li>Mechanical or hand cutting and/or prescribed burning would be used to remove competing conifers from riparian ecosystems, including aspen clones. Commodity removal of juniper would be encouraged.</li> </ul>			

**Table 2-23  
Comparison of Alternatives**

***Riparian Vegetation – Riparian Management Zones (RMZs)***

Alternative A - No Action	Alternative B - Preferred	Alternative C	Alternative D
<p>Managed per the Montana Streamside Management Zone Law.</p>	<p>RMZs from the edge of the aquatic habitat would be established as follows:</p> <p><b>Forested Areas</b></p> <p><u>Streams, lakes, ponds, and reservoirs containing fish:</u> The RMZ would consist of the water body and a zone located on all sides of the water body.</p> <p>This zone would extend from the outer edges of the bankfull channel (average high water mark), full pool, or adjacent wetland a distance equal to the height of two site-potential trees. (Site potential tree height – within forested areas would be the average maximum potential height of dominant trees, in the RMZ).</p> <p><u>Perennial non-fish bearing streams:</u> The RMZ would consist of the stream and a zone located on both sides of the channel. This zone would extend from the outer edges of the bankfull channel (or adjacent wetland) a distance equal to one site-potential tree height.</p> <p><u>Non-fish bearing ponds, lakes, reservoirs, or wetlands greater than 1 acre:</u> The RMZ would extend from the outer edge of the full pool or wetland a distance equal to one site-potential tree height or to the edge of seasonally saturated soil or wetland vegetation, whichever is greater.</p>	<p>RMZs from the edge of the aquatic habitat would be established as follows:</p> <p><b>Forested Areas</b></p> <p><u>Streams, lakes, ponds, and reservoirs containing fish:</u> The RMZ would consist of the water body and a zone located on all sides of the water body.</p> <p>This zone would extend from the outer edges of the bankfull channel, full pool, or adjacent wetland a distance equal to the top of the inner gorge, or the outer edge of the 100-year floodplain, or 300 feet slope distance, whichever is greatest.</p> <p><u>Perennial non-fish bearing streams:</u> The RMZ would consist of the stream and a zone located on both sides of the channel. This zone would extend from the outer edges of the bankfull channel (or adjacent wetland) a distance equal to the top of the inner gorge, the outer edge of the 100 year floodplain, or 150 feet slope distance whichever is greatest.</p> <p><u>Non-fish bearing ponds, lakes, reservoirs, or wetlands greater than 1 acre:</u> The RMZ would extend 150 feet slope distance from the outer edge of the full pool or wetland. This area would also include all moderately and highly unstable areas.</p>	<p>Same as Alternative A.</p>

**Table 2-23  
Comparison of Alternatives**

***Riparian Vegetation – Riparian Management Zones (RMZs) – continued***

Alternative A - No Action	Alternative B - Preferred	Alternative C	Alternative D
	<p><u>Intermittent streams and wetlands less than 1 acre:</u> The RMZ would consist of the water body and a zone located on all sides of the water body. This zone would extend at least 50 feet from the outer edges of the bankfull channel or adjacent wetland.</p> <p><b>Non-forested Areas</b></p> <p><u>For fish-bearing and non-fish bearing streams, lakes, ponds, and reservoirs:</u> the RMZ would consist of the water body and a zone located on all sides of the water body. This zone would extend from the outer edges of the bankfull channel (average high-water mark), full pool, or adjacent wetland a distance that encompasses the active floodplain. The RMZ would extend 50 feet above the break in slope leading down from the lowest terrace to the floodplain, or in segments where trees are present, to a distance equal to 1 site-potential tree height from the edge of the feature, whichever is greatest.</p> <p><u>Intermittent streams and wetlands less than 1 acre:</u> RMZs would be 50 feet from the edge of wetland vegetation or active stream channel as indicated by riparian vegetation, saturated soil, or water. The criteria for selecting the width may be different for each side of the water body.</p>	<p><u>Intermittent streams and wetlands less than 1 acre:</u> The RMZ would consist of the water body and a zone located on all sides of the water body. This zone would extend at least 50 feet slope distance from the outer edges of the bankfull channel or wetland.</p> <p><b>Non-forested Areas</b></p> <p><u>Perennial fish-bearing and non fish-bearing streams or wetlands larger than 1 acre:</u> The RMZ would consist of the water body and a zone located on all sides of the water body. This zone would extend from the outer edges of the bankfull channel, full pool, or adjacent wetland a distance that encompasses the active floodplain. RMZs would extend 150 feet above the break in slope leading down from the lowest terrace to the floodplain.</p> <p><u>Intermittent streams and wetlands less than 1 acre:</u> The RMZ would consist of the water body and a zone located on all sides of the water body. This zone would extend at least 50 feet from the outer edges of the bankfull channel or wetland.</p>	

**Table 2-23  
Comparison of Alternatives**

<b><i>Riparian Vegetation Objectives - Proposed Range of Riparian Vegetation Treatment Acres Per Decade by Major Watershed</i></b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Big Hole - N/A	Big Hole - 50 to 200 (of 3,139)	Big Hole - 20 to 50 (of 3,139)	Big Hole - 75 to 650 (of 3,139)
Blackfoot - N/A	Blackfoot - 0 to 40 (of 92)	Blackfoot – 0 (of 92)	Blackfoot - 0 to 40 (of 92)
Gallatin - N/A	Gallatin - 0 to 10 (of 22)	Gallatin – 0 (of 22)	Gallatin - 0 to 10 (of 22)
Jefferson - N/A	Jefferson - 50 to 200 (of 2,846)	Jefferson - 20 to 50 (of 2,846)	Jefferson - 75 to 300 (of 2,846)
Missouri - N/A	Missouri - 100 to 200 (of 4,651)	Missouri - 35 to 100 (of 4,651)	Missouri - 150 to 600 (of 4,651)
Yellowstone - N/A	Yellowstone - 0 to 50 (of 350)	Yellowstone – 0 (of 350)	Yellowstone - 0 to 100 (of 350)
Total – 30 (of 11,100)	Total - 200 to 700 (of 11,100)	Total - 75 to 200 (of 11,100)	Total - 300 to 1,700 (of 11,100)
Note: Treatment acres are by mechanical and prescribed burning methods. For Alternative A, this treatment figure is a continuation of what has occurred; however, the current plan allows treatment in all riparian areas subject to other management constraints.			
<b><i>Riparian Vegetation – Aspen</i></b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related action.	Where the primary project objective is aspen restoration, treated aspen stands would be fenced from livestock and wildlife when recovery could be suppressed by grazing and browsing. Fencing could consist of using native, on-site materials as barriers.	The structure and composition of aspen stands would be determined by natural processes or treated opportunistically through other projects. Treated aspen stands would be fenced from livestock grazing and, if necessary, wildlife grazing, and browsing. There would be an emphasis on using native, on-site materials for “natural” barriers.	Same as Alternative B.
<b><i>Livestock Grazing</i></b>			
<b>Goals</b>			
<ul style="list-style-type: none"> <li>• Manage for a sustainable level of livestock grazing while meeting or progressing toward Land Health Standards.</li> <li>• Maintain, restore, or enhance BLM rangelands to meet the Land Health Standards.</li> <li>• Manage livestock grazing to provide a sustained flow of local economic benefits and protect non-market economic values.</li> </ul>			

**Table 2-23  
Comparison of Alternatives**

***Livestock Grazing continued***

**Management Common to All Alternatives**

- Livestock grazing would be managed through Implementation of Standards for Rangeland Health and Guidelines for Livestock Grazing.
- Cooperatively managed allotments with the USFS and Dillon Field Office would continue under existing Memoranda of Understanding. Applications for unleased allotments and vacant available lands would be considered on a case-by-case basis.
- Adjustments to livestock management practices or livestock numbers would be made based on results of monitoring studies, rangeland health assessments, allotment evaluations, and interdisciplinary review.
- Functional wildlife escape ramps would be installed and maintained on all water tanks on BLM lands.
- Grazing practices in riparian areas that retard or prevent attainment of riparian goals or proper functioning condition would be modified.
- New fences would be built to standard BLM wildlife specifications to allow wildlife passage
- Livestock grazing guidelines for residual cover and monitoring of forage utilization in new or revised Allotment Management Plans would be developed.
- No new term grazing permits would be authorized on river islands.
- Water developments for livestock generally would not be established in areas where significant conflicts with wildlife forage and habitat occur.
- Sufficient forage and cover would be provided for wildlife on seasonal habitat.

**Management Common to Action Alternatives (B, C, and D)**

- For allotments without specific management objectives, the utilization level as measured at the end of the grazing season would not exceed 55 percent on non-native seedlings and 45 percent on native herbaceous forage plants.
- Grazing uses on lands proposed for acquisition would be considered on a case-by-case basis based on the values identified for the acquisition.
- No new kind of livestock conversions from sheep or cattle to horses would be allowed on existing allotments smaller than 160 acres.
- BLM would develop and implement appropriate grazing strategies in grizzly bear distribution zones.

***Livestock Grazing – Allowable Use***

<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Livestock grazing would be allowed on about 278,000 acres. The amount of forage available on these lands would be 25,677 Animal Unit Months (AUMs).	Livestock grazing would be allowed on about 270,000 acres of public land. The amount of forage available on these lands would be 24,710 AUMs active use and 1,312 AUMs forage reserve, temporary non-renewable AUMs.	Livestock grazing would be allowed on about 262,000 acres of public land. The amount of forage available on these lands would be 24,710 AUMs active use and 936 AUMs forage reserve, temporary non-renewable AUMs.	Same As Alternative A

**Table 2-23  
Comparison of Alternatives**

***Livestock Grazing - McMasters/Spokane Hills Areas***

<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
After the current permittee ceases livestock grazing, the McMaster Hills and Spokane Hills individual allotments would become vacant and available to qualified applicants per the grazing regulations. These allotments would be administered like all other existing allotments.	After the current permittee ceases livestock grazing, the McMaster Hills and Spokane Hills individual allotments would become forage reserve allotments. Use would be authorized on a temporary, nonrenewable basis.	Same as Alternative B.	Same as Alternative A.

***Livestock Grazing - Indian Creek/Iron Mask Areas***

<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
The existing Indian Creek allotment (2,215 acres and 376 AUMS) would be expanded up to an additional 5,566 acres and 700 AUMS by the Iron Mask acquisition. The Indian Creek allotment would be available to qualified applicants per the grazing regulations. This allotment would be administered like all other existing allotments.	The existing Indian Creek allotment would be expanded up to 5,566 additional acres and 700 AUMS by the Iron Mask acquisition. The allotment would be managed as a forage reserve allotment. Use would be authorized on a temporary, nonrenewable basis.	The existing Indian Creek allotment (2,215 acres and 376 AUMS) as well as any lands acquired from the Iron Mask acquisition would be unavailable for grazing lease or permit.	Same as Alternative A.

***Livestock Grazing – Centennial Gulch Area***

<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
The Medicine Rock riparian areas would not be available for prescription livestock grazing. The Centennial Gulch (Ward Ranch) allotment would be available to qualified applicants per the grazing regulations.	The Centennial Gulch (Ward Ranch) allotment and Medicine Rock (North-east Helena) riparian area would only be available for prescription livestock grazing to meet specific resource objectives.	Same as Alternative B.	Same as Alternative A.

**Table 2-23  
Comparison of Alternatives**

<b>Livestock Grazing – Relinquished Allotments</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Allotments where grazing preference is relinquished would remain available for livestock grazing leases or permits.</p>	<p>After the current permittee ceases livestock grazing, the McMaster Hills and Spokane Hills individual allotments would be established as forage reserve allotments (an allotment without a term grazing permit that is grazed on a temporary nonrenewable basis. This type of allotment would be used to provide temporary grazing to rest other areas following wildfire, habitat treatments, or to allow for more rapid attainment of rangeland health). Forage reserve allotments would be managed to meet, or move toward meeting, land health standards. Use would be authorized on a temporary, nonrenewable basis. The amount of use would be determined by the BFO. Applicants would be required to meet qualifications per the grazing regulations, and show the ability and commitment to repair and maintain improvements and infrastructure. The BFO would rank qualified applicants according to the following criteria in priority order:</p> <ol style="list-style-type: none"> <li>1. Implementing projects or vegetation management on BLM lands.</li> <li>2. Facilitating a change in management to improve resource conditions on BLM allotments.</li> <li>3. Accommodating permittees or lessees displaced by natural causes (i.e. wildland fire, drought, insect infestations, etc.)</li> </ol> <p>The criteria found at 43 CFR §4130.1-2 (USDI-BLM 2006a) when conflicting applications are submitted.</p>	<p>Same as Alternative B.</p>	<p>Same as Alternative A.</p>

**Table 2-23  
Comparison of Alternatives**

<b><i>Livestock Grazing – Rest from Grazing Before Prescribed Burning</i></b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Rest from livestock grazing in areas identified for prescribed burning would be determined through site-specific interdisciplinary planning and NEPA processes.	Areas identified for prescribed burning would be rested from livestock grazing up to one year prior to treatment if necessary to produce fine fuels to carry the burn, and for a minimum of two growing seasons following treatment to promote recovery of vegetation. Livestock rest for more or less than two growing seasons could be justified on a case-by-case basis.	Areas identified for prescribed burning would be rested from livestock grazing up to one year prior to treatment if necessary to produce fine fuels to carry the burn, and for a minimum of two growing seasons following treatment to promote recovery of vegetation.	Areas identified for prescribed burning would be rested from livestock grazing prior to treatment if necessary to produce fine fuels to carry the burn, and for a minimum of one growing season following treatment to promote recovery of vegetation. Livestock rest for more than one growing season could be justified on a case-by-case basis.
<b><i>Livestock Grazing – Adjustments</i></b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Forage and cover requirements would be incorporated into allotment management plans and would be specific to areas of primary wildlife use.	Grazing practices would be adjusted to protect or enhance fish and wildlife habitat when livestock grazing is a contributing factor to not meeting land health standards.	Guidelines for residual ground cover would be developed in Allotment Management Plans. Forage utilization would be monitored.	Same as Alternative B.
<b><i>Livestock Grazing - Exclosures</i></b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related action.	Range projects would be maintained as long as needed to meet management objectives. Maintenance would be assigned to grazing permittees, other authorized public land users, or the BLM. Routine maintenance would be completed according to the maintenance schedule per the terms and conditions of existing cooperative agreements.	Currently existing exclosures would be maintained free from livestock grazing. Exclosures would be maintained annually before livestock turnout and would be monitored to compare differences between grazed and ungrazed areas.	Currently existing exclosures would be maintained free from livestock grazing. Exclosures would be checked and maintained every five years.

**Table 2-23  
Comparison of Alternatives**

<b>Livestock Grazing - Bighorn Sheep</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Existing Instruction Memorandum 98-140 (USDI-BLM 1998b) would be followed to protect wild sheep.	<p>No change in livestock conversions from cattle to domestic sheep or goats would be allowed in allotments within occupied wild sheep habitat.</p> <p>New sheep and goat allotments or conversions from cattle to sheep or goats would be permitted a minimum of 5 miles from known bighorn sheep habitat. This distance would be greater if deemed necessary through site-specific analysis.</p> <p>Goats and sheep could be used for weed control on winter ranges when wild sheep are absent.</p> <p>To minimize contact with bighorn sheep, domestic sheep and goats used for weed control would only be allowed to graze for up to 1 month near occupied bighorn sheep habitat and there would be a minimum buffer of 2 miles between domestic and wild sheep. Bedding grounds would be at least 4 miles from known bighorn sheep habitat. The use of domestic sheep and goats would only be allowed from 5/1 to 7/31, unless coordinated with MFWP. A herder would be required to be on site at all times and be able to communicate with the BLM, the herd owner and MFWP. If bighorn sheep and domestic sheep and goats come into contact, the herder would be required to contact the BLM and MFWP immediately.</p>	<p>No change in livestock conversions from cattle to domestic sheep or goats would be allowed in allotments within occupied wild sheep habitat.</p> <p>New sheep and goat allotments or conversions from cattle to sheep or goats would be permitted a minimum of 9 miles from known bighorn sheep habitat. This distance would be greater if deemed necessary through site specific analysis.</p> <p>Goats and sheep could be used for weed control on winter ranges when wild sheep are absent.</p> <p>To minimize contact with bighorn sheep, domestic sheep and goats used for weed control would only be allowed to graze for up to two weeks near occupied bighorn sheep habitat and there would be a minimum buffer of 4 miles between domestic and wild sheep. Bedding grounds would be at least 6 miles from known bighorn sheep habitat. The use of domestic sheep and goats would only be allowed from 5/15 to 7/15 unless coordinated with MFWP. A herder would be required to be on site at all times and be able to communicate with the BLM, the herd owner and MFWP. If bighorn sheep and domestic sheep and goats come into contact, the herder would be required to contact the BLM and MFWP immediately.</p>	<p>The existing Instruction Memorandum 98-140 (USDI-BLM 1998b) would be followed to protect wild sheep. Goats and sheep could be used for weed control on winter ranges when wild sheep are absent.</p> <p>To minimize contact with bighorn sheep, domestic sheep and goats used for weed control would only be allowed to graze for up to 1 month near occupied bighorn sheep habitat and there would be a minimum buffer of 2 miles between domestic and wild sheep. Bedding grounds would be at least 4 miles from known bighorn sheep habitat. The use of domestic sheep and goats would only be allowed from 5/1 to 7/31 unless coordinated with MFWP. A herder would be required to be on site at all times and be able to communicate with the BLM, the herd owner and MFWP. If bighorn sheep and domestic sheep and goats come into contact, the herder would be required to contact the BLM and MFWP immediately.</p>

**Table 2-23  
Comparison of Alternatives**

***Wildland Fire Management***

**Goals**

- Provide an appropriate management response to all wildland fires, emphasizing firefighter and public safety.
- Move toward restoring and maintaining desired ecological conditions consistent with appropriate fire regimes.
- Minimize the adverse effects of fire on resources, resource uses, and wildland-urban interface.
- Promote seamless fire management planning across jurisdictions within the boundaries of the BFO.
- Protect life and property by treating hazardous fuels on BLM lands near Wildland Urban Interface.

**Management Common to All Alternatives**

- The Beaverhead-Deerlodge National Forest, Helena National Forest, Gallatin National Forest, and the State of Montana DNRC would implement fire preparedness, prevention, and suppression on BLM administered lands through the interagency offset and six party fire protection agreements.
- Use of retardant in Wilderness Areas or WSAs would be avoided and would require line officer approval.
- Use of heavy equipment would be restricted to areas outside of Wilderness or WSAs.
- Minimum Impact Suppression Tactics would be used when working in a Wilderness Area or WSAs, following the Interim Management Policy and Guidelines for Lands under Wilderness Review (BLM Handbook H-8550-1). BLM would manage naturally ignited wildland fires in the Elkhorn Mountain units under the prescription guidelines established in the Elkhorn Mountains Fire Management Plan.
- Fire Management activities (wildland fire, fuels, and fire mitigation, education and prevention) would be prioritized by their risk of life and property across the Planning Area. Fires that are adjacent to or near WUI would have highest priority for fire suppression.
- Fire management activities would be designed and implemented in a manner that meets, or moves toward meeting Land Health Standards. Wildland fire management activities would be conducted to meet or move toward meeting Land Health Standards when compliant with the standards for fire operations.
- Emergency fire rehabilitation funds may be used to:
  - a. Protect life, property, and soil, water and vegetation resources.
  - b. Prevent unacceptable onsite or offsite damage.
  - c. Facilitate meeting land use plan goals and other federal laws.
  - d. Reduce the invasion and establishment of undesirable or invasive vegetation.
- Incident bases, camps, helibases, staging areas, and other incident management activities would be located outside of riparian areas. If unavoidable, an exemption could be made by a resource advisor.
- BLM would implement management actions that maintain or move plant communities to the historic fire regime and condition classes. In areas where the environment has changed substantially and a return to historic conditions is not possible or ecologically desirable, the appropriate fire regime would be determined based on current management.
- BLM would provide assistance to communities in developing and maintaining community wildland fire protection plans.

**Table 2-23  
Comparison of Alternatives**

***Wildland Fire Management - continued***

**Management Common to Action Alternatives (B, C, and D)**

- Priority of fire management activities would be placed on fuels reduction in WUI areas in conjunction with completed Community Wildfire Protection Plans.
- Fire management activities outside of the WUI areas would use Fire Regime, Condition Class (FRCC) to determine level of fuels treatments.
- Fire management would focus on maintaining fire dependent ecosystems and restoring or maintaining those areas outside their natural balance through mechanical, chemical, and/or prescribed fire treatments.
- Spread of non-native invasive aquatic species as well as additional resource values would be addressed in the Butte Field Office Fire Management Plan to be revised after finalization of this RMP.

***Fire Management Response***

<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
The BLM administered ground is currently is managed under A, B, and C FMU designations (for description of FMU designations see Chapter 2). Approximately 7,300 acres would be designated in an A FMU, 36,700 acres would be designated in a B FMU, and 258,200 acres would be designated in a C FMU.	BLM administered ground would be managed under B and C FMU designations (for description of FMU designations see Chapter 2) based on watersheds. No acres would be designated in an A FMU, 52,000 acres would be designated in a B FMU, and 255,000 acres would be designated in a C FMU.	BLM administered ground would be managed under A, B and C FMU designations (for description of FMU designations see Chapter 2) based on watersheds. Approximately 41,000 acres would be designated in an A FMU, 23,000 acres would be designated in a B FMU, and 243,000 acres would be designated in a C FMU.	BLM administered ground would be managed under B, C, and D FMU designations (for description of FMU designations see Chapter 2) based on watersheds. No acres would be designated in an A FMU, 42,000 acres would be designated in a B FMU, 82,000 acres would be designated in a C FMU, and 183,000 acres would be designated in a D FMU.

***Fire - Timing Periods***

<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related action.	Management-ignited prescribed fire would not be conducted between May 1 and August 30 to protect nesting migratory birds, unless breeding bird surveys document low potential impacts to breeding birds.	Vegetation treatments, including management-ignited prescribed fire and mechanical treatments would not be conducted between May 1 and August 30 to protect nesting migratory birds, unless breeding bird surveys document low potential impacts to breeding birds.	Same as Alternative A.

**Table 2-23  
Comparison of Alternatives**

<b>Fire - Habitat w/in Burn Patches</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related action.	In grassland/shrubland habitats, BLM would plan for prescribed burns that do not consume above-ground vegetation on more than 80 percent (on average) of each unit by surface area.	In grassland/shrubland habitats, BLM would plan for prescribed burns that do not consume above-ground vegetation on more than 60 percent (on average) of each unit by surface area.	In grassland/shrubland habitats, BLM would plan for prescribed burns that do not consume above-ground vegetation on more than 90 percent (on average) of each unit by surface area.
<b>Fire - Fire Retardant</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related action.	Delivery of chemical retardant, foam or additives to live streams would be avoided. Maps of fish bearing streams would be developed for use in initial attack of wildland fires.	Use of chemical retardant foam, or additives over live streams would only occur if there a risk to human life and safety.	Delivery of chemical retardant, foam or additives to live streams would be avoided.
<b>Fire - Fish Screens</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related action.	Fish screens (1/8 inch diameter holes) on hoses would be required when removing water from fish bearing streams during fire management activities.	Same as Alternative B.	Same as Alternative A.
<b>Noxious Weeds</b>			
<p><b>Goal</b></p> <ul style="list-style-type: none"> <li>Minimize infestations of invasive plants and noxious weeds.</li> </ul> <p><b>Management Common to All Alternatives</b></p> <ul style="list-style-type: none"> <li>Weed management would utilize Integrated Weed Management and work within federal, state, and county guidelines, laws, statutes, plans, and regulations to minimize infestations of invasive plants and noxious weeds.</li> <li>Management would continue to work cooperatively and coordinate with county, state, and federal agencies, weed management areas, and private landowners and organizations.</li> <li>Weed management prescriptions would be included in all new treatment projects and incorporated, where possible, into existing contracts, agreements and land use authorizations which would result in ground disturbing activities.</li> <li>Weed seed free forage (hay, grains, cubes, pelletized feeds, straw, and mulch) would be used on BLM lands.</li> <li>Monitoring would evaluate weed management activities at project and field office levels.</li> <li>All weed treatment ranges represent only 10 to 15 percent treatment of new acres. The remainder would be repeat treatments on the same infestations.</li> </ul>			

**Table 2-23  
Comparison of Alternatives**

***Noxious Weeds - continued***

**Management Common to Action Alternatives (B, C, and D)**

- All contractor and BLM equipment would be power washed to remove weed seeds before entering ground disturbing project areas.
- Weed control using domestic sheep and/or goats in occupied bighorn sheep habitat or using biological controls which have been documented to damage existing desired species would be prohibited.
- BLM would conduct outreach and education for BLM personnel, public land users, and the general public.
- BLM would encourage development of weed management areas.
- Plant communities would be restored, where applicable, to promote resistance to weed invasion.

***Noxious Weeds Objectives - Proposed Range of Weed Treatment Acres Per Decade***

<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
20,000	21,000 to 50,000	16,000 to 38,000	25,000 to 61,000

***Noxious Weeds - Treatment Focus/Priorities***

<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Management on roads and trails, urban interface and recreation areas, and areas currently under a multi-year treatment plan. All grazing allotment agreements for the Planning Area would continue to address weed control by chemical treatment and adjusting livestock use.	Prevention on roads, trails, waterways, recreation sites, and disturbed sites due to project implementation. Prevention and control in special designation areas and weed management areas are also high priority.	Prevention on roads, trails, waterways, recreation sites, disturbed sites due to project implementation, and special designation areas. Prevention and control in special designation areas would be a moderate priority.	Prevention on roads, trails, waterways, recreation sites, and disturbed sites due to project implementation. Prevention and control in special designation areas, weed management areas, areas under a multi-year treatment plan would be a moderate priority.

***Noxious Weeds - Aerial Spraying***

<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Aerial spraying of herbicides would not take place within 200 feet of streams or wetlands.	Procedures described in the Record of Decision for Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (U. S. Department of Interior, Bureau of Land Management, June 2007) would be used. All vegetation projects must be consistent with the Standard Operating Procedures and mitigation measures identified in this Record of Decision.	Aerial application of herbicides and pesticides would not occur.	Aerial spraying of herbicides would not take place when eye-level winds are greater than 6 miles per hour or within 100 feet of streams or wetlands.

**Table 2-23  
Comparison of Alternatives**

***Noxious Weeds - Special Status Plants***

Alternative A - No Action	Alternative B - Preferred	Alternative C	Alternative D
No related action.	BLM, county, and contractor personnel participating in weed treatment activities would be provided with training to identify special status plants and maps of special status plant populations associated with weed treatment areas.	BLM weed personnel would be provided with maps of special status plant populations associated with weed treatment areas.	Same as Alternative B.

***Noxious Weeds - Public Outreach***

Alternative A - No Action	Alternative B - Preferred	Alternative C	Alternative D
No related action.	Outreach/education on noxious weeds would be provided to the public at campgrounds and trailheads.	Same as Alternative B.	Outreach/education on noxious weeds would be provided to the public at campgrounds, trailheads, to specific user groups, at schools, fairs, and community events.

***ISSUE 2: WILDLIFE, WILDLIFE HABITAT, and FISH***

**Goals**

- Conserve, enhance, restore, mitigate, or contribute to the recovery of threatened, endangered, or candidate plant or animal species.
- Conserve or enhance habitat or mitigate negative effects to habitat of BLM sensitive plant and animal species to prevent the federal listing of these species.
- Conserve special-status species and habitats across the landscape through collaboration and cooperation.
- Provide a variety of well-distributed diverse plant communities to support a diversity of habitats.
- Conserve, enhance, restore, or mitigate areas of important wildlife habitat such as rare or limited seasonal habitats, corridors, blocks of intact functional habitat across the landscape, areas of low road-density, foraging areas, and riparian areas.
- Conserve, enhance or restore special habitat features or mitigate/minimize impacts to special habitat features including, but not limited to caves, cliffs, riparian areas, wetlands, snags, and down woody material.

**Management Common to All Alternatives**

- All alternatives would emphasize actions that would promote conservation of special status and priority wildlife species and the ecosystems on which they depend. All alternatives would emphasize maintaining and supporting healthy, productive, and diverse populations and communities of native plants and animals (including big game species such as deer, elk, and bighorn sheep) appropriate to soil, climate, and landform.
- Habitat improvement projects would be implemented where necessary to restore wildlife habitat and/or to improve unsatisfactory or declining wildlife habitat.
- Important blocks of hiding, security, and thermal cover for big game would be considered during project planning.

**Table 2-23  
Comparison of Alternatives**

***WILDLIFE, WILDLIFE HABITAT, and FISH – continued***

- All new fences would be built to standard BLM wildlife specifications (USDI – BLM. 1989b. Bureau of Land Management Fencing Handbook, H-1741-1) to allow wildlife passage with the exception of fences built specifically to keep native ungulates out of an area unless site specific analysis indicates other specifications are necessary.
- Consistent with the requirements of the Endangered Species Act (1973) and BLM policy, all alternatives would ensure that actions are consistent with the conservation needs of special status species. The BLM would seek opportunities to conserve and improve special status species habitats and habitats for native plants and wildlife in project level planning and in other BLM authorized, funded, or approved activities.
- BLM would cooperate and collaborate with federal, tribal, and state wildlife management agencies as well as private landowners to improve habitat for wildlife and special status plants.
- Timing restrictions may be used in special status species habitat. Human activities that disrupt special status species habitats during their seasons of use, particularly during the breeding and winter seasons would be avoided or minimized.
- BLM would manage in a manner consistent with current and future restoration/conservation and recovery plans/conservation agreements (westslope and Yellowstone cutthroat trout, Arctic grayling, and prairie dog) for sensitive terrestrial and aquatic species.
- Sage grouse management activities would be designed and implemented to be consistent with adopted conservation strategies such as The National and Montana Management Plan and Conservation Strategies for Sage Grouse in Montana (USDI-BLM 2004) and current, accepted science.
- Vegetation altering activities could occur in sage grouse habitat where it does not result in long-term loss of habitats or contribute to the need to list. Sufficient sagebrush densities and cover would be retained in sage grouse habitat.

**Management Common to Action Alternatives (B, C, and D)**

- All federally listed and BLM sensitive species and their habitats would be considered priority species and habitats. Additional priority wildlife species would be big game (such as elk, bighorn sheep, deer, and antelope) and migratory birds listed by USFWS and Level 1 and Level 2 species listed under the Montana Bird Conservation Plan (Partners in Flight 2000). Tier I and Tier II habitat and species from Montana's Comprehensive Fish and Wildlife Conservation Strategy (MFWP 2005b) would also be considered priority species and habitats. Priority habitats would include habitat for all special status species as well as riparian areas, dry savannah forest, special habitats including caves, cliffs, snags and down woody material, sagebrush, bitterbrush communities and mountain mahogany communities.
- Management techniques, including but not limited to prescribed and managed wildland fire, prescriptive livestock grazing, planting, exclusion to intense disturbance, timber harvest and other mechanical methods would be used to restore, maintain or improve the desired ecological conditions of vegetation communities for the purpose of improving forage, nesting, breeding, and security habitat, hiding cover and travel corridors for a wide diversity of terrestrial and aquatic species.
- The BLM would emphasize providing habitat of sufficient quantity and quality, including connectivity and wildlife movement corridors, habitat complexity, forest openings, edges, and ecotones, to enhance biological diversity and provide quality, sustainable habitat for native wildlife species.
- BLM would maintain suitable habitat conditions and minimize fragmentation in linkage corridors among habitats occupied by special status species.
- BLM would coordinate with MFWP to determine whether habitat and other conditions exist that would allow successful reintroduction of locally or regionally absent species, such as westslope cutthroat trout, sage grouse, beaver, bighorn sheep, and prairie dogs.

**Table 2-23  
Comparison of Alternatives**

- To the extent possible, BLM would: maintain large patches of high quality sagebrush in occupied or historic sage grouse habitat (as mapped by MFWP); maintain connections between sagebrush habitats and enlarge the size of sagebrush patches in occupied or historic sage grouse habitat.
- BLM would close rock climbing in areas with active raptor nests and would educate the public about the importance of avoiding such locations.
- Seasonal timing restrictions on projects that cause disturbance would be applied where they are needed to minimize the impacts of human activities on important seasonal wildlife habitat. The major types of seasonal wildlife habitat and the time periods which restrictions may be needed are: big game winter and spring range (12/1 to 5/30), big game calving range/habitat (5/1 to 6/30), mountain goat nursery areas (5/1 to 7/15), mountain goat breeding areas (11/1 to 12/31), mountain goat winter range (10/15 to 5/15), grizzly bear spring and summer range (4/1 to 9/1), and grizzly bear denning habitat (10/1 to 4/30).
- One objective under all action alternatives would be to maintain functional blocks of security habitat for big game species across the landscape. Where minimum-size blocks of security habitat (250 acres), as defined by Hillis et al. (1991), are located, they would be retained in a suitable condition during project planning and implementation. Protection of larger blocks of security habitat would also be addressed during project or watershed level planning. Where security habitat is limited or fragmented across the landscape, the BLM would emphasize improving habitat through vegetation treatments and road closures (including seasonal closures) to increase security habitat for big game species.
- At the project level, dead and down woody material would be retained in amounts that are within the range of natural variability for the plant community, to the extent compatible with reforestation objectives, fire hazard reduction standards, and public safety.
- In grasslands and shrublands undergoing vegetation treatments such as the removal of conifer encroachment through mechanical thinning or prescribed burning, all trees and snags with characteristics of old forest structure would be left standing to the extent practicable.
- All action alternatives would emphasize protecting and restoring special habitat components or features that contribute to the productivity of bat species.
- Caves and abandoned mines would be surveyed and assessed for bat use. BLM would determine the need for closures or seasonal closures for activities affecting caves and abandoned mines. Hibernacula closure dates would be approximately 10/15 to 5/1 and maternity closure dates would be approximately 4/15 to 9/30.
- Bat gates or other suitable measures would be used to protect bat habitat when bat use of caves or abandoned mines is determined. Public health and safety would take precedence over protection of bat habitat if hazardous mine openings cannot be remediated with installation of bat gates.
- BLM would comply with the standards and guidelines in the Canada Lynx Conservation Assessment and Strategy (Appendix G).
- BLM would develop and implement human food storage regulations and guidelines in grizzly bear distribution zones in coordination with MFWP and other agencies.
- All action alternatives would emphasize maintaining diverse, healthy, productive, well-distributed aquatic habitats and communities to increase populations of native fish and other aquatic species.
- The BLM would emphasize maintaining and/or restoring the structure, composition, and function of aquatic ecosystems to support a diversity of aquatic plant and animal species and emphasize hydrologic connectivity within watersheds to maintain and/or restore habitat and connectivity needs for populations of aquatic dependent species.
- The BLM would restore and/or maintain riparian structure, composition, and processes, including physical integrity of riparian ecosystems, amount and distribution of woody debris to sustain physical and biological complexity, adequate summer and winter thermal regulation, water quality and hydrologic processes, distribution and diversity of riparian vegetative communities and source habitats for riparian dependent species.

**Table 2-23  
Comparison of Alternatives**

***WILDLIFE, WILDLIFE HABITAT, and FISH – continued***

**Management Common to Action Alternatives (B, C, and D) - continued**

- BLM would opportunistically enhance or restore populations of and habitat for westslope and Yellowstone cutthroat trout and Arctic grayling.
- In select areas identified for native fish restoration, BLM would collaborate with MFWP to remove non-native fish species that out-compete or hybridize with native cutthroat trout.
- Transportation system effects on fisheries resources would be reduced. To the extent possible, roads would be located, designed and maintained to reduce sedimentation, identify and remove unnatural barriers, eliminate fish passage barriers (when desired), and restore or maintain riparian vegetation.

***Wildlife - Livestock Grazing Fences as Barriers***

<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related action.	Fences identified as barriers to wildlife movement would be considered for removal or reconstruction on a case by case basis, to follow BLM fence specifications for wildlife.	Fences identified as barriers to wildlife movement would be removed or reconstructed to follow BLM fence specifications for wildlife.	Same as Alternative B.

***Wildlife - Restoration/Fire Rehabilitation***

<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related action.	For habitat enhancement, fire rehabilitation and other restoration projects, a variety of techniques would be considered to protect plantings, and seedlings from the effects of wildlife and domestic grazing including rest, fencing, netting, and wildlife repellants.	For habitat enhancement, fire rehabilitation and other restoration projects, plantings and seedlings would be protected from the effects of wildlife and domestic grazing including rest, fencing, netting, and wildlife repellants.	Same as Alternative B.

***Wildlife Objectives - Big Game and Roads***

<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Where applicable, the elk management guidelines contained in the Montana Cooperative Elk-logging Study (USDA-FS 1982) will be followed. The existing road network generally will remain open for public use.	There would be no net increase in permanent roads built in areas where open road densities are 1 mi/mi <sup>2</sup> or less in big game winter and calving ranges unless not possible due to rights-of-way, leases or permits. All practicable measures would be taken to assure that important habitats with low road densities remain in that condition.	There would be no net increase in permanent roads built in areas where open road densities are 1.5 mi/mi <sup>2</sup> or less in big game winter and calving ranges unless not possible due to rights-of-way, leases or permits. All practicable measures would be taken to assure that important habitats with low road densities remain in that condition.	No new permanent roads would be allowed in areas where open road densities are 0.5 mi/mi <sup>2</sup> or less in big game winter and calving ranges unless not possible due to rights-of-way, leases or permits. All practicable measures would be taken to assure that important habitats with low road densities remain in that condition.

**Table 2-23  
Comparison of Alternatives**

	BLM would manage to reduce open road densities in big game winter and calving ranges where they exceed 1 mi/mi <sup>2</sup> .	BLM would manage to reduce open road densities in big game winter and calving ranges where they exceed 0.5 mi/mi <sup>2</sup> .	BLM would manage to reduce open road densities in big game winter and calving ranges where they exceed 1.5 mi/mi <sup>2</sup> .
<b>Wildlife Objectives - Grizzly Bears (Special Status Species) and Roads</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related action.	There would be no net increase in permanent roads built in areas where open road densities are 1 mi/mi <sup>2</sup> or less within the current distribution of grizzly bear unless not possible due to rights-of-way, leases or permits. All practicable measures would be taken to assure that important habitats with low road densities remain in that condition. BLM would manage to reduce open road densities within the current distribution of grizzly bear where they exceed 1 mi/mi <sup>2</sup> .	There would be no net increase in permanent roads built in areas where open road densities are 1.5 mi/mi <sup>2</sup> or less within the current distribution of grizzly bear unless not possible due to rights-of-way, leases or permits. All practicable measures would be taken to assure that important habitats with low road densities remain in that condition. BLM would manage to reduce open road densities within the current distribution of grizzly bear where they exceed 0.5 mi/mi <sup>2</sup> .	Same as Alternative B.
<b>Wildlife Objectives – Big Game Security Cover</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Elk management guidelines in the Montana Cooperative Elk-Logging Study (Lyon et al. 1982) would be followed including: managing public vehicle access to maintain habitat effectiveness of security cover and key seasonal habitat for deer and elk; maintaining adequate untreated peripheral zones around important moist sites; maintaining adequate thermal and security cover on deer and elk habitat, particularly in timber stands adjacent to primary winter foraging areas; ensuring slash depth in clear cuts does not exceed 1.5 feet and generally discouraging thinning immediately adjacent to clear cuts.	Where minimum-size blocks of security habitat (250 acres), as defined by Hillis et al. (1991), are located, they would be retained in a suitable condition during project planning and implementation. Protection of larger blocks of security habitat would also be addressed during project or watershed level planning. Where security habitat is limited or fragmented across the landscape, the BLM would emphasize improving habitat through vegetation treatments and road closures (including seasonal closures) to increase security habitat for big game species.	Same as Alternative B.	Same as Alternative B.

**Table 2-23  
Comparison of Alternatives**

<b>Wildlife - Mountain Mahogany and Bitterbrush Management</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related action.	BLM would enhance and improve big game winter range through protection and restoration of mountain mahogany stands where conifers have become established. Detrimental effects to mountain mahogany stands would be avoided with projects in big game winter range whenever possible. When detrimental effects are unavoidable, loss of mountain mahogany would be minimized. BLM would also proactively restore the distribution and vigor of bitterbrush stands through vegetative treatments designed to reduce competing plants; and create a variety of bitterbrush age classes and conditions conducive to bitterbrush regeneration.	BLM would allow natural processes and continued fire suppression to determine the structure and composition of mountain mahogany stands where conifers have become established. Mountain mahogany stands would be restored or enhanced opportunistically through other higher priority projects. Bitterbrush would be protected or restored opportunistically through other higher priority projects.	Same as Alternative B.
<b>Wildlife - Snag Management</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
In concert with the timber management program, a snag management program would be implemented to enhance habitat for cavity-nesting birds.	To determine the "range of natural conditions" for snag densities, BLM would follow the "Northern Region Snag Management Protocol", Jan. 2000, USDA FS Northern Region, until more current information is available.	Same as Alternative B.	Same as Alternative A.
No related Action	Prescribed fire, mechanical treatments, inoculation, or other appropriate methods would be used to create snags and down woody material where deficient in appropriate vegetation types across the landscape.	Snags and down woody material would be created opportunistically through other project work such as fuels reduction or ecosystem restoration. The focus would be on snag and down wood protection rather than on actively creating these features.	Same as Alternative A.

**Table 2-23  
Comparison of Alternatives**

<b>Wildlife - Raptors/Special Status Species</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related action.	Noise disturbance/management activities would be avoided or minimized within 0.5 mile of occupied raptor nests during the nesting and brood rearing period.	Noise disturbance/management activities would be avoided or minimized within 1 mile of raptor nests during the nesting and brood rearing period.	Noise disturbance/management activities would be avoided or minimized within 0.25 mile of raptor nests during the nesting and brood rearing period.
No related action	Unoccupied raptor nests (on cliffs, rocky outcrops or in trees) would be protected from removal or destruction for 5 years, or the period a known preferred prey species fluctuates from population highs to lows. The nest would not have to be retained if it is physically damaged past the point of repair by raptors. In forested habitat types, a 0.25 mile buffer of suitable habitat would be maintained around unoccupied nests for 5 years.	Unoccupied raptor nests (on cliffs, rocky outcrops or in trees) would be protected from removal or destruction for 7 years, or the period a known preferred prey species fluctuates from population highs to lows. The nest would not have to be retained if it is physically damaged past the point of repair by raptors. In forested habitat types, a 0.5 mile buffer of suitable habitat would be maintained around unoccupied nests for 7 years.	Unoccupied raptor nests (on cliffs, rocky outcrops or in trees) would be protected from removal or destruction for 3 years, or the period a known preferred prey species fluctuates from population highs to lows. The nest would not have to be retained if it is physically damaged past the point of repair by raptors. In forested habitat types, a 0.25 mile buffer of suitable habitat would be maintained around unoccupied nests for 3 years.
<b>Wildlife - Bald Eagle (Special Status Species)</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related action.	Bald eagle nesting and roosting habitats would be actively protected from loss due to fire, insect, or disease by reducing vegetation competition and encroachment in these habitats.	Same as Alternative B.	Same as Alternative A.
<b>Wildlife – Bats (Special Status Species)</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related action.	Clearing of vegetation, except noxious weeds, would not be allowed within 250 feet of the entrance of caves and abandoned mines with populations of bats except for public safety. Vegetation could be removed if necessary when installing bat gates, or when it becomes an obstruction to bat movement.	Same as Alternative B.	Same as Alternative A.

<p align="center"><b>Table 2-23 Comparison of Alternatives</b></p>			
<b>Wildlife –Westslope Cutthroat Trout (Special Status Species)</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related specific action.	Genetically pure and slightly hybridized (less than 20 percent hybridization) westslope cutthroat trout populations would be managed by maintaining or restoring high-quality habitats and by expanding populations.	All westslope cutthroat trout populations, regardless of hybridization, would be protected by maintaining high-quality habitats and by expanding populations.	Genetically pure and slightly hybridized (less than 10 percent hybridization) westslope cutthroat trout populations would be protected by maintaining or restoring high-quality habitats and by expanding populations.
<b>Wildlife –Non-Native Aquatic Species</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related action.	BLM would work with MFWP to remove brook trout and other non-native aquatic species that out-compete or breed with westslope cutthroat trout through the use of electroshocking or other physical or chemical means.	Same as Alternative B.	Same as Alternative A.
<b>Wildlife –Non-Native Invasive Species</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related action.	To prevent spread of non-native, invasive aquatic species, BLM would post educational signs about waterborne invasive species at all BLM boat ramps.	Same as Alternative B.	To prevent spread of non-native, invasive aquatic species, BLM would install boat wash stations at all major BLM boating access sites.
<b>ISSUE 3: TRAVEL MANAGEMENT</b>			
<b>Field Office-wide</b>			
<b>Goals</b>			
<ul style="list-style-type: none"> <li>• Provide a balanced approach to travel management that provides a sustained flow of local economic benefits, minimizes or mitigates user conflict, safety concerns, and resource impacts while taking into consideration the unique attributes and values of the various travel management Planning Areas.</li> <li>• Maintain facilities, roads, and trails to provide for public and/or administrative use and safety while mitigating impacts to resources.</li> </ul>			
<b>Management Common to All Alternatives</b>			
<ul style="list-style-type: none"> <li>• Travel management would be conducted in a manner that would meet, or move toward meeting, Land Health Standards.</li> <li>• The 2003 Statewide OHV ROD and Plan Amendment would be followed.</li> <li>• Previous travel planning decisions made for areas with existing travel plans (Elkhorn Mountains, Clancy-Unionville, Whitetail-Pipestone, and Sleeping Giant and several small “sub-planning” areas) would be brought forward in this RMP revision with no proposed changes.</li> </ul>			

**Table 2-23  
Comparison of Alternatives**

- BLM would provide for interagency travel management consistency and route connectivity with adjoining public lands.
- Designated routes would be mapped and signed as open or open with restrictions.
- BLM would continue to participate with the Southwest Montana Interagency Travel Management Committee, maintaining map and sign consistency, and seasonal restrictions.
- BLM would continue to partner with the State Trails Program, seeking opportunities to improve existing as well as future trails and facilities.
- Variances to travel plan designations may be issued on a case-by-case basis to conduct essential agency administrative actions and site-specific approved uses such as casual use mineral exploration.
- Wheeled motorized vehicle travel would be allowed for any military, fire, search and rescue, or law enforcement vehicle for emergency operations. Temporary routes could be constructed where needed and where other routes are not available under approved travel management plans. Construction of such routes would be to minimal standards, adhering to BMPs.
- BLM would minimize establishing travel routes in areas identified at risk for noxious weed infestations.
- In areas with sensitive soils, BLM would minimize establishing new routes and would consider closure, restriction, mitigation, or administrative management of existing travel routes.
- Travel planning analysis would be conducted on those routes documented during the inventory period (up to May 2005).
- Short, site-specific sections of route/trail re-alignment, or reconstruction would continue to be implemented as needed to minimize resource damage and/or provide minor reroutes around private property.

**Management Common to Action Alternatives (B, C, and D)**

- BLM objective in route-specific travel planning within individual TPAs would be to use a systematic process that considers the unique resource issues and social environments of each TPA.
- Travel Plan Areas not analyzed for route-specific management during this RMP revision would be initiated within five years of the completed RMP revision.
- BLM would cooperate with MFWP, adjusting seasonal travel restrictions in accordance with big game hunting season extensions.
- Gates or other barriers would be used as necessary to prevent access on roads and trails closed yearlong to the public.
- Travel route densities would conform with the management prescriptions in the wildlife section of this RMP.
- Loop-road connections would be established, where appropriate, to enhance public access and enjoyment.
- The BLM would emphasize management of the transportation system to reduce impacts to natural resources from authorized roads and trails. The BLM would also stress closing and restoring unauthorized user created roads and trails to prevent resource damage. Ecologically sensitive areas within 300 feet of roads and trails could be closed to dispersed camping if resource damage is found to be occurring in these areas.
- Snowmobile use would be subject to restrictions outlined in specific travel plans. It is the rider's responsibility to avoid locations where wind or topographic conditions may have reduced snow depth and created situations where damage to vegetation or soils could occur, or where vegetation is taller than the protective snow cover. Ecologically sensitive areas could be closed to snowmobiling if resource damage caused or exacerbated by snowmobile activity is found to be occurring in these areas.

**Table 2-23  
Comparison of Alternatives**

<b>Table 2-23 Comparison of Alternatives</b>			
<b><i>Travel Management – Field Office-wide Area Designations</i></b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Areas Designations of “Open”, “Closed”, and “Limited” would be:</p> <p><u>Wheeled Vehicles</u> Open – 4,367 acres Closed – 31,500 acres Limited – 271,442 acres</p> <p><u>Snowmobiles</u> Open – 143,206 acres Closed – 27,065 acres Limited – 137,038 acres</p>	<p>Areas Designations of “Open”, “Closed”, and “Limited” would be:</p> <p><u>Wheeled Vehicles</u> Open – 283 acres Closed – 31,500 acres Limited – 275,526 acres</p> <p><u>Snowmobiles</u> Open – 112,682 acres Closed – 54,706 acres Limited – 139,921 acres</p>	<p>Same as Alternative B for wheeled vehicles.</p> <p><u>Snowmobiles</u> Open – 26,148 acres Closed – 65,270 acres Limited – 215,891 acres</p>	<p>Same as Alternative B for wheeled vehicles.</p> <p><u>Snowmobiles</u> Open – 139,138 acres Closed – 31,282 acres Limited – 136,889 acres</p>
<b><i>Travel Management – Competitive Motorized Events</i></b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Applications for competitive and non competitive organized motorized events would continue to be evaluated on a case by case basis.</p>	<p>Organized competitive and noncompetitive motorized events would be considered and evaluated on a case-by-case basis for the Pipestone area only (existing management). Noncompetitive motorized events would not be allowed outside Pipestone. However, competitive motorized events (timed /speed based) proposed on BLM lands outside Pipestone would be considered, but only if held in conjunction with use of adjacent lands (public or private).</p>	<p>Competitive and organized motorized events would not be allowed. Unless otherwise managed, snowmobile use would be restricted to designated routes only (open or open/restricted), between December 1st and May 15th, snow conditions permitting.</p>	<p>Management for organized motorized events (competitive and non-competitive) would be the same as for Alternative B.</p>
<b><i>Travel Management – Field Office-wide Snowmobile Use</i></b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Existing management varies, and includes: unrestricted area cross-country travel (conditions permitting), seasonally restricted area cross-country travel, travel on all wheeled designated routes (12/1-5/15), and snowmobile use only routes.</p>	<p>With some exceptions (see site specific travel plan alternatives), cross-country snowmobile use would be allowed, as well as travel on all existing routes (conditions permitting).</p>	<p>Unless otherwise managed, snowmobile use would be restricted to designated routes only (open or open/restricted), during the season of use, 12/1-5/15, snow conditions permitting.</p>	<p>Same as Alternative B.</p>

**Table 2-23  
Comparison of Alternatives**

<b><i>Travel Management – Travel Route Easements</i></b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Easements would be pursued as needed for new route construction.	BLM would actively seek easements in order to maintain current access for popularly traveled routes, as well as seek additional site-specific opportunities as needed.	BLM would seek public access easements as needed for new road or trail construction.	BLM would seek public access easements for all locations where BLM routes are accessed either from, or cross private property.
<b><i>Travel Management – Cattle Guards/Gates</i></b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Cattle guards and gates needed to facilitate public travel would be installed on an as needed basis for newly constructed roads/trails.	BLM would replace barbed wire gates (and similar closures) with cattle guards and/or easily operated metal gates wherever problems are known to occur.	Same as Alternative A.	BLM would replace barbed wire gates (and similar closures) with cattle guards and/or easily operated metal gates wherever they currently exist.
<b><i>Transportation/Facilities</i></b>			
<p><b>Management Common to Action Alternatives (B, C, and D)</b></p> <ul style="list-style-type: none"> <li>Roads would be built to the minimum standard necessary that allows reasonable access and has the least impact on resource values.</li> <li>If an existing road is substantially contributing to Land Health Standards not being met, the road would be considered for redesign, closure, or decommissioning to minimize the adverse impacts.</li> </ul> <p><b>Management Common to All Alternatives</b></p> <ul style="list-style-type: none"> <li>Transportation and road management activity would meet, or move toward meeting Land Health Standards.</li> <li>Comprehensive assessments would be conducted for all maintained roads and facilities and maintenance actions would be implemented as needed.</li> <li>New permanent roads and trails would be constructed subject to NEPA and approved engineering standards. Consideration would be given to use demands, location, safety, and resource constraints when determining the level of road necessary, in accordance with <b>Manual Section 9113</b>.</li> <li>Roads and trails would be maintained in accordance with Travel Management Plan guidance and BLM policy. Roads would be assigned maintenance levels and managed in accordance with these levels and in consideration of resource issues. All roads and trails would be maintained in accordance with standards and guidelines in BLM Handbook 9113-2 and <b>Manual Section 9114</b>. Roads and trails would be inspected on an established schedule in accordance with BLM's Condition Assessment guidance.</li> </ul>			

**Table 2-23  
Comparison of Alternatives**

<b>Transportation/Facilities - Road Design</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related management.	Road designs would include at a minimum: <ul style="list-style-type: none"> <li>• Minimizing road and landing locations in Riparian Management Zones;</li> <li>• Minimizing sediment delivery to streams from road surfaces;</li> <li>• Outsloping roadway surfaces where possible, except in cases where outsloping would increase sediment delivery to streams or where outsloping is infeasible or unsafe;</li> <li>• Routing road drainage away from potentially unstable stream channels, fills and hillslopes;</li> <li>• Minimizing disruption of natural hydrologic flow paths;</li> <li>• Minimizing sidecasting of soil or snow.</li> </ul>	Same as Alternative B with the additional condition that stream crossings would be designed to accommodate 100-year storm events with associated sediment and debris.	Road designs would include at a minimum: <ul style="list-style-type: none"> <li>• Minimizing road and landing locations in Streamside Management Zones;</li> <li>• Minimizing sediment delivery to streams from road surfaces;</li> <li>• Outsloping roadway surfaces where possible, except in cases where outsloping would increase sediment delivery to streams or where outsloping is infeasible or unsafe;</li> <li>• Routing road drainage away from potentially unstable stream channels, fills, and hillslopes.</li> </ul>
<b>Transportation/Facilities - Road Design and Maintenance</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
BLM would use Water Quality Best Management Practices for Montana Forests during road construction and maintenance.	Roads would be designed and maintained in a manner that provides for water quality protection by controlling placement of fill material, keeping drainage facilities open, installing and maintaining appropriately-sized culverts at stream crossings, and by repairing ruts and failures to reduce erosion and sedimentation of aquatic habitats.	Roads would be designed and maintained in a manner that provides for water quality protection by controlling placement of fill material, keeping drainage facilities open, installing and maintaining stream crossings capable of accommodating 100-year storm events including associated sediment and debris, and by repairing ruts and failures to reduce erosion and sedimentation of aquatic habitats.	Roads would be designed and maintained in a manner that provides for water quality protection by controlling placement of fill material, keeping drainage facilities open, installing and maintaining appropriately-sized culverts at stream crossings, and by repairing ruts and failures to reduce erosion and sedimentation of aquatic habitats.

**Table 2-23  
Comparison of Alternatives**

***ISSUE 4: RECREATION***

**Goals**

- Provide a diverse array of recreational opportunities while maintaining healthy public land resources.
- Establish, manage, and maintain quality recreation sites and facilities to meet a broad range of public needs subject to resource constraints.
- Manage commercial, competitive, or special events with special recreation permits that eliminate or mitigate impacts to resources and conflicts with other users.
- Manage recreation opportunities to provide a sustained flow of local economic benefits and protect non-market economic values.
- “Leave No Trace” and “Tread Lightly” practices would be promoted.
- BLM would support events that emphasize collaborative outreach and public awareness.
- BLM would support and utilize volunteers.

**Management Common to All Alternatives**

- BLM would continue to provide a diverse range of quality recreation opportunities and experiences commensurate with public demands, resource considerations, management capabilities, and existing program guidance.
- Comparable, cost effective and value based fee systems would be established for services and facilities provided to public users in accordance with the Butte Field Office Recreation Fee Area (MT-02) Business Plan, BLM directives and the Federal Lands Recreation Enhancement Act. This Business Plan would be updated every five years.
- There are no known significant caves or karsts in the Decision Area. Should these resources be discovered, BLM would develop management plans appropriate for the specific resource in accordance with Bureau directives.
- Recreation users would be limited to 14-day camping stays with the exceptions presented under Recreation Management – Management Common to All Alternatives.
- Personal property of recreational users could not be unattended for more than 24 hours at recreation sites or for more than 72 hours on other BLM lands.
- BLM would establish and maintain information kiosks with site maps, brochures, interpretive and educational information, important contacts, and site regulations at recreation sites.
- BLM would continue to conduct periodic accessibility, safety, and condition assessments in accordance with Bureau policy at developed recreation sites. Prioritize available funds to resolve deferred and corrective maintenance needs.
- BLM would conduct annual evaluations of all fee sites that address project needs, support equipment, visitor services, public comments, administrative needs, fees, site regulations, and conflict concerns.
- Working relationships with tourism organizations, recreation interest groups, and local/state/other federal governments would be maintained and expanded to enhance visitor services, management efficiencies, and recreation opportunities.
- Partnership agreements that are mutually beneficial to BLM and the public would be established and maintained to enhance comprehensive planning, collaborative management, and collective funding.

**Table 2-23  
Comparison of Alternatives**

**RECREATION - continued**

**Management Common to All Alternatives - continued**

- BLM would develop and strive to maintain an agreement with MFWP that would establish partnership efforts and responsibilities to collectively manage the Black and White Sandy sites on Hauser Lake.
- SRMAs would be given management priority to provide quality recreation opportunities and visitor experiences. All remaining lands would be managed as an Extensive Recreation Management Area (ERMA). This area would generally be given less priority in terms of on-the-ground management, improvements, and facility maintenance.
- BLM would pursue opportunities to expand day-use parking capacities on Holter Lake in cooperation with the Missouri/Madison Comprehensive Recreation Plan.
- Organized competitive and non-competitive motorized events would be considered and evaluated on a case-by-case basis for the Pipestone area only (existing management). Non-competitive motorized events would not be allowed outside Pipestone. However, competitive motorized events (timed/speed based) proposed on BLM lands outside Pipestone would be considered, but only if held in conjunction with adjacent lands (public or private). New permits would not be authorized that directly conflict with permitted uses. Existing permittees would be given preference.

**Management Common to Action Alternatives (B, C, and D)**

- BLM would establish designated boat-in camp sites along the shoreline of Holter Lake and consider a similar designation effort for the Hauser Lake shoreline should resource concerns warrant.
- In accordance with policy guidance (IM No. 2004-150), a greater priority would be placed on extending appropriate, reoccurring permits from five years to 10 years.
- New special recreation use permits would be analyzed and mitigated to meet management objectives.
- BLM would coordinate with MFWP to manage appropriate uses at BLM launch sites as necessary to ensure quality recreation opportunities and experiences on State waters and affected BLM lands.
- New sites would be developed commensurate with public demand, resource constraints, and management capabilities. Priority would be given to new sites that have partnership funding strategies and are consistent with established ROS and SRMA management guidelines.
- If an existing developed recreation site significantly contributes to Land Health Standards not being met, the impacts from the site would be minimized to the extent possible.
- All new recreation sites would be designed, constructed, and managed to meet, or move toward meeting, Land Health Standards.

**Recreation – Permits**

Alternative A - No Action	Alternative B - Preferred	Alternative C	Alternative D
No fees would be charged for commercial fishing and floating outfitters using developed BLM river access sites.	Day-use Special Recreation Permits would be issued for commercial fishing and floating uses at BLM river access sites. Outfitters would be annually billed an <b>advance flat fee</b> (currently	Day-use Special Recreation Permits would be issued for commercial fishing and floating outfitters using developed BLM river access sites. Fees would be based on actual use reports and estab-	Fees would be postponed for commercial fishing and floating outfitters using developed BLM river access sites until a multi-agency statewide fee system is established. Under this system, BLM

**Table 2-23  
Comparison of Alternatives**

	\$90.00) established by the Director based on the Implicit Price Deflator Index. Long-term BLM would continue to coordinate with MFWP to enhance river/corridor land management and to possibly develop a multi-agency state-wide fee system for the commercial uses of river access sites.	lished BLM policies.	would receive a portion of collections based on a percentage of total sites under the statewide system.
<b>Recreation – 14-Day Camping Variances</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Variations (extensions) to the 14-day camping limit would be considered on a case-by-case basis subject to the following considerations: resource impacts, social conflicts, sanitation concerns, no livestock or commercial activities would be involved.	Variations to the 14-day camping limit during the hunting season would be considered on a case-by-case basis subject to the following considerations: resource impacts, social conflicts, and sanitation concerns, no livestock, or commercial activities would be involved. Preference will be given to developed recreation sites since they provide hardened camping units, toilet facilities, and good access during this low use season.	No variations to 14-day camping limits would be allowed.	Same as Alternative B.
<b>Recreation – Permits</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Authorization of commercial camping activity would be considered throughout the Field Office on a case-by-case basis subject to resource constraints, management capabilities, social conflicts, and public health and safety concerns.	Commercial camping permits within developed fee sites would not be allowed during the fee season to reduce user conflicts and resource impacts (Memorial Day to Labor Day).	Same as Alternative B.	Same as Alternative A.

**Table 2-23  
Comparison of Alternatives**

<b>Recreation – Permits</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Permit requests by outfitter and guide hunters would be considered on a case-by-case basis throughout the Field Office, subject to environmental, social, and public health and safety concerns.	Special recreation permits would be limited to day-use activities during the hunting season with the exception that camping uses would only be considered within developed recreation sites during the non-fee season.	Special recreation use permits during the hunting season would be limited to day-use activities only.	Same as Alternative A.
<b>Recreation – Hauser Lake Boat-in Camping</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Boat-in camping would be allowed along the entire BLM shoreline of Hauser and Holter Lakes subject to current regulations.	Boat-in camping at dispersed sites (excludes developed sites) on BLM lands along the Holter Lake shoreline would be limited to designated sites only. Site availability would be determined through a field evaluation by an interdisciplinary team. Suitable sites where impacts to other important resources are acceptable would be designated, signed, and available to the public on a first-come, first-served basis. A similar management system should be considered and implemented along Hauser Lake should conditions warrant.	The entire BLM shoreline on Hauser and Holter Lakes excluding developed sites would be closed to camping.	Same as Alternative A.
<b>Recreation – Bear/Human Interactions</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related action.	Human food storage regulations would be developed and implemented for all recreation sites with high potential and/or known encounters between people and bears.	Same as Alternative B.	Same as Alternative A.

**Table 2-23  
Comparison of Alternatives**

<b>Recreation – Recreation Opportunity Spectrum</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No ROS classifications would be established to guide the management of appropriate settings and visitor opportunity experiences.	ROS classifications would be: <ul style="list-style-type: none"> <li>• Semi-Primitive Non-Motorized – 36,800 acres</li> <li>• Semi-Primitive Motorized – 71,800 acres</li> <li>• Roded Natural – 171,100 acres</li> <li>• Roded Modified – 16,600 acres</li> <li>• Rural – 11,000 acres</li> </ul>	ROS classifications would be: <ul style="list-style-type: none"> <li>• Semi-Primitive Non-Motorized – 63,700 acres</li> <li>• Semi-Primitive Motorized – 66,900 acres</li> <li>• Roded Natural – 158,100 acres</li> <li>• Roded Modified – 15,900 acres</li> <li>• Rural – 2,700 acres</li> </ul>	ROS classifications would be: <ul style="list-style-type: none"> <li>• Semi-Primitive Non-Motorized – 30,000 acres</li> <li>• Semi-Primitive Motorized – 37,600 acres</li> <li>• Roded Natural – 186,100 acres</li> <li>• Roded Modified – 19,600 acres</li> <li>• Rural – 34,000 acres</li> </ul>
<b>Recreation – Special Recreation Management Areas (SRMAs)</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Recreation management would continue to be prioritized in the following five areas: Holter Lake/Sleeping Giant, Lewis & Clark National Trail, Upper Big Hole River, Humbug Spires, and Scratchgravel Hills.	Recreation management would be prioritized in the following nine areas: Lower Holter Lake/Missouri River, Sleeping Giant/Missouri River, Hauser Lake, Uppermost Missouri River, Scratchgravel Hills, Sheep Mountain, Pipestone, Upper Big Hole River, and Humbug Spires.	Same as Alternative B.	Recreation management would be prioritized in the following five areas: Lower Holter Lake/Missouri River, Hauser Lake, Uppermost Missouri River, Pipestone, and Upper Big Hole River.
<b>ISSUE 5: SPECIAL DESIGNATIONS INCLUDING ACEC, NATIONAL TRAILS, WILD AND SCENIC RIVERS AND WSAs</b>			
<b>Goals</b> <ul style="list-style-type: none"> <li>• Designate ACECs where special management attention is required to protect important and relevant values.</li> <li>• Manage National Trails to promote public enjoyment and protect their designated values.</li> <li>• Manage preliminarily eligible river segments so that their suitability for potential National Wild and Scenic Rivers System designation is not impaired.</li> <li>• Manage Wilderness Study Areas so that their suitability for potential wilderness designation is not impaired.</li> </ul>			

**Table 2-23  
Comparison of Alternatives**

<b>Special Designations – ACEC</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Sleeping Giant ACEC (11,679 acres) would continue to be managed as an ACEC under the existing management plan.</p>	<p>Approximately 70,644 acres would be managed in the following four potential ACECs to protect relevant and important values:</p> <ul style="list-style-type: none"> <li>• Sleeping Giant (11,679 acres)</li> <li>• Elkhorns (50,431 acres)</li> <li>• Humbug Spires (8,374 acres)</li> <li>• Ringing Rocks (160 acres within existing withdrawal)</li> </ul>	<p>Approximately 87,893 acres would be managed in the following five potential ACECs to protect relevant and important values:</p> <ul style="list-style-type: none"> <li>• Sleeping Giant (11,679 acres)</li> <li>• Elkhorns (67,665 acres)</li> <li>• Humbug Spires (8,374 acres)</li> <li>• Spokane Creek (14 acres)</li> <li>• Ringing Rocks (160 acres within existing withdrawal)</li> </ul>	<p>Approximately 23,695 acres would be managed in the following three potential ACECs to protect relevant and important values:</p> <ul style="list-style-type: none"> <li>• Sleeping Giant (11,679 acres)</li> <li>• Elkhorns (3,575 acres)</li> <li>• Humbug Spires (8,374 acres)</li> </ul>
<b>Special Designations – National Trails</b>			
<b>Management Common to All Alternatives</b>			
<ul style="list-style-type: none"> <li>• The Continental Divide Trail would be managed cooperatively with the USFS in accordance with national policy guidelines. The Lewis and Clark Historic Trail would be managed cooperatively with the National Park Service (NPS) in accordance with national policy guidelines.</li> <li>• BLM would seek opportunities to cooperatively manage National Trails through partnerships.</li> <li>• BLM would continue cooperative efforts with PPLM and other partners to collectively manage the Lewis and Clark National Historic Trail under the Missouri/Madison Comprehensive Recreation Plan. All historical recreation sites within the trail corridor would continue to be managed in a manner that promotes public accessibility, resource protection, visitor safety, and interpretive education.</li> </ul>			
<b>Special Designations – National Trails – continued</b>			
<b>Management Common to Action Alternatives (B, C, and D)</b>			
<ul style="list-style-type: none"> <li>• The two National Trails (Continental Divide National Scenic Trail and Lewis and Clark National Historic Trail) would be managed in accordance with the ROS classes, VRM classes, travel plan direction, and oil and gas stipulations established under the action alternatives.</li> <li>• BLM would evaluate opportunities to re-route the Continental Divide Trail segment in coordination with the USFS to enhance non-motorized opportunities; reduce current needs for use easements/acquisitions through private lands; and remove motorized conflicts associated with the motorized road.</li> </ul>			
<b>Special Designations – Wild and Scenic Rivers</b>			
<b>Management Common to All Alternatives</b>			
<ul style="list-style-type: none"> <li>• In cooperation with other agencies, local governments, and special interest groups, management would be conducted in a manner to protect and enhance the outstandingly remarkable values for each suitable river segment.</li> </ul>			

**Table 2-23  
Comparison of Alternatives**

***Special Designations – Wild and Scenic Rivers***

<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>The suitability study of the four river segments (Upper Big Hole River - 2.3 miles, Missouri River - 3.1 miles, Moose Creek - 4.0 miles, and Muskrat Creek - 2.6 miles) determined to be eligible for designation in the National Wild and Scenic River System would not be completed and protective management would continue indefinitely for all four river segments.</p>	<p>Muskrat Creek (2.6 miles) would be recommended as suitable for inclusion in the National Wild and Scenic Rivers System (NWSRS).</p> <p>Missouri River (3.1 miles) would be found preliminarily suitable, but would only be recommended for inclusion in the NWSRS pending USFS (Helena National Forest) concurrence and coordination.</p> <p>The Upper Big Hole River and Moose Creek segments would not be recommended as suitable.</p>	<p>Under Alternative C all four eligible river segments (totaling 12 miles) would be recommended as suitable for inclusion in the National Wild and Scenic Rivers System.</p>	<p>None of the four eligible river segments would be recommended as suitable for inclusion in the National Wild and Scenic River System.</p>

***Special Designations – Wilderness Study Areas***

**Management Common to All Alternatives**

- All six WSAs (Humbug Spires, Sleeping giant, Sheep Creek, Black Sage, Elkhorns Tack-on, and Yellowstone River Island) would continue to be managed under the Interim Management Policy and Guidelines for Lands under Wilderness Review until such time as Congress either designates them as wilderness or releases them from further consideration as wilderness.
- WSAs would continue to be managed in accordance with the established monitoring and sign plans for each WSA.
- Sleeping Giant and Sheep Creek WSAs would continue to be managed as part of the Sleeping Giant ACEC and management plan.

**Management Common to Action Alternatives (B, C, and D)**

- Sleeping Giant, Sheep Creek, Humbug Spires, and Elkhorns Tack-on WSAs would be managed as ACECs as per management direction described in the ACEC section regardless of whether Congress designates them as wilderness or releases them from wilderness consideration.
- In the event that Congress releases Black Sage and Yellowstone Island WSAs from wilderness consideration, they would be managed as per management direction described by alternative as described above in Chapter 2.

**Table 2-23  
Comparison of Alternatives**

***Management Concern: Air Resources***

**Goals**

- Ensure BLM authorizations and management activities protect the local quality of life and sustain economic benefits by complying with Tribal, local, state, and federal air quality regulations, requirements, and implementation plans.

**Management Common to All Alternatives**

- BLM would continue to participate in local, state, and federal ambient air quality monitoring programs, as required.
- BLM would comply with local, state, and federal regulatory requirements.
- All resource uses would meet the Land Health Standards for air quality.
- Management would minimize or prevent air quality degradation throughout the Planning Area by applying mitigation measures to projects.
- Mitigation measures would be developed as appropriate to ensure compatibility of projects with air resource management.

***Management Concern: Soils***

**Goals**

- Manage uses to minimize accelerated soil erosion and compaction and maintain surface soil water infiltration based on site-specific conditions.
- Maintain or improve soil health and fertility, prevent or minimize erosion and compaction while supporting multiple use management.

***Management Concern: Soils – continued***

**Management Common to All Alternatives**

- Soil management objectives would include: reducing soil erosion associated with steeper slopes, granitic soils, and high recreational use areas; reducing sediment delivery to streams; reducing soil movement resulting from burned areas, aboveground disturbances, and accelerated streambank erosion.
- BMPs would be implemented at the site-specific project level to maintain or improve the soil resources.
- Soil compaction and erosion problems would be diagnosed using Land Health Standards.
- Mitigation or seasonal activity restrictions would be applied to activities in areas with significant soil compaction or accelerated erosion.

**Management Common to Action Alternatives (B, C, and D)**

- BLM would reseed disturbed areas where needed.

**Table 2-23  
Comparison of Alternatives**

**Management Concern: Water Quality**

**Goals**

- Restore and/or maintain the chemical, physical, and biological integrity of water resources to protect designated beneficial uses and achieve water quality standards.
- Maintain existing or acquire new water rights on BLM land to ensure water availability for multiple-use management.
- Minimize erosion and accelerated runoff to streams to improve watershed function.
- Maintain or improve morphological conditions to a stable state that can fully support beneficial uses.
- Protect water quality for municipal, industrial, agricultural, recreation, and residential purposes by adopting protective measures to meet tribal, state, and local water quality requirements.

**Management Common to All Alternatives**

- Land Health Standards would be implemented to protect beneficial uses of water are protected and ensure that water quality meets State standards.
- BLM would continue to cooperate with Montana Department of Environmental Quality and communities in the development of Water Quality Restoration Plans and Source Water Protection Plans.
- BLM would comply with non-degradation provisions of the Montana Water Quality Act.
- Projects would be reviewed on a case-by-case basis to minimize impacts to water quality.
- Water rights and instream flow reservations would be maintained subject to Montana water law.

**Management Common to Action Alternatives (B, C, and D)**

- Existing water rights would be maintained to ensure water availability for multiple-use management and proper functioning riparian and upland areas.
- Water quality would be monitored to establish baseline conditions, identify areas of concern, and document progress from mitigation measures.
- BLM would participate in the development, implementation, and monitoring of water quality restoration plans/TMDL plans.

**Management Concern: Water Quality - Total Maximum Daily Loads (TMDLs)**

Alternative A - No Action	Alternative B - Preferred	Alternative C	Alternative D
Present levels of stream restoration activities would continue. Progress of past actions to improve water quality would be monitored.	BLM would examine "Water Quality Restoration Plans" (Plans) to determine if reduction targets of pollutants (TMDLs) are reasonable and attainable. Plans would be implemented as funding becomes available.	BLM would reduce pollutants in streams to levels indicated in "Water Quality Restoration Plans." Plans would be implemented as funding becomes available.	Same as Alternative A.

**Table 2-23  
Comparison of Alternatives**

<b>Management Concern: Water Quality - Water Rights</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related action.	BLM would consider acquiring water rights from willing sellers.	Same as Alternative B.	No related action.
<b>Management Concern: Water Quality - Fire Rehabilitation</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
No related action.	Burned areas would be monitored for weed infestations and accelerated soil erosion. Where sedimentation impacts adjacent streams, erosion would be mitigated.	Accelerated soil erosion and sedimentation in burned areas would be mitigated.	No related action.
<b>Management Concern: Visual Resources</b>			
<b>Management Common to All Alternatives</b>			
<ul style="list-style-type: none"> <li>• Visual resources would be managed according to VRM classes as described in Appendix C.</li> <li>• Visual resource design techniques and best management practices would be used to minimize short and long-term visual impacts of projects.</li> <li>• Visual contrast ratings for major projects within VRM Class I, II, and III areas would be completed according to BLM Handbook H-8341-1.</li> <li>• VRM Class I objectives would be maintained for all WSAs.</li> </ul>			
<b>Management Common to Action Alternatives (B, C, and D)</b>			
<ul style="list-style-type: none"> <li>• VRM classifications would be established for all BLM lands based on visual resource characteristics.</li> </ul>			
<b>Management Concern: Visual Resources</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Approximately 31,500 acres would be managed as VRM Class I.	Approximately 31,500 acres would be managed as VRM Class I.	Approximately 31,500 acres would be managed as VRM Class I.	Approximately 31,500 acres would be managed as VRM Class I.
Approximately 25,400 acres would be managed as VRM Class II.	Approximately 48,900 acres would be managed as VRM Class II.	Approximately 67,600 acres would be managed as VRM Class II.	Approximately 6,600 acres would be managed as VRM Class II.
Approximately 250,400 acres would be managed as VRM Class III and IV. These areas would continue to be evaluated and protected on a case-by-case basis through project/activity plans.	Approximately 125,200 acres would be managed as VRM Class III. Approximately 101,700 acres would be managed as VRM Class IV.	Approximately 151,700 acres would be managed as VRM Class III. Approximately 56,500 acres would be managed as VRM Class IV.	Approximately 142,900 acres would be managed as VRM Class III. Approximately 126,300 acres would be managed as VRM Class IV.

**Table 2-23  
Comparison of Alternatives**

**Management Concerns: Cultural Resources, Traditional Cultural Properties and Paleontological Resources**

**Goals**

- Preserve and protect eligible cultural resources, and traditional cultural properties within the BFO.
- Identify cultural resource sites and traditional cultural properties and mitigate impacts when necessary, from natural or human-caused deterioration.
- Preserve and protect eligible cultural resources to ensure that they are available for appropriate uses by present and future generations.

**Management Common to All Alternatives**

- BLM would conduct inventories as per Section 106 of the National Historic Preservation Act to avoid disturbance to cultural resources.
- To minimize impacts to significant cultural resources, projects would be designed to avoid disturbance or mitigated through data recovery as a last resort.
- BLM would continue to consult with tribal governments to meet requirements under federal law and insure protection of sites important to Indian Tribes.
- BLM's consultation process for historic mining sites would continue in accordance with the Historic Placer and Lode Mining Properties Programmatic Agreement that specifies creation of a historic preservation plan to organize and compile what is known about various historic mining districts.
- Fossil localities would be afforded the same consideration as historic sites during project planning.
- Projects would be redesigned to avoid or minimize effects to fossil localities. If this is not feasible then specimens would be excavated by permitted paleontologists.

**Management Concerns: Cultural Resources, Traditional Cultural Properties**

Alternative A - No Action	Alternative B - Preferred	Alternative C	Alternative D
BLM would inventory 100 acres per year in compliance with Section 110, National Historic Preservation Act.	BLM would identify areas with a high potential for various archaeological/historical site types, and conduct 200 acres of proactive inventory in those areas each year. One hundred acres of low potential areas would be inventoried each year for comparison.	BLM would identify areas with a high potential for various archaeological/historical site types, and conduct 1,000 acres of proactive inventory in those areas. Three hundred acres of low potential areas would be inventoried each year for comparison.	BLM would conduct proactive inventories as time permits.
Educational and public outreach programs would be provided as requested and volunteer assistance relationships would be developed as time permits.	Educational and public outreach programs would be provided as requested.	Educational and public outreach programs would be provided as requested.	Educational and public outreach programs would be provided as requested.
No related action.	Eligible historic buildings would be maintained consistent with National Park Service standards as funding permits.	Same as Alternative B.	No related action.

<p align="center"><b>Table 2-23 Comparison of Alternatives</b></p>			
<p><b><i>Management Concern: Paleontological Resources</i></b></p>			
<p align="center"><b>Alternative A - No Action</b></p>	<p align="center"><b>Alternative B - Preferred</b></p>	<p align="center"><b>Alternative C</b></p>	<p align="center"><b>Alternative D</b></p>
<p>At the project level, BLM would continue to map fossil localities so as to avoid them during project implementation. If the locality cannot be avoided, then permitted paleontologists would be contacted to assist in removal of fossil resources.</p>	<p>Same as Alternative A.</p>	<p>At the project level, BLM would continue to map fossil localities so as to avoid them during project implementation. If the locality cannot be avoided, permitted paleontologists would be contacted to assist in removal of fossil resources. BLM would cooperate with permitted institutions/parties to map and record fossil localities.</p>	<p>Same as Alternative A.</p>
<p><b><i>Management Concern: Lands and Realty – Land Use Authorizations</i></b></p>			
<p><b>Goals</b></p>			
<ul style="list-style-type: none"> <li>• Look for opportunities to acquire non-federal land or interest in non-federal land with important resources and resource uses.</li> <li>• Provide for land-use opportunities to provide a sustained flow of economic benefits and meet local infrastructure needs while protecting or minimizing adverse impacts to resources and resource uses.</li> </ul>			
<p><b><i>Management Concern: Lands and Realty – Land Use Authorizations – continued</i></b></p>			
<p><b>Management Common to All Alternatives</b></p>			
<ul style="list-style-type: none"> <li>• Land use authorization requests would be analyzed and mitigation measures would be applied on a case-by-case basis.</li> <li>• New right-of-way facilities would be located within or adjacent to existing rights-of-way to the extent practical.</li> <li>• New communication site users would be grouped into existing facilities to minimize impacts to other resources and expedite permitting process.</li> <li>• Site plans would be completed prior to authorizing communication site uses in new areas.</li> <li>• Proposals for renewable energy development would be considered on a case-by-case basis. Guidelines and Best Management Practices (BMPs) from the Wind Energy Development Programmatic EIS would be used when considering wind energy projects on BLM land.</li> <li>• Suggested Practices for Raptor Protection on Power Lines (APLIC 1996) would be implemented in the construction and operation of right-of-way facilities.</li> <li>• Owners of non-Federal land surrounded by public land managed under FLPMA would be allowed a degree of access across public land to provide for reasonable use and enjoyment of non-Federal lands.</li> <li>• Pre-FLPMA rights-of-way constructed on public lands prior to FLPMA would be recognized as valid uses even though laws under which they were authorized were repealed by FLPMA. If these rights-of-way expire, holders would be required to apply for new FLPMA rights-of-way.</li> </ul>			

**Table 2-23  
Comparison of Alternatives**

**Management Common to Action Alternatives (B, C, and D)**

- Existing Communication Sites at Boulder, Bull Mountain, Limestone Hills, Montana City, Mt. Belmont, Toston, and Wickes would be formally designated as communication sites for the BFO. New facilities within designated sites would conform to existing site plans. Once designated communications sites are filled to near capacity, new site locations may be authorized after site management plans and site-specific NEPA analyses are completed.
- No new rights-of-way would be authorized in identified exclusion areas (approximately 27,361 acres)
- New rights-of-way in identified avoidance areas (approximately 75,626 acres) would be allowed only if no other routing options exist. Valid existing rights-of-way in avoidance areas would be recognized and holders would be allowed to maintain their facilities.
- Two utility corridors, originally considered in the 1992 Western Regional Corridor Study would be designated where they cross BFO lands.
- New leases, permits, rights-of-way, and easements would be authorized in a manner consistent with meeting Land Health Standards and applicable Best Management Practices.
- Attempts would be made to negotiate changes in existing authorizations which would meet or move toward meeting Land Health Standards.

***Management Concern: Lands and Realty – Withdrawals***

**Management Common to All Alternatives**

- Existing withdrawals would be reviewed prior to the end of the withdrawal period to determine if they should be extended, revoked, or modified. Withdrawals no longer needed for their original intended purpose would be recommended for revocation or modification.
- New withdrawal proposals would be considered where land would transfer from one federal agency to another or where resource values or agency investments are best protected by withdrawal if strongly justified and in conformance with current withdrawal and mineral policy.
- If legislation is passed for a military withdrawal west of Townsend it would be adopted in the Approved Resource Management Plan as described in the Record of Decision for this RMP.
- Land classifications, as “de facto” withdrawals, would be reviewed to determine if they should be continued or terminated. Classification and Multiple Use Act retention classifications would be terminated.
- The Recreation and Public Purpose classification on 200 acres at the Deep Creek Ski Area would be terminated.
- The parcel used by Last Chance Handgunners under an R&PP lease in Boulder would be reclassified for disposal.

**Alternatives A and D**

- Withdrawals would be considered on a case-by-case basis.

**Alternatives B and C**

- Priority for new withdrawals would be for all developed and undeveloped recreation sites followed by new acquisitions through exchange or purchase, and in ACECs to protect resources and values as needed.

<p align="center"><b>Table 2-23 Comparison of Alternatives</b></p>			
<p><b><i>Management Concern: Lands and Realty – Withdrawals</i></b></p>			
<p align="center"><b>Alternative A - No Action</b></p>	<p align="center"><b>Alternative B - Preferred</b></p>	<p align="center"><b>Alternative C</b></p>	<p align="center"><b>Alternative D</b></p>
<p>Withdrawals from mineral entry would be considered on a case-by-case basis.</p>	<p>Priority for new withdrawals would be for all developed recreation sites, followed by new acquisitions and ACECs to protect resources as needed.</p>	<p>Same as Alternative B.</p>	<p>Withdrawals from mineral entry would be considered on a case-by-case basis.</p>
<p><b><i>Management Concern: Lands and Realty – Land Ownership Adjustment</i></b></p>			
<p><b>Goals</b></p> <ul style="list-style-type: none"> <li>• Look for opportunities to acquire non-federal land or interest in non-federal land with important resources and resource uses.</li> <li>• Provide for land-use opportunities to provide a sustained flow of economic benefits and meet local infrastructure needs while protecting or minimizing adverse impacts to resources and resource uses.</li> </ul>			
<p><b>Management Common to All Alternatives</b></p> <ul style="list-style-type: none"> <li>• Methods of land ownership adjustment would include exchanges, sales, transfers, fee acquisition, and donation.</li> <li>• Public access would be maintained or improved through all land ownership adjustment transactions.</li> <li>• BLM land within disposal areas would be made available for sales, exchanges, or both. Some lands identified for disposal would be retained in public ownership based on site-specific application of the land ownership adjustment criteria (Appendix L).</li> <li>• Lands to be sold would meet the following disposal criteria from FLPMA:                             <ul style="list-style-type: none"> <li>❖ Such land must be difficult and uneconomic to manage as part of the public land base, and must not be suitable for management by another federal department or agency.</li> <li>❖ Such land must have been acquired for a specific purpose and must no longer be required for that or any other federal purpose.</li> <li>❖ Disposal of such land will serve important public objectives that can only be achieved prudently or feasibly if the land is removed from public ownership and if these objectives outweigh other public objectives and values that would be served by maintaining such land in federal ownership.</li> </ul> </li> </ul>			
<p><b>No BLM lands in the BFO are suitable for Desert Land Entry. Alternative A</b></p> <ul style="list-style-type: none"> <li>• Land ownership adjustment guidance would be provided by the 1984 Headwaters RMP, 1979 Dillon Management Framework Plan, and “Land Pattern and Land Adjustment, Supplement to the State Director Guidance for Resource Management Planning in Montana and the Dakotas, 1984” as amended by the 1989 State Director’s guidance pertaining to access.</li> <li>• Non-federal land to be acquired by the BFO through exchanges would generally be located in retention areas.</li> </ul>			
<p><b>Management Common to Action Alternatives (B, C, and D)</b></p> <ul style="list-style-type: none"> <li>• Approximately 298,408 acres of BLM land would be identified in the retention category.</li> <li>• High priority lands for retention and potential future acquisition would include those in and immediately adjacent to special designation areas (ACECs, Wild and Scenic Rivers, Wilderness Study Areas, National Trail Corridors, Special Recreation Management Areas, and recreation sites) as well as habitat for priority and special status species.</li> </ul>			

**Table 2-23  
Comparison of Alternatives**

- Approximately 8,901 acres of land would be identified as available for disposal.
- Lands leased or conveyed under the R&PP Act would be classified for such disposal under Section 7 of the Taylor Grazing Act (42 USC 315f) and 43 CFR 2400.
- Right-of-way holders would be issued perpetual easements for their facilities prior to the disposal of any BLM parcels.

***Management Concern: Lands and Realty – Access and Unauthorized Land Use***

**Management Common to All Alternatives - Access**

- BLM would acquire legal public access and administrative access to BLM land from willing landowners through easements, fee purchase, exchange, donation, and/or long-term land use agreements.

**Alternative A**

- Access acquisition efforts would be focused on larger blocks of BLM land which are designated for retention, areas with important resource values, areas where public demand for access is high, and areas with substantial BLM investments.

**Management Common to Action Alternatives (B, C, and D)**

- Acquisition of access would be focused on routes designated as “open” in travel plans that lack legal public access. Criteria described in **Appendix L** would be used for identifying new access opportunities and managing existing access to BLM lands.

**Management Common to All Alternatives – Unauthorized Land Use**

- BLM would abate realty-related unauthorized use through prevention, detection, and resolution. Unauthorized use of BLM administered land would be resolved through termination, short or long-term authorization, sale, or exchange as appropriate. Resolution of trespasses would require settlement of trespass liabilities and reclamation of any resource damage.

***Management Concern: Minerals***

**Goals**

- Ensure that federal minerals are available for energy and mineral exploration and development.
- Manage exploration and development of mineral resources and ensure they are conducted in an environmentally sound manner.
- Where possible, conserve significant or unique geological features.

**Management Common to All Alternatives**

- The BLM Energy and Non-Energy Mineral Policy, which references several existing acts, recognizes the nation’s need for domestic sources of minerals, energy, and other resources and the responsibilities concerning the discovery, development, production and acquisition of minerals and metals. All Energy and Minerals exploration, development, and production activities would be managed to prevent unnecessary or undue degradation. Management Common to Action Alternatives (B, C, and D)
- For all exploration and mining proposals, BLM would ensure operations take all practical measures to maintain, protect, or minimize disturbances to resources.

**Table 2-23  
Comparison of Alternatives**

<b>Management Concern: Minerals</b>			
<ul style="list-style-type: none"> <li>Mineral activity would be managed to meet, or move toward meeting Land Health Standards.</li> <li>Future changes to ESA listings of species or occupied habitats may require changes or modifications of proposed activities to comply with the requirements of the act.</li> </ul>			
<b>Management Concern: Minerals – Roads</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Mineral operations permits would identify requirements and BMPs necessary to avoid or minimize adverse effects on natural resources.	Where no alternative to road construction exists, roads (including in riparian areas) would be kept to the minimum necessary for the approved mineral activity. Roads and facilities would be closed and the landscape rehabilitated when no longer required for mineral or land management activities.	No new or existing mineral operations (salable, leasable, and locatable) would be allowed to construct new structures, support facilities, or roads inside Riparian Management Zones.	New and existing mineral operations (salable, leasable, and locatable) would be allowed to construct structures, support facilities, and roads in riparian areas using stipulations and BMPs when necessary. Roads and facilities no longer needed for mineral or land management would be reclaimed to the best extent possible.
<b>Management Concern: Minerals – Leasable Solid Minerals</b>			
<b>Management Common to All Alternatives</b>			
<ul style="list-style-type: none"> <li>BLM would consider proposals for developing leasable solid minerals (coal, phosphate, sodium, potash, sulphur, oil shale, native asphalt, and solid and semi-solid bituminous rock) under the administration of the federal government on a case-by-case basis. Site-specific environmental analysis would be required to lease these minerals.</li> </ul>			
<b>Management Concern: Minerals – Leasable Fluid Minerals (Oil and Gas)</b>			
<b>Management Common to All Alternatives</b>			
<ul style="list-style-type: none"> <li>Public lands available for oil and gas leasing would be offered first by competitive bid at an oral auction.</li> <li>Appropriate stipulations, terms, and conditions would be applied at the time of leasing.</li> <li>Interim management policy and guidelines for mineral leasing in WSAs would be applied as appropriate. All WSAs would be closed to new oil and gas leases where BLM owns both the surface and sub-surface. This acreage totals about 28,774 acres.</li> </ul>			
<b>Management Concern: Minerals – Leasable Fluid Minerals (Oil and Gas)</b>			
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Approximately 31,911 acres would be open to leasing, subject to standard lease terms.	Approximately 17,943 acres would be open to leasing, subject to standard lease terms.	Approximately 17,016 acres would be open to leasing, subject to standard lease terms.	Approximately 54,079 acres would be open to leasing, subject to standard lease terms.
Approximately 313,694 acres would be	Approximately 325,165 acres would be	Approximately 30,983 acres would be	Approximately 468,421 acres would be

**Table 2-23  
Comparison of Alternatives**

open to leasing under Controlled Surface Use/Timing Limitation stipulations.	open to leasing under Controlled Surface Use/Timing Limitation stipulations.	open to leasing, subject to Controlled Surface Use stipulations.	open to leasing, subject to Controlled Surface Use/Timing Limitation stipulations.
<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Approximately 251,779 acres would be open to leasing subject to No Surface Occupancy stipulations.</p> <p>Approximately 54,810 acres would be unavailable for leasing; 28,774 acres would be in WSAs; 26,036 acres would be within core areas of state wildlife management areas and in lands recently acquired with LWCF funds.</p>	<p>Approximately 280,312 acres would be open to leasing, subject to No Surface Occupancy stipulations.</p> <p>Approximately 28,774 acres would be unavailable for leasing in WSAs.</p>	<p>Approximately 23,903 acres would be open to leasing, subject to No Surface Occupancy stipulations.</p> <p>Approximately 580,382 acres would be unavailable for leasing within the following areas:</p> <ul style="list-style-type: none"> <li>• prairie dog towns</li> <li>• sage grouse winter/spring range</li> <li>• 0.5 mile of sage grouse strutting grounds</li> <li>• state wildlife management areas</li> <li>• big game winter/spring range</li> <li>• elk calving/big game birthing areas</li> <li>• bighorn sheep yearlong range</li> <li>• 1 mile of bald eagle nest site/breeding habitat</li> <li>• 0.5 mile of raptor breeding territories</li> <li>• 1 mile of peregrine falcon nest sites/breeding habitat</li> <li>• 0.5 mile of ferruginous hawk breeding territories</li> <li>• 0.5 mile of westslope cutthroat trout habitat (90-99 percent genetically pure)</li> <li>• 0.5 mile of Yellowstone cutthroat trout habitat</li> <li>• municipal watersheds</li> <li>• WSAs</li> <li>• lands acquired with LWCF funds.</li> </ul>	<p>Approximately 93,288 acres would be open to leasing, subject to No Surface Occupancy stipulations.</p> <p>Approximately 28,774 acres would be unavailable for leasing in WSAs with an additional 7,632 acres unavailable in lands recently acquired with LWCF funds.</p>

**Table 2-23  
Comparison of Alternatives**

***Management Concern: Minerals - Geothermal***

**Management Common to All Alternatives**

- Lands in the Decision Area would be available for geothermal leasing, unless located within WSAs or in instance where it is determined that issuing leases would cause unnecessary or undue degradation to public lands or resources.
- Stipulations developed for oil and gas leases would be applied to geothermal leases if appropriate.

***Management Concern: Minerals - Geophysical Exploration***

**Management Common to All Alternatives**

- BLM would review Notices of Intent to Conduct Geophysical Exploration and develop appropriate mitigation measures so as not to create undue and unnecessary degradation. A site-specific environmental analysis would be prepared for each NOI filed.

***Management Concern: Minerals - Locatable Minerals***

**Management Common to All Alternatives**

- At a minimum, an annual compliance inspection of each active notice would be conducted.
- Opportunities and accessibility to mineralized areas for exploration and development would be provided.
- Special project design measures would be incorporated into exploration and development projects as needed to prevent unnecessary or undue degradation to other resources such as special status or priority species, visual corridors, cultural resource sites, and fossil localities.
- Reclamation and restoration activities would be monitored to determine effectiveness of management practices.
- For placer mining operations, reclamation activities would be required to restore stream channels and riparian habitats to functioning condition as close to pre-mining conditions as possible.
- As information becomes available, known areas of geological hazards (e.g. landslide prone areas, avalanche areas, etc.) would be mapped.

***Management Concern: Minerals - Locatable Minerals - Withdrawals***

<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
Approximately 6,300 acres of land would remain withdrawn from locatable mineral entry. Many of these acres are included in Power Site Reserve and Power Project withdrawals.	Same as Alternative A for existing withdrawals.	Same as Alternative A for existing withdrawals.	Same as Alternative A for existing withdrawals.

**Table 2-23  
Comparison of Alternatives**

<p>No related action for newly proposed withdrawals.</p>	<p>An additional approximately 198 acres would be recommended for withdrawal from mineral entry if justified and in conformance with current withdrawal and mineral policy. These acres are located in eight different recreation sites.</p>	<p>An additional approximately 378 acres would be recommended for withdrawal from mineral entry if justified and in conformance with current withdrawal and mineral policy.</p> <p>Approximately 198 of these acres are located in eight different recreation sites. The remaining approximately 180 acres are in riparian areas of Muskrat Creek and Nursery Creek to protect an important genetically pure westslope cutthroat trout population.</p>	<p>Same as Alternative A.</p>
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***Management Concern: Minerals - Salable Minerals***

**Management Common to All Alternatives**

- Salable mineral sites would have approved mining and reclamation plans and environmental analyses prior to be opened.
- Mineral material would be sold at fair market value to the public but would be free to state, county, or other local government when used for public projects.

***Management Concern: Minerals - Salable Minerals***

<b>Alternative A - No Action</b>	<b>Alternative B - Preferred</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>The BLM would authorize the purchase of salable minerals (common varieties of sand, stone, gravel, pumice, cinders, clay, and petrified wood) from the federal government through a contract of sale (by the ton or cubic yard) or a free-use permit unless specific circumstances dictate otherwise. Extraction of materials from previously disturbed sites would be encouraged and all impacts to natural resources are mitigated.</p>	<p>The BLM would continue to authorize the purchase of salable minerals (common varieties of sand, stone, gravel, pumice, cinders, clay, and petrified wood) from the federal government through a contract of sale (by the ton or cubic yard) or a free-use permit unless specific circumstances dictate otherwise. Extraction of materials from previously disturbed sites would be encouraged. All development and operating impacts to natural resources and local residence will be mitigated.</p>	<p>The BLM would not allow the purchase of salable minerals (common varieties of sand, stone, gravel, pumice, cinders, clay and petrified wood), unless desired by the state or counties, or within existing community pits.</p>	<p>The BLM would authorize the purchase of salable minerals (common varieties of sand, stone, gravel, pumice, cinders, clay, and petrified wood) from the federal government through a contract of sale (by the ton or cubic yard) or a free-use permit unless specific circumstances dictate otherwise.</p>

**Table 2-23  
Comparison of Alternatives**

***Management Concern: Abandoned Mine Lands***

**Goals**

- Reclaim AML sites on public land to improve water quality, plant communities, and diverse fish and wildlife habitat.
- Reduce and/or eliminate risks to human health from hazardous mine openings.
- Protect historic resources and wildlife habitat commonly associated with AML sites.

**Management Common to All Alternatives**

- To the extent possible on BLM lands, BLM would strive to meet state and federal water quality standards in watersheds impacted by historic mining.
- BLM would assess level of risks at AML sites and prioritize for reclamation based on standardized risk assessment. Reclamation would be implemented at the highest risk sites first.
- Where deemed appropriate by BLM personnel, BLM would restore severely impacted soils and watersheds as close as possible to pre-disturbed conditions that support productive plant communities and ensure properly functioning watersheds.
- Closures of dangerous inactive and abandoned mine sites would be designed to reduce the risks to human health and safety, restore the environment, and protect geological and cultural resources and meet or move toward meeting Land Health Standards.
- Restoration and reclamation activities and repositories would be monitored to determine effectiveness of reclamation practices.
- To the extent possible on BLM lands, BLM would strive to meet state and federal air quality standards in the interest of protecting human health potentially impacted by fugitive dust emissions.

***Management Concern: Hazardous Materials Management***

**Goals**

- Mitigate threats and reduce risks to the public and environment from hazardous materials.

**Management Common to All Alternatives**

- Disposal of hazardous materials on public lands would generally not be permitted. When the use or storage of hazardous materials is authorized (i.e. in mining operations or other types of commercial activities) special stipulations would be applied to comply with appropriate laws, regulations, and policies. In the event of hazardous materials incidents on public land, standard operating procedures would be used to respond. Cleanups and reclamation would be conducted in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan and the NEPA decision.
- BLM would promote and support the appropriate use and recycling of hazardous materials in public facilities and on public land to prevent or minimize the generation and disposal of hazardous wastes.
- Environmental Site Assessments would be conducted for land acquisitions, land disposals, and for right-of-ways if applicable. Land uses would be authorized and managed to reduce the occurrence and severity of hazardous materials incidences on public land.
- BLM would assess level of risk at hazard sites and conduct remediation at highest priority sites that are the greatest risks to the public and environment.
- Pollutants, such as flammable liquids and lubricants, would be prevented from entering streams by storing outside of riparian areas, having a spill prevention and control plan, and not allowing refueling within riparian areas (with the exception of permitted mining activities, fire suppression activities, reclamation work and chainsaw re-fueling).

**Table 2-23  
Comparison of Alternatives**

***Management Concern: Social and Economic Environment***

**Goals**

- Provide opportunities for economic benefits while minimizing adverse impacts to resources and resource uses.
- Provide for a diverse array of activities that result in social benefits for local residents, businesses, visitors, interested citizens, and future generations, while minimizing negative social effects.
- Sustain, and where appropriate, restore the health of forest, rangeland, aquatic, and riparian ecosystems administered by the BLM to provide a sustained flow of economic benefits within the capability of the ecosystem.
- Protect visual quality, wildlife habitats, and recreation opportunities on BLM lands to sustain non-market economic values; and, make resource commodities available to provide a sustainable flow of economic benefits within the capability of the ecosystem.

**Management Common to Action Alternatives (B, C, and D)**

- Identified Special Recreation Management Areas and the remaining Extensive Recreation Management Areas would be managed for identified user markets, activities, and experience levels.
- Collaborative and/or stewardship processes would be used in the analysis and treatment of all resources and uses, as possible.
- BLM would provide opportunities for traditional and nontraditional uses of forest and forest products by incorporating sound ecological principles while contributing to the economic stability of the community.
- Use of new and developing technologies and industries would be encouraged in achieving healthy forest, stewardship, biomass utilization, and fuel management goals.

***Management Concern: Environmental Justice***

**Goals**

- Identify and remediate to the extent possible disproportionate negative effects to minority or low income populations per Executive Order 12898.

**Management Common to All Alternatives**

- Under all alternatives, BLM would evaluate and disclose whether actions would place a disproportionate share of negative environmental consequences on any particular populations covered by the Executive Order, and where practical, avoid such consequences.

***Management Concern: Tribal Treaty Rights***

**Goals**

- Accommodate treaty and legal rights of appropriate Native American groups in management of public lands.

**Management Common to All Alternatives**

- BLM would notify and consult with tribes on BLM actions. Consultation and coordination would be conducted on a government to government basis with federally recognized tribes.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>AIR QUALITY</i></b>				
	Air quality would continue to be protected although short term impacts could occur from ongoing fire events, prescribed fire activities, slash burning, or dust from travel on unpaved roads, and dust and exhaust from construction or development activities.	Air quality would continue to be protected similar to Alternative A although short-term impacts from prescribed burning could be greater due to increase in potential acreage burned.	Air quality would continue to be protected similar to Alt. A although short-term impacts from prescribed burning would be less than in all other alternatives due to decrease in potential acreage burned.	Air quality would continue to be protected similar to Alt. A. Smoke from prescribed burning would be greater than any other alternative, and where fires are allowed to burn for resource benefits there could be a longer term negative impact on air quality.
<b><i>SOIL RESOURCES</i></b>				
	Alt. A would provide no change from current conditions.	Alt. B would cause more impacts on soil resources than Alt. C, but less than Alts. A or D.	Alt. C would be most protective of soil resources and would create the least impacts of all alternatives.	Alt. D would create the greatest amount of impact to soil resources of the action alternatives.
<b>Restoration of vegetative communities</b>	Short- to mid-term impacts to soils from restoration of vegetative communities, and long-term benefits of restored communities would be greater than Alt. C but less than Alts. B or D.	Short to mid-term adverse effects from restoration of vegetative communities would be greater than Alts. A and C, but less than Alt. D, as would long-term benefits associated with restoration.	Short to mid-term adverse effects from restoration of vegetative communities would be the least of all alternatives, but long-term benefits would also be less.	Short to mid-term adverse effects from restoration of vegetative communities would be greatest of all alternatives, but long-term benefits would be greatest.
<b>Livestock grazing</b>	Greater impacts associated with livestock grazing than Alts. B or C due to availability of additional allotments.	Reduced soil impacts from grazing than Alts. A and D due to management of McMasters and, Spokane Hills as forage reserve allotments.	Least impacts from livestock grazing of all alternatives because several allotments would not be available for grazing.	Same as Alt. A.
<b>Travel management</b>	Greatest soil erosion potential resulting from the most miles of open motorized road.	Less ground disturbance and erosion due to road closures than Alts. A and D, but less than Alt. C.	Reduced ground disturbance associated with most motorized route closures would benefit soil more than other alternatives.	Reduction in ground disturbance from closing roads to motorized use would be greater than Alt. A, but less than Alts. B and C.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Timber harvest/ mine development</b>	No additional protection for soils by allowing timber harvest in SMZs.	More protection than Alts. A and D by not allowing new mining-related roads and facilities inside RMZ, unless there is no other option. Ground disturbance from timber harvest in RMZs has greater impacts than Alt. C but less than Alts. A and D.	Greater soil protection in riparian areas than other alternatives since timber harvest and mining roads/ facilities would not be allowed in RMZs.	Same as Alt. A.
<b>Firewood management</b>	Least long-term benefit to soils in riparian areas due to SMZ law guidance.	More beneficial than Alt. A, but less than Alt. C due to restrictions for firewood cutting within 100 feet of live streams and 50 feet of intermittent streams.	Most long-term benefit to soils in riparian areas due to restriction that firewood cannot be cut within 200 feet of live streams or 100 feet of intermittent streams.	Same as Alt. B.
<b>WATER RESOURCES</b>				
<b>Vegetation treatments</b>	Short to mid-term erosion/ sedimentation impacts from ground disturbance and long-term benefits to water quality greater than Alt. C but less than Alts. B and D.	Greater effects (short-term adverse and long-term benefits) than Alts. A and C, but less than Alt. D.	Most protective from adverse effects due to least ground disturbance proposed with vegetative treatments, but least long-term benefits of all alternatives.	Greatest impacts (short-term adverse and long-term benefits) of all alternatives because highest level of vegetation treatments.
<b>Riparian Vegetation Treatments</b>	Negligible effects since only 30 acres riparian vegetation treated per decade.	Short-term localized erosion and sedimentation to streams from treating up to 700 acres/decade in riparian areas but long-term benefits to water quality from improved conditions.	Effects less than Alts. B and D, but more than Alternative A since 200 acres riparian vegetation treated per decade.	Most short-term adverse effects and long-term benefits of all alternatives since 1,700 acres riparian vegetation treated per decade.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>WATER RESOURCES – continued</i></b>				
<b>Fire Rehabilitation</b>	Weed and erosion control conducted in burned areas as outlined in BLM's Emergency Fire Rehabilitation Handbook would serve to reduce erosion and subsequent stream sedimentation, though short-term impacts could occur until appropriate measures could be implemented.	More surface water protection than Alts. A and D but less than Alt. C because weed and erosion control in burned areas would only occur when stream sedimentation taking place.	Greatest benefit to surface water because weed and erosion control required anywhere accelerated erosion taking place in burned areas.	Same as Alt. A.
<b>Livestock Grazing</b>	Slightly greater erosion/ sedimentation and streambank stability impacts than Alts. B or C since more allotments available for grazing.	Fewer impacts than Alts. A and D since various allotments managed as forage reserves rather than general grazing.	Less impacts than Alt. B because several allotments unavailable for grazing. Least impacts of all alternatives.	Same as Alt. A.
<b>Noxious weeds</b>	Minimal effects to water quality expected since herbicides applied according to label directions, in accordance with National Vegetation EIS and BFO Weed Management Plan. Increase in weed infestations (more than Alt. C, but less than Alts. B and D) could increase potential for erosion and sedimentation, and thus water quality issues.	Minimal effects to water quality expected since herbicides applied according to label directions, in accordance with National Vegetation EIS, and BFO Weed Management Plan, and aerial applications would require a minimum 100-foot buffer from aquatic habitats. Increase in weed infestations under this alternative (more than Alts. A and C, but less than Alt. D) could increase potential for erosion, sedimentation, and thus water quality issues.	No effects to water quality expected since herbicides applied according to label directions, in accordance with National Vegetation EIS, and BFO Weed Management Plan, and aerial applications would not be allowed. Increase in weed infestations (least of any alternative) could still increase potential for erosion and sedimentation, and thus water quality issues.	Minimal effects to water quality expected since herbicides applied according to label directions, in accordance with National Vegetation EIS, and BFO Weed Management Plan. Increase in weed infestations (greatest of any alternative) could increase potential for erosion and sedimentation, and thus water quality issues.
<b>Riparian management</b>	No additional protection than afforded by SMZ law.	Alt. B more protective of water quality than Alternatives A and D due to RMZs.	Most protective because wider RMZs and no commercial timber harvest allowed.	Same as Alt. A.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Water rights</b>	No consideration given to acquiring water rights.	Increasing or maintaining in-stream flows through water rights acquisitions could benefit water quality more than Alts. A and D.	Same as Alt. B.	Same as Alt. A.
<b>Travel management</b>	Greatest degree of water quality impacts due to most open roads overall (629.2 miles), as well as within 300 feet of streams (94.3 miles), of all alternatives.	Fewer impacts to water quality than Alts. A and D due to second lowest number of open roads (416.8 miles) overall, and within 300 feet of streams (77.4 miles) of all alternatives.	Lowest impacts to water quality of any alternative due to fewest open roads (372.4 miles). Fewest open roads within 300 feet of streams (73.7 miles) of all alternatives.	Fewer water quality impacts than Alt. A but more than Alts. B and C. Second highest number of open roads (478.6 miles) and roads within 300 feet of streams (81.2 miles) of all alternatives.
<b>Road design and maintenance standards</b>	Least protective of water quality of all alternatives.	More protective than Alt. A, because roads minimized in RMZs, outloping surfaces, routing drainage away from streams, and culvert stream crossings.	More protective than all other alternatives because 100-year storm event culverts would be installed at stream crossings.	Slightly less protective than Alt. B due to fewer design and maintenance considerations.
<b>Special designations</b>	Provides equal protection of NWSRS-eligible segments as Alt. C by limiting activities within a 0.25 mile corridor of all four segments (12 miles). Spokane Creek aquatic resource values within 14-acre area not protected with ACEC designation.	More protective than Alternative D, but less than Alternatives A and C since only two river segments considered for NWSRS. More protective than Alts. A and D in Spokane Creek due to its designation as ACEC.	Same as Alt. A for NWSRS suitability. Same as Alternative B for Spokane Creek ACEC designation.	Less water quality protection than other alternatives since no rivers recommended suitable for NWSRS. Spokane Creek not designated as potential ACEC.
<b>Oil and gas leasing</b>	Effects of NSO restrictions more protective for perennial streams and rivers than other alternatives. Standard lease terms less protective of municipal watersheds than other alternatives.	More protective of municipal water supplies than Alts. A and D due to NSO stipulation in municipal watersheds.	Most protective of municipal watersheds with no leasing of oil and gas allowed in municipal watersheds.	Controlled Surface Use stipulation less protective of municipal watersheds than Alts. B and C.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>WATER RESOURCES – continued</i></b>				
<b>Mining operations</b>	Most water quality impacts because new roads and facilities would be allowed in riparian areas.	More protective than Alts. A and D, because new roads and facilities would not be allowed in riparian areas unless there is no other option.	Most protective of all alternatives because new mining roads and facilities prohibited in riparian areas.	Same as Alt. A.
<b>Mineral withdrawals</b>	No proposed withdrawal in Muskrat Creek drainage	Same as Alt. A.	Would protect westslope cutthroat trout population, stream channel, and water quality associated with mining impacts by proposing a withdrawal from mineral entry of 180 acres of riparian areas in the Muskrat Creek drainage.	Same as Alt. A.
<b><i>VEGETATION COMMUNITIES</i></b>				
<b><i>General vegetation</i></b>				
<b>Livestock grazing</b>	Biomass on allotments would be reduced on 273,000 acres available for grazing. Density and production of palatable species may be reduced in localized areas. The reduction in fine fuels would reduce frequency and intensity of wildland fire.	Grazing effects would occur on 265,000 acres. Fine fuels buildup and some grass species decadence may occur on 8,000 additional acres unavailable for grazing.	Grazing effects would occur on 262,000 acres. Fine fuels buildup and some grass species decadence may occur on 11,000 additional acres unavailable for grazing.	Same as Alt. A.
<b>Revegetation seed mix</b>	Revegetation seed mixes consist of mostly native species.	Using native species or non-invasive seed mixes on burned areas and sites with high erosion potential would minimize proliferation of noxious weeds. Perennial non-native species may initiate persistent stands,	Using only native species for revegetation of disturbed areas would require intense management for weed control but long-term benefits of little or no maintenance once they are established. The slope stabiliz-	Same as Alt. B

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
		which can inhibit colonization by native herbaceous species and conifers.	ing, quick ground cover, and invasive species competition of introduced species would be foregone.	
<b>Permanent Roads</b>	No set road density target for areas in big game winter and calving ranges. The existing road network would remain open for public use. Provides greatest flexibility for vegetation treatments.	No new, permanent roads would be allowed in big game winter range or calving habitat where road densities are 1 mi/mi <sup>2</sup> or less. Vegetation treatment options could be limited more than Alt. D but less than Alt C.	No new, permanent roads in big game winter range and calving areas where road densities where are 1.5 mi/mi <sup>2</sup> or less. This is most restrictive of all alternatives for vegetation treatments.	No new, permanent roads would be allowed in big game winter range or calving habitat where road densities are 0.5 mi/mi <sup>2</sup> or less. Vegetation treatments would be limited more than Alt. A, but less than Alts. B and C.
<b>Protection of raptor nests</b>	Alt. A would provide no limitations to vegetation treatments associated with occupied raptor nests.	Alt. B would restrict noise disturbance and most management activities within 0.5 miles of occupied raptor nests, during the nesting and brooding period.  Approximately 500 acres per nest would be affected, making management more difficult.	Alt. C would restrict noise disturbance and most management activities within 1 mile of occupied raptor nests, during the nesting and brooding period.  Affects approximately 2,000 acres per nest, four times as many acres as Alt. B and sixteen times as many acres as Alt. D.	Alt. D would restrict noise disturbance and most management activities within 0.25 miles of occupied raptor nests.  Approximately 125 acres per nest would be affected, making management more restrictive than Alt. A, but less than Alts. B and C.
<b><i>Grassland and Shrubland</i></b>				
<b>Vegetation treatments</b>	Would treat 5,250 acres per decade resulting in a net increase in conifer encroachment of approximately 1,161 acres per decade.	Would restore up to 15,450 acres per decade of grassland and shrubland communities for a net restoration (decrease in conifer encroachment) on up to 9,039 acres per decade.	Would treat up to 2,750 acres per decade resulting in net increase in conifer encroachment rather than an increase in restored habitat compared to Alts. B and D.	Would treat up to 25,900 acres per decade resulting in greater net increase in restored habitat (up to 19,489 acres per decade) than all other alternatives.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>VEGETATION COMMUNITIES - Grassland and Shrubland -continued</i></b>				
<b>Fire management (Prescribed fire)</b>	<p>Would reduce fuel loading and remove encroaching conifers.</p> <p>No timing restrictions for prescribed burning.</p> <p>Rest from livestock grazing in grassland/shrubland habitats before and after burning as determined through site-specific planning.</p>	<p>Projects planned to reduce density of conifer seedlings and saplings on 80 percent of area burned leaving conifer encroachment in mosaic of unburned patches.</p> <p>Soil, grasses, and forbs protected from fire-related mortality during hotter drier months by imposed burning restrictions May-August.</p> <p>Resting areas from livestock grazing in grassland/shrubland habitats up to one year prior to treatment and two growing seasons following treatments (with case by case flexibility) would promote vegetative recovery before reapplying grazing.</p>	<p>Projects planned to burn least surface area (60 percent) to treat conifer encroachment.</p> <p>Timing restriction for prescribed burning the similar to Alt. B, but includes mechanical treatments as well, and therefore is most restrictive.</p> <p>Same as Alt. B but without flexibility to reduce post-treatment rest timeframe. Limited flexibility to meet permittee forage needs.</p>	<p>Projects planned to burn 90 percent of surface area would be burned to reduce conifer encroachment.</p> <p>Same as Alt. A.</p> <p>Rest prior to burning if needed and for one growing season after, additional rest on case-by-case basis. Vegetation recovery may occur more slowly. More flexibility to meet permittee forage needs.</p>
<b>Mountain mahogany and bitterbrush restoration</b>	No proactive restoration proposed.	Treatment of mahogany and bitterbrush would be a priority. Vigor and health of these species would be improved compared to Alts. A and C through treatments reducing competing plants.	Would provide for opportunistic restorative treatments of mountain mahogany and bitterbrush communities when associated with other projects. Effects would be the same as Alts. B and D, but would occur on fewer acres.	Same as Alt. B.

<b>Table 2-24 Summary Comparison of Effects by Alternative</b>				
<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<i>Forests and woodlands</i>				
<b>Dry forest treatments</b>	Least acres of dry forest treated per decade (5,100 acres) to help restore historic conditions and still exceed rate of decline in forest health.	Second most acres of dry forest treated per decade (up to 14,750 acres) to help restore historic conditions that would exceed rate of decline in forest health.	At a treatment rate of up to 4,800 acres per decade, dry forest would not be restored at a rate exceeding rate of decline in forest health.	Most acres of dry forest treated per decade to restore historic conditions (up to 18,200 acres per decade) of all alternatives.
<b>Cool, moist forest treatments</b>	Least acres of cool, moist forest treated per decade (2,350 acres) to help restore historic conditions and still exceed rate of decline in forest health.	Second most acres of cool, moist forest treated per decade (up to 3,750 acres) to help restore historic conditions that would exceed rate of declining forest health.	At a treatment rate of up to 550 acres per decade, cool moist forest would not be restored at a rate exceeding rate of decline in forest health.	Most acres of cool, moist forest treated per decade to restore historic conditions (up to 5,050 acres per decade) of all alternatives.
<b>Big Game Security Cover</b>	Guidelines from the Montana Cooperative Elk-Logging Study (Lyon et al. 1982) can be considered on a case-by case basis, as compared to action alternatives which specify core acreages that must remain unroaded or closed during the hunting season. Provides greatest flexibility for implementation.	Maintaining 250 acre blocks for big game security cover would restrict vegetation treatment options more than under Alternative A, but would still provide some flexibility.	Same as Alt. B	Same as Alt. B.
<b>Old forest structure</b>	No specific limitations associated with maintaining old forest structure.	Maintain and promote old forest structure through active restoration treatments and activities. More proactive than Alts. A and C.	Maintain and protect old forest structure. Management would be more reactive than proactive, unlike Alts. B and D.	Same as Alt. B.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>VEGETATION COMMUNITIES – Forests and Woodlands – continued</i></b>				
<b>Unoccupied raptors nests</b>	No specific limitations on treatments associated with maintaining habitat around unoccupied raptor nests.	Maintain a 0.25 mile buffer (~125 acres) of suitable habitat around unoccupied nests for 5 years. Less restrictive than Alt. C but more so than Alts. A and D.	Maintain a 0.5 mile buffer (~500 acres) of suitable habitat around unoccupied nests for 7 years. Most restrictive of all alternatives.	Maintain a 0.25 mile buffer (~125 acres) of suitable habitat around unoccupied nests for 3 years. Least restrictive of the action alternatives.
<b><i>Noxious weeds</i></b>				
<b>Potential spread</b>	Management under Alt. A could result in the lowest rate of potential weed spread, though infested acres could still increase (43,000 acres by 2015).	Management under Alt. B could result in the third lowest rate of potential weed spread (48,000 acres by 2015).	Management under Alt. C could result in the highest rate of potential weed spread (51,000 acres by 2015).	Management under Alt. D could result in the second lowest rate of potential weed spread (47,000 acres by 2015).
<b>Weed spread contributions</b>	Open and limited roads and trails would contribute 13 acres/year, grassland treatments 66 acres/year, forest treatments 38 acres/year, and riparian treatments would be negligible contributors.	Open and limited roads and trails would contribute 9 acres/year, grassland and shrubland treatments 193 acres/year, forest treatments 93 acres/year, and riparian treatments would be negligible contributors.	Open and limited roads and trails would contribute 8 acres/year, grassland and shrubland treatments 34 acres/year, forest treatments 27 acres/year, and riparian treatments would be negligible contributors.	Open and limited roads and trails would contribute 10 acres/year, grassland and shrubland treatments 323 acres/year, forest treatments 116 acres/year, and riparian treatments 9 acres/year.
	Spread from wildfire is not included in the increased acres, and wildfire risk is greater than Alts. B and D but less than Alt. C.	Spread from wildfire is not included in the increased acres, and wildfire risk is greater than Alt. D but less than Alts. A and C.	Spread from wildfire is not included in the increased acres, and wildfire risk is the greatest under this alternative.	Spread from wildfire is not included in the increased acres, and wildfire risk is the least under this alternative.
<b>Oil and gas development</b>	Weed spread from oil and gas development would be similar to Alt. B, greater than Alt. C, and less than Alt. D.	Weed spread from oil and gas development would be similar to Alt. A, greater than Alt. C, and less than Alt. D.	Weed spread from oil and gas development would be least under this alternative.	Weed spread from oil and gas development would be greatest under this alternative.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Lakeside Camping</b>	Weed spread from camping on Holter and Hauser Lakes would be greater than Alts. B and C but the same as Alt. D.	Weed spread from camping on Holter and Hauser Lakes would be greater than Alt. C but less than Alts. A and D.	Weed spread from camping on Holter and Hauser Lakes would be least under this alternative.	Same as Alt. A.
<b>Grassland and Shrubland treatments</b>	Grassland treatments could result in up to 4,000 acres/decade of weed resistant plant communities. No shrubland treatments are anticipated.	Grassland and shrubland (combined) treatments could result in up to 12,000 acres/decade of weed resistant plant communities.	Grassland and shrubland (combined) treatments could result in up to 2,000 acres/decade of weed resistant plant communities.	Grassland and shrubland (combined) treatments could result in up to 19,000 acres/decade of weed resistant plant communities.
<b>Aerial treatment restrictions</b>	Aerial treatment restrictions would result in greater costs per mile of riparian treatments than Alt. D, but less than Alts. B and C.	Aerial treatment restrictions would result in greater costs per mile of riparian treatments than Alts. A and D, but less than Alt. C.	Aerial treatment restrictions would result in the greatest costs per mile of riparian treatments.	Aerial treatment restrictions would result in the least cost per mile of riparian treatments.
<b><i>Riparian types</i></b>				
<b>Riparian protection</b>	SMZs provide protection to water quality, streambank stability, down woody material and shade by restricting certain forest activities on 3,528 acres.	Increased stream shading, increased down woody material recruitment, and wider vegetative “filters” to prevent eroded sediment from reaching streams on 5,312 acres in RMZs.	Increased stream shading, increased down woody material recruitment, and wider vegetative “filters” to prevent eroded sediment from reaching streams on 11,393 acres in RMZs.	Same as Alt. A.
<b>Riparian restoration</b>	Mechanically treating 30 acres per decade would require the longest timeframe to restore riparian vegetation communities to proper functioning condition.	Mechanically treating up to 700 acres per decade would require the second shortest timeframe to restore riparian vegetation communities to proper functioning condition.	Would require second longest timeframe to restore riparian vegetation communities to proper functioning condition at up to 200 acres per decade of mechanical treatments.	Treating up to 1,700 acres per decade, could allow the shortest period required to restore riparian vegetation communities to proper functioning condition of all alternatives.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>VEGETATION COMMUNITIES – Riparian types – continued</i></b>				
<b>Noxious weeds</b>	Adhering to application standards during aerial spraying, including a 200' buffer along riparian areas, would protect untargeted riparian vegetation.	Adhering to application standards during aerial spraying would protect untargeted riparian vegetation, though there would be more risk of inadvertent herbicide application given the minimum buffer of 100 feet in riparian areas. Cost of treating weeds and risk of noxious weed spread in riparian areas would be less than Alternatives A or C.	Least risk of inadvertent herbicide application to untargeted riparian vegetation, since no aerial spraying is allowed, but least progress in minimizing weeds in these habitats. Cost of treating weeds would be the highest of all alternatives.	Adhering to application standards during aerial spraying would protect untargeted riparian vegetation. Alt. D would allow flexibility in weed control options based on 100 foot application buffer in riparian areas, and thus potential to better control weed infestation and spread. Low cost of treatment like B, but greater risk of inadvertent herbicide application than Alts. A and C.
<b>Special designations</b>	Some protection of riparian vegetation from potential future land use disturbances such as utility corridors, timber harvest, or mining since 12 river miles would be managed to maintain WSR eligibility.	Increased protection of riparian vegetation over Alt. A since 5.7 miles of river/stream segment recommended for WSR designation.	Most protection of riparian vegetation of all alternatives since 12 miles of river/stream recommended suitable for WSR designation. Additional 14 riparian acres in ACEC designation (Spokane Creek).	Least protection of riparian vegetation of all alternatives since no rivers recommended for WSR designation. Spokane Creek ACEC would not be designated.
<b>Lands and realty</b>	No mineral withdrawal proposed for Muskrat Creek	Same as Alts. A and D.	Muskrat Creek's sensitive riparian values and vegetation protected from potential mining impacts by 180 acre withdrawal.	Same as Alts. A and B.
<b>Mine-Related Road construction</b>	No provisions in place for restricting mine-related roads in riparian areas.	Reduced impacts to riparian vegetation from Alt. A by not allowing mining roads and facilities in riparian areas unless no other option exists.	Least impacts of all alternatives since no mining-related road or facilities allowed in riparian areas.	Same as Alt. A.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Oil and gas leasing</b>	Disturbance of riparian vegetation limited by NSO within 500 feet of reservoirs, lakes, ponds, and intermittent streams. Disturbance of riparian vegetation limited by NSO within 1,000 feet of perennial streams and rivers.	Similar protection as Alt. A for reservoirs, lakes, ponds, and intermittent streams due to flexibility under Standard Lease Terms to move facilities up to 656 feet. Slightly less protection of vegetation along perennial streams and rivers compared to Alt. A due to lack of 1,000 foot NSO stipulation but still with flexibility to move facilities up to 656 feet.	Same as Alt. B.	Same as Alt. B.
<b>WILDLIFE</b>				
<b>Dry forest habitats</b>	Alt. A would restore fewer acres (up to 5,100 acres/decade) of habitat for those species that depend on dry forest types than Alts. B and D but could restore up to 300 acres more per decade than Alt. C.	Alt. B would restore more habitats for species that depend on dry forest types (up to 14,750 acres/decade) than Alts. A and C but 3,450 acres less per decade than Alt. D. Alternative B would have fewer short-term adverse effects on wildlife than Alt. D.	Alt. C would restore the fewest acres of dry forest types (up to 4,800 acres/decade) of all alternatives. Alt. C would have the fewest short-term adverse effects on wildlife from disturbance and road construction.	Alt. D would restore the most acres of dry forest types (up to 18,200 acres/decade) of all alternatives and considerably improve habitat for a variety of wildlife species. Alt. D would have the most short-term adverse effects on wildlife from disturbance and road construction.
<b>Cool, moist forest habitats</b>	Alt. A would restore fewer acres (up to 2,400 acres) of habitat for those species that depend on cool, moist forests than Alts. B and D but could restore up to 1,850 acres more per decade than Alt. C.	Alt. B would restore more habitat for cool forest species (up to 3,750 acres/decade) than Alts. A and C but up to 1,300 acres less than Alt. D. Alt. B would have fewer short-term adverse effects to wildlife than Alt. D.	Alt. C would restore the fewest acres of cool forest (up to 550 acres/decade) of all alternatives. Alt. C would have the fewest short-term adverse effects on wildlife of all the alternatives.	Alt. D would restore the most acres of cool forest (up to 5,050 acres/decade) of all alternatives and improve more habitat for a variety of wildlife species. Alt. D would have the most short-term effects on wildlife from disturbance and road construction.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>WILDLIFE – continued</i></b>				
<b>Snag management</b>	Alts. A and D would not provide retention guidelines for snag and down woody habitat and would not proactively create snags in snag deficient areas. Alts. A and D would protect less snag habitat than Alts. B and C.	Alts. B and C would both use the same protocol to identify the range of natural variability for retention or creation of snags. Unlike Alts. A and C, Alt. B would actively create snags in snag deficient areas.	Alternative C could create less snag habitat over long-term than Alt. B due to opportunistic snag creation rather than active management.	Same as Alt. A.
<b>Timber Salvage</b>	Alt. A would have no restrictions on the number of acres or size of trees removed with timber salvage. Under Alt. A, snag habitat and down wood, which provides breeding and foraging for a variety of species, would decline more rapidly than under the action alternatives.	Contiguous blocks of dead and dying forest would be retained in adequate amounts during timber salvage under Alt. B. Alt. B would retain more habitat for species dependent on dead and dying forests compared to Alts A and D but less than Alt. C.	By retaining 50 percent of dead and dying forest during salvage where these areas exceed 1,000 acres, Alt. C would ensure the most acres available to species dependent on snag habitat. Alt. C would ensure breeding and nesting habitat is available in adequate amounts to maintain viability of species dependent on this habitat type.	Alt. D would retain fewer acres of dead and dying forest (30 percent in areas that exceed 1,000 acres) during salvage compared to Alt. B and, especially, Alt. C. This would ensure that some habitat is maintained for species dependent on dead and dying forest but may not ensure the long-term viability of these species.
<b>Firewood cutting</b>	Alt A would have no restrictions on the size of snags taken or where snags are removed. This would reduce breeding and foraging habitat for many species more than the action alternatives.	Restricting the size of snags taken would protect more breeding and nesting habitat than Alt. A but less than under Alt. C.	Alt. C would protect more snag and down woody habitat of all alternatives by only allowing firewood cutting in designated areas to meet resource objective and only allowing trees <20" DBH to be removed.	Same as Alt. B.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Grassland/Shrubland habitats</b>	Unlike the action alternatives, Alt. A only proposes treating grasslands (up to 5,250 acres/decade) and not sagebrush. Alt. A would restore fewer acres of grassland and shrublands for those species that depend on these habitat types compared to Alts. B and D but could restore up to 3,250 more grassland acres per decade than Alt. C.	Alt. B would restore and enhance considerably more habitat for grassland and shrubland species (up to 15,450 acres/decade) than Alts. A and C but up to 10,400 acres less than Alt. D. However, Alt. B would have fewer short-term adverse effects to wildlife than Alt. D.	Alt. C would restore the fewest acres of grassland (up to 2,000 acres/decade) of all alternatives and less shrubland (up to 750 acres/decade) than Alts. B and D but more than Alt. A. Alt. C would restore considerably fewer acres of grassland/shrubland habitats than Alts. B and D causing a decline in the quality and quantity of habitat for grassland and sagebrush species. Alt. C would have the fewest short-term adverse effects on wildlife of all the alternatives.	Alt. D would restore and enhance the most acres of grassland/shrubland (up to 25,850 acres/decade) of all alternatives and improve more habitats for grassland/shrubland species. Alt. D, however, would have the most short-term adverse effects on wildlife from disturbance and temporary road construction.
<b>Firewood cutting in Riparian Areas</b>	With no restriction on firewood cutting in riparian areas, Alt. A would have the most detrimental effects to riparian species from the loss of breeding and nesting habitat.	Alt. B would maintain more breeding and nesting habitat in riparian areas by restricting firewood cutting within 100 feet of live streams and within 50 feet of intermittent streams.	Alt. C would provide the greatest protection to breeding and nesting riparian wildlife species of all alternatives by not allowing firewood cutting within 200 feet of live streams and within 100 feet of intermittent streams.	Same as Alt. B.
<b>Riparian habitat protection</b>	Under Alts. A and D, riparian areas would be given a minimum amount of protection through the use of SMZs. SMZs allow activities such as logging, prescribed fire, and road building in riparian areas (50 feet on either side of a stream) but restricts how many trees can be removed and where road construction can occur.	Alts. B and C would establish riparian management zones (RMZs) where all activities would have to meet riparian goals and objectives. The RMZ width would vary depending on the type of stream (80 feet for perennial streams and 160 feet for fish bearing streams).	Alt. C would ensure the best protection of riparian and stream habitats by requiring all activities with 150 feet of perennial and 300 feet of fish bearing streams meet riparian goals and objectives. Alt. C would protect more riparian habitat for terrestrial species than all other alternatives.	Same as Alt. A

**Table 2-24  
Summary Comparison of Effects by Alternative**

Resource or Aspect of Management	Alternative A (No Action)	Alternative B (Preferred Alternative)	Alternative C	Alternative D
<b><i>WILDLIFE – Riparian habitat protection – continued</i></b>				
	SMZs provide limited protection to overall riparian function and habitat diversity to terrestrial species. By focusing dead and live tree retention within the first 50 feet of stream and by allowing smaller diameter trees to be retained (down to 8 inches DBH), SMZs would limit wood recruitment to streams, reduce habitat for foraging and breeding (less vegetation and smaller diameter snags retained), reduce hiding and brood rearing habitat as well as limit effective wildlife movement corridors.	The emphasis in riparian and stream functions along with wider RMZs would ensure that riparian habitat is maintained along streams not only for water quality and aquatic habitat but also for the numerous terrestrial wildlife species that use riparian areas for breeding, foraging and hiding as well as for movement corridors.		
<b>Noxious weeds</b>	Continued degradation of grassland, shrubland, riparian and forested habitats with a reduction in forage, hiding cover, and vegetative diversity due to the fewest acres treated of all alternatives.  Alt. A would provide more protection to non-target vegetation compared to Alt. D by not allowing aerial spraying within 200 feet of streams.	Assuming implementation of the high end of proposed weed treatment acres, Alt. B would treat more weeds than Alts. A and C but less than D. Alt. B would restore more habitat than Alts. A and C but less than D. Alt. B would provide the same protection from non-target species as Alt. D by not allowing aerial spraying within a minimum of 100 feet of streams.	Assuming implementation of the high end of proposed weed treatment acres, Alt. C would treat and restore more acres of weeds than Alt. A but substantially less than Alts. B and D. Alt. C would provide the most protection of non-target vegetation of all alternatives by not allowing aerial spraying. Alt C could allow weed infestation to rapidly spread in hard to access sites by not allowing aerial spraying.	Assuming implementation of the high end of proposed weed treatment acres, Alt. D would restore more habitats for a diversity of species compared to the other alternatives by reducing noxious weed infestations. Alt. D would protect the least amount of non-target vegetation by allowing aerial spraying within 100 feet of streams.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Livestock grazing</b>	Alt. A would have more acres available to livestock grazing than Alts. B and C (273,000) and the same as Alt. D. Alternatives A and D could have more negative effects due to competition between livestock and big game for forage, spread of noxious weeds, decrease in quality and quantity of grassland/shrubland habitat and loss of riparian habitat than Alts. B and C.	Alt. B would reduce the existing acres available for livestock grazing to 265,000 acres and potentially increase the quality and quantity of habitat for big game as well as nesting and foraging habitat for a variety of grassland/shrubland and riparian species compared to Alts. A and D. Annual maintenance of exclosures would ensure riparian areas are not degraded from livestock grazing or trampling.	Alt C would allow the fewest acres of livestock grazing (262,000 acres) compared to all other alternatives. This would benefit the most wildlife species by reducing competition for forage, reducing disturbance, preventing spread of weeds, protecting riparian areas, and protecting nesting and cover habitat. Annual maintenance of exclosures would ensure riparian areas are not degraded from livestock grazing or trampling.	Same as Alt. A on allowable acres for livestock grazing but more effects from reduced maintenance of livestock exclosures expected (exclosures to be maintained every 5 years). However, damaged and non-functional exclosures could allow access to riparian areas and streams between 5 year maintenance intervals. Due to this, Alternative D would provide less protection to riparian areas than Alternatives B and C.
<b>Bighorn sheep management</b>	For new sheep/goat allotments or conversions from cows to sheep/ goats, although Alts A and D would allow for a buffer of up to 9 miles between wild and domestic sheep, these alternatives would not have a minimum buffer width. These Alts. would not guarantee adequate separation between wild and domestic sheep to prevent disease transmission.  Alt. A would not provide specific guidance when using domestic sheep for weed control in occupied bighorn sheep habitat. This could allow for disease transmission to wild sheep during weed control activities.	For new sheep/goat allotments or conversions from cows to sheep/ goats, Alt. B would require a minimum buffer width of 5 miles between wild and domestic sheep populations to reduce the potential for diseases to be passed from domestic to bighorn sheep.  Alts. B and C would not allow new sheep or goat allotments in occupied bighorn sheep habitat to protect wild sheep from disease transmission.  Alts. B, C, and D would restrict when and for how long domestic sheep could be used for weed control adjacent to occupied wild sheep habitat.	For new sheep/goat allotments or conversions from cows to sheep/ goats, Alt. C would have the greatest protection to bighorn sheep from disease transmission and competition of resources due to the largest mandatory buffer (9 miles) between wild and domestic sheep. Alt. C would also have the most restrictions on when domestic sheep could be used for weed control and would not allow new sheep or goat allotments in occupied bighorn sheep habitat.	For new sheep/goat allotments or conversions from cows to sheep/ goats, Alt. D would have the same direction for a buffer between domestic sheep and goat allotments and wild sheep habitat as Alternative A, but would have the same restrictions as Alt. B for the use of domestic sheep and goats during weed control adjacent to wild sheep habitat. Alt D would protect bighorn sheep from disease slightly more than Alt. A but considerably less than Alts. B and C.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>WILDLIFE – continued</i></b>				
<b>Fire Management</b>	Alts. A and D would have more mortality to nesting migratory and resident birds compared to Alts. B and C because there would be no timing restrictions during prescribed burning or mechanical treatments.	Alt. B would reduce mortality to nesting birds, including migratory and resident birds, by excluding the use of fire during the breeding season. Because mechanical treatments would not have timing restrictions, there could be impacts to breeding birds from implementation during the breeding season. Alt. B would protect breeding birds and prevent more mortality than Alts. A and D but less than Alt. C.	Alt. C would prevent the most mortality to migratory and resident breeding birds by restricting both prescribed fire and mechanical treatments during the breeding season.	Same as Alt. A.
<b>Travel management</b>	Alt. D would have the most miles of open yearlong roads (471.8 miles) of all alternatives. Alt. D would have the most detrimental effects on wildlife from disturbance or loss of habitat for overwintering, breeding, and migrating wildlife. Alt. A would have more roads that could cause direct mortality through road kill, prevent wildlife movement, create disturbance, cause spread of noxious weeds, and cause habitat fragmentation across the landscape.  Alt. A would have more detrimental effects to wildlife from cross-country snowmobile use	Alt. B would have substantially fewer detrimental effects to wildlife from open yearlong roads (263 miles) compared to Alt. A. Alt. B would also have fewer negative effects to wildlife from loss of habitat, road kill, disturbance and fragmentation of habitat than Alt. D but more than Alt. C.  Alt. B would have considerably fewer acres available for cross-country snowmobile use	Alt. C would have the least negative effects to wildlife from open roads because no new permanent roads would be constructed for forest treatments and because Alt. C would have the most closed and seasonally restricted roads. Alt. C would have 244.3 miles of open yearlong roads, considerably less than Alts. A and D and 13.3 miles less than Alt. B.  Alt. C would have substantially fewer detrimental effects to wildlife from cross-country	Alt. D would improve wildlife habitat and reduce disturbance over Alt. A with 304.8 miles of open yearlong roads but would restore much fewer acres and allow considerable disturbance over Alts. B and C.  Alt. D would allow 139,138 acres to be open to cross country snowmobile use, considerably

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
	on 143,206 acres compared to the other alternatives. Alt A would allow more harassment of wildlife during seasons of high stress. This could lead to individuals leaving an area and/or cause an increase in stress that could lead to mortality.	(112,682 acres) compared to Alt. A. Alt B would protect more wildlife from harassment and stress due to snowmobile use than Alts A and D but substantially less than Alt. C.	snowmobile use of all alternatives. Alt C would allow cross-country snowmobile use on 26,148 acres.	more than Alts. B and C, but 4,068 acres less than Alt. A. Alt. D would have the greatest negative effects from harassment, displacement and an increase in stress to wildlife from snowmobile use of the action alternatives, but would have fewer effects than Alternative A.
<b>Big game winter range habitat</b>	<p>Actual road densities in winter range for Alt. A would be greater than 1 mi/mi<sup>2</sup> in all five travel plan areas being analyzed in RMP. Road densities above 1 mi/mi<sup>2</sup> can have substantial detrimental effects to big game through loss of habitat, disturbance, an increase in stress, and an increase in vulnerability to direct mortality (road kill and hunting).</p> <p>No minimum size of unroaded forested habitats identified to be protected as big game security habitat under Alt. A. Based on existing blocks of security habitat 250 acres or greater in size, Alt. A would provide 5,846 acres of security habitat Decision Area-wide.</p>	<p>Alt. B would provide greater protection and larger blocks of effective big game habitats than Alts. A and D by having road densities below 1.0 mi/mi<sup>2</sup> in winter range of all five travel plan areas being analyzed. Alt. B would further protect big game habitat over Alts. A and D by restricting new road construction in areas where open road densities are 1.0 mi/mi<sup>2</sup> or less.</p> <p>Alt. B would have substantially more functional big game security habitat than Alt. A by retaining blocks (&gt;250 acres) of forested habitats as unroaded or with closed roads during the hunting season. Alt. B would provide 8,510 acres of security habitat Decision Area-wide.</p>	<p>Alt. C would provide the most protection and the largest blocks of effective big game habitat of all alternatives by reducing road densities within winter range in all five travel plan areas to 0.8 mi/mi<sup>2</sup> or less. Alt. C would further protect big game habitat more than all other alternatives by restricting new road construction in areas where open road densities are 1.5 mi/mi<sup>2</sup> or less.</p> <p>Alt. C would ensure the greatest amount of functional big game security habitat of all alternatives by retaining blocks (&gt;250 acres) as unroaded or with closed roads during the hunting season. Alt. C would provide 10,946 acres of security habitat Decision Area-wide.</p>	<p>Alt. D would create larger blocks of big game habitat over Alt. A, but fewer acres compared to Alts. B and C. Road densities within winter range of the five travel plan areas being analyzed would be 1.2 mi/mi<sup>2</sup> or less. Alt. D would continue to reduce effective big game habitat because new road construction would be restricted in areas where open road densities are 0.5 mi/mi<sup>2</sup> or less.</p> <p>Alt. D would provide more security habitat than Alt. A, but less than Alts. B and C. Alt. D would provide 7,007 acres of security habitat Decision Area-wide.</p>

**Table 2-24  
Summary Comparison of Effects by Alternative**

Resource or Aspect of Management	Alternative A (No Action)	Alternative B (Preferred Alternative)	Alternative C	Alternative D
<b>WILDLIFE – continued</b>				
<p><b>Wildlife movement corridors</b></p>	<p>Habitat fragmentation and isolation of populations as a result of degradation of movement corridors can result in small, vulnerable populations. Disturbance related to high road density within wildlife corridors can degrade the quality of wildlife corridors, eventually making them unavailable to wildlife species that depend on them.</p> <p>Alt. A would have the fewest acres of wildlife movement corridors with low road densities (99,137 acres).</p>	<p>Alt. B would substantially improve the quality of wildlife movement corridors over Alt. A by increasing the acreage with low road densities to 114,086 acres.</p>	<p>Alt. C would provide the most connectivity and the least amount of habitat fragmentation of all alternatives by providing the most acreage with low road densities in wildlife movement corridors at 117,469 acres.</p>	<p>Alt. D would have the least amount of connectivity and the lowest quality movement corridors (109,796 acres with low road densities) compared to Alts B and C, but would have higher quality corridors compared to Alt. A.</p>
<p><b>Special designations</b></p>	<p>Alt. A would continue management of the Sleeping Giant ACEC but would not propose any new ACECs. Under Alt. A, WSAs would revert back to multiple use management if not designated as wilderness. If the existing MOU in the Elkhorn Mountains is withdrawn, this area would also revert to multiple use management. Alt. A would have the fewest acres managed for wildlife goals and objectives through the special designations compared to all other alts.</p>	<p>Alt. B would propose four ACECs. The two new ACECs that would benefit wildlife the most under Alt B would be Humbug Spires and, especially, Elkhorns. If the WSA designation is withdrawn for Humbug Spires, the ACEC would ensure habitat for many dry forest, riparian and cliff species would be protected in this unique area.</p> <p>The Elkhorn ACEC would consist of 50,431 acres in and around the Elkhorn Mountains but would exclude the Limestone Hills National Guard Training Area, Radersburg motorized play area and small iso-</p>	<p>Under Alt. C, the benefits to wildlife from ACECs would be similar to Alt. B with the exception of the Elkhorn ACEC. Under Alt. C, the Elkhorn ACEC would consist of all BLM lands in and around the Elkhorns (67,665 acres). Alt. C would ensure that all BLM acres in the Elkhorn Mountains would be managed over the long-term specifically for wildlife.</p>	<p>Alt. D would propose new ACECs. The Humbug Spires ACEC would be the same as Alts B and C. Under Alt. D, the Elkhorn ACEC would only include the existing WSA boundary (3,575 acres). This would be substantially different from Alts. B and C. If the existing MOU is withdrawn under Alt. D, the majority of BLM lands in the Elkhorn Mountain Range would revert to multiple use management. This would be detrimental to wildlife in this unique area.</p>

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
		<p>lated parcels along the western boundary.</p> <p>This ACEC would have long-term benefits to wildlife by focusing management specifically for wildlife. Substantially more acres would be proposed under this alternative than under Alt. D.</p>		
<b>Recreation</b>	No food storage restrictions would be in place at recreation sites to protect bears from being moved or destroyed.	Alt. B would protect bears from being moved or destroyed by implementing food storage restrictions at recreation sites.	Same as Alt. B.	Same as Alt. A
<b>Oil and gas leasing</b>	<p>All big game winter and calving habitat in the five areas with most potential for oil and gas development would be protected with timing restrictions. Timing restrictions would be the same for Alt. A, B, and D in big game winter/spring habitat. Timing restrictions would allow habitat to be lost and would allow some disturbance to big game during development.</p> <p>Wildlife management areas (state lands) would be the most protected of the action alternatives with NL and NSO stipulations.</p>	<p>Alt. B would use NSO to protect wildlife management areas (same as Alt. D) and in bighorn sheep core habitat. Alt. B would ensure habitat is not lost and sheep not disturbed in core areas. This is more protective than Alts. A and D.</p> <p>Alt. B would also use timing restriction in other big game habitats (calving/birthing areas) but they would be more restrictive than under Alts. A and D. This would give big game more refuge during the calving season and also reduce stress during the winter and spring seasons.</p>	Alt. C would provide complete protection to big game from loss of habitats or disturbance by using a NL stipulation in big game habitat and in wildlife management areas.	<p>Alt. D would be similar to Alt. A and Alt. B in protecting big game.</p> <p>This Alt. would provide more refuge to bighorn sheep by having a longer time restriction during the winter and spring than Alt. A. Alt. D would have less protection to bighorn sheep than Alts B and C only using a timing restriction in core habitat. Timing restrictions would allow habitat to be lost and would allow disturbance to bighorn sheep core habitat during development.</p>

**Table 2-24  
Summary Comparison of Effects by Alternative**

Resource or Aspect of Management	Alternative A (No Action)	Alternative B (Preferred Alternative)	Alternative C	Alternative D
<b>FISH</b>				
<b>Riparian Function</b>	<p>Under Alt. A and D, riparian areas would be given a minimum amount of protection through the use of SMZs. SMZs allow activities such as logging, prescribed fire, and road building in riparian areas (generally 50 feet on either side of a stream) but restricts how many trees can be removed and where road construction can occur.</p> <p>Although this would provide some protection to streams, the loss of riparian vegetation and soil disturbance could cause negative impacts to streams from increased runoff, loss of large woody material, loss of riparian vegetation and sedimentation.</p>	<p>Alts B and C would establish riparian management zones (RMZs) where all activities would have to meet riparian goals and objectives. The RMZ width would vary depending on the type of stream (80 feet for perennial streams and 160 feet for fish bearing streams).</p> <p>The emphasis in riparian and stream functions along with wider RMZs would ensure that riparian and stream habitats and functions are maintained for the long-term.</p>	<p>Alt. C would ensure the most protection of riparian and stream habitats by requiring all activities with 150 feet of perennial and 300 feet of fish bearing streams meet riparian goals and objectives. Alt. C would protect more riparian habitat for aquatic species than all other alternatives.</p>	<p>Same as Alt. A</p>
<b>Wildland fire suppression</b>	<p>Alts. A and D would not require fish screens when removing water during fire suppression. This could cause direct mortality of fish.</p>	<p>Alt. B would prevent mortality to fish by requiring fish screens are used when removing water from streams.</p>	<p>Same as Alt. B.</p>	<p>Same as Alt. B.</p>
<b>Watershed function</b>	<p>Watersheds with the highest road densities often have lower quality and less functional habitat available for fish. Alt A would have the most BLM acres with high road densities (&gt;2 mi/mi<sup>2</sup>) of all alternatives (107,566 acres).</p>	<p>Alt. B would improve the overall function of watersheds and the quality of fish habitat by reducing acres with high road densities to 87,729 acres compared to Alt. A. Alt B would have fewer acres with high road densities compared to Alt. D but more than Alt. C.</p>	<p>Alt. C would substantially improve overall watershed functions and aquatic habitats by having the fewest acres with high road densities of all alternatives (81,196 acres).</p>	<p>Alt D would improve watershed functions more than Alt. A with 95,481 acres in high road densities but would allow more detrimental effects to aquatic habitats from high road densities compared to Alts. B and C.</p>

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Riparian roads</b>	Road crossings and roads that are adjacent to streams can result in loss of riparian vegetation, loss of large woody material to streams, increased sedimentation, direct stream channel alteration, and barriers to fish movement. Alt. A would have the most miles of open roads in riparian areas (94.3 miles) of all alternatives.	Alt. B would allow improvement in riparian vegetation and decrease sedimentation and runoff to streams more than Alts. A and D with 77.4 miles of open roads in riparian areas.	Alt. C would have the greatest benefit to fish and aquatic habitats by having the most miles of closed roads in riparian areas by decreasing the amount of open road miles to 73.7.	Alt. D would improve aquatic and riparian habitats more than Alt. A, but not as much as Alts. B and C by having 81.2 miles of open roads in riparian areas.
<b>Lands and realty</b>	Alt. A would not protect the genetically pure westslope cutthroat trout population in Muskrat Cr. with a 180 acre mineral withdrawal.  Mining in and along Muskrat Cr. could cause a loss of riparian vegetation, streambed and bank destabilization, erosion and sedimentation and alteration of floodplain and stream morphology. Alt. A could allow crushing or disturbance of gravels during spawning and when eggs are incubating/hatching. If mining operations cause a decline in this population, the population may no longer be able to function as a donor source of fish for MT and may impede long-term restoration efforts.	Same as Alt. A.	Alt. C would provide long-term protection of riparian and aquatic habitats for the restored population of westslope cutthroat trout in Muskrat Creek from the negative effects of mining (including placer mining) on aquatic and riparian species through a 180 acre mineral withdrawal.  Alt. C would ensure long-term protection to the newly restored westslope cutthroat trout population in Muskrat Creek from the direct detrimental effects of mining (including placer mining) by implementing a 180 acre mineral withdrawal.	Same as Alt. A.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>FISH – continued</i></b>				
<b>Special designations</b>	Alt. A would protect the least amount of fish bearing stream (11.4 miles) through ACEC designations.  No streams would be recommended for WSR but management would protect ORVs on all four eligible segments (12 miles).	More protective of fish-bearing streams with 30.6 miles in ACEC designations. More protection to fish and aquatic resources than Alts. A and D with two eligible segments (5.7 miles) recommended for WSRS.	Most protective of fish-bearing streams with 32.9 miles in ACEC designations. More protective than Alt. B because of additional miles in Elkhorns ACEC designation. Most protection to fish and aquatic resources from WSRS with four segments (12 miles) recommended as suitable.	More miles of fish-bearing streams in ACEC designations than Alt. A (21.5 miles), but less than Alts. B and C.  No eligible WSRS would be recommended as suitable.
<b><i>SPECIAL STATUS SPECIES</i></b>				
<b><i>Wildlife</i></b>				
<b>Raptors</b>	Under Alt A, there would be no restrictions on projects around active raptor nests.  No unoccupied raptor nest sites would be protected from loss of habitat.	Alt. B could prevent more raptors from abandoning nests due to noise and project implementation than Alts. A and D with a 0.5 mile noise disturbance buffer.  Enhanced protection and recruitment of raptors through protection of unoccupied nests for 5 years and retention of suitable habitat within 0.25 mile radius.	Alt. C would prevent more raptors from abandoning nests compared to all other alternatives with a 1 mile noise disturbance buffer.  Substantial protection to raptors due to a 0.5 mile buffer around unoccupied nests and protection for 7 years.	Alt. D would have a smaller buffer around raptor nests (0.25 mile) and would have more detrimental effects to raptors than Alts. B and C but less than Alt. A.  Less protection than Alts. B and C due to a 0.25 mile buffer around unoccupied nests and protection for 3 years.
<b>Bald eagles</b>	There is no identified management for restoration of bald eagle nest and roost sites.	Alt. B would treat vegetation around bald eagle nest and roost sites to protect nest trees from fire and promote development of nest trees.	Same as Alt. B.	Same as Alt. A.
<b>Grizzly bear habitat</b>	Road densities and open roads can impact the quality and quantity of grizzly bear habitat.	Closing roads under Alt. B would minimize the negative impacts on bears related to	Alt. C would provide the largest blocks of effective grizzly bear habitat of all alternatives	Although Alt. D would provide better quality habitat for grizzly bears than Alt. A, road densi-

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
	Grizzly bears underutilize habitat near roads and other human activities. MFWP recommends that land management agencies manage for an open road density of 1 mi/mi <sup>2</sup> or less in occupied grizzly bear habitat. Alt. A would have the lowest quality and the least amount of functional grizzly bear habitat compared to the other alternatives with a road density of 2.4 mi/mi <sup>2</sup> in occupied grizzly bear habitat.	disturbance and interactions with humans more than under Alts. A and D but less than under Alt. C. Alt. B would have a road density of 0.8 mi/mi <sup>2</sup> in occupied grizzly bear habitat. Alts. B and D would maintain functional habitat by restricting new, permanent roads in areas where open road densities are 1.0 mi/mi <sup>2</sup> or less.	by reducing road densities to 0.6 mi/mi <sup>2</sup> in occupied grizzly bear habitat and by restricting new, permanent roads in areas where open road densities are 1.5 mi/mi <sup>2</sup> or less.	ties would still be above the 1 mi/mi <sup>2</sup> (1.3 mi/mi <sup>2</sup> ) recommended by MFWP. Alt. D would provide lower quality and less functional habitat for grizzly bear than Alts. B and C.
<b>Oil and Gas leasing</b>	<p>Alts. A and D would have CSU for grizzly bear and gray wolf and would not ensure protection from disturbance or loss of habitat from oil and gas exploration and development.</p> <p>Alts. A, B and D would have similar protections from NSO or TL to prairie dog towns, sage grouse winter and spring range and bald eagle nest sites.</p> <p>Sage grouse would be the least protected under Alt. A with TL of 0.25 mile radius of leks.</p>	<p>Grizzly bear in the recovery zone would be completely protected from disturbance and habitat loss with a NSO but bears in the distribution zone would only be protected from disturbance in the spring and fall.</p> <p>Gray wolf den sites would be protected from disturbance but not from loss of habitat.</p> <p>Alts B and D would give peregrine falcons more protection from disturbance and loss of habitat than with Alts. A.</p> <p>Sage grouse leks would be completely protected from disturbance during the breeding season under Alts. B and D but habitat could be lost.</p>	<p>Grizzly bear, gray wolf, sage grouse, bald eagle, peregrine falcon, and ferruginous hawk would all be protected from disturbance and loss of habitat with NSO or NL under Alt. C.</p> <p>Sage grouse leks would be completely protected from disturbance and habitat loss under Alts. C with a 3 mile NSO.</p>	Alts. A and D would have CSU for grizzly bear and gray wolf and would not ensure protection from disturbance or loss of habitat from oil and gas exploration and development.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>SPECIAL STATUS SPECIES – continued</i></b>				
<b><i>Fish</i></b>				
<b>Westslope cutthroat trout</b>	No emphasis on which westslope cutthroat trout populations should be restored.  No management emphasis to remove non-native species that out-compete or breed with westslope cutthroat trout.	Alt. B could cause an expansion in population by emphasizing restoration of genetically pure and <20 percent hybridized westslope cutthroat trout and their habitats.  Alts. B and C would prevent the loss or degradation of westslope cutthroat trout populations by removing non-native species that outcompete or breed with westslope cutthroat trout.	Alt. C would allow the greatest amount of population expansion by emphasizing restoration of all westslope cutthroat trout populations and their habitats, regardless of the degree of hybridization.  Same as Alt. B.	Alt. D would allow the least amount of population expansion of the action alternatives by emphasizing restoration of genetically pure and <10 percent hybridized westslope cutthroat trout and their habitats.  Same as Alt. A.
<b>Oil and gas leasing</b>	Alt. A would provide the least amount of protection to aquatic species with NSOs up to 0.25 mile for westslope and Yellowstone cutthroat trout and Arctic grayling, and a CSU for bull trout.	NSO within 0.5 mile of streams would protect westslope and Yellowstone cutthroat trout, Arctic grayling, and bull trout.	Greatest amount of protection of all alternatives to westslope and Yellowstone cutthroat trout, Arctic grayling, and bull trout with NSO or No Lease within 0.5 mile of streams.	Alt. D would provide more protection over Alt. A with 0.5 mile CSU or NSO but less protection than under Alts. B or C.
<b><i>Plants</i></b>				
<b>Noxious Weeds</b>	Under the worst case scenario analysis assumptions, Alt. A would have the fewest acres of noxious weed spread (43,000) of all alternatives, placing the least amount of habitat at risk.	Under a worst case scenario, Alt. B would have the second highest acres of spread (48,000) of all alternatives, putting more special status plant habitat at risk.	Under a worst case scenario, Alt. C would have the most acres of weed spread (51,000) of all alternatives, placing the most habitat at risk.	Under a worst case scenario, Alt. D would have fewer acres of weed spread (47,000) than Alts. B and C, putting less habitat at risk than the other action alternatives.
<b>OHV</b>	Most motorized use activity and miles of open road, placing the most habitat at risk.	Less motorized use activity than Alts. A and D, lesser impacts on special status plant habitat.	Least motorized use activity of all alternatives, posing the least impacts on habitat.	Less motorized use activity than Alt. A, but more than Alts. B and C. More potential habitat impacts than other action alternatives.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Riparian buffers</b>	SMZs would limit disturbance to Idaho sedge and small yellow lady's slipper habitat.	RMZs would provide greater buffers than SMZs and also buffers for non-forested species such as mealy primrose, Ute ladies' tresses and dwarf purple monkeyflower.	Largest RMZ buffer for riparian species, protecting riparian and some upslope special status plants the most of all alternatives.	Same as Alt. A.
<b>Dry forest tree, shrub, grass treatments</b>	Less habitat treated than Alts. B and D. Potential short-term adverse effects due to ground disturbance would be less, as would potential long-term benefits of treatments than Alts. B and D.	Treatments to restore dry forest, shrub, and grass habitat higher than Alts. A and C. Greater potential short-term adverse effects due to ground disturbance, but greater long-term benefits than Alts. A and C.	Fewest acres of habitat treatments of all alternatives. Fewer potential short-term adverse effects along with fewer long-term benefits of all alternatives.	Most acres of habitat treatment of all alternatives. Most potential short-term adverse effects along with most long-term benefits of all alternatives.
<b>Oil and Gas</b>	NSO within 0.25 mile of known sensitive status plant populations would reduce risk of habitat disturbance.	NSO within 0.25 mile of known sensitive status plant populations would reduce risk of habitat disturbance.	Greatest reduction in risk of habitat disturbance with NSO within 0.5 mile of known special status plant population.	NSO of known sensitive status plant populations would limit disturbance of populations, however risk of habitat disturbance and fragmentation would be the highest.
<b><i>WILDLAND FIRE MANAGEMENT</i></b>				
<b>Fire management</b>	Provides 7,300 acres of Category A fire management in which wildland fire is not desired which will limit fuels treatment options to mechanical treatment on those acres.	Contains no Category A fire management, providing some flexibility in fire management.	Most restrictive fire management alternative with most acres (41,000) of Category A fire management which will limit fuels treatment options to mechanical only treatment on those acres.	Allows greatest flexibility in fire management with no Category A fire management and highest Category D acres.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>WILDLAND FIRE MANAGEMENT – continued</i></b>				
<b>Fire suppression strategies</b>	Allows for some flexibility to manage fires but a large percentage could be controlled while still small in size.	Same as Alt. A, but more flexibility to manage fires since no Category A designations.	Greatest potential to reduce loss of life and property and protect resources because fire suppression high priority.	Same as Alt. A.
<b>Hazardous fuel treatments</b>	Reduces fuels on second least acres (14,430 per decade). Lower fuel levels would result in a reduced potential for high-severity fires.	Reduces fuels on second most acres per decade of all alternatives, and would reduce fire intensity and behavior, improve fire fighter safety, and move towards historic FRCC levels more than Alts. A and C.	Reduces fuels on least acres of all alternatives, which would do the least to reduce fire intensity and behavior, improve wildland fire fighter safety, and change FRCC.	Reduces fuels on the most acres of all alternatives and would do the most to reduce fire intensity and behavior, improve wildland fire fighter safety, and move toward historic FRCC levels.
<b>Travel management</b>	Provides greatest access for fire suppression and fuel treatments and most opportunities for human caused wildland fire.	Provides second lowest level of access for fire suppression and fuel reduction treatments, and fewer opportunities for human-caused fire ignitions.	Provides the least access for fire suppression and fuel treatments and fewest opportunities for human-caused wildland fire.	Provides second highest level of access for fire suppression and fuel reduction treatments, and second highest opportunities for human-caused fire ignitions.
<b>Recreation Opportunity Spectrum (ROS)</b>	Determined on case by case basis. Provides for most flexibility between alternatives.	Could limit the flexibility for designing and planning fuels projects and implementing fire suppression on 36,800 acres.	Could limit the flexibility for designing and planning fuels projects and implementing fire suppression on 63,700 acres.	Could limit the flexibility for designing and planning fuels projects and implementing fire suppression on 30,000 acres.
<b>Visual Resource Management</b>	Second fewest acres designated in VRM Class I and II. This would provide for more flexibility for designing, planning, and implementation of fuels projects.	80,400 acres designated in VRM Class I and II. This could limit the effectiveness and flexibility for designing, planning, and implementation fuels projects on those acres.	The most VRM Class I and II lands (99,100 acres) of any alternative, which may affect the extent of some fire management actions and fuel treatments more than under any other alternative.	The least VRM Class I and II lands (38,100 acres) of any alternative, which may affect the extent of some fire management actions and fuel treatments.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Wildlife (Seasonal Timing Restrictions)</b>	There would be no seasonal timing restrictions for prescribed fire or mechanical treatments in this alternative	Restrictions for prescribed fire in this alternative. This may cause delays, higher cost, and possible less effectiveness in reducing fire intensity and behavior, improve wildland fire fighter safety, and change FRCC.	Restriction on prescribed fire and mechanical treatments. This may limit the opportunities and effectiveness of to reduce fire intensity and behavior, improve wildland fire fighter safety, and change FRCC especially in areas of wildland urban interface.	Same as Alt. A.
<b><i>CULTURAL AND PALEONTOLOGICAL RESOURCES</i></b>				
<b>Recreation sites/ special designations</b>	Possible adverse effects due to development of recreation sites.	Increased protection of traditional cultural properties over Alts. A and D due to acreage managed as ACECs and increased restrictions on surface disturbing activity.	Most protective of cultural properties due to largest acreage managed as ACECs.	Increased protection of traditional cultural properties over Alt. A due to increase in acreage managed as ACECs.
<b>Oil and gas leasing</b>	Large number of cultural sites would be vulnerable to adverse effects due to standard lease terms and controlled surface use stipulations.	Fewer cultural sites would be vulnerable to adverse effects due to standard lease terms and controlled use stipulations as well as NSO for traditional cultural properties compared to Alt. A.	Most protective of cultural sites because it has the lowest number of acres open for fluid mineral leasing.	Same as Alt. B.
<b>Forest treatments</b>	Risk of impacting cultural and paleontological resources due to ground disturbance from vegetation treatments would not change.	Alt. B would place more cultural and paleontological resources at risk due to an increase in forest treatments over Alt. A.	Fewer cultural and paleontological resources would be at risk than in the other alternatives due to less ground disturbance from vegetation treatments.	Highest proposed forest treatment acres would put more cultural and paleontological resources at risk than under any other alternative.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>CULTURAL AND PALEONTOLOGICAL RESOURCES – continued</i></b>				
<b>Visual Resource Management</b>	Lowering the number of acres managed as Class II in this alternative may have an adverse impact on traditional cultural properties, which often incorporate the quality of the viewshed for traditional values.	Increasing Class II acreages would improve the visual quality of traditional cultural properties in those viewsheds.	Most beneficial to traditional cultural properties by providing greatest acres managed under Class II and III and allowing fewest viewshed intrusions.	Same as Alt. B.
<b>Soil protection</b>	Alt. A would put the most cultural and paleontological resources at risk of loss from erosion due to less protection of the soil resource.	Alt. B would prevent soil erosion more than Alts. A or D and would therefore protect more cultural and paleontological resources.	Alt. C would be most protective of soil resources and would therefore, protect more cultural and paleontological resources.	Same as Alt. A.
<b>OHV and Travel Management</b>	This alternative has the most miles of open roads and the fewest miles of closed roads. Therefore, this alternative presents the highest risk of vandalism and erosional damage to cultural resources and paleontological localities.	Since this alternative has more closed roads, fewer cultural resources are at risk than under Alts A and D. Some resources may be at risk from road closures and decommissioning requiring mechanical treatment.	Alt C. would protect the most cultural resources and paleontological localities from vandalism because of the large number of closed roads, but it would also present some risk to other resources when closed and decommissioned roads require physical treatment prior to closing.	Alt. D would put more sites at risk than Alts. B and C due to the provision for more open roads. Alt. D would have less risk than Alt. A.
<b><i>VISUAL RESOURCES</i></b>				
<b>Vegetation treatments</b>	Second lowest potential for short-term adverse impacts to visual qualities due to vegetation treatments in grasslands and shrublands (5,250 acres/ decade). Second lowest potential for long-term benefits due to enhanced vegetation conditions and reduced wildfire risks.	Increased treatment of grassland and shrubland habitat (second highest – up to 15,450 acres/ decade) could create additional short to mid-term impacts to visual quality due to changes in color and texture but would promote long-term visual benefits due to reduced potential for large-scale wildland fires.	Least grassland and shrubland treatments of the action alternatives. Effects would be similar to Alt. B but to a lesser extent, given that only up to 2,750 acres of treatment would be targeted/ decade.	Greatest potential impacts/ benefits to visual resources, since this alternative proposes the most vegetative treatments (up to 25,850 acres/ decade).

**Table 2-24  
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<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Forest products removal</b>	Second lowest potential impacts to visual resources from harvesting activities in dry forests (5,100 acres/decade) and cool, moist forests (2,400 acres/decade). Highest potential impacts from timber salvage given least restrictions imposed.	Second highest potential impacts from dry (up to 14,750 acres/decade) and moist (up to 3,750 acres/decade) forest harvests. Second highest potential for impacts from salvage related activities.	Lowest potential impacts of all alternatives given that potential forest treatment acres within forest types (dry-up to 4,800 acres/decade and moist-up to 550 acres/decade) would be the lowest and restrictions governing salvage cutting are the most restrictive.	Highest potential impacts from dry (up to 18,200 acres/decade) and cool, moist (5,050 acres/decade) forest harvests. Second lowest potential for impacts to visuals next to Alt. A, from salvage harvests.
<b>Travel management</b>	Due to highest number of open motorized roads (629 miles), effects on visual quality would be highest of all alternatives.	Scenic qualities would be enhanced and sensitive viewpoints reduced by reducing designated routes more than Alts. A and D, to 417 miles.	Lowest impacts to visual resources of all alternatives given that motorized uses and open roads would be limited to 372 miles.	Second highest impacts to visual resources as open roads would total about 479 miles.
<b>ROS</b>	Does not establish ROS and would therefore be least protective of visual resources of all alternatives.	More protection for visual resources than Alts. A and D due to designation of one third of BFO lands (108,600 acres) as semi-primitive non-motorized and semi-primitive motorized.	Greatest protection for visual resources of all alternatives since highest acreages managed as semi-primitive non-motorized and motorized (130,600 acres).	Second fewest acres designated under the more protective ROS settings (67,600 acres) and therefore visual resources would be subject to more potential impacts than under Alts. B and C.
<b>Mineral and energy exploration</b>	Potential impacts from oil and gas leasing would be higher than under Alt. D because of CSU stipulation that would only be Standard Lease Terms under Alt. D. Short and mid-term impacts from salable minerals would continue until vegetation and excavation are reclaimed.	Potential impacts from oil and gas leasing would be similar as Alt. A because of same CSU stipulation. Reduced impacts compared to Alt. A due to proposed withdrawal of 198 acres from mineral entry.	Least impacting alternative to visual resources since oil and gas leasing would be excluded from 89 percent of DA. Benefits from proposed mineral withdrawals would be the same as under Alt. B.	Impacts from oil and gas leasing would be the greatest compared to all other alternatives due to SLTs instead of CSU stipulation. Effects of other mineral activity similar to Alt. A.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>VISUAL RESOURCES – continued</i></b>				
<b>Special designations</b>	More protective of visual resources than Alt. D since six WSAs managed as VRM Class I and four suitable WSR segments as VRM Class II.	More special designation acres classified as VRM Class II than Alt. A due to four ACEC designations and two suitable WSR segments.	Most visual protection of all alternatives since all four eligible WSR segments found suitable and afforded greater long-term protection, and because more areas and acres would be designated as ACECs than under any other alternative.	Greatest potential visual impacts of all alternatives because no WSR segments would be protected and fewer acres would be designated as ACECs.
<b><i>FORESTRY AND WOODLAND PRODUCTS</i></b>				
<b>PSQ</b>	Alt A would provide amounts of forest products up to current levels under existing planning.	Alt B. would provide similar amounts of forest products as provided under Alt. A, utilizing treatment approaches that treat group of stands or forested areas taken together holistically rather than an individual stand by stand perspective that strives to provide the most products over time.	Alt. C would provide the least forest products of all alternatives	Alt. D would provide more forest products than all alternatives, by more aggressively treating more acres with fewer intermediate treatments.
<b>Recreation Opportunity Spectrum</b>	No ROS Classifications and no overall adjustment in forest product offerings.	Approximately 18,554 acres of forest and woodlands designated ROS Semi-primitive non-motorized and 26,283 acres designated as Semi-primitive motorized, potentially reducing PSQ on 41 percent of forested areas available for product removal. Seventeen percent potential reduction in the forested area available for small public demand sales such as Christmas trees and firewood	Most restrictive of all alternatives. Approximately 23,895 acres of forest and woodlands designated ROS Semi-primitive non-motorized and 31,583 acres designated as Semi-primitive motorized, potentially reducing PSQ on 50 percent of forested areas available for product removal. Twenty nine percent potential reduction in the forested area available for small public demand sales such	Approximately 18,029 acres of forest and woodlands designated ROS Semi-primitive non-motorized and 13,823 acres designated as Semi-primitive motorized, potentially reducing PSQ on 29 percent of forested areas available for product removal. Sixteen percent potential reduction in the forested area available for small public demand sales such as Christmas trees and firewood from

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
		from area available under Alternative A.	as Christmas trees and firewood from area available under Alternative A.	area available under Alternative A.
<b>Visual Resource Management</b>	No VRM Classifications and no overall adjustment in forest product offerings, but adjustments could occur on a case by case basis depending on analysis of impacts.	Approximately 16,902 acres of forest and woodlands designated VRM Class II potentially reducing PSQ on 15 percent of forested areas available for product removal under Alternative A.	Most restrictive of all alternatives. Approximately 27,259 acres of forest and woodlands designated VRM Class II potentially reducing PSQ on 25 percent of forested areas available for product removal under Alternative A.	Same as Alt. A.
<b>Riparian management</b>	Highest forest product offerings and support of PSQ in riparian and nearby upland areas, as restrictions would be limited only by state regulations derived from Montana SMZ laws.	Limited product offerings as riparian management objectives would dictate treatment type and level of forest change needed to meet objectives in the RMZs, which are defined as 160 feet on either side of fish bearing streams (39 acres per mile of stream), 80 feet on either side of non-fish bearing streams (19 acres per mile of stream), and 50 feet on either side of intermittent streams (12 acres per mile of stream). Forest management and product removal efficiency would be reduced as access and heavy equipment use would be restricted in these areas, based on impacts to resources in the RMZ.	Alternative C provides the smallest amount of product offerings and support of PSQ from RMZs, which are defined as 300 feet on either side of fish bearing streams (73 acres per mile of stream), 150 feet on either side of non-fish bearing streams (36 acres per mile of stream), and 50 feet on either side of intermittent streams (12 acres per mile of stream). No commercial forest products would be removed from these areas.	Same as Alt. A

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<b><i>FORESTRY AND WOODLAND PRODUCTS – continued</i></b>				
<b>Small forest product sales</b>	Alts. A and B are similarly effective at meeting public demand for small sale products, with Alt. B having slightly higher amounts of products made available due to a more proactive landscape approach and anticipated use of stewardship tools. Permits for forest products are less than estimated under Alts. B and D and much more than Alt. C.	Second most effective at meeting public demand for small sale products. Alt. B is less restrictive with more permits than Alts. A and C, but less than Alt. D.	Least effective at meeting public demand for small sale products. Lowest number of permits for forest products removal of all alternatives. Firewood would be least available to the public under this alternative, using permits to cut green trees or dead and down wood in designated areas.	Highest level of permits for forest products. Most effective at meeting public demand for small sale products.
<b>Biomass</b>	Opportunities for biomass would be 55 CCF/decade, the least of all alternatives.	Biomass production would be approximately 77 CCF/decade.	Same as Alternative A.	Biomass production would be greater than under all other alternatives with 105 CCF/decade.
<b>Timber salvage</b>	Alt. A provides greatest salvage opportunities. Loss of forest products from fire would create greater salvage opportunities than under all other alternatives.	Limited salvage compared to Alt. A. Salvage from fire mortality would have less product removal than Alternatives A and D.	Limited salvage opportunities compared to other alternatives as Alternative C includes most restrictive prescriptions. Projects are likely to be smaller and occur less often.	Alt. D limits salvage compared to Alt. A, but projects would be larger and occur more often than Alternatives B and C.
<b>Travel management</b>	Provides greatest access for small sales permits and economic efficiency for forest management and timber removal activities, with approximately 416 open road miles available in the five site-specific travel planning areas. Most miles of open and seasonally limited roads, approx-	Road closures could reduce economic efficiency of some projects, reduce public access for small sales permits. Approximately 84 percent of the roads available under Alt. A for timber removal in the five site-specific travel planning areas would be available under Alt. B, 45 percent of which would be	Reduces economic efficiency of projects compared to Alternative B, as no construction of new permanent roads would be allowed. Public access for small sales would be reduced more than under other alternatives due to fewer open roads. Approximately 87 percent of the roads available for timber	Economic efficiency similar to Alternative B, but public access for small sales permits and ability to meet public demand would be greater than Alts. B and C. Approximately 87 percent of the roads available for timber removal in the five site-specific TPAs under Alternative A would still be available,

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
	imately 379 miles would support small product sales.	available for public use in the removal small sale products such as Christmas trees and firewood.	removal under Alt. A in the five site-specific travel planning areas would still be available under Alt. C, 33 percent of which would be available for public use in the removal small sale products such as Christmas trees and firewood.	61 percent of which would be available for public use in the removal small sale products such as Christmas trees and firewood.
<b>LIVESTOCK GRAZING</b>				
	Alts. A and D provide greatest opportunity for livestock grazing with 278,000 acres available.	270,000 acres available for grazing would be more than Alt. C, but less than Alts. A and D.	Fewest acres (262,000) available for livestock grazing.	Same as Alt. A.
<b>Vegetation treatments</b>	Forage quality and quantity improvement on grasslands and shrublands would slowly decline because of net increase in conifer encroachment (1,161 acres per decade). Short-term effects would occur where deferment and temporary removal of livestock required after vegetation treatments.	Forage quality and quantity improvement on grasslands and shrublands would improve because of net decrease in conifer encroachment (up to 9,039 acres per decade). Short-term impacts to grazing from the one-year resting period before vegetation treatment and the two-year resting period after treatment (with case by case flexibility).	Forage quality and quantity improvement on grasslands and shrublands would decline at fastest rate because of net increase in conifer encroachment (3,661 acres per decade). Impacts to livestock grazing are mandatory rest one year prior to treatment and rest two growing seasons following treatments.	Greatest improvement in long-term livestock forage quality and quantity due to most acres undergoing vegetation treatment resulting in largest net decrease of conifer encroachment— up to 19,489 acres per decade. Short-term impacts to grazing from the one-year resting period before vegetation treatment and the one-year resting period after treatment.
<b>Noxious weed management</b>	Under a worst case scenario of weed treatment accomplishments in under action alternatives, Alt. A would have the least amount of noxious weed spread—to 43,000 acres over a ten year period and would have the least impact to livestock forage base.	Forage base for livestock grazing reduced under worst case weed treatment scenario because noxious weed spread would reach up to 48,000 acres in ten years.	Worst case weed treatment scenario could lead to noxious weed spread on up to 51,000 acres over ten years would reduce the forage base the most of all alternatives.	Worst case weed treatment scenario could lead to noxious weed spread on up to 47,000 acres over ten years, consequently more livestock forage would be maintained than under alternatives B and C, but less than A.

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Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>LIVESTOCK GRAZING – continued</i></b>				
<b>Travel management</b>	Greatest potential conflicts (gates left open, livestock disturbance, etc.) with grazing program due to the most roads open and open w/restrictions – 629 miles DA-wide.	Compared to Alt. A, conflicts between grazing and wheeled vehicles would be reduced due to road closures leaving 417 miles of roads open and open w/restrictions DA-wide.	Alt. C would provide the least miles of road open and open w/restrictions – 372 miles DA-wide, resulting in fewest conflicts with grazing of all alternatives.	Conflicts with grazing more than Alts. B and C, but less than Alt. A, as 479 miles of road would be open and open w/restrictions DA-wide.
<b><i>ENERGY AND MINERALS</i></b>				
<b>Riparian management zones</b>	No change.	Potential additional expenditures and longer permitting timeframe for the mineral developer due to requirements to avoid roads and facilities inside RMZs when possible. Placer mines could be more difficult and time consuming to permit.	Additional restrictions could impact the ability to proceed with the project, should access to water or the stream bed be a critical part of the proposed operation. Operating/rehabilitation requirements could make some placer mining operations uneconomic.	Avoidance, mitigations, and BMPs associated with roads in riparian areas would make effects of Alt. D similar to Alts. A and B.
<b><i>Leasable Minerals (Oil and Gas)</i></b>				
<b>Stipulations</b>	Major constraints such as NSO stipulations may decrease some lease values, increase operating costs, and to a lesser extent require relocation of well sites and modification of field development. Leases issued with moderate constraints such as CSU or timing stipulations may result in similar impacts to a lesser degree and delays in operations and uncertainty. Under Alt. A, federal mineral estate lands would be available subject to the following levels	The impact of individual constraints would be similar to that for Alt. A; however, the level and nature and number of constraints varies from that alternative for this alternative. Under Alt. B federal mineral estate lands would be available, subject to the following levels of constraints: Major Constraints – 42.9% Moderate Constraints – 49.9% Standard Terms – 2.8% Approximately 4.4% would be unavailable for lease.	The impact of individual constraints would be similar to that for Alternative A; however, the level, and nature and number of constraints varies from that alternative for this alternative. Under Alt. C federal mineral estate lands would be available, subject to the following levels of constraints: Major Constraints – 3.7% Moderate Constraints – 4.7% Standard Terms – 2.6% Approximately 89.0% would be unavailable for lease.	The impact of individual constraints would be similar to that for Alternative A; however, the level, and nature and number of constraints varies from that alternative for this alternative. Under Alt. D federal mineral estate lands would be available subject to the following levels of constraints: Major Constraints – 14.3% Moderate Constraints – 71.8% Standard Terms – 8.3% Approximately 5.6% would be unavailable for lease.

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Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
	of constraints: Major Constraints – 38.6% Moderate Constraints – 48.1% Standard Terms – 4.9% Approximately 8.4% would be unavailable for lease. Alts. A and B would be similar in their level of constraints.	Alternatives A and B would be similar in their level of constraints.	Alternative C would be the most restrictive of the four alternatives.	Alternative D would be the least restrictive of all alternatives.
<b>Locatable Minerals</b>				
<b>High mineral potential – 118,560 total acres</b>	103,541 open acres 11,344 restricted acres 3,675 closed acres	77,390 open acres 37,495 restricted acres 3,675 closed acres	71,359 open acres 43,455 restricted acres 3,746 closed acres	103,541 open acres 11,342 restricted acres 3,675 closed acres
<b>Medium mineral potential – 34,952 total acres</b>	24,505 open acres 6,495 restricted acres 3,952 closed acres	21,414 open acres 9,586 restricted acres 3,952 closed acres	17,473 open acres 13,527 restricted acres 3,952 closed acres	24,505 open acres 6,495 restricted acres 3,952 closed acres
<b>Low to None Mineral Potential – 151,466 total acres</b>	111,092 open acres 30,479 restricted acres 9,894 closed acres	99,899 open acres 41,647 restricted acres 9,919 closed acres	87,196 open acres 54,248 restricted acres 10,022 closed acres	111,804 open acres 29,758 open acres 9,894 closed acres
<b>Totals</b>	239,138 open acres 48,319 restricted acres 17,522 closed acres	198,704 open acres 88,728 restricted acres 17,547 closed acres	176,028 open acres 111,230 restricted acres 17,720 closed acres	239,850 open acres 47,607 restricted acres 17,522 closed acres
Notes: Acreage analyzed excludes approximately 2,300 acres not covered by the MBMG Mineral Potential reviews and 347,000 acres of federal subsurface minerals. Restricted areas include WSAs, ACECs, Wild and Scenic Rivers, and Threatened and Endangered species habitat (grizzly bear and bull trout) Closed areas include Withdrawals and lands acquired with LWCF funds. Open areas are all other areas Travel Plan road designations not included in analysis				
<b>Lands and realty</b>	Increased or decreased opportunities to explore/develop areas could result from acquisition or disposal of lands with mineral value.	Same as Alt. A. Additionally, proposed withdrawal of 198 acres in recreation sites would decrease available acres in the BFO for mineral location.	Proposed withdrawal of 378 acres in recreation sites and Muskrat Creek drainage would decrease available acres in the BFO for mineral location.	Same as Alt. A.

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<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>ENERGY AND MINERALS – Locatable Minerals – continued</i></b>				
<b>Special designations</b>	Performance standards required for protection of relevant and important values of ACECs, and Notice-level review that would require NEPA analysis would cause time delays for permitting.	Same as Alt. A.	Same as Alt. A.	Same as Alt. A.
<b>Travel management</b>	Alternative A is less restrictive in providing access to mineralized areas than any other alternative.	Alternative B is potentially more restrictive on access to mineralized areas than Alternatives A and D, and less restrictive than Alternative C. Operators would need to obtain travel variances to conduct exploration on more closed roads than under Alternatives A and D.	Alternative C is potentially the most restrictive alternative for access to mineralized areas. Operators would need more travel variances to conduct exploration on closed roads than under any alternative.	Alternative D is the least potentially restrictive of the action alternatives, but more restrictive than Alternative A for access to mineralized areas.
<b>Abandoned mine lands</b>	Reclamation of AML would reduce risks to the public from potential environmental or safety hazards. However these activities will also result in the removal or obscuring of information used by exploration companies to sample and map mineral deposits.	Same as Alt. A.	Same as Alt. A.	Same as Alt. A.
<b><i>Salable Minerals</i></b>				
	Mine development for salable minerals would usually be located near municipalities or small rural communities to maximize convenience to the public.	Additional expenditures and longer approval time could result from management direction to avoid or minimize effects on riparian zones from structures, support facilities, and roads.	Same effects as Alt. A, but since development of new pits by private citizens would be eliminated; mineral materials would cost more through commercial sources due to higher transportation costs.	Same as Alt. A.

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<b>RECREATION</b>				
<b>Vegetative treatments</b>	Second lowest potential for quality recreation experiences dependant on natural settings due to disturbances associated with vegetation treatments.	Second highest potential for impacts on dispersed recreation uses due to higher disturbances associated with vegetation treatments.	Lowest potential for impacts on dispersed recreation uses due to disturbances associated with vegetation treatments since least acres treated.	Highest potential for impacts on dispersed recreation uses from disturbances associated with vegetation treatments since most acres treated.
<b>Riparian restoration</b>	Dispersed recreation most impacted and developed site management least impacted since riparian protection less restrictive than Alts. B and C.	Dispersed recreation in riparian areas improved and developed site management impacted over Alts. A and C due to increased size of RMZs.	Most enhanced dispersed recreation experiences and impacts to developed site management due to greater RMZ protective measures.	Same as Alt. A.
<b>Noxious weeds</b>	Recreationists seeking a natural setting with fewer weeds would benefit most since this alternative would result in the lowest projected weed infestation (43,000 acres by 2015 under worst case weed treatment scenario).	More beneficial to recreationists desiring natural setting experiences without weeds (48,000 acres of weed infestation by 2015 under worst case weed treatment scenario) than Alt. C, but less than Alts. A and D.	Recreationists seeking a natural setting without weeds would benefit least under this alternative given the projected weed infestation of 51,000 acres by 2015 under the worst case weed treatment scenario.	More beneficial to recreationists desiring natural setting experiences without weeds (47,000 acres by 2015 under worst case weed treatment scenario) than Alts. B and C, but less beneficial than Alt. A.
<b>Road densities</b>	Least impact to motorized users and potentially the greatest impact to non-motorized users since Alt. A features the most open roads.	More impacts to motorized users than Alts. A and D due to projected reduction of open roads in big game winter range. Recreationists seeking non-motorized experiences would be benefited the second most next to Alternative C.	Motorized users most impacted and non-motorized users most benefited due to an added restriction of no net increase in permanent roads where target road densities are exceeded in big game winter range areas.	Impacts to motorized riders less than Alts B and D due to higher road densities and more open roads.

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<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>ENERGY AND MINERALS – Locatable Minerals – continued</i></b>				
<b>User opportunities</b>	Most opportunities for motorized users, those seeking organized motorized events, and snowmobile riders due to fewest restrictions. Fewest non-motorized opportunities. Most opportunities for boat-in camping.	More opportunities than Alts. A and D for non-motorized users due to fewer open roads. Fewer opportunities for motorized use, organized motorized events and snowmobile riding. Reduction in dispersed recreation sites by limiting boat-in camping opportunities.	Greatest opportunities for non-motorized users due to fewest open roads. Least motorized and snowmobile opportunities. Opportunities for organized motorized events eliminated. Dispersed camping at Holter and Hauser Lakes eliminated by closing entire shoreline to boat-in camping except at developed sites.	Provides most opportunities for motorized users, next to Alt. A due to acres available for motorized events, mileage of open roads and fewest opportunities for non-motorized users. Boat-in camping opportunities same as Alt. A.
<b>SRMAs</b>	Recreation management emphasis prioritized within SRMAs ensuring quality recreation opportunities and experiences are provided.	Increased recreation management over Alts. A and D through addition of four more SRMA designations.	Same as Alt. B but most SRMAs within ROS Semi-Primitive, Non-Motorized setting.	Same as Alt. A.
<b>Outfitter fees, permits and camping limits</b>	Value based revenues from outfitters using developed BLM river/lake access sites not realized. Greatest opportunities offered for commercial and public camping.	Fair value revenues realized from outfitters using developed BLM river/lake access sites. Commercial and public camping opportunities limited to a greater degree than Alts. A and D.	Fair value revenues maximized from outfitters using developed BLM river/lake access sites. Commercial and public camping opportunities limited the most.	Fair value revenues from outfitters using developed BLM river/lake access sites realized in a more comprehensive and customer friendly manner. Commercial and public camping opportunities same as Alt. A.
<b>User conflicts and violations</b>	Potential for social conflicts and violations within the Scratchgravel Hills would be the highest since no management changes would occur.	Potential for social conflicts and violations within the Scratchgravel Hills would be reduced the second most given the proposed yearlong restrictions on motorized uses.	Potential for social conflicts and violations within the Scratchgravel Hills would be reduced the most given the additional restrictions proposed on motorized uses.	Potential for social conflicts and violations within the Scratchgravel Hills would be similar to Alt. A.

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<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Recreation Opportunity Spectrum</b>	Possible negative impacts to recreation use since no ROS classifications. Management would be reactive rather than proactive.	Balanced approach for managing recreation settings, opportunities, and experiences compared to Alts. C and D.	Maximum acreage designated as ROS Semi-Primitive Non-Motorized creating greatest non-motorized and least motorized opportunities.	Highest acreage of designated ROS settings that allow for motorized uses, developed infrastructure and less natural settings. Impacts similar to Alt. A.
<b>Special designations</b>	Least protective of special designation values as only the Sleeping Giant ACEC (11,679 acres) would continue to be designated. None of the four eligible WSR segments would be recommended as suitable although ORVs would be protected.	Second greatest protection of the relevant and important values and associated recreation opportunities as four ACECs would be designated totaling about 70,644 acres and outstandingly remarkable values as two WSR segments totaling 5.7 miles would be protected and two segments totaling 6.3 miles dropped.	Most protective of special designation values and associated recreation opportunities as five ACECs would be designated totaling about 87,893 acres and all four WSR segments totaling 12 miles would be recommended as suitable.	Second least protective of special designation values and associated recreation opportunities as three ACECs would be designated totaling about 23,695 acres and no WSR segments would be protected.
<b>Visual Resource Management</b>	Protects second lowest acreage managed as Class I and II VRM	Second highest acreage under Classes I and II allowing management for higher natural character retention.	Highest acreage under Classes I and II allowing greatest level of management for natural character retention.	Least protective of recreational opportunities and experiences dependent on natural settings since lowest acreage managed as VRM Classes I and II.
<b>Mineral and energy management</b>	High probability that recreation settings and visitor experiences would be impacted by oil and gas leasing since second lowest level of stipulations.	Better protection of recreation facility investments and site opportunities than Alts. A and D since eight sites withdrawn from mineral entry.  Lower probability of impacts to recreation settings and visitor experience than Alts. A and D due to stipulations on solid and fluid mineral activities.	Impacts from withdrawal of eight sites same as Alt. B. Lowest probability for impacting recreation settings and visitor experience due to most restrictive stipulations on solid and fluid mineral activities.	Highest probability for impacting recreation settings and visitor experiences due to lowest amount of restrictive stipulations on solid and fluid mineral activities.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>TRAVEL MANAGEMENT AND ACCESS</i></b>				
<b><i>Travel Management – Field Office-wide</i></b>				
<b>Field Office-wide area designations for travel</b>	Alt. A area designations for wheeled vehicles would be: Open- 4,367 acres Closed-31,500 acres Limited-271,442 acres.	Alt. B area designations for wheeled vehicles would be: Open- 283 acres Closed-31,500 acres Limited-275,526 acres.	Alt. C area designations for wheeled vehicles would be: Same as Alt. B.	Alt. D area designations for wheeled vehicles would be: Same as Alt. B.
<b>Field Office-wide area designations for travel</b>	Alt. A area designations for snowmobiles would be: Open- 143,206 acres Closed- 27,065 acres Limited- 137,038 acres.	Alt. B area designations for snowmobiles would be: Open- 112,682 acres Closed- 54,706 acres Limited- 139,921 acres.	Alt. C area designations for snowmobiles would be: Open- 26,148 acres Closed- 65,270 acres Limited- 215,891 acres.	Alt. D area designations for snowmobiles would be: Open- 139,138 acres Closed- 31,282 acres Limited- 136,889 acres.
<b>Total miles of travel routes available</b>	Under Alt. A, the total mileage of travel routes available Decision Area-wide (Open, Open/Restricted, Snowmobile Only, Non-Motorized Trails, Game Retrieval Only, Motorcycles Only, ATV Only) would be approximately 684 miles.	Under Alt. B, the total mileage of travel routes available (Open, Open/Restricted, Snowmobile Only, Non-Motorized Trails, Game Retrieval Only, Motorcycles Only, ATV Only) would be approximately 485 miles.	Under Alt. C, the total mileage of travel routes available (Open, Open/Restricted, Snowmobile Only, Non-Motorized Trails, Game Retrieval Only, Motorcycles Only, ATV Only) would be approximately 430 miles.	Under Alt. D, the total mileage of travel routes available (Open, Open/Restricted, Snowmobile Only, Non-Motorized Trails, Game Retrieval Only, Motorcycles Only, ATV Only) would be approximately 547 miles.
<b>Motorized/non-motorized opportunities</b>	Greatest number of motorized opportunities.	Substantially increased opportunities for non-motorized users. Motorized wheeled access restricted to routes leading up to non-motorized trail-heads.	Route closures would result in net decrease of motorized routes and highest level of non-motorized opportunities compared to Alts. B and D. Same as Alt. B for competitive motorized events.	Alt. D is less restrictive and could result in more routes in the transportation system. Non-motorized opportunities would be more than under Alt. A, but less than under Alts. B and C.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>TRAVEL MANAGEMENT AND ACCESS – Travel Management – Field Office-wide - continued</i></b>				
<b>User conflicts</b>	User conflict greatest under Alt. A, because motorized and non-motorized users would share same routes. Conflicts with snowmobile use would increase because cross-country travel would continue.	Reduced user conflict due to dispersed recreational opportunities.	Same as Alt. B.	Same as Alt. B.
<b>Illegal activities</b>	Greatest under Alt. A due to more miles open to yearlong motorized access.	Illegal activities may be less under Alt. B than Alts. A and D, but may still occur more than Alt. C.	Due to increase in route closures, Alt. C would have the least amount of illegal activity.	Illegal activities may be less under Alt. D than Alts. A, but may still occur more than Alts. B and C.
<b>Road and trail safety</b>	More accidents/injuries expected under Alt. A due to motorized and non-motorized users on the same routes.	Less accidents/injuries due to dispersed recreational opportunities.	Same as Alt. B.	Same as Alt. B.
<b>Forest management</b>	If needed, up to 5.5 miles of new permanent roads could be constructed per year to provide access for treatments. Opportunities for motorized users could be increased and non-motorized users could be diminished by increasing road density for forest product management where permanent roads are constructed.	Temporary road construction would also be kept to a minimum, and temporary roads would be decommissioned within one year of project completion. Degree of new road construction would be less than Alts. A and D.	Temporary road construction would also be kept to a minimum, and temporary roads would be decommissioned within one year of project completion. Impacts less than other alternatives because no new permanent roads would be constructed.	Degree of road building would be less than Alt. A but more than Alt. B.
<b>Wildlife and special status species</b>	Reduced short term impacts on travel and access due to fewer seasonal wildlife closures than other alternatives.	Seasonal wildlife closures would create short term impacts on travel and access.	Same as Alt. B except stricter resource protection.	More seasonal wildlife closures than under Alternative A, but less restrictive than alternatives B and C.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>TRAVEL MANAGEMENT AND ACCESS – Travel Management – Field Office-wide - continued</i></b>				
<b>Road density</b>	Road density would not change	Road density levels in big game winter ranges would result in fewer motorized routes and concentrated use on fewer roads.	Greater effect on transportation system than Alts. B and D due to proposed route closures.	Overall net decrease of available motorized routes but to a lesser extent than Alts B and C.
<b>User compliance/implementation</b>	Information kiosks would enhance user compliance and public safety. Management costs under Alt. A would be mixed. Less personnel time would be required to monitor user compliance; however more effort would be required for initial signing efforts.	Moderate increase in travel management costs due to initial sign implementation and long-term travel plan compliance. In comparison, higher than Alts. A and D, but less than Alt. C.	Management costs would be greater than under all other alternatives due to greater efforts needed to monitor travel plan compliance.	Same as Alt. B.
<b>Public easements</b>	Acquiring easements would increase the overall route network and expand both motorized and non-motorized opportunities.	Same as Alt. A.	Same as Alt. A.	Same as Alt. A.
<b>Special designations</b>	Lowest potential impacts on future transportation routes given that only 11,679 acres would be recommended or designated as ACECs or WSRs.	Second highest acres protected as ACECs and WSRs and therefore transportation routes would be subject to greater restrictions.	Highest special designation acreage protected and therefore the most restrictions imposed on existing and future transportation systems.	Second lowest acreage protected as special designations therefore greater potential for future transportation access routes.
<b>Mineral operations</b>	New permanent roads for mineral development could increase public access.	Short or long-term increase in transportation system from permitting roads for mineral operations outside RMZs.	New roads would not be allowed within RMZs for mineral development. Some travel network expansion may occur with routes outside RMZs.	Same as Alt. B.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<i>Helena TPA</i>				
<b>Motorized/Non-motorized opportunities</b>	BLM would continue to allow recreational activities including motorized vehicle uses within the Scratchgravel Hills 24 hours/day.	The entire Scratchgravel Hills area would be closed to wheeled motorized vehicle uses yearlong with the exception of routes needed for residential access.	The entire Scratchgravel Hills area would be closed to both motorized and non-motorized recreational uses after dark (dusk to dawn) yearlong.	Same as Alternative A.
	No non-motorized trails designated. Motorized use would continue 24 hours a day within the Scratchgravel Hills.	Increased opportunities for non-motorized users since motorized access restricted to routes leading to existing trailheads in Scratchgravel Hills.	Alt. C would provide 15 percent more non-motorized routes than Alt. B and 85 percent fewer motorized routes than Alt. A.	Increased opportunities for motorized users because new loop routes created in Scratchgravel Hills.
	Area availability for wheeled, motorized use (in acres) - Open: 0, Closed: 0, Limited: 10,164	Area availability for wheeled, motorized use (in acres) same as Alternative A.	Area availability for wheeled, motorized use (in acres) same as Alternative A.	Area availability for wheeled, motorized use (in acres) same as Alternative A
	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 52.2	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 9.8	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 7.0	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 21.9
	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 0	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 42.5	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 45.3	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 30.8
<b>Snowmobile use</b>	area wide cross-country snowmobile use would continue to be allowed as well as travel on all existing routes, during the season of use (12/2-5/15), snow conditions permitting.	Same opportunities as Alt. A.	Potential long-term effects to users because cross-country snowmobile use would not be allowed.	Same as Alt. A.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>TRAVEL MANAGEMENT AND ACCESS – Helena TPA – Snowmobile Use - continued</i></b>				
	Area availability for snowmobile use (in acres) - Open: 10,164, Closed: 0, Limited: 0  Miles of motorized routes available to snowmobile travel: 52.2		Area Availability for snowmobile use (in acres) - Open: 0, Closed: 0, Limited: 10,164  Miles of motorized routes available to snowmobile travel: 7	
<b>User conflicts</b>	User conflict would be greatest around the Scratchgravel Hills due to lack of opportunities to separate motorized from non-motorized uses.	Minimal conflicts. With the exception of a few routes needed for residential access, the Scratchgravel Hills are closed to motorized recreation use.	Alt. C would be most beneficial to reducing user conflict than other alternatives.	Same as Alt. B.
<b>Illegal activities</b>	Greatest level of illegal activities expected to occur.	Illegal activities (underage drinking, vandalism, dumping) in the Scratchgravel Hills would be substantially reduced. With the exception of a few routes needed for residential access, public access would be restricted to non-motorized trailheads.	Lowest level of illegal activity expected since use of Scratchgravel Hills would be restricted after dark.	Illegal activities would be less than Alt. A but more than Alts. B and C.
<b>Road and trail safety</b>	More accidents/injuries expected under Alt. A due to motorized and non-motorized users on same routes.	Less accidents/injuries due to dispersed recreational opportunities.	Greater benefit than Alt. B because use of Scratchgravel Hills would also be restricted after dark.	Same as Alt. B.
<b>User compliance</b>	No additional effort needed.	Substantial effort required to educate public on change in use for Scratchgravel Hills.	Same as Alt. B. Increased cost could result from need to expand trailhead parking lots.	Same as Alt. B.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>East Helena TPA</b>				
<b>Motorized/ Non-motorized opportunities</b>	Alt. A would have 60 percent more motorized opportunities than Alts. B and C, and 15 percent more than Alt. D.	Non-motorized opportunities would increase in North Hills compared to Alts. A and D. Alt. B would also provide increased opportunities for disabled hunters.	Least amount of motorized access of all alternatives providing most non-motorized opportunities.	Alt. D would have 14 percent fewer motorized opportunities than Alt A and over 55 percent more than Alts. B or C.
	Area availability for wheeled, motorized use (in acres) – Open: 0, Closed: 0, Limited: 20,266	Area availability for wheeled, motorized use same as Alternative A.	Area availability for wheeled, motorized use same as Alternative A.	Area availability for wheeled, motorized use same as Alternative A.
	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 44.3	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 17.0	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 12.0	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 38
	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 26.4	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 47.1	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 59.1	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 32.6
<b>Snowmobile use</b>	Open to cross-country snowmobile use except Ward Ranch, McMasters and Spokane Hills temporary closure areas.	Reduced cross-country snowmobile use from Alt. A, additional travel closures (includes cross country travel as well as travel on existing routes) for the area immediately west of the York Bridge (“Mount Bend”), the French Bar area, and BLM lands located adjacent to the Spokane Hills area.	Potential long-term effects to users because cross-country snowmobile use would not be allowed.	Less area open to cross-country snowmobile travel than with Alt. A, but more area open than with Alts. B and C.
	Area availability for snowmobile use (in acres) – Open: 15,066, Closed: 1,588, Limited: 3,612	Area availability for snowmobile use (in acres) – Open: 6,362, Closed: 13,904, Limited: 0	Area availability for snowmobile use (in acres) – Open: 0, Closed: 0, Limited: 20,266	Area availability for snowmobile use (in acres) – Open: 14,461, Closed: 5,805, Limited: 0

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>TRAVEL MANAGEMENT AND ACCESS – East Helena TPA – Snowmobile Use – continued</i></b>				
	Miles of motorized routes available to snowmobile travel: 44.3	Miles of motorized routes available to snowmobile travel: 21.5	Miles of motorized routes available to snowmobile travel: 12	Miles of motorized routes available to snowmobile travel: 47.5
<b>User conflicts</b>	Conflict expected to increase as urbanization continues.	Separate use areas and decreased road density would lessen user conflicts.	Same as Alt. B	User conflict would be similar to Alt. A.
<b>Illegal activities</b>	Greatest level of illegal activities expected to occur.	Route closures across 60 percent of area would reduce illegal activities.	Same as Alt. B.	Same as Alt. A.
<b>Road and trail safety</b>	More accidents/injuries expected under Alt. A due to motorized and non-motorized users on more of the same routes.	More separate use areas and decreased road density would increase road and trail safety.	Same as Alt. B.	Same as Alt. A.
<b>User compliance/implementation</b>	No additional effort/expenditures needed.	Costs would be greater under Alternative B than Alternatives A and D, due to the development of non-motorized trail heads.	More effort/cost required than under other alternatives to educate public on change in use and to monitor compliance.	Same as Alt. A.
<b><i>Lewis and Clark County NW TPA</i></b>				
<b>Motorized/Non-motorized opportunities</b>	Alt. A would have 47 percent more motorized routes than action alternatives. Non-motorized users would have fewer opportunities under Alt. A.	Opportunities for non-motorized users would be greater than Alts. A and D.	Alt. C would provide fewer opportunities for motorized users. Closure of routes in northwest corner of TPA would result in enhanced non-motorized opportunities.	Alt. D would provide more motorized opportunities than other action alternatives. Opportunities increased for ATV riders and hunters through yearlong ATV-only and game retrieval route.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
	Area availability for wheeled, motorized use (in acres) – Open: 0, Closed: 0, Limited: 16,997	Area availability for wheeled, motorized use same as Alternative A.	Area availability for wheeled, motorized use same as Alternative A.	Area availability for wheeled, motorized use same as Alternative A.
	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 64.2.	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 28.1.	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 19.7.	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 34.1.
	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 5.3	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 37.7.	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 46.7.	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 29.1.
<b>Snowmobile use</b>	Allows cross-country snowmobile use outside Great Divide Ski Area, greatest of all alternatives.	Reduced opportunities because northwest portion of TPA restricted to designated routes.	Potential long-term effects to users because cross-country snowmobile use would not be allowed.	Increase in snowmobile opportunities on designated routes compared to Alts. B and C.
	Area availability for snowmobile use (in acres) – Open: 16,112, Closed: 888, Limited: 0.  Miles of motorized routes available to snowmobile travel: 56.5.	Area availability for snowmobile use (in acres) – Open: 12,649, Closed: 888, Limited: 3,463.  Miles of motorized routes available to snowmobile travel: 50.8 (includes 1.8 miles of snowmobile only trail).	Area availability for snowmobile use (in acres) - Open: 0, Closed: 888, Limited: 16,112.  Miles of motorized routes available to snowmobile travel: 9.1 (includes 1.1 miles of snowmobile only trail).	Area availability for snowmobile use same as Alternative B.  Miles of motorized routes available to snowmobile travel: 51 (includes 2.0 miles of snowmobile only trail).
<b>User conflicts</b>	User conflict during winter due to snowmobile use; on Continental Divide Trail due to motorized and non-motorized use on the same trail.	User conflict reduced due to dispersed recreational opportunities. Rerouting Continental Divide Trail would enhance motorized/non-motorized conflicts.	Same as Alt. B.	Same as Alt. B. Restricted snowmobile use in northwest portion of TPA and Great Divide Ski Area would reduce winter use conflicts.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>TRAVEL MANAGEMENT AND ACCESS – continued</i></b>				
<b><i>Boulder/Jefferson City TPA</i></b>				
<b>Motorized/Non-motorized opportunities</b>	Alt. A would have the most open routes of all alternatives. No designated non-motorized routes. Fewer recreation opportunities for non-motorized users.	Provides more opportunities for non-motorized users than Alt. A.	Fewer opportunities for motorized users since least number of open routes. Increased non-motorized opportunities since routes in southwest corner of TPA closed to motorized use.	Opportunities for motorized uses would be greater than Alts. B and C but less than Alt. A.
	Area availability for wheeled, motorized use (in acres) – Open: 0, Closed: 0, Limited: 14,487	Area availability for wheeled, motorized use same as Alternative A.	Area availability for wheeled, motorized use same as Alternative A.	Area availability for wheeled, motorized use same as Alternative A.
<b>Motorized/Non-motorized opportunities</b>	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 60.5	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 28.8	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 23.5	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 38.1
	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 0	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 31.7	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 36.9	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 23.3
<b>Snowmobile use</b>	Alt. A would provide greatest opportunity for motorized winter use because TPA would be open to area-wide cross country use as well as on all existing routes.	Same as Alt. A.	Alt. C would provide fewest opportunities for snowmobiles since cross-country travel would not be allowed and fewer designated routes would be available.	Same as Alt. A.
	Area availability for snowmobile use (in acres) – Open: 14,487, Closed: 0, Limited: 0 Miles of motorized routes available to snowmobile travel: 60.5	Same as Alt. A.	Area Availability for snowmobile use (in acres) – Open: 0, Closed: 0, Limited: 14,487 Miles of motorized routes available to snowmobile travel: 3.0	Same as Alt. A.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>User conflicts</b>	Greatest potential for user conflict, due to lack of separate use areas and high level of motorized routes.	Conflicts between non motorized and motorized users would be less during the spring/summer/ fall use season but continue or increase during the winter use season.	Fewer user conflicts than other alternatives due to dispersed recreational opportunities.	Same as Alt. A.
<b>Upper Big Hole River TPA</b>				
<b>Motorized/Non-motorized opportunities</b>	Alt. A would have 38 percent more motorized routes than any other alternative. Alt. A would have fewest non-motorized opportunities.	Reduction by half of motorized opportunities due to seasonal restrictions or road closures. Non-motorized opportunities would be enhanced compared to Alt. A.	Fewest opportunities for motorized users due to least number of open routes. Non-motorized opportunities would be greatest.	Fewer opportunities for motorized use than Alt. A, but more than Alts. B and C.
	Area availability for wheeled, motorized use (in acres) – Open: 0, Closed: 0, Limited: 63,249	Area availability for wheeled, motorized use same as Alt. A.	Area availability for wheeled, motorized use same as Alt. A.	Area availability for wheeled, motorized use same as Alt. A.
	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 158.6	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 84.8	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 60	Miles of wheeled motorized routes available (Open Year-long, Seasonally Restricted): 97.4
	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 11.0	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 76.9	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 106.9	Miles of non-motorized trails available (includes existing trails, as well as closed and decommissioned roads): 62.9
<b>Snowmobile use</b>	Provides greatest opportunities for snowmobile use since area-wide cross-country travel and use on existing routes generally allowed.	Fewer opportunities than Alternative A. Additional areas would be closed to cross-country travel, other areas restricted to designated routes during the season of use (12/2-5/15).	No cross-country travel allowed; travel restricted to designated routes only during the season of use (12/2-5/15).	Same as Alternative A.

<b>Table 2-24 Summary Comparison of Effects by Alternative</b>				
<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>TRAVEL MANAGEMENT AND ACCESS – Upper Big Hole River TPA – Snowmobile Use – continued</i></b>				
	Area availability for snowmobile use (acres) – Open: 31,600, Closed: 31,607, Limited: 0	Area availability for snowmobile use (acres) – Open: 13,243, Closed: 46,932, Limited: 3,032	Area Availability for snowmobile use (acres) – Open: 0, Closed: 31,607, Limited: 31,600	Area Availability for snowmobile use (acres) – Open: 31,600, Closed: 31,607, Limited: 0
	Miles of motorized routes available to snowmobile travel: 90.2	Miles of motorized routes available to snowmobile travel: 60.6 (Includes 2.5 miles of snowmobile use only trail).	Miles of motorized routes available to snowmobile travel: 16.4 (Includes 2.4 miles of snowmobile use only trail).	Miles of motorized routes available to snowmobile travel: 92.7 (includes 2.5 miles of snowmobile use only trail).
<b>User conflicts</b>	Greatest user conflict due to least number of non-motorized trails available for recreation.	User conflicts would be reduced from Alt. A due to greater separation of motorized/non-motorized uses.	Least amount of user conflicts due to greatest number of non-motorized routes for dispersed use.	Same as Alt. B.
<b>Road and trail safety</b>	Greatest risk of road/trail accidents/injuries due to less separation of motorized/non-motorized uses and year-round river ford at Sawlog Gulch.	Improved public safety compared to Alt. A associated with greater separation of motorized/non-motorized uses and restricting vehicular crossing of Big Hole River from 12/2 – 7/15.	Most enhanced public safety due to greatest separation of motorized/non-motorized uses and elimination of river ford at Sawlog Gulch.	Less risk to public safety than under Alt. A but more than under Alts. B and C. Seasonal restriction on Sawlog Gulch to avoid fording river during high water.
<b><i>TRANSPORTATION FACILITIES</i></b>				
<b><i>Field Office-Wide</i></b>				
<b>Road maintenance, monitoring and compliance, and weed control</b>	Highest transportation facility costs than action alternatives due to more motorized routes.	Transportation facility costs would be less than Alts. A and D, and similar to Alt. C. Lower facility costs due to overall reduction in available routes despite increased design standards for stream crossings (culverts) and proposed barbed wire gate replacement.	Transportation facility costs would be less than Alts. A and D, and similar to Alt B. Lower facility costs due to overall reduction in available routes despite increased design standards for stream crossings (to withstand 100-year flood events) and as needed barbed wire gate replacement.	Transportation facility costs would be greater than Alts. B and D, but less than Alt. A. Lower facility costs due to overall reduction in routes despite increased design standards for stream crossings, complete barbed wire gate replacement, and new construction to provide additional loop routes.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>Helena TPA</i></b>				
<b>Road signing, maintenance, monitoring, and compliance</b>	Short-term lower costs for signage and compliance monitoring since fewer route restrictions.	Short-term increase in costs for trailhead maintenance, gates, and signage associated with restricted motorized access, and compliance costs associated with nighttime closure of the Scratchgravel Hills.	Same as Alt. B.	Short-term increase in cost for signage and long-term increase compared to Alts. B and C for route maintenance associated with constructing new connector routes and reconstructing existing routes.
<b>Overall costs of facility maintenance</b>	Overall transportation facility costs would be highest of all the action alternatives; almost three times more than Alts. B and D, and six times more than Alt. C.	Overall transportation facility costs would be less than Alts. A and D due to fewer open routes to maintain, but more than Alt. C.	Due to the overall reduction in available routes, transportation facility costs would be least of all the alternatives.	Overall transportation facility costs would be greater than Alts. B and C, but less than Alt. A.
<b><i>East Helena TPA</i></b>				
<b>Road signing, maintenance, monitoring, and compliance</b>	Short-term lower costs for signage and compliance monitoring since fewer route restrictions.	Short-term increase in cost for compliance monitoring effort, trailhead development, and maintenance for trailheads in North Hills and for signage and sign maintenance for hunters with a disability access in South Hills.	Short-term increase in costs for compliance monitoring, signage to mark restricted routes. Indirect costs for sign maintenance and replacement greater than other alternatives.	Short-term increase in costs for compliance monitoring, signage and long-term increase for route maintenance associated with constructing new routes.
<b>Overall costs of facility maintenance</b>	Overall transportation facility costs would be similar to Alt. D and much less than Alts. B and C.	Overall transportation facility costs would be less than Alts. A and D and more than Alt. C.	Due to the overall reduction in available routes, transportation facility costs would be least of all the alternatives.	Overall transportation facility costs would be similar to Alt. A and less than Alts B and C.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>TRANSPORTATION FACILITIES – continued</i></b>				
<b><i>Lewis and Clark County NW TPA</i></b>				
<b>Road signing, maintenance, monitoring, and compliance</b>	Short-term lower costs for signage and compliance monitoring since fewer route restrictions.	Short-term increase in costs for additional signage and compliance monitoring and from closing upper northwest portion of area to motorized vehicles and cross-country snowmobile travel.	Short-term increase in costs for additional signage and monitoring compliance and due to closing entire northwest portion of TPA to motorized vehicles and cross-country snowmobile travel.	Short-term increase in costs due to new signage and monitoring compliance and maintenance associated with addition of new routes including ATV-only and game retrieval route, and closing northwest portion of TPA to cross-country snowmobile travel.
<b>Overall costs of facility maintenance</b>	Overall transportation facility costs would be greatest of all alternatives since highest level of motorized access.	Overall transportation facility costs would be similar to Alt. D, less than Alt. A and more than Alt. C.	Due to the overall reduction in available routes, transportation facility costs would least of all the alternatives.	Overall transportation facility costs would be greater than Alts. B and C, but less than Alt. A.
<b>Motorized trail maintenance</b>	No costs for motorized trail maintenance.	No costs for motorized trail maintenance.	No costs for motorized trail maintenance.	Only alternative with motorized trail maintenance.
<b><i>Boulder/Jefferson City TPA</i></b>				
<b>Road signing, maintenance, monitoring and compliance</b>	Short-term lower costs for signage and compliance monitoring since fewer route restrictions.	Short-term increase in costs for signage and compliance monitoring effort compared to Alt. A.	Short-term increase in costs for additional signage and compliance monitoring effort and due to closing southwest corner of TPA to motorized use and entire area to cross-country snowmobile travel.	Short-term increase in costs for signage and compliance monitoring effort.
<b>Overall costs of facility maintenance</b>	Greatest overall transportation facility costs due to the greatest level of motorized access.	Overall transportation facility costs would be less than Alts. A and D and more than Alt. C.	Due to the overall reduction in available routes, transportation facility costs would be the least of all the alternatives.	Overall transportation facility costs would be greater than Alts. B and C, but less than Alt. A.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>Upper Big Hole River TPA</i></b>				
<b>Road signing, maintenance, monitoring and compliance</b>	Lower costs for signage and compliance monitoring since fewer route restrictions.	Short-term increased costs from new signage and compliance monitoring due to changing seasonal use restrictions in various areas and closing some areas to cross-country snowmobile travel.	Short-term increase costs for new signage and compliance monitoring due to route closures and seasonal restriction changes and closing some areas to cross-country snowmobile travel.	Short-term increase in costs due to new signage and compliance monitoring due to route restrictions in various areas and closure of some areas to cross-country snowmobile travel.
<b>Overall costs of facility maintenance</b>	Transportation facility costs would be almost twice that of the action alternatives due to the highest level of motorized access.	Overall transportation facility costs would be more than two times less than Alt. A, more than Alt. C and slightly less than Alt. D.	Due to the overall reduction in available routes, transportation facility costs would be the least of all alternatives.	Overall transportation facility costs would be substantially less than Alt. A due to a great reduction in motorized access and slightly higher than Alts. B or C.
<b><i>LANDS AND REALTY</i></b>				
<b>Renewable energy</b>	Renewable energy developments could result in requests for land use authorizations.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
<b>Facility locating</b>	Would provide greatest flexibility in locating transmission lines, pipelines, and communication sites since no designated right-of-way corridor, use areas, exclusion areas, and limited avoidance areas would be identified.	Limiting new communication facilities to seven designated communication sites would concentrate these uses and diminish proliferation of separate rights-of-way. Designating utility corridors would focus locations of future facilities.	Same as Alternative B.	Same as Alternative B.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>LANDS AND REALTY - continued</i></b>				
<b>Land ownership adjustment</b>	No Change.	Would improve and provide better guidance by prioritizing actions associated with chronic management problems and protecting public resource values. Focus on identifying areas for future acquisitions associated with special designations and special status/priority species habitat.	Same as Alternative B.	Same as Alternative B.
<b><i>SPECIAL DESIGNATIONS</i></b>				
<b><i>ACECs</i></b>				
	Existing ACEC (Sleeping Giant) only area managed as an ACEC totaling 11,679 acres.	Four potential areas would be designated as ACECs totaling 70,644 acres. This alternative would provide the second greatest protection of relevant and important values.	This alternative provides the greatest protection of relevant and important values since all five potential areas totaling 87,893 acres would be designated as ACECs.	The second least amount of ACECs (three) and acreage (23,695 acres) would be designated as ACECs.
<b><i>National Trails</i></b>				
	Lowest protection provided for the two National Trail corridors given that ROS, VRM, travel and oil and gas restrictions would be lowest.	Second highest protection afforded the National Trails as resource use restrictions would be greater than Alts. A and D.	Greatest protection of the existing National Trails and associated user experiences since all resource uses such as timber harvesting, motorized travel, rights-of-way, minerals, and oil and gas would be restricted the most through ROS, VRM, and travel management.	Second lowest protection for National Trails as potential impacts from other resource uses would be higher than Alts. B and C.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>Wild and Scenic Rivers</i></b>				
	Outstandingly remarkable values of all WSR eligible segments would be minimally affected as interim protective measures would be applied until suitability decisions were made.	Only two of the four eligible WSR segments would be recommended as suitable for NWSRS (Muskrat Creek and Upper Missouri River). The remaining two segments would be dropped from consideration.	All four segments would be recommended as suitable for consideration in NWSRS; interim management would be the same as Alternative A. The potential for long-term protection of the outstandingly remarkable values would be greatest of all alternatives.	Least protection provided for the WSR values as no river segments would be recommended as suitable for WSR management status.
<b><i>Wilderness Study Areas (Fall back management if removed from wilderness consideration)</i></b>				
	Sleeping Giant and Sheep Creek WSAs would be managed as ACECs under the current Sleeping Giant ACEC Management Plan.	Four WSAs would be managed as ACECs providing some long-term resource value protection should Congress remove them from further wilderness consideration. Yellowstone River Island and Black Sage would be managed to protect their natural characteristics and outstanding values to a greater degree than Alt. D and a lesser degree than Alt. C.	Same as Alternative B, with the exception that oil and gas stipulations would be more restrictive for Black Sage (and protective of existing values) if dismissed from further wilderness consideration.	Same as Alternative B, with the exception that Black Sage would be open to all salable and leasable minerals and less protective oil and gas leasing stipulations of Alt. D.
<b><i>SOCIAL AND ECONOMIC</i></b>				
<b><i>Economic Environment</i></b>				
<b>Agricultural and livestock use</b>	Livestock grazing (actual use) would support <b>10</b> total (direct, indirect, induced) jobs and total labor income of <b>\$198,000</b> .	Livestock grazing (estimated actual use) would support <b>10</b> total (direct, indirect, induced) jobs and total labor income of about <b>\$180,000</b> .	Same as Alt. B, i.e. livestock grazing (estimated actual use) would support about <b>10</b> total (direct, indirect, induced) jobs and total labor income of about <b>\$183,000</b> .	Same as Alternative A

**Table 2-24  
Summary Comparison of Effects by Alternative**

Resource or Aspect of Management	Alternative A (No Action)	Alternative B (Preferred Alternative)	Alternative C	Alternative D
<b><i>SOCIAL AND ECONOMIC – Economic Environment – continued</i></b>				
	<p>Dependency of local livestock operators on BLM forage would remain at less than 1 percent of total livestock forage needs. Approximately 185 operators have grazing permits on BLM public lands. BLM forage often provides a critical element of the livestock producer's matched complement of grazing, forage, and hay production.</p> <p>Livestock grazing would continue to generate about \$35,000 in annual government revenues; \$8,400 would be distributed to the state and counties.</p>	<p>Changes in grazing management and economic effects would be spread unequally among permittees. Dependency and government revenues would be similar to Alternative A.</p>	<p>Changes in grazing management and economic effects would be spread unequally among permittees. Dependency and government revenues would be similar to Alternative A.</p>	
<b>Forest products</b>	<p>The combined effect of 9,800 CCF of timber sales would be 110 total jobs and \$3.0 million in annual labor income.</p>	<p>The combined effect of 9,200 CCF of timber sales would be 100 total jobs and \$2.8 million in annual labor income.</p>	<p>The combined effect of 4,100 CCF of timber sales would be 50 total jobs and \$1.3 million in annual labor income.</p>	<p>The combined effect of 10,800 CCF of timber sales would be 120 total jobs and \$3.3 million in annual labor income.</p>
<b>Recreation</b>	<p>An estimated 800 total local jobs and \$20.6 million in total annual labor income would be supported by 1.33 million recreation visits per year on public lands. The amount of revenues generated by recreation management would be \$123,000.</p>	<p>An estimated 790 total local jobs and \$20.3 million in total annual labor income would be supported by 1.31 million recreation visits per year on public lands. Recreation revenues would be similar to Alternative A.</p>	<p>An estimated 780 total local jobs and \$20.1 million in total annual labor income would be supported by 1.3 million recreation visits per year on public lands. Recreation revenues would be similar to Alternative A.</p>	<p>An estimated 800 total local jobs and \$20.5 million in total annual labor income would be supported by 1.33 million recreation visits per year on public lands. Recreation revenues would be similar to Alternative A.</p>

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Mining and mineral</b>	An estimated 90 local jobs and \$4.6 million in annual labor income would be supported by exploration, development, and production of 980,000 MCF of gas, 330,000 tons of limestone, 400 tons of dimension stone, and 20,000 tons of sand/gravel. Federal revenues from leases, rents, and royalties would be about \$960,000. State and local revenues would be \$480,000 and \$100,000, respectively.	Economic impacts would be similar to those described for Alternative A.	The number of local jobs annual labor income supported by exploration, development, and production of 330,000 tons of limestone, 400 tons of dimension stone, and 20,000 tons of sand/gravel would be similar to current management. There would be no federal, state, or local revenues from leasing, rents, or royalties.	Economic impacts would be similar to those described for Alternative A.
<b>Ecosystem Restoration</b>	Ecosystem restoration activities, e.g. fuels treatments and pre-commercial thinning (1,275 acres), weed spraying (2,000 acres), and road closures (172 miles) would support about 10 jobs and \$340,000 in labor income annually.	Ecosystem restoration activities, e.g. hazardous fuels treatments and pre-commercial thinning (2,560 acres), weed spraying (2,900 acres), road decommissioning (5 miles), and road closures (318 miles) would support about 20 jobs and \$590,000 in labor income annually.	Ecosystem restoration activities, e.g. hazardous fuels treatments and pre-commercial thinning (450 acres), weed spraying (2,200 acres), road decommissioning (5 miles), and road closures (375 miles) would support less than 10 jobs and about \$250,000 in labor income annually.	Ecosystem restoration activities, e.g. hazardous fuels treatments and pre-commercial thinning (3,345 acres), weed spraying (3,600 acres), road decommissioning (4 miles), and road closures (266 miles) would support about 20 jobs and \$750,000 in labor income annually.
<b>BLM management effects on the local economy</b>	BLM management would support about 1,270 local jobs and \$37.7 million in local labor income. This would be about 0.7 percent of total local jobs and 0.6 percent of total local labor income.	BLM management would support about 1,260 local jobs and \$37.8 million in local labor income. This would be about 0.7 percent of total local jobs and 0.6 percent of total local labor income.	BLM management would support about 1,100 local jobs and \$31.3 million in local labor income. This would be about 0.6 percent of total local jobs and 0.5 percent of total local labor income.	BLM management would support about 1,300 local jobs and \$39.3 million in local labor income. This would be about 0.7 percent of total local jobs and 0.6 percent of total local labor income.

<b>Table 2-24 Summary Comparison of Effects by Alternative</b>				
<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>SOCIAL AND ECONOMIC – continued</i></b>				
<b><i>Economic Environment</i></b>				
<b>Indirect non-market and non-use values</b>	Based strictly on the number of acres that would be in an ACEC, Alternative A would have the lowest non-use values.	Based strictly on the number of acres that would be in an ACEC, Alternative B would have the second highest non-use values.	Based strictly on the number of acres that would be in an ACEC, Alternative C would have the highest non-use values.	Based strictly on the number of acres that would be in an ACEC, Alternative D would have the second lowest non-use values.
<b>Economic stability, diversity, and growth</b>	Economic stability (indicated by seasonal unemployment, sporadic population changes, and fluctuating income growth rates) and economic diversity (indicated by the number of economic sectors) would not be influenced by BLM resource management. Alternative C and to a lesser extent, Alternative B would indirectly provide an environment more conducive to continuing long-term population growth and corresponding economic growth because of more resource protection offered.			
<b>Weed management</b>	Economic benefits from weed management and costs (in terms of reduced agricultural output, reduced recreation use, increased soil loss and water pollution (sedimentation and turbidity) associated with the spread of weeds are unknown.			
<b>Soil and water</b>	Economic benefits from soil and water management and costs (from lost agricultural production, additional costs for municipal water treatments, shortened life of dams and reservoirs, additional cost of water for industrial purposes, reduced water recreation use, reduced soil productivity, and water pollution) associated with resource use are unknown.			
<b>Fire/Fuels</b>	Economic benefits from fire and fuels management (beyond those covered under forestry management) and potential costs (in terms of property losses, lost revenues from wildland fires, and increase suppression costs) associated with hazardous fuels buildup are unknown.			
<b>Social and Economic Goals</b>	All alternatives would, to varying degrees, provide opportunities for economic benefits while minimizing adverse impacts on resources and resource uses; sustain, and where appropriate, restore the health of forest, rangeland, aquatic, and riparian ecosystems to provide a sustained flow of economic benefits within the capability of the ecosystem; protect visual quality, wildlife habitats, and recreation opportunities to sustain non-market values; and make resource commodities available to provide a sustainable flow of economic benefits within the ecosystem.			
<b><i>Environmental Justice</i></b>				
	No disproportionately high and adverse human health or environmental effects on minority and low income populations would occur.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.

<b>Table 2-24 Summary Comparison of Effects by Alternative</b>				
<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>Public Health and Safety</i></b>				
<b>Abandoned mine reclamation</b>	Reclamation of abandoned mine sites would continue to remediate safety and environmental quality issues.	Same as Alternative A. AML program would reclaim shaft in Ringing Rocks potential ACEC reducing safety hazard.	Same as Alternative A.	Same as Alternative A.
<b><i>Hazardous Materials</i></b>				
	Land use authorizations not issued for uses involving disposal or storage of hazardous materials. Lands proposed for acquisition or disposal would be inventoried for hazardous materials.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
<b><i>Social Environment</i></b>				
<b>Timber and Logging Interests</b>	No change to current social conditions under this alternative.	Alt. B would be favored over Alts. A and C by timber industry and workers because it provides for higher projected harvest levels and availability of forest products.	Alternative C would have the lowest projected harvest levels and therefore, would be less likely to be favored by those concerned about timber employment.	Likely to be the most favored alternative by the timber industry and workers concerned about employment because highest projected timber harvest levels.
<b>Ranching/Livestock Permittee Interests</b>	No change in authorized AUMs; projected levels of grazing would be maintained at current levels	Effects would be similar to Alternative A, but conflicts between livestock grazing and wheeled vehicles would be addressed.	Effects would be similar to Alternative B.	Effects would be similar to Alternative B.
<b>Recreation Interests</b>	Most roads open under this alternative.  Would not address concerns about conflicts between motorized and non-motorized use.	Emphasized balance of motorized and non-motorized recreation and access.  Entire Scratchgravel Hills closed to wheeled motorized use yearlong (with the exception of routes to residences.	Overall effect of reducing motorized recreation, but quality of experience may increase because user conflicts reduced.  Scratchgravel Hills closed after dark.	Emphasis on motorized recreation.  Motorized use of Scratchgravel Hills would be allowed 24 hours per day; would address some concerns about conflicts between motorized and non-motorized uses.

**Table 2-24  
Summary Comparison of Effects by Alternative**

<b>Resource or Aspect of Management</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Preferred Alternative)</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b><i>SOCIAL AND ECONOMIC – Social Environment – continued</i></b>				
<b>Commercial Outfitter and Guide Interests</b>	Favored by outfitter guides over Alternatives B and C because fewer constraints.	Outfitters/ guides less likely to favor Alternative B because more constraints on their operations.	Outfitter/guides less likely to favor Alternative C because of more constraints on their operations.	Favored by outfitters/guides because fewest constraints.
<b>Groups/Individuals who give a high priority to resource protection</b>	Groups and individuals who give high priority to resource protection would be less likely to support this alternative than Alternatives B or C.	Groups and individuals who give high priority to resource protection would be likely to favor this alternative over Alternatives A and D, but may be less likely to favor this Alternative over Alternative C.	Groups and individuals who give high priority to resource protection would likely favor Alternative C because of wildlife and riparian habitat protection and establishment of WSRs and greatest acreage in new ACECs.	Groups and individuals who give high priority to resource protection would be less likely to favor Alternative D than the other action alternatives.
<b>Groups/Individuals who give a high priority to resource use</b>	Groups and individuals concerned about resource use would probably favor this alternative or Alternative D.	Groups and individuals who give high priority to resource use would be more likely to favor Alternative B over Alternative C, and possibly Alternative A.	Groups and individuals who give high priority to resource use would less likely favor Alternative C because timber harvest, oil & gas development, etc. would be more restricted than under Alternatives B and D.	Groups and individuals who give high priority to resource use would be likely to favor Alternative D because timber harvest would be highest and oil and gas constraints would be less restrictive.
<b><i>Tribal Rights</i></b>				
	Provides opportunity to exercise tribal treaty rights such as hunting, fishing, and gathering on public lands.	Same as Alternative A	Same as Alternative A	Same as Alternative A

## CHAPTER 3

# AFFECTED ENVIRONMENT

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### INTRODUCTION

The information in this chapter is a summary of the information provided in the Analysis of the Management Situation (AMS), which was distributed for public review. The AMS contains information on the current management policies and regulations, more detail on the existing condition of some resources, habitat requirements for fish and wildlife species, information on current trends, and the resource specialists' determination of where change is needed in the current management direction. Maps from the AMS are referenced in this chapter as **AMS Figures** and are included electronically in PDF format on a compact disc with this document.

Throughout this document, the term "Planning Area" (PA) refers to the eight-county area with land administered by the BLM's Butte Field Office. The term "Decision Area" (DA) refers to all surface and subsurface (mineral estate) BLM-managed public lands in the PA.

### HOW TO READ THIS CHAPTER

Chapter 3 provides information on the current condition of resources, resource uses, and programs that could be affected by the revised RMP alternatives described in Chapter 2. This chapter is organized into Resources, Resource Uses, Special Area Designations, and Social and Economic. Each of these sections is further divided into resources or program areas. This is the organization prescribed in the BLM guidance (USDI-BLM 2005a).

### RESOURCES

#### AIR QUALITY

Several sensitive ecological areas designated by the Prevention of Significant Deterioration regulations as Mandatory Class I Areas are located within and near the PA airshed. These Class I areas include:

- Anaconda-Pintler Wilderness in western Deer Lodge County.
- Gates of the Mountains Wilderness in Lewis and Clark County.
- Scapegoat Wilderness in Lewis and Clark County.
- Yellowstone National Park (northern and northwestern portions) in Gallatin County.

Potentially affected Class I areas near the PA include the Bob Marshall Wilderness, which abuts Lewis and Clark County's western border, Glacier National Park, about 25 miles north of Lewis and Clark County, and the Red Rock Lakes Wilderness, located approximately 15 miles west of the southern part of Gallatin County.

Although air quality in most of the PA airshed is considered excellent, localized issues in some urbanized centers do not comply with the applicable EPA National Ambient Air Quality Standards (NAAQS) and the Montana Ambient Air Quality Standards (MAAQS) for certain pollutants designated as criteria pollutants by the Clean Air Act. Consequently, the EPA has designated two areas as "non-attainment areas":

- City of Butte, which is rated as not attaining standard conditions (non-attainment category) for coarse, inhalable particulate matter having an aerodynamic diameter of 10 microns or less (this category of particulate matter pollutants is referred to as  $PM_{10}$ ),
- City of East Helena, which is in the non-attainment category for lead.

Currently, there are no non-attainment designations for fine particulate matter ( $PM_{2.5}$ ) within the Planning Area. The closest non-attainment designation is Lincoln County in the far northwest portion of the state of Montana.

#### Air Quality Monitoring and Standards

The state of Montana maintains a network of ambient air quality monitoring stations. Pollutant monitoring is performed in Belgrade, Bozeman, Butte (two stations), Helena (two stations), Lincoln, and West Yellowstone (two stations). Seven of these nine stations monitor  $PM_{10}$  on a daily (24-hour) basis. Two of these stations also monitor  $PM_{10}$  continuously, while three monitor daily  $PM_{2.5}$  as well. Two different stations are equipped to continuously monitor ambient air concentrations of carbon monoxide.

Maximum measured ambient air concentrations for the criteria pollutants in Gallatin, Silver Bow, and Lewis and Clark Counties for 2003, from EPA's AirData database system (USEPA 2004), are presented in **Table 3-1**. This is the most complete recent data set available through the EPA. Data from these monitoring stations indicate that there were no exceedences of national or Montana ambient air quality standards in 2003. No monitoring station in the East Helena non-attainment area is currently reporting data on lead emissions. The most recent data available for lead in EPA's ambient air database is for the year 2001, and shows compliance with national standards for lead emissions.

Air quality issues center mainly on sources of particulate emissions.  $PM_{10}$  are emitted by industrial plants such as mines, quarries, and sawmills that produce dust from mechanical operations. Other common sources of  $PM_{10}$  are vehicle traffic on paved and unpaved roads and smoke and dust and exhaust from construction or development activities. Most  $PM_{2.5}$  in ambient air is believed

**Table 3-1  
Background Criteria Air Pollution Data**

Pollutant	Averaging Time	Federal (NAAQS)	Montana (MAAQS)	Maximum Monitored Value (2003) <sup>a,b</sup>		
				Gallatin	Silver Bow	Lewis and Clark
Carbon Monoxide	Hourly	35 ppm	23 ppm	8.6 ppm	5.5 ppm	NDA
	8-Hour	9 ppm	9 ppm	2.1 ppm	4.0 ppm	NDA
Ozone	1-hour	0.12 ppm	0.10 ppm	NDA	NDA	0.079 ppm <sup>3c</sup>
	8-hour	0.08 ppm	--	NDA	NDA	0.065 ppm <sup>3c</sup>
Lead	90-Day	--	1.5 µg/m <sup>3</sup>	NDA	NDA	NDA
	Quarterly	1.5 µg/m <sup>3</sup>	--	NDA	1.02 µg/m <sup>3,d</sup>	NDA
Sulfur Dioxide	Hourly	--	0.50 ppm	NDA	NDA	NDA
	3-Hour	0.50 ppm	--	NDA	NDA	0.10 ppm <sup>d</sup>
	24-Hour	0.14 ppm	0.10 ppm	NDA	NDA	0.03 ppm <sup>d</sup>
	Annual	0.03 ppm	0.02 ppm	NDA	NDA	NDA
Coarse Particulate Matter (PM <sub>10</sub> )	24-Hour	150 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	68 µg/m <sup>3</sup>	49 µg/m <sup>3</sup>	83 µg/m <sup>3</sup>
	Annual	--	50 µg/m <sup>3</sup>	26 µg/m <sup>3</sup>	16 µg/m <sup>3</sup>	23 µg/m <sup>3</sup>
Fine Particulate Matter (PM <sub>2.5</sub> )	24-Hour	35 µg/m <sup>3</sup>	--	23 µg/m <sup>3</sup>	39 µg/m <sup>3</sup>	29 µg/m <sup>3</sup>
	Annual	15 µg/m <sup>3</sup>	--	8.1 µg/m <sup>3</sup>	8.3 µg/m <sup>3</sup>	6.8 µg/m <sup>3</sup>

NDA = No Data Available; ppm = parts per million; µg/m<sup>3</sup> = micrograms per cubic meter

<sup>a</sup>Data in table is for maximum values reported in the year 2003 with the exception of annual particulate matter results, which are presented as the annual geometric mean.

<sup>b</sup>Monitoring data are not available through the EPA AirData Database for Nitrogen Dioxide (NO<sub>2</sub>) and Ozone (O<sub>3</sub>) since no counties within the PA have monitoring stations for these pollutants.

<sup>c</sup>The Ozone result presented for Lewis and Clark County was measured at the Glacier National Park monitoring station in Flathead County. This station is in the impact zone for Ozone precursors emitted in parts of the PA.

<sup>d</sup>The latest available data for lead and sulfur dioxide are those from calendar year 2001.

to arise from combustion processes or atmospheric reactions among naturally occurring or industrial pollutants. Both forms of particulate matter are inhalable and penetrate the lungs, where they may be deposited. This is the primary reason for EPA's regulation of these particles at different levels.

Particulate emissions of both types within the PA are produced during prescribed burns of timber and underbrush by forest management, as well as wildland fire, private debris burning, agricultural burning, slash burning, and wood burning stoves and fireplaces. These emission situations are generally transitory and do not pose significant risks to human health because exposures can often be minimized or avoided. However, smoke from large fires, particularly PM<sub>2.5</sub>, can traverse great distances, sometimes thousands of miles, and can impact visibility in nearby and even distant Class I areas. Air quality and visibility can also deteriorate locally due to temporary air stagnation events.

The Montana/Idaho Airshed Group has developed a Smoke Management Program to address smoke production from wildland and prescribed fires. Accumulation

of smoke from controlled burning is limited through monitoring of weather conditions and formal coordination of activities through the Monitoring Unit in Missoula, Montana. The Monitoring Unit decides daily on burning within a particular airshed depending on adequate smoke dispersion. Airsheds in the PA are Airsheds 5, 6, 7, 8A and 8B.

## Climate

The climate of the region is modified northern Pacific Coast type with continental components. **Table 3-2** provides a sampling of data recorded within the PA. The Rocky Mountains exert the main influence on climate. Winter days are marked by cold temperatures and cloudy days. Winter Chinook winds blow frequently from 25 to 50 miles per hour and can create warm, windy days east of the Continental Divide, while temperatures remain steadier in the mountain valleys. In the summer, the heat and dry conditions are somewhat modified by mountainous terrain west of the PA.

**Table 3-2  
Sampling of Climate Data in Planning Area**

Parameter	Bozeman: Montana State Univ.	Butte: FAA Airport	Gardiner	Helena: Weather Service Office
Period of Record	1892–2003	1894–2003	1956–2003	1893–2003
Average Maximum Temperature	81.0°F	79.7°F	85.9°F	82.7°F
Month of Average Maximum Temperature	July	July	July	July
Average Minimum Temperature	11.8°F	7.3°F	13.7°F	11.2°F
Month of Average Minimum Temperature	January	January	January	January
Average Annual Precipitation	18.26 in.	12.77 in.	9.89 in.	11.94 in.
Average Annual Snowfall	85.1 in.	56.8 in.	25.2 in.	51.3 in.
Annual Mean Wind Speed	NDA	NDA	NDA	7.7 mph
Annual Prevailing Wind Direction	NDA	NDA	NDA	West

in. = inches; °F = degrees Fahrenheit; FAA = Federal Aviation Administration; mph = miles per hour; NDA = No Data Available

### ***Global Climate Change***

On-going scientific research has identified the potential impacts of anthropogenic “greenhouse gas” (GHG) emissions (including carbon dioxide, CO<sub>2</sub>; methane; nitrous oxide; water vapor; and several trace gases) on global climate. Through complex interactions on a regional and global scale, these GHG emissions cause a net warming effect of the atmosphere (making surface temperatures suitable for life on earth), primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia (along with corresponding variations in climatic conditions), recent industrialization and burning of fossil carbon sources have caused CO<sub>2</sub> concentrations to increase dramatically, and are likely to contribute to overall global climatic changes. The Intergovernmental Panel on Climate Change (IPCC 2007a) recently concluded that “warming of the climate system is unequivocal” and “most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic [man-made] greenhouse gas concentrations.”

Global mean surface temperatures have increased nearly 1.8°F (1.0°C) from 1890 to 2006 (Goddard Institute for Space Studies, 2007). However, observations and predictive models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Northern latitudes (above 24° N) have exhibited temperature increases of nearly 2.1°F (1.2°C) since 1900, with nearly a 1.8°F (1.0°C) increase since 1970 alone. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

In 2001, the IPCC indicated that by the year 2100, global average surface temperatures would increase 2.5 to

10.4°F (1.4 to 5.8°C) above 1990 levels. The National Academy of Sciences (2006) has confirmed these findings, but also indicated that there are uncertainties regarding how climate change may affect different regions. Computer model predictions indicate that increases in temperature will not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures is more likely than increases in daily maximum temperatures.

Over the last century, the average temperature in Helena, Montana, has increased 1.3°F, and precipitation has decreased by up to 20 percent in many parts of the state (USEPA 1997, Hansen et al. 2001). Over the next century, climate in Montana may change even more. Similar temperature changes have occurred in the past, but the previous changes took place over centuries or millennia instead of decades. One confounding issue in determining whether GCC is actively affecting conditions in the Planning Area is what is apparent from long-term climate data.

In many cases it is inherently difficult to discern whether global climate change in and of itself is already affecting resources in Montana, let alone the Planning or Decision Areas for the Butte RMP. This is particularly difficult in the context of multiple mechanisms or causes contributing to the resource conditions that currently exist. In most cases there is more information about potential or *projected* effects of GCC on resources. It is important to note that projected changes are likely to occur over several decades to a century.

While it is difficult to specifically determine current effects of global climate change on resources in the Butte RMP Planning Area, a number of projected effects are forecasted to occur over the coming decades. The Environmental Protection Agency (Region 8) predicts

that for the region of the United States that includes Montana, a number of predicted effects of climate change will occur. These predicted changes include (USEPA 2008):

- The region will experience warmer temperatures overall, with less snowfall.
- Temperatures are expected to increase more in winter than in summer, more at night than in the day, and more in the mountains than at lower elevations, leading to less snow.
- Earlier snowmelt means peak streamflows will be earlier, weeks before the peak needs of farmers, ranchers, rafters, and others. In late summer, rivers, lakes and reservoirs will be drier.
- More frequent, more severe, and possibly longer-lasting droughts will occur.
- Crop and livestock production patterns could shift northward; less soil moisture due to increased evaporation may increase irrigation needs.
- Drier summer conditions will reduce the range and health of ponderosa and lodgepole pine forests, and increase susceptibility to fire. Grasslands and rangeland could expand into previously forested areas.
- Ecosystems will be stressed and a number of wildlife species such as the mountain lion, black bear, pine marten, and bald eagle could be further stressed.

## GEOLOGIC RESOURCES

Seismic activity (earthquakes), landslides, rock falls, earth flows, slumps, debris flow, and avalanches are all examples of geologic hazards that can occur within the PA. A belt of seismic activity, known as the Intermountain Seismic Belt, is about 100 miles wide and extends through western Montana from near Kalispell in the northwest corner of the state to Yellowstone National Park in the southwest. Within the Intermountain Seismic Belt, approximately 70 mostly high-angle, steep-range bounding faults are known to have been active in the last 1.6 million years, and more than 5,000 earthquakes have been recorded since 1982, according to the Montana Bureau of Mines and Geology (MBMG 2005).

Almost the entire PA is included in the Intermountain Seismic Belt. A branch of the Intermountain Seismic Belt, called the Centennial Tectonic Belt, extends west from the northwest corner of Yellowstone Park, through southwestern Montana, and into central Idaho. The Centennial Tectonic Belt includes at least eight major active faults. The site of the largest historic earthquake in the northern Rocky Mountains, the August 18, 1959 Hebgen Lake, Montana earthquake (magnitude 7.5), is located in the southwestern-most portion of the PA. Although it has been over four decades since the last destructive earthquake in Montana, small earthquakes are very

common in the region, averaging 7 to 10 per day (<http://mbmgquake.mtech.edu>).

Landslides, earth flows, and slumps are common where 1) slopes are steep, and 2) impermeable ground conditions occur, seasonally or otherwise, that result in saturated soils or areas of high moisture content. In addition to natural processes such as earthquakes, road building and vegetation removal in areas of steep terrain can also trigger landslides.

Debris flows are comprised of fluidized sediments that rapidly move downslope, forming channels of saturated, viscous, slurry-like material. They usually occur in association with very high rainfall or rapid snowmelt events. They typically affect only small areas, with the greatest erosion occurring in the flow channels. Debris flows can destroy roads and bridges in their paths, and can cause physical injury or property damage.

Rock falls are common in many areas and are associated with locally steep terrain, road cuts, stream valleys, cliffs, peaks, and ridges. Rock falls can be triggered by temperature fluctuations, precipitation events, or seismic activities.

Snow avalanches are large masses of snow or ice in swift motion down a mountainside or over a precipice. Snow slides commonly occur in chutes near mountain peaks and along ridges. Both human activity and natural processes can trigger an avalanche.

## SOIL RESOURCES

Soils were surveyed and are available for the PA including Broadwater, Deer Lodge, Gallatin, Jefferson, and Lewis and Clark counties. Soils were surveyed in Beaverhead, Park and Silver Bow counties. The data is not yet completed and published although some is available through the NCSS Web Soil Survey (NRCS 2004a). Three major geologic units found include the older Precambrian Belt Series sedimentary rocks, Boulder batholith granite and related rocks, and younger Tertiary volcanic and sedimentary deposits. In addition, mountain glaciations during the more recent Quaternary period helped shape and carve the mountain topography. Eroded bedrock from the mountains was deposited in the adjacent valleys.

The granitic Boulder batholith commonly weathers to weakly-developed sandy texture soil horizons over coarse sand to slightly decomposed granite subsurface layers.

Soils that have developed from Belt Series bedrock typically are fine sandy or loamy soils with high percentages of coarse fragments (Veseth and Montagne 1980). The soils are non-calcareous except for specific areas where calcareous strata (impure limestone) is exposed at or near the surface.

Soils in the Tertiary valley-fill can be highly variable in physical and chemical properties due to the inherent

variability of the source rock. The soils in this landscape setting may also have formed from more recent Quaternary sediments or other bedrock deposits.

The basic soil mapping units of the Soil Survey Geographic Database and National Soil Information System can be correlated with the underlying igneous rocks, limestone, or argillite, or mixed colluvial and alluvial deposits. Of the five basic soils forming factors (climate, organisms, parent material, topography, and time), parent material, and topography primarily influence the development of soils in the PA.

### WATER RESOURCES

The PA generally consists of headwaters of the Missouri River (Big Hole River, Jefferson River, Madison River, and Gallatin River) and to a lesser extent, the Yellowstone River and Clark Fork River.

Topography varies from steep rugged mountains of the Madison, Gallatin, Bridger, Crazy, and Absaroka ranges to broad grassy valleys around the towns of Bozeman, Butte, and Helena. Elevations range from 11,200 feet in the Absaroka Range to 3,400 feet along the Missouri River below Holter Lake.

Precipitation patterns are affected primarily by local terrain. Mountain ranges cause rain shadow and other orographic effects, resulting in variations in annual precipitation from 10 to 15 inches in the valleys to 30 to 60 inches in the mountains (Western Regional Climate Center 2004). May and June are the wettest months; however, moisture from mountain snowpack typically sustains the major streams and rivers all year.

The EPA has determined that streams and rivers, or segments fail in achieving beneficial use(s) as designated by the MDEQ and are therefore considered impaired. Impairment status is based on numeric and narrative criteria for chemical, physical, and biological conditions of each water body. Each of the impaired water bodies is evaluated by the state to determine how to attain their beneficial uses by meeting TMDL limitations. As such, any water body in the Decision Area, and possibly portions of the PA, that is on the Section 303(d) List is considered adversely impacted until removed from the List. Impaired water bodies in the DA based on the Section 303(d) List for Montana (MDEQ, 2006) are listed in **Table 3-3**.

**Table 3-3**  
**Impaired Water Bodies by 4th Level Hydrologic Unit Code 2005 Survey**

4th Hydrologic Unit Code	Stream Segment Within BLM Land	Miles Within BLM Land	Probable Impairment Type(s) <sup>A</sup>	Probable Impairment Source(s) <sup>B</sup>
Big Hole River (10020004)	Big Hole River	8.83	1, 2, 4, 8, 10	1, 4, 6, 8, 10, 17, 18
	Camp Creek	1.51	1, 2, 5, 8, 10	9, 10, 12, 18
	Charcoal Creek	1.34	5, 6, 8	10, 12
	Deep Creek	0.87	1, 2, 8	9, 10, 13
	French Creek	0.06	10	18, 20
	Jerry Creek	0.40	1, 2, 7, 8, 10	1, 2, 6, 8, 9, 10, 14, 18
	Moose Creek	5.90	1	9
	Sawlog Creek	0.80	2, 5, 8, 10	10, 12
	Soap Creek	5.00	2, 5, 8	9, 10, 12
	Sevenmile Creek	0.27	2, 8	6, 13
	Wickiup Creek	0.07	2, 5, 8, 9, 10, 11	10, 12, 19
Jefferson River (10020005)	Jefferson River	0.56	1, 2, 4, 8, 10, 11	5, 9, 13, 17, 18
	Big Pipestone Creek	3.26	1, 2, 4, 5, 6	1, 5, 8, 9, 12, 13, 17, 21
	Fish Creek	0.94	1, 2, 8	1, 9, 10, 12, 17, 20
	Fitz Creek	0.88	2, 5, 8	10
	Halfway Creek	0.71	2, 8	5, 10, 12
	Whitetail Creek	2.33	1, 2, 5, 6, 7, 8, 10, 11	6, 9, 17, 18
Boulder River (10020006)	Boulder River	4.20	1, 2, 4, 7, 8, 10	1, 9, 18, 19
	Basin Creek	0.04	2, 8, 9, 10, 11, 14	5, 6, 12, 14, 18
	Big Limber Gulch	1.55	9, 10, 11	18
	Cataract Creek	0.35	6, 7, 8, 9, 10, 11	5, 6, 14, 18
	High Ore Creek	2.12	2, 4, 8, 9, 10, 11, 14	5, 6, 8, 14, 18, 21
	Little Boulder River	0.53	2, 10	1, 8, 18, 19
	Muskrat Creek	2.66	2, 10, 11	6, 18
	NF Little Boulder River	0.11	2, 6, 7, 8	10, 12
	Nursery Creek	0.92	6, 7, 8	12, 14

**Table 3-3**  
**Impaired Water Bodies by 4th Level Hydrologic Unit Code 2005 Survey**

4th Hydrologic Unit Code	Stream Segment Within BLM Land	Miles Within BLM Land	Probable Impairment Type(s) <sup>A</sup>	Probable Impairment Source(s) <sup>B</sup>
Upper Missouri River (10030101)	Beaver Creek	0.25	2, 6, 7, 8, 10, 11	9, 10, 12
	Clancy Creek	0.70	2, 8, 9, 10, 14	10, 12, 16, 18
	Confederate Gulch	1.47	1, 2, 7, 10	1, 8, 18, 19, 21
	Corbin Creek	0.07	2, 4, 8, 9, 10, 11, 14	1, 17, 19
	Crow Creek	1.05	2, 8, 10, 11	18, 19, 21
	Deep Creek	0.18	1, 2, 8	1, 4, 5, 6, 11, 13
	East Fork Indian Creek	1.98	9, 10, 11, 14	18
	Falls Gulch	1.54	9, 10	18, 19
	Golconda Creek	3.09	10, 11	18, 19
	Granite Creek	1.14	10, 14	18
	Indian Creek	4.88	9, 10, 11, 14	18, 19
	Jennies Fork	0.22	5, 6, 7, 8, 11	10, 12, 19
	Little Prickly Pear Cr	2.04	1, 2, 4, 8	1, 5, 10, 12, 14, 17
	Lump Gulch	1.89	9, 10, 11	18
	Missouri River	0.38	1, 2, 5, 6, 7, 8, 10, 11	1, 9, 10, 17, 18
	Prickly Pear Creek	0.86	2, 8, 10, 11, 14	8, 13, 18, 20
	Sevenmile Creek	0.11	1, 2, 5, 7, 8, 10, 11	6, 10, 13, 18, 21
	Silver Creek	0.03	1, 2, 9, 10, 14	1, 9, 18, 19
	Sixteen Mile Creek	1.62	2, 5, 6, 7, 8	10, 21
	Skelly Gulch	0.83	8, 14	12, 18
Trout Creek	0.33	2, 8	5, 10, 12	
Virginia Creek	1.97	10, 11	18	
Woodsiding Gulch	2.07	5, 7	12	
Upper Yellowstone (10070002)	Mill Creek	0.20	1	17
	Suce Creek	0.11	1	17
	Yellowstone River	0.27	2	5, 13
Blackfoot River (17010203)	Blackfoot River	1.90	7, 8, 10	1, 11, 18, 19
<b>Impaired Streams Mileage on BLM Managed Lands</b>		<b>77.37</b>		

<sup>A</sup> Cause: 1= flow alterations; 2=habitat alterations (including wetlands); 3=dewatering; 4=thermal modifications; 5=phosphorous; 6=nitrogen; 7=nutrients; 8=sedimentation; 9=mercury; 10=metals; 11=lead; 12=riparian degradation; 13=suspended solids; 14=arsenic

<sup>B</sup> Source: 1=agriculture; 2=construction; 3=land development; 4=habitat modifications (other than construction); 5=removal of riparian vegetation; 6=grazing-related; 7=pasture grazing-riparian construction; 8=highway/road/bridge construction; 9=irrigated crop production; 10=range grazing-riparian; 11=crop-related; 12=logging road construction & maintenance; 13=bank or shoreline modification & destabilization; 14=silviculture; 15=intensive animal feeding operation; 16=confined animal feeding operation (NPS); 17=hydromodification; 18=abandoned mining; 19=resource extraction; 20=placer mining; 21=channelization.

The Montana Department of Environmental Quality (DEQ) web site provides an excellent assessment database that allows for queries of specific basins. This includes maps that show water bodies, ownership, TMDL planning areas, and other landmarks. This database can be found at: <http://deq.mt.gov/cwaic/default.aspx?yr=2006>

The primary beneficial uses of water on public land include agriculture, support of wildlife, and recreation. Water use on private land within the area is primarily for agriculture and domestic activities.

There are four municipal watersheds in the Butte Field Office that have federal surface or subsurface mineral rights. They are the Missouri River Siphon, Tenmile Creek drainage, Big Hole River Intake, and Moulton Reservoir. The Tenmile Creek drainage is Helena's primary source of drinking water. Additional water is obtained, as needed, during the summer months from the

Missouri River Siphon which is located on the downstream side of Canyon Ferry Dam. The Big Hole River Intake encompasses a major portion of the Big Hole watershed upstream of the intake and is an important source of drinking water for the city of Butte. Moulton Reservoir is about five miles north of Butte and provides additional drinking water for Butte.

Municipal watersheds provide water to public water supplies which provide drinking water to municipalities. Montana is required under the 1996 amendments to the Federal Safe Drinking Water Act to carry out a Source

Water Assessment Program. The Source Water Assessment Program requires all public water systems to identify and protect their water sources. Each city public works program has local ordinances that regulate surface land use in order to protect public drinking water source(s).

Water quantity is another resource quality indicator based on whether the Proposed Action or alternatives would result in a flow or water level reduction for either surface water or groundwater resources. Criteria evaluated include water rights, beneficial uses, and ecological conditions. The PA includes portions of 15 major watersheds (4<sup>th</sup> level Hydrologic Unit Code or HUC) in west central Montana. Surface water flow data presented herein were retrieved from the U.S. Geological Survey (USGS) website (USGS 2004). Water quality data from selected surface water monitoring stations, Big Hole River, Jefferson River, Madison River, Missouri River, Yellowstone River, and Silver Bow Creek are included in Appendix E of the AMS. No specific areas of water quality problems are known in the Decision Area or PA other than the impaired water bodies identified on the Section 303(d) List. Some unspecified areas of streams, rivers, and groundwater probably have exceedences of some water quality standards due to natural or anthropomorphic conditions. Erosion and sedimentation to streams is occurring in some unspecified areas (MDEQ 2006).

A list of water rights held by BLM in the PA is found in Appendix F of the AMS. These water rights data, as well as information on basin closures and groundwater control areas, were obtained from the Montana Department of Natural Resources and Conservation (DNRC 2004a). Groundwater wells located in the PA are shown in Appendix G of the AMS. Groundwater wells monitored periodically for depth to water by the Montana Bureau of Mines and Geology (MBMG 2004) are shown on maps contained in Appendix F of the AMS.

The following subsections describe general water resources for each of the 15 major watersheds that comprise the PA (AMS Figure 2-4). AMS Figures 2-5a, 2-5b, and 2-5c show greater detail for streams, rivers, lakes, and watershed boundaries located in the northern, western, and southern portions of the PA, respectively. BLM lands are generally scattered such that relatively short stream/river reaches flow through BLM lands in most cases.

### Big Hole River Basin

The Big Hole River basin is the western-most drainage basin in the southwest portion of the PA (AMS Figure 2-4). Only the north-central portion of this watershed is within the PA. Streams and rivers of this area drain south to the Big Hole River.

Major streams in the area that drain to the Big Hole River include West Fork Fishtrap Creek, Seymour Creek, Divide Creek, and Moose Creek.

Currently, the Big Hole River basin is closed to further appropriations and reservations of surface water as part of the Upper Missouri River basin legislative closure. Beneficial water use permits for groundwater can still be obtained.

### Jefferson River Basin

The Jefferson River basin is one of the south central watersheds within the PA (AMS Figure 2-4). Major streams in the basin that flow into the Jefferson River include Fish Creek, Little Pipestone Creek, Big Pipestone Creek, Whitetail Creek, Little Whitetail Creek, and the Boulder River. Major lakes or reservoirs within this watershed include Delmoe Lake (Big Pipestone Creek drainage), Willow Creek Reservoir, and Whitetail Reservoir. Whitetail Reservoir is part of the water supply system for the town of Whitehall. The entire Jefferson River basin is closed to further appropriations and reservations of surface water as part of the Jefferson-Madison River basin legislative closure. Beneficial water use permits for groundwater can still be obtained.

A sediment transport study (Berger and Gammons 2004) concluded that approximately 90 percent of sediment entering Pipestone Creek is from overland flow on hill-sides and bank erosion. The largest human-caused sediment sources were due to uncontrolled runoff from gullying developed on steep hill slopes along portions of Interstate 90. Relatively minor contribution of sediment to Pipestone Creek was attributed to off-highway vehicle use.

### Boulder River Basin

The Boulder River basin is the central-most watershed in the management area (AMS Figure 2-4). There are no major lakes or reservoirs in this management area. The Boulder River basin is closed to further appropriations and reservations of surface water as part of the Jefferson-Madison River basin legislative closure. Beneficial water use permits for groundwater can still be obtained.

### Madison River Basin

The Madison River basin is one of the south-central watersheds (AMS Figure 2-4). Major streams in the basin that flow to the Madison River include: Beaver Creek, Elk Creek, and South Fork of the Madison River. Hebgen Lake is the major lake or reservoir in the planning district.

The entire Madison River basin is closed to further appropriations and reservations of surface water as part of the Jefferson-Madison River basin legislative closure. Beneficial water use permits for groundwater can still be obtained. A controlled groundwater area exists for the basin upstream of Hebgen Lake and was established to regulate groundwater development adjacent to Yellowstone National Park in an effort to preserve its natural hydrothermal features.

## Gallatin River Basin

The Gallatin River basin originates from the Yellowstone Plateau and continues north to the confluence with the Missouri River near Three Forks (AMS Figure 2-4). Major streams in the watershed include Hyalite Creek, Bridger Creek, Taylor Creek, Hell Roaring Creek, and Dry Creek. Hyalite Reservoir is the only major lake in the basin and is part of the water supply system for the town of Bozeman.

The Gallatin River basin is closed to further appropriations and reservations of surface water as part of the Upper Missouri River basin legislative closure. Beneficial water use permits for groundwater can still be obtained.

Three controlled groundwater areas exist in or near the town of Bozeman and include the Bozeman Solvent Site, Sypes Canyon, and Idaho Pole. The controlled groundwater area adjacent to Yellowstone National Park exists within the headwaters of the Gallatin River.

## Upper Missouri River Basin

The Upper Missouri River basin is the largest of the watersheds in the PA (AMS Figure 2-4). Major streams in this watershed include Deep Creek, Confederate Gulch, Avalanche Gulch, Trout Creek, Beaver Creek, Little Prickly Pear Creek, Prickly Pear Creek, Ten Mile Creek, and Crow Creek. Major lakes and reservoirs in this management area include Canyon Ferry Reservoir, Hauser Lake, Holter Lake, Lake Helena, and the Helena Valley Regulating Reservoir. These lakes and reservoirs are part of an irrigation and power generation network that constitute dammed portions of the Missouri River. In addition to these major water bodies, Chessman Reservoir and Scott Reservoir are part of the water supply system for the town of Helena. Park Lake is an alpine lake located near the Continental Divide south of Helena and used for recreation.

The Upper Missouri River basin is closed to further appropriations and reservations of surface water as part of the Upper Missouri River basin legislative closure. Beneficial water use permits for groundwater can still be obtained. Currently, the North Hills controlled groundwater area is located in the PA in the northern portion of the Helena Valley.

## Upper Missouri-Dearborn River Basin

A small portion of the PA located on the north slope of the Big Belt Mountains east of Holter Lake is within the Upper Missouri-Dearborn River basin (AMS Figure 2-4). These land tracts do not directly affect any major surface water bodies.

## Upper Musselshell River Basin

A small portion of the Upper Musselshell River basin drains the northeast slope of the Crazy Mountains (AMS

Figure 2-4). These land tracts do not directly affect any major surface water bodies.

## Yellowstone River Headwaters Basin

The Yellowstone River Headwaters basin located upstream of the town of Gardiner drains the Yellowstone Plateau and a portion of the Absaroka Mountains in Gallatin County (AMS Figure 2-4). Major streams include Slough Creek, Buffalo Creek, Hellroaring Creek, and the Lamar River.

The headwaters of the Yellowstone River within Montana and within Yellowstone National Park are closed to further appropriations and reservations of surface water. The portion of this basin within Montana located north of Yellowstone National Park is part of the controlled groundwater area.

## Upper Yellowstone River Basin

A portion of the Upper Yellowstone River basin is within the PA (AMS Figure 2-4). Major streams within this basin include Tom Miner Creek, Big Creek, Mill Creek, Trail Creek, and the Shields River. Daily Lake is the only major lake or reservoir within the basin.

A portion of this basin near the town of Gardiner is part of the Yellowstone National Park controlled groundwater area.

## Shields River Basin

The Shields River basin originates from the Crazy Mountains and continues south to its confluence with the Yellowstone River near Livingston (AMS Figure 2-4). Major streams of the basin include Potter Creek, Cottonwood Creek, Muddy Creek, Flathead Creek, and Brackett Creek. Cottonwood Reservoir is the only major lake in the basin.

## Stillwater River Basin

The Stillwater River basin has a portion of its headwaters within the PA (AMS Figure 2-4). There are no major lakes or reservoirs within this watershed. The Stillwater River is a major tributary of the Yellowstone River.

Approximately a third of this basin is part of the Absaroka-Beartooth Wilderness area. The headwaters of this basin near Yellowstone National Park are listed as a controlled groundwater area.

## Clark Fork River Basin

Clark Fork River basin drains the portion of the PA from the Continental Divide near Butte northwest to near Georgetown Lake (AMS Figure 2-4). Streams draining north to the Clark Fork River include Basin Creek, Blacktail Creek, Browns Gulch, Silver Bow Creek, Mill Creek, Warm Springs Creek, Lost Creek, and Flint Creek.

Silver Lake near Georgetown Lake is the only major lake or reservoir in the PA. Silver Lake is part of the water supply system for Anaconda and Butte. Large ponds, constructed near Warm Springs and Opportunity, are for treatment of surface water impacted by historic mining and smelting activities.

The Clark Fork River basin is closed to further appropriations and reservations of surface water as part of the basin legislative closure. Beneficial water use permits for groundwater can still be obtained. The Butte Field Office administers only 649 acres of public land in the Upper Clark Fork River Basin.

### **Blackfoot River Basin**

Headwaters of the Blackfoot River basin drain the northwest portion of the Butte Planning District near the town of Lincoln (AMS Figure 2-4).

Currently the Blackfoot River basin is closed to further appropriations and reservations of surface water as part of the Upper Clark Fork River legislative closure. Beneficial water use permits for groundwater can still be obtained.

## **VEGETATIVE COMMUNITIES**

Plant communities occurring in the PA include mid-grass prairie on the driest sites (usually in valleys); fescue grasslands on slopes and foothills with higher precipitation; sagebrush, bitterbrush, and mountain mahogany interspersed in grasslands; and Douglas-fir, Rocky Mountain juniper, ponderosa pine, and limber pine communities adjacent to and encroaching into grasslands and shrublands. The cool moist conifer zone, which is composed of Douglas-fir, lodgepole pine, and Engelmann spruce communities, occupies a relatively narrow mid-elevation range in mountains. The highest and coldest elevations are characterized by communities of sub-alpine fire, lodgepole pine, Engelmann spruce, and whitebark pine. Riparian communities and wetlands occupy the wettest sites along rivers and streams and sites where water is available in plant rooting zones for a substantial part of the growing season.

### **Processes of Vegetation Change**

Disturbances, whether human-caused or naturally occurring, affect plant communities by creating patterns of varying plant species and age classes across the landscape. Changes in plant community composition and structure and function can be relatively sudden, resulting from wildfire, floods, logging, and mining or more subtle, resulting from fire suppression, drought, insects, disease, or aging of dominant species in the canopy overstory.

Past management has contributed substantially to the vegetation condition and status of ecological succession by changing cycles and frequency of fires and susceptibility of forest vegetation to insects and disease. Prior to

European settlement in the mid-1800s, American Indians influenced the range of vegetative conditions mostly through their liberal use of fire to improve forage for horses and assist in hunting. Since the mid-1800s, agriculture, timber harvest, mining, livestock grazing, road construction, introduction of exotic species, and fire suppression have been the dominant factors of change that have shaped vegetation patterns in the PA.

### ***Forest Insects and Disease***

Reduced fire frequency in the last century has allowed forest stands to become overstocked, with a high proportion of decadent trees that are stressed from competition and recent region-wide droughts. Stress, higher densities of most forest stands, and conifer colonization of open woodlands, meadows, and grasslands and shrublands have rendered many stands susceptible to insect infestation and disease.

Insects that affect the health of trees in the PA include: mountain pine and pine engraver beetles, species that attack the pines; western spruce budworm, a species that attacks Douglas-fir and spruce; and Douglas-fir beetle, a species that attacks Douglas-fir. Mountain pine beetles typically attack the largest, oldest trees in a stand (Despain 1990). These trees are the highest value for timber and the most valuable for cavity nesting wildlife. AMS Figures 2-6, 2-7, and 2-8 depict changes in environmentally damaged trees by bark beetle infestations over a period of 20 years from 1984 to 2004. The current mountain pine beetle infestation in the planning area is epidemic and began in the year 2000 (Sturdevant 2007). Mountain pine beetle has infested over 15,500 acres of BLM lands, with the majority of infested stands in the Big Hole, Jefferson, and Missouri watersheds. For the past couple years, the planning area has received essentially “normal” amounts of precipitation, and climatologists have suggested that the long-standing drought in western Montana is now over. Although this change has been demonstrated in improved growing conditions for most bark beetle hosts and resultant reductions in beetle populations, long-term drought conditions are not easily overcome (DeNitto 2006). This is evidenced by an increase in both mountain pine beetle and western spruce budworm within BLM lands in the PA from 2005 to 2006 (USDA-FS 2005c and USDA-FS 2006a).

Similar to mountain pine beetle, western spruce budworm are influenced mainly by weather conditions. The recent drought has increased the intensity of infestation, and spruce budworm has defoliated over 91,000 acres BLM lands in the PA since 2000 (USDA-FS 2000). Budworm populations are usually highest and have the most significant effect in forests that are warm and dry, are dense with multiple crown layers, and are of poor vigor (DeNitto 2006). In 2000, only 229 acres of spruce budworm defoliation was recorded on BLM lands in the PA (USDA-FS 2000). Conversely, in 2006 defoliation was recorded on over 50,000 acres, mainly occurring on BLM lands in the Big Hole, Jefferson, and Missouri

watersheds (USDA-FS 2006a). Normally, spruce budworm does not kill trees, but reduces growth and kills tree tops. The more defoliation a tree experiences over a number of years, the higher likelihood of mortality to occur.

Larger Douglas-fir that experience heavy defoliation become stressed and thus are predisposed to be killed by attack from Douglas-fir beetle. Trees that could normally fend off bark beetle attack are weakened and then easily killed (Joy and Hutton 1990).

Douglas-fir beetle has also been slowly increasing across the BLM lands in the PA. Beetle levels are highest in the Jefferson and Missouri watersheds, with levels also currently increasing in the Big Hole due to widespread spruce budworm defoliation (Sturdevant 2007).

Recent attacks by the red turpentine beetle on ponderosa pine have also occurred in the Helena Valley, in the Jefferson watershed.

The most common forest diseases are:

- Dwarf mistletoe, the most serious and widespread disease affecting lodgepole pine in the PA and throughout its range;
- Schweinitzii root rot, in all conifer species;
- Red ring rot, mainly in pines;
- Commandra blister and western gall rust, in the pine species; and
- White pine blister rust, in whitebark pine and limber pine.

With high rates of insect and disease pathology, forest stands become much more prone to high intensity, severe fires that are stand replacing and can alter site characteristics by altering soil structure and nutrient reserves. Oliver and others (1994) report that many forest ecosystems in the northern Rocky Mountains develop naturally high levels of insect infestation and then burn severely at 100-year intervals.

## Vegetation Zones

Broad vegetation zones, generally reflecting a temperature and moisture gradient, are addressed in the following section and depicted on **AMS Figures 2-9a, 2-9b and 2-9c**. The acreage of each of the vegetation zones in the PA and Decision Area is shown in **Table 3-4**.

Vegetation in the PA is predominantly grasslands and shrublands, and subalpine conifer forests. Grasslands and shrublands occupy valley floors and lower slopes, while subalpine conifer communities are present at higher elevations in mountains. The smaller areas of transitional vegetation, dry foothills/woodlands, and cool moist conifer forests reflect a relatively steep elevational gradient that results in relatively narrow zones that support vegetation intermediate in ecological requirements of grassland and shrublands and higher elevation conifer forest.

Vegetation on land within the Decision Area reflects the predominance of land managed by BLM to be present at lower elevations. Most land in the Decision Area is grassland (45 percent) and shrubland (7 percent), and conifer forests and woodlands (45 percent). Amounts of agricultural land substantially differ between the Planning and Decision Areas (**Table 3-4**) at seven percent and 0.7 percent, respectively.

Typically, the most productive agricultural land in valleys is private, whereas land managed by BLM is not as amenable to crop production. Land managed by BLM where agricultural land is present is on the recently acquired McMasters and Ward ranches. This agricultural land is currently seeded to agronomic grass species and will be managed in the future as grasslands.

Forest communities on BLM land generally do not include high elevation montane conifer forests (1 percent). The upper elevations of most land in the Decision Area support moist conifer forests, which are important for timber production and wildlife habitat when combined

**Table 3-4**  
**Acres and Percent by Vegetation Zones in the Planning and Decision Areas**

Vegetation Zone	Acres in PA	% of Acres in PA	Acres in DA	% of Acres in DA
Grassland Zone	2,451,212	34	135,722	45
Shrubland Zone	313,385	4	19,658	7
Dry Foothills/Woodlands	1,091,820	15	114,926	38
Cool Moist Conifer Zone	800,387	11	21,738	7
Subalpine Fir Zone	1,305,766	18	1,796	<1
Wetland/Riparian	171,313	2	1,266	<1
Agriculture	562,017	8	2,186	1
Unvegetated	344,365	5	3,537	1
Water	77,693	1	265	<1
Urban	72,921	1	0	0
<b>Total</b>	<b>7,190,879</b>	<b>100</b>	<b>301,094</b>	<b>100</b>

Note: BLM surface ownership has increased to approximately 307,309 acres since release of the Draft RMP/EIS. These additional acres are predominantly grasslands/shrublands with some woodlands.

with drier mid elevation forests and forestlands adjacent to National Forest (USFS) lands.

Encroachment of conifers has been mapped in the northern part of the PA (AMS Figure 2-10). Within the Decision Area, most encroachment takes place in grasslands (17 percent) and shrublands (5 percent) with encroachment also occurring in riparian areas. Douglas-fir, Rocky Mountain juniper, and ponderosa pine are species most commonly invading grasslands and shrublands; whereas, Rocky Mountain juniper more commonly encroaches into riparian areas. Conifers have invaded 250,608 acres of grassland in the PA. Approximately 14,445 acres of sagebrush and 49,803 acres of grassland have conifer encroachment in the Decision Area.

### ***Grassland and Shrubland Zone***

Grasslands and shrublands are the most productive grazing land in the PA. Grasslands are an important vegetation community as they represent 34 percent of the PA and 45 percent of the Decision Area. Sagebrush is the most dominant shrubland type within the PA. Approximately four percent of the PA is sagebrush while seven percent of the Decision Area is sagebrush habitat. Sagebrush communities are dominated by Wyoming big sage, mountain big sage, rubber rabbitbrush, skunkbush sumac, and greasewood. Wyoming big sage tends to grow within the mid to low elevations on the drier sites, while mountain big sage occurs in upper elevations under moister conditions.

Native grasslands occupy 135,722 acres of the Decision Area on a variety of topographical positions, from level valley floors, to alluvial benches, and foothills, to dry mountain slopes. Grasslands in valleys and lower toe slopes are dominated by cool-season grasses and sedges which include needle-and-thread, western wheatgrass, prairie junegrass and Sandberg's bluegrass. The warmest and driest grasslands also may have warm season species such as blue grama, prairie sandreed, sand dropseed, or red threeawn. Shrubs are minor components of these grasslands.

Grasslands in the PA have floristic components of the Mixed-Grass Prairie of the Great Plains (western wheatgrass, needle-and-thread, blue grama) and the Palouse Prairie of the Pacific Northwest (e.g., bluebunch wheatgrass, Idaho fescue, western needlegrass, and rough fescues). In general, the warmer, dryer sites, often with heavier soils, support grasslands dominated by sod-forming species typical of the northern Great Plains; whereas the higher elevation, cooler grasslands are dominated by bunchgrasses with floristic affinities with the dry regions of eastern Washington.

Typically, sod-forming grasslands east of the Continental Divide historically were subjected to heavy grazing pressure from bison and other native ungulates; whereas bunchgrasses with origins in the Palouse Prairie farther to the West received much lighter grazing pressure from native ungulates. West of the Continental Divide, bison

were relatively scarce or absent; consequently, sod-forming grasses have evolved to be more resistant to heavy livestock grazing and trampling than are bunchgrass-dominated communities. Dominant bunchgrasses such as bluebunch wheatgrass, Idaho fescue, and rough fescue are considered "decreasers", meaning that they decline in vigor and distribution with extended periods of heavy grazing by livestock.

Additionally, grasslands composed of sod forming species tend to be more resistant to the invasion and spread of noxious weeds and other invasive species. Bunchgrass communities have areas of unvegetated soil between bunches of grass, which is susceptible to colonization by noxious weeds. Many of the bunchgrass communities in the PA have been infested with noxious weeds including spotted knapweed, leafy spurge, and Dalmatian toadflax.

At the upper elevation contacts of grasslands with forest communities and woodlands, encroachment by conifer species into grasslands is taking place as a result of fire suppression. Prior to effective fire suppression, foothill grasslands were maintained free of invading trees and shrubs by periodic fires. With successful fire suppression over the last century, many grasslands are becoming woodlands or shrublands, with an associated loss of habitat features provided by grasslands (e.g., livestock and wildlife forage, especially on big game winter ranges; and breeding sites for wildlife adapted to grasslands). Additionally, increased tree and shrub growth increases the risk of high severity fires that would alter soil and vegetation characteristics, increasing the risk of invasion by noxious weeds.

Most grass communities are adapted to frequent fire intervals (USDI-BLM 1993, Lehman 1995 and Heyerdahl et al. 2006). Bluebunch wheatgrass and Sandberg's bluegrass, respond well after fire, including stand-replacing fires. Needle-and-thread does not regenerate after summer burns, which kill root crowns. Response of Idaho and rough fescue to fire varies based on plant vigor, amount of residual litter, and season of burn (USDI-BLM 2003a).

In native grasslands, historically frequent fires burned quickly and did not severely heat the soil and remove protective plant cover. With the addition of woody fuels from encroachment of trees and shrubs, the potential for very hot fires that burn duff and litter down to mineral soil has increased. With the exposure of mineral soil, reproduction of conifers is facilitated, which initiates a type conversion, from grassland to woodland, which may not be reversible with practical management. Conifer species require mineral soil for successful seed germination and growth and do not become established as quickly in intact grasslands.

The most extensive shrublands in the PA are dominated by two types (i.e., subspecies) of big sagebrush (i.e., Wyoming big sage and mountain big sage). There are

19,658 acres of shrub-dominated communities in the Decision Area. It is important to distinguish between the two subspecies because they have ecological differences that are relevant to management. These two forms of big sagebrush differ in their moisture requirements, seed germination characteristics, and importance to wildlife (Morris *et al.* 1976; Tisdale and Hironaka 1981). Wyoming big sage grows on drier sites, on shallow soils in the 8 to 12 inch precipitation range. This subspecies is most common on valley floors and lower slopes in the Three Forks-Townsend area and in the vicinity of Butte, eastward through the PA (Morris *et al.* 1976). Wyoming sagebrush is preferred by sage grouse.

Mountain big sage is most common in the Helena and Shields River valleys, above 6,000 feet elevation, where it contacts the forest margin and high elevation fescue grasslands. Mountain big sage tends to more readily re-establish itself after fire and on sites of disturbance (e.g., road cuts, rodent diggings, and abandoned fields) than Wyoming big sage (Morris *et al.* 1976).

Other important shrubs often growing in association with big sagebrush include rubber rabbitbrush, skunk-bush sumac, greasewood, spineless horsebrush, low sage, silver sage, bitterbrush, and shrubby cinquefoil. Serviceberry, chokecherry, wild rose, and species of gooseberry and currant are common on sites with elevated moisture such as ravines and cooler slopes. Common understory species include western wheatgrass, Sandberg's bluegrass, Great Basin wildrye, squirreltail, Indian rice grass, and western needlegrass. Forbs are generally abundant in big sagebrush communities.

Big sagebrush communities occur on a variety of slopes, exposures, and soil types. On the driest sites, bluebunch wheatgrass is the dominant grass, with rough fescue and Idaho fescue becoming more common with increasing moisture. Fringed sage, broom snakeweed, prickly pear cactus, blue grama, and junegrass are usually conspicuous understory species on drier sites. On moister sites, pussytoes, yarrow, chickweed, and buckwheat are common associates (Mueggler and Stewart 1980).

Low sagebrush is one of the driest shrubland types occurring in western Montana (Mueggler and Stewart 1980), usually growing on south and west exposures, on dry, rocky soils. Low sagebrush communities usually do not form extensive landscape-level stands, but are usually part of larger big sagebrush mosaics. Grasses, such as bluebunch wheatgrass, needle-and-thread, and Sandberg bluegrass dominate the undergrowth. Non-native annual grasses, such as cheatgrass and Japanese brome, may also be present. Common herbaceous species include Hood's phlox, blue flax, lupine, and fringed sage.

The fire history of shrublands has not been firmly established, but fire was probably uncommon on drier sites because of sparse fuels, and more frequent, averaging 32 to 70 years on moister sites with greater herbaceous production (USDI-BLM 2003a). Big sagebrush and low

sagebrush are sensitive to fire and do not sprout from root crowns following fire (Howard 1999 and McMurray 1986). Amounts of grass and other vegetation to sustain fire is directly related to the amount of moisture available, consequently, drier sites occupied by drought-tolerant Wyoming big sage and low sage tend to have the least frequent fire return interval (100 years or more between fires) (USDI-BLM 2001). Moister mountain big sage communities are more likely to be growing in association with continuous grass and forb species that can carry fire. Fire return intervals in basin big sage and mountain big sage communities tend to be much more frequent, less than 50 years (Johnson 2000).

Non-lethal and mixed severity fires may burn in a mosaic pattern, leaving clumps of live sagebrush. Common sub-dominants in sagebrush communities, rubber rabbit brush, and spineless horsebrush sprout from root crowns following fire. These species tend to reoccupy burned sites more quickly than big sagebrush, but over time become decadent in absences of periodic fire.

Fire return intervals in sagebrush communities are influenced to a large extent by amounts of herbaceous fuel available to carry fire. Livestock grazing has probably influenced fire return intervals especially on sites where little herbaceous biomass has accumulated. Invasion of sites by non-native cheatgrass also has the potential to substantially alter fire cycles. Cheatgrass is extremely flammable causing stands to burn with much greater frequency, as often as every few years. With drastic shortening of fire return intervals, sagebrush can be effectively eliminated and replaced by grassland dominated by cheatgrass, rabbit brush, and fire-resistant forbs, often invasive species. This type of conversion is common in the Great Basin but is not yet prevalent in the Butte PA.

As with grassland habitats, sagebrush communities within the Planning Area are also experiencing an increase in conifer species. Douglas fir and other conifer species most likely encroached into sagebrush and grasslands in the past but surface fires were probably frequent enough to kill many of these trees before they reached fire-resistant size (Heyerdahl *et al.* 2006). Heyerdahl *et al.* (2006) found that prior to 1855, fires occurred frequently enough in southwest Montana to limit Douglas fir encroachment (establishment) but not so frequently that they eliminated mountain big sagebrush. These fires are also suspected to have burned in a mosaic pattern across the landscape, retaining a seed source for the re-establishment of sagebrush. Johnson *et al.* (2006) found several studies that reported declines in shrub (including sagebrush) and herbaceous vegetation throughout the Intermountain West as juniper increases in dominance.

Bitterbrush is more common west of the Continental Divide, but it is present in PA, usually as small patches of only a few acres, generally restricted to rather dry, rocky, southern exposures (Mueggler and Stewart 1980). Bitterbrush is palatable to livestock and wildlife, being

especially important on big game winter ranges. Bitterbrush is usually found in association with dry site Douglas-fir, ponderosa pine, bluebunch wheatgrass, Idaho fescue, and rough fescue.

Bitterbrush is more resistant to grazing early and late in the season than during summer. Plants heavily grazed early in the season tend to produce more biomass than plants grazed at moderate intensity late in the growing season. Plants grazed during dormant periods recover much more quickly than plants grazed during the peak of the growing season (McConnell and Smith 1977).

Bitterbrush is generally considered susceptible to fire, often taking 15 to 30 years to recover following moderate to severe fires; however, the potential to sprout after fire is variable depending on fire severity and season, genetic composition, carbohydrate reserves, and age. Bitterbrushes growing in association with plant communities that have relatively frequent fire intervals tend to sprout more frequently than bitterbrush growing on sites where fire has been excluded for long periods (Agee 1994). Low intensity, high frequency fires favor regrowth from sprouting, whereas higher intensity, less frequent fires favor regeneration by seed.

Curlleaf mountain mahogany dominates communities that typically occupy hot, dry rocky and limestone soils or rock outcrops on slopes. It is one of the few species that meet the protein requirements for wintering deer and is heavily favored by bighorn sheep in summer. Wyoming big sagebrush, rubber and green rabbitbrush and juniper are often present in mountain mahogany communities. Bluebunch wheatgrass dominates the undergrowth; needle-and-thread may be present in varying amounts.

Mountain mahogany often forms dense, closed-canopy stands that have little understory or interspecific competition. Where ponderosa pine and Douglas-fir are also present, mountain mahogany may eventually be overshadowed by tall trees and be shaded out (Ross 1999). Typically, seed production is episodic, often producing copious amounts of seed that germinate under the canopy of mature plants but then die from damping off. Mountain mahogany usually germinates and becomes established on bare mineral soil. The increase in cheatgrass and other invasive species has inhibited reproduction of mountain mahogany in some areas of the West. Mountain mahogany is usually killed by fire, even fires of low intensity, and does not resprout (Ross 1999). Closed, mature stands may not have sufficient understory to carry fire, so fire-induced mortality may be confined to edges of stands. Regeneration by seed may occur after fire if the soil is not rapidly colonized by other competitive plants.

Factors other than fire that can cause extensive mortality include attack by sapsuckers and other woodpeckers, which attack intermediate age class trees and girdle the stems (Ross 1999).

### ***Dry Foothills/Woodlands Zone***

The zone is a transition area between the dryer Grassland and Shrubland Zone and the Cool Moist Conifer Zone. This zone has historically been characterized by relatively open stands of limber pine, Rocky Mountain juniper, ponderosa pine, and Douglas-fir on rocky, dry slopes. The relative proportions of these species vary depending on site conditions and fire history (Arno 1980), ranging from mixtures of all four species to stands dominated by one or two species. BLM forest inventory compiled in 2005 for the Decision Area clearly shows that the dry forest types continue to mature in a heavily overstocked condition that is unhealthy, declining in productivity, and unsustainable. These forest stands are crowded, averaging 600 to 700 trees per acre with many sampled stands having well over a 1,000 trees per acre. These stocking levels are indicative of a high potential for insect epidemic and/or large-scale disturbance events with severe effects similar to those that occurred recently with the wildfires of 2000. Stands with these high stocking levels are also undergoing bark beetle infestations and the widespread western spruce budworm defoliation now being seen in many areas. The impacts from these past events are expected to be long-term as well, with deforestation occurring on approximately a quarter to a half of severely affected stands.

Conifer species in this zone are not as productive for timber or fiber because the trees are usually slow growing, often have branches and limbs growing in the lower boles, and are more costly to handle when removed for commercial harvest reducing economic returns when compared to timber harvesting in the higher elevation zones. Many of these forested areas produce high volumes of woody materials suitable for biomass or other forest products. This zone is often important for fire wood gathering, Christmas tree cutting, and recreation because it is easily accessible to many urban areas. Dry foothills and woodlands occupy approximately 15 percent of the PA and 38 percent of the BLM land within the Decision Area.

This zone is important seasonal and year-around wildlife habitat, often being part of big game winter range and year-round habitat for species that occupy the higher elevation forest communities in summer and lower elevation grasslands and shrublands. This zone is especially important for wolves and mountain lions, if elk or deer, their primary prey, are present.

Plant communities in this zone tend to be composed of relatively open stands of small, slow-growing trees with understories of bunchgrass. Plant communities in this zone are susceptible to invasion by noxious weeds because forest overstory cover is not sufficiently dense to shade out invasive weeds and the bunchgrass component does not compete well with weeds because of the prevalence of unvegetated areas among the relatively evenly dispersed bunchgrass clumps.

Of the conifers present in this zone, Rocky Mountain juniper appears to have the widest ecological amplitude, growing admixed with ponderosa pine and Douglas-fir at higher elevations and extending into riparian areas along the Jefferson, Madison, Gallatin, and Missouri Rivers. It forms nearly pure stands on some sites in the PA.

Juniper is important to wildlife, being a major source of forage for mule deer in winter. Juniper berries are an important food for small mammals and birds, especially waxwings. This shrubby tree is important nesting habitat for a variety of birds including chipping sparrow, robins, song sparrows, and sharp-shinned hawks (Scher 2002). Fire is a major factor controlling the distribution of woodland conifer species such as Douglas-fir, ponderosa pine, limber pine and juniper. Limber pine, juniper, and smaller conifers are readily killed by low intensity burns because of its dense lower branches with a high volatile oil content and thin bark. Juniper does not sprout after top-kill by fire, with post-fire establishment from seed. Prior to the late 1800s, more frequent fires probably maintained low densities of woodland conifers, often restricting conifers to rocky sites without sufficient fuel to carry fire. Dry Douglas-fir/ponderosa pine stands historically underwent low to moderate severity fires approximately every 5 to 20 years (Fischer and Clayton 1983). Fire maintained these stands open in structure with grass understories. Currently, most of these stands are overstocked with trees and have a closed canopy with little to no grass in the understory.

Limber pine communities grow on some of the driest sites capable of supporting trees, generally on shallow, rocky soils derived from limestone. On the driest sites, bluebunch wheatgrass is a dominant understory species with rough fescue and Idaho fescue becoming dominant with increasing moisture (Pfister *et al.* 1977). Within the DA there are approximately 7,560 acres of limber pine interspersed with Douglas-fir and ponderosa pine.

Limber pine is of low commercial value due to its growth characteristics and wood quality. The foliage of limber pine is largely unpalatable as a browse species for wildlife; however, its large high-energy seeds are an important food for birds and small mammals. Clark's nutcrackers cache seeds from limber pine, which are often found and eaten by bears.

Limber pine is especially susceptible to five-needle pine blister rust. Stands that are infected with this fungal pathogen often experience 75 to 95 percent mortality (Johnson 2001). Although infection by blister rust has not decimated populations of limber pine in the PA, extensive limber pine communities along the Rocky Mountain Front north of Helena are experiencing large-scale mortality.

Young limber pines are susceptible to low-severity fires because of their thin bark and low branches that can rapidly carry ground fire to the crown. Older trees, some

more than 500 years old, are more resistant to fire because they develop thick bark and few branches near ground level. Open savannah-like communities of Douglas-fir and ponderosa pine adapted to dry conditions occupy sites at upper elevations of grasslands and shrublands. These open stands are important to wildlife species such as flammulated owls, which utilize large snags for nesting habitat. Ponderosa pine communities are present on 16,600 acres in the Decision Area while dry Douglas-fir communities are present on 90,700 acres. At the interface of the dry conifer and grassland/shrubland communities, Douglas-fir and ponderosa pine are increasing in density and expanding into areas previously dominated by grasses and shrubs. Fire had been a primary factor in shaping the species composition and stand structure (e.g., canopy layers and dominance of trees and shrubs), but fire suppression has allowed conifers to grow into these areas. Approximately 14,500 acres of shrubland and 49,600 acres of grasslands are encroached with conifers in the PA. Increased density and expansion of conifers reduces the density and vigor of sagebrush and grasses through shading and competition for nutrients and water. Common species associated with ponderosa pine and dry site Douglas-fir stands include ninebark, pinegrass, bluebunch wheatgrass, ponderosa pine, elk, sedge, common juniper, skunkbush sumac, bitterbrush, chokecherry, spirea, rough fescue, and mountain snowberry. In the past, frequent low-intensity fires maintained the high cover of grasses and sprouting shrubs, with lower cover of fire-sensitive sagebrush species.

Conifer encroachment into grasslands and shrublands has expanded because of decreased intervals of fire.

This zone is important from a fire management perspective because it is often part of the wildland-urban interface that separates forests with a high-fire potential from urban and residential areas where fires and smoke pose a risk to human health and property. Conifer species in this zone often encroach into grasslands and shrublands tending to exacerbate the threat of wildfire. **Table 3-5** shows size class and density of dry forest types by 4<sup>th</sup> field HUC within the Decision Area.

### ***Cool, Moist Conifer Zone***

The cool, moist conifer zone represents approximately 11 percent (800,387 acres) of the PA and seven percent (21,738 acres) of the Decision Area. Cool moist conifer communities are the most productive timber-producing forest type in the PA. They also are important summer and fall habitat for elk, deer, black bears, small mammals, migratory birds, and woodpeckers. Large Douglas-fir snags in this forest zone are important denning and nesting sites for cavity-nesting birds and mammals.

The majority of this zone is dominated by lodgepole pine and Douglas-fir with lesser amounts of Engelmann spruce and subalpine fir on colder and moister sites, usually at the higher elevations, or extending downslope in cold-air drainages. Douglas-fir occupies the lower

**Table 3-5  
Size Class and Density of Dry Forest Types in the Decision Area**

Watershed	Dry Douglas-fir Medium and Large Size Class High Density		Ponderosa Pine Medium and Large Size Class High Density		Ponderosa Pine and Douglas-fir Medium and Large Size Class Low Density		Limber Pine All Sizes and Densities		Ponderosa Pine and Douglas-fir Seedling Sapling and Pole Class All Densities	
	Current	Historic <sup>1</sup>	Current	Historic <sup>1</sup>	Current	Historic <sup>1</sup>	Current	Historic <sup>1</sup>	Current	Historic <sup>1</sup>
Big Hole	13,733	6,690	0	78	5,272	3,010	10	60	890	3,247
Blackfoot	0	86	0	0	368	78	0	0	0	0
Gallatin	400	61	0	0	133	13	0	0	0	0
Jefferson	19,123	4,875	64	39	8,484	3,337	3,199	405	1,066	3,479
Missouri	23,200	5,597	10,773	1,368	17,502	4,692	4,290	338	4,223	6,352
Yellowstone	1,331	248	0	0	800	228	65	0	0	287
<b>Total</b>	<b>57,787</b>	<b>17,557</b>	<b>10,837</b>	<b>1,485</b>	<b>32,559</b>	<b>11,358</b>	<b>7,564</b>	<b>803</b>	<b>6,179</b>	<b>13,365</b>

<sup>1</sup> Historic acres were derived from modeling vegetation conditions over a 500-year period using the SIMPPLLE model, run approximately 30 times, to determine "average" historic condition. See **Appendix D** for more details.

elevations of this zone in association with understory shrub and forb dominants including blue huckleberry, heart-leaf arnica, kinnikinnick, beargrass, twinflower, and elk sedge (Pfister *et al.* 1977). These forest vegetation types are also maturing with higher stocking densities as indicated by the forest inventory compiled in 2005. Across the Decision Area, these forests have very low percentages of young stands due in part to successful fire protection in the past and limited treatment activities over the last planning cycle. They are also subject to an increasing potential for insect outbreak as they continue to age and overstory canopies continue to close with the ground vegetation continuing to decline. Moist Douglas-fir communities are present on 5,053 acres of the DA. Lodgepole pine thrives following disturbances such as fire, logging, and insect infestation and is relatively short-lived, becoming decadent in absence of periodic replacement regimes that initiate reproduction. Lodgepole pine is present in the PA as nearly pure stands or intermixed with other conifers. Even aged, single-storied stands occur where favorable fire, seed, and climatic conditions have combined to produce large numbers of seedlings at one time. Dwarf mistletoe is a common disease in many lodgepole stands in the DA. Lodgepole pine communities are present on 16,481 acres of the DA.

Lodgepole pine has a broad ecological range, growing in habitats such as frost pockets, soils with high water tables, and soils low in fertility. Typically, lodgepole pine is a seral or pioneer species and is eventually replaced by Douglas-fir or subalpine fir; however, on some sites lodgepole pine may be a climax species, meaning it persists over a long period of time and is not replaced by other tree species. Typical associates of lodgepole pine include pinegrass, elk sedge, beargrass, twinflower, blue huckleberry, and grouse whortleberry (Pfister *et al.* 1977). Forest communities in this zone are susceptible to severe, stand-replacing wildland fire. Following fire, lodgepole pine often becomes the dominant tree species because of the proportion of serotinous,

fire resistant cones found in the PA that can hold high numbers of viable seeds for twenty years or more, which often survive intense crown fire such as those seen in Yellowstone Park in 1988. Lodgepole pine also has a high rate of seedling survival, rapid growth of young trees, early seed production, prolific seed production, and high seed viability (Anderson 2003).

Currently, this zone has a higher density of sub-dominant trees in the understory and higher levels of fuel than with conditions prior to the early 1900s and, consequently trees are stressed and vulnerable to insects and high-severity, stand-replacing fires.

In cool moist Douglas-fir areas high-fuel conditions have developed as a result of fire suppression and insect infestations in this zone. Instead of having mixed intensity fires that occur every 30 to 60 years and are typical of moderate severity fire regimes (Agree 1998), the risk of high-intensity, large scale fire has greatly increased in this zone over most of the PA. High-intensity, stand-replacing fires can adversely affect many resources such as soils, water quality, wildlife, noxious weed invasions, and fisheries, including threatened and endangered species.

Fire management in cool, moist forest types is addressed by Crane and Fisher (1986). They state that protection from unwanted fire is a major fire management consideration in stands where ignition of live and dead fuels could result in severe fire behavior. It may be difficult and impractical to abate the fire hazard and reinitiate normal fire intervals in such stands except in conjunction with timber harvest operations and other mechanical treatments. Fiedler (1996) suggested that prescribed fire in dense stands or those with understory ladder fuels could fatally damage the already stressed overstory trees. Logging and thinning might be appropriate pre-burn treatments before prescribed fire can safely be introduced into dense forests.

### Subalpine Fir Zone

Subalpine fir and Engelmann spruce communities occupy the highest, coolest elevations in the PA. Subalpine fir communities are present on 1,796 acres of the Decision Area.

They have minor importance for timber production and grazing, but are important hydrologically and for wildlife habitat. High snow accumulations in this zone provide most of the seasonal runoff in rivers and streams and recharge groundwater aquifers that provide base flow during the driest parts of the summer. Plant communities in this zone are important habitat for pine marten, boreal owl, lynx, wolverine, elk, mule deer, grizzly bear, black bear, blue grouse, Clark's nutcracker, and migratory birds. This community occupies 18 percent (1,305,766 acres) of the PA but only one percent (1,796 acres) of the DA.

**Table 3-6** shows size class and density of cool moist and subalpine fir forest types by 4<sup>th</sup> Field Watershed within the Decision Area. This zone, dominated by subalpine fir, Engelmann spruce, lodgepole pine, and whitebark pine, extends from the cold limits of Douglas-fir upslope to timberline. Above the elevational cold limit of lodgepole pine (9,850 feet) Engelmann spruce and subalpine fir often co-dominate to form extensive forests to the upper limit of tree growth. Spruce and subalpine firs are extremely cold hardy and at timberline both species develop low-growing gnarled growth forms, known as krumholtz. Common understory species in this zone include pinegrass, elk sedge, beargrass, twinflower, blue huckleberry, and grouse whortleberry.

Spruce requires a mineral soil seedbed for successful establishment; subalpine fir is able to establish in duff and litter because of its rapid root growth. Consequently, subalpine fir seedlings usually outnumber spruce/fir stands even where spruce dominates the overstory. Spruce and subalpine firs are very fire sensitive and are

generally killed even by low-intensity fires. Typically, forests in this zone experience stand-replacing fires at intervals of about 150 years (Uchytel 1991). Lodgepole pine ecology in this zone is similar to its ecology in the lower moist, cool conifer communities.

Infrequent stand-replacing fires are necessary to maintain whitebark pine in early to mid-seral stands because of the rapid rate of ecological succession (Howard 2002).

Lodgepole pine often forms single-species, even-aged stands following fire. In areas where spruce is abundant and lodgepole pine is scarce before fire, spruce rapidly establishes if adequate numbers of seed trees are present in adjacent unburned areas. If lodgepole pine is present in the preburn community, it usually becomes dominant, overtopping spruce seedlings; however, because spruce seedlings are shade tolerant, they usually survive and eventually become the largest trees in the stand in the absence of fire (Uchytel 1991).

Whitebark pine generally grows on cold, moist sites, often exposed, rocky ridges near timberline. Regeneration is dependent on Clark's nutcrackers, which remove the large seeds and bury the seeds in shallow caches, usually in open areas and burns, for future food. During years of good seed production, Clark's nutcrackers cache more seeds than they consume, with unretrieved seeds germinating to become new trees (Howard 2002).

Whitebark pine communities experience frequent fires as a result of lightning strikes on exposed, windswept ridges; however fires usually do not spread and are low intensity because of discontinuous canopies and sparse understory fuel.

Natural regeneration of whitebark pine is affected by five-needle pine blister rust, fire exclusion, bark beetles, seed predation, and fungal disease, with the greatest threat being posed by blister rust. Seed predators include Clark's nutcrackers, ravens, chipmunks, red squirrels,

**Table 3-6**  
**Size Classes and Density of Cool and Moist and Subalpine Fir Forest Types in the Decision Area**

Watershed	Cool and Moist Forests Medium and Large Size Classes – High Density		Cool and Moist Forests Medium and Large Size Classes – Low Density		Cool and Moist Forests Seedling, Sapling, and Pole Size Classes – All Densities	
	Current	Historic <sup>1</sup>	Current	Historic <sup>1</sup>	Current	Historic <sup>1</sup>
	Big Hole	5,533	2438	1,320	NA	4,335
Blackfoot	0	46	460	NA	0	0
Gallatin	0	0	0	NA	0	0
Jefferson	1,493	1518	232	NA	610	549
Missouri	6,187	4262	1,153	NA	1,097	1,174
Upper Clark Fork	262	0	0	NA	0	0
Yellowstone	551	158	301	NA	0	0
<b>Total</b>	<b>14,026</b>	<b>8,422</b>	<b>3,466</b>	<b>NA</b>	<b>6,042</b>	<b>6,107</b>

<sup>1</sup> Historic acres were derived from modeling vegetation conditions over a 500 year period using the SIMPPLLE model, run approximately 30 times, to determine "average" historic condition. See **Appendix D** for more details.

pine grosbeaks, grizzly bears, and pocket gophers. Whitebark pine communities are present on less than 30 acres of the Decision Area.

### ***Wetlands and Riparian Communities***

A riparian zone is the swath of land adjacent to a river or stream and is the transition area between terrestrial uplands and the stream. The size of the riparian zone will vary depending on the landscape. It may be a small corridor of vegetation immediately adjacent to the stream or a large network of wetlands.

There are 346 miles of rivers and streams with associated riparian vegetation in the Decision Area. Riparian areas and associated wetlands are some of the most important habitats in the PA for providing ecological functions and values. Riparian areas are the green strips bordering springs, streams, and other bodies of water. They include wetlands, stream channels, and vegetation adapted to soil and moisture conditions transitional between uplands and wetlands. These areas support the highest densities and diversity of breeding birds, including bald eagle, great blue heron, Swainson's hawk, waterfowl, red-tailed hawk, owls, and numerous migratory birds. Riparian areas provide crucial habitat for furbearers such as otter, beaver, mink, and muskrat; white-tailed deer; moose; ring-necked pheasant; red fox; and coyote. Riparian and wetland areas are especially important to the livestock industry. Livestock tend to congregate in wetland and riparian areas and utilize the vegetation more intensely than on adjacent upland sites. Riparian areas and wetlands often produce 10 to 15 times the amounts of forage compared to drier upland sites.

Grazing can have substantial effects on vegetation and soils, resulting in decreased vigor and biomass and alteration of species composition and diversity. Improper grazing of riparian areas can affect the streamside environment by changing and reducing riparian vegetation. Channel morphology can be changed through: widening the streambed, making it shallower; alteration of water flows and velocity; and, decreases in water quality. Water quality changes associated with improper grazing include increased water temperatures, nutrients, suspended sediments, and bacterial counts.

One of the most extensive human-caused influences on riparian zones in the western United States has been grazing (Ehrhart and Hansen 1998). Livestock grazing has been implicated in declining reproduction of cottonwood and aspen communities and degradation of water quality in streams supporting cold-water biota. Extensive livestock grazing can result in a decline in the recruitment of woody species, a reduction in understory diversity, increased erosion, changes in the channel morphology and degraded water quality.

The BLM manages grazing in riparian areas through seasonal constraints on cattle numbers and times of access and through fencing and placement of water

sources and salt in upslope areas to encourage movement of livestock away from riparian areas.

Riparian areas also are critical for stabilizing streambanks and shading to reduce water temperatures of streams that support trout and other cold water species. Sediment generated from streambank erosion is an important source of water quality impairment.

Roads in the PA often are within or close to riparian areas, which can adversely affect these areas by vegetation removal, dust generation, sediment delivery to streams and associated wetlands, fragmentation, by preventing channel migrations, and by increasing human activities such as camping and OHV use. Historic mining has often included dredging and other techniques that have altered riparian areas and streams. Riparian areas can also be degraded by noxious weed infestations and recreational activities.

Wetlands are regulated under Section 404 of the Clean Water Act as a subset of Waters of the U.S. Wetlands are defined as areas that are inundated or saturated by surface water or groundwater at frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (U.S. Army Corps of Engineers 1987). Wetlands can consist of herbaceous species, shrubs, and trees.

Riparian shrub communities typically are dominated by red-osier dogwood, willows, and water birch. Douglas-fir and juniper colonize the drier margins and terraces of riparian areas in the absence of frequent flooding.

Currently, riparian vegetation conditions in the Decision Area vary from healthy native vegetation to severely impacted stands with the majority of plants being introduced species. In degraded riparian areas, disturbance processes (such as frequent flooding), which create and maintain riparian communities have been altered and fire is infrequent. As a result there are larger numbers of conifers, especially Rocky Mountain juniper, in valley bottoms and aspen, willow, and cottonwoods are decadent and do not reproduce effectively.

Heavy browsing and trampling by livestock and wildlife have stressed localized areas of riparian vegetation and contributed to streambank instability and delivery of sediment to streams. The role of beavers in creating higher water tables by dam construction and regenerating woody species has been eliminated or reduced in many areas.

In some riparian areas, the loss of water storage from beaver dams and/or the loss of riparian vegetation have changed site potentials and vegetation adapted to drier conditions has increased. Consequently, species adapted to drier site conditions have become more prevalent (e.g., Kentucky bluegrass, streambank wheatgrass, silver sagebrush, and shrubby cinquefoil).

BLM has developed a protocol for determining proper functioning condition of riparian areas. This protocol entails field observations of hydrologic, vegetative, and erosional attributes that indicate functional status of riparian communities. Hydrologic attributes include flow regimes, flood frequency, presence of beaver dams, sinuosity, width/depth ratios, gradient, and riparian zone width. Vegetation attributes include composition, age structure, indicator species, root masses, bank cover, vigor, and woody debris recruitment potential. Erosion attributes include floodplain and channel characteristics, point bar cover, lateral stream movement, stability, and water/sediment balance.

Riparian areas are considered functioning properly when they have adequate vegetation and landforms to:

- Dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality;
- Filter sediment, capture bedload, and aid floodplain development;
- Improve flood-water retention and groundwater recharge; or
- Develop root masses and stabilize streambanks against cutting action.

Areas are considered functional—at risk when they are functioning properly to some degree but existing soil, water, or vegetation conditions make them susceptible to degradation. Nonfunctioning riparian areas are identified when conditions are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows.

For fire and fuels management projects, BLM has developed a Riparian Management Zone (RMZ) Strategy (USDI-BLM 2003a) for forested and non-forested riparian areas. Boundaries of RMZs around ponds, lakes, and perennial streams in forested habitat generally would be the width of one site-potential tree height (two site-potential tree heights for waters with special status fish species). In non-forested rangeland ecosystems, RMZs extend to the edge of riparian vegetation; extent of seasonally saturated soil; or to the extent of moderately and highly unstable areas; or if trees are present, the width of one site-potential tree height.

Of the 346 miles of riparian vegetation along rivers and streams in the DA, 150 miles (43 percent) are in proper functioning condition, 147 miles (42 percent) are functioning at risk, 40 miles (12 percent) are non-functional, 1 mile (less than one percent) are unknown, and 8 miles are woody draws (2 percent).

### ***Cottonwood***

Black cottonwood is a common overstory species in riparian communities along rivers and larger streams with common shrubs including western snowberry, serviceberry, red-osier dogwood, and wild rose.

Cottonwood communities in the PA are most extensive along the Missouri, Gallatin, and Jefferson Rivers, and other perennial streams. Cottonwood communities occupy riparian zones of rivers and streams that have periodic over-bank flooding. Riparian plant communities are "pulse-stabilized" systems maintained in continual ecological transition (disclimax) through the pulse of periodic flooding. Scouring by floodwaters and deposition of water-borne sediment (alluvium) creates optimum habitat for seedlings of cottonwood and willow species. Seeds of these species germinate almost exclusively on recently deposited, fully exposed alluvium.

According to Mahoney and Rood (1993), the following factors are important for cottonwood seedling establishment: 1) peak flows to prepare germination sites; 2) receding flows at the time of seed release to expose new germination sites; 3) gradually declining water table to limit seedling drought stress and promote root growth; 4) adequate summer flows to meet high water demands; and 5) adequate autumn flows to maintain water balance and over-winter survival. A detailed discussion of life history, ecology, and conservation of North American cottonwood forests is presented by Braatne and others (1996), Johnson (1992), and Hansen and Suchomel (1990). Fluvial processes, associated with establishment and maintenance of riparian forests, are discussed by Scott and others (1996).

Black cottonwood is frequently damaged by low-severity fires, with young trees with thinner bark being more susceptible. Following fire, black cottonwood sprouts from stumps, root crowns, and lateral roots (Steinberg 2001). Rate of sprouting is highest when plants are dormant, and in young plants. Sprout survival is highest when the water table is near the surface. Fire can improve regeneration from seed by increasing light penetration and exposing mineral soil. Exposed mineral soil is essential for successful reproduction from seed.

### ***Aspen***

Aspen has historically occupied moist sites from the upper margins of grasslands and shrublands, extending well into the higher Cool Moist Conifer Zone. Aspen is intolerant of shade and grows in even-aged, single-storied stands. Aspen is relatively short lived, usually maturing in 60 to 80 years, followed by a rapid decline in vigor with increased susceptibility to disease. As aspen stands mature and decline in growth and vigor, conifers begin to dominate the sites. Without fire, logging, or some other disturbance, aspen does not effectively reproduce (DeByle and Winokur 1985).

Aspen stands are relatively rare in Montana when compared to the other Rocky Mountain States, but where they occur they support a diverse avifauna. Large stands of pure aspen can be found in southwestern Montana, primarily on the Beaverhead-Deerlodge and Gallatin National Forests and in the Beartooth Mountain portion of the Custer National Forest. It is often the only broad

leafed tree within coniferous forests and therefore provides unique foraging substrates for a variety of insectivorous birds. Its suckers, twigs, and bark are used by wintering ungulates, particularly deer, elk, and moose. Snowshoe hares and cottontail rabbits feed on its twigs and buds, while ruffed grouse are highly dependent on aspen buds in winter. Aspen also provides cavities and snags for cavity dependant wildlife.

Aspen trees are in poor condition over most of Montana. Most of the aspen remaining in the state are in the older age classes and are in critical need of regeneration. Older stands are usually less vigorous and least likely to regenerate successfully. Many of these stands are currently being crowded out by competing conifers and aspen and will eventually be lost from the site. In addition, pure and mixed stands in the older age classes are of low vigor and are often heavily infested with pathogens. Effective fire suppression over the past 50 years has permitted competition and disease to reduce clone vigor to levels lower than would be expected under natural conditions. Compounding the situation, fire suppression has drastically reduced fire-induced regeneration in recent years resulting in few young aged stands.

**Noxious Weeds**

Noxious weeds, designated by state law and county weed boards, are non-native species that invade areas of native vegetation and replace native species. They are aggressive invaders, especially of disturbed soils, and decrease habitat value for wildlife, reduce range productivity for livestock, and increase costs for other land management activities.

Thirteen species of weeds are known to be well established on about 20,000 acres in the Decision Area (Table 3-7).

A substantial number of these infestations occur adjacent to roads, power lines, streams, ditches, and canals indicating vehicles and water are primary carriers of weed seed. Weed spread also occurs through direct human contact, wildlife use and livestock use. This includes weed seed and plant parts adhering to human clothes and weed seeds and parts adhering to animal hair and passing through their digestive system. Noxious weeds and non-native, invasive species are spreading rapidly in much of the Decision Area, including the Travel Planning Areas for which site-specific plans are proposed in this RMP.

Noxious weed infestations are causing adverse impacts on native plant communities, hydrological cycles, wildlife habitat, soil and watershed resources, recreation, and aesthetic values. A shift from shrub and bunchgrass vegetation to noxious weeds decreases wildlife forage and species diversity and increases soil erosion.

Any habitat type that has been disturbed or is in poor ecological condition is subject to noxious weed invasion. The lack of a forest overstory and the bunchgrass structure of many native grasslands and shrublands render them susceptible to weed invasion and infestation. Spotted knapweed, Dalmatian toadflax, and leafy spurge are the most widespread and frequent weeds.

Noxious weeds in coniferous forest habitat types (mostly the Dry Foothills and Woodlands Zone) are the same species that have invaded grasslands and shrublands. The density and vigor of noxious weed populations are inversely related to shading and competition from overstory trees, seedlings, and saplings. In forests, noxious weeds are usually found in open forest stands that have low tree densities and cover because of moisture limitation, or other disturbance.

**Table 3-7**  
**Acres of Noxious Weeds by 4<sup>th</sup> Code Watershed in the Decision Area in 2005**

Species	4 <sup>th</sup> Code Watershed <sup>1</sup>					
	Big Hole	Blackfoot	Gallatin	Jefferson	Missouri	Yellowstone
Canada thistle	354		5	140	78	5
Dalmatian toadflax	1,490		5	3,805	1,080	4
Diffuse knapweed				11	12	
Dyers woad						
Field bindweed				8		
Houndstongue	485		5	2,230	787	108
Leafy spurge	23		65	954	1,047	99
Oxeye daisy						
Russian knapweed				1	213	
Spotted knapweed	1,192	20	129	1,528	3,370	72
Sulfur cinquefoil				1		
Whitetop				55	16	
Yellow toadflax	108		5	172	81	22
<b>Total</b>	<b>3,652</b>	<b>20</b>	<b>214</b>	<b>8,905</b>	<b>6,684</b>	<b>310</b>

<sup>1</sup> No data indicates the species has not been observed in the unit, not absence of the species from the unit.

Effects of wildland fire and fire-suppression on the spread and introduction of noxious weeds are concerns because forest canopy cover has been lost in many areas that were formerly shaded. Prior to the fires, shading by conifers inhibited noxious weeds from spreading into areas with unburned overstories. The proliferation of noxious weeds may alter post-fire succession.

The Butte Field Office utilizes the Integrated Weed Management approach for noxious weed control in all the resource programs negatively impacted by weeds and works cooperatively with other federal, state, and county entities in the common goal of noxious weed control.

## FISH

The PA contains a variety of stream networks ranging from headwater stream systems to major river systems. The PA also contains ponds, lakes, and reservoirs of varying sizes. Fisheries in the PA include high-quality coldwater fisheries in rivers and streams and warm water fish communities in lakes, reservoirs, and larger river systems.

A general overview of conditions and trends of aquatic resources includes the following:

- Currently, native fish species (such as Yellowstone and westslope cutthroat trout, bull trout and Arctic grayling) that were historically common throughout the PA are either uncommon or have been locally extirpated. The loss of native species is mainly due to competition with non-native species, hybridization with non-native species, loss of habitat and over harvest.
- Special-status species (bull trout, fluvial Arctic grayling, westslope cutthroat trout, Yellowstone cutthroat trout, and northern red belly and fine scale dace hybrid) are located throughout portions of the PA and some require special management direction dictated by interagency Memoranda of Understanding and Conservation Plans.
- Water quantity and water quality have been affected by management activities, which can become cumulative and produce environmental changes across the landscape. These activities include fire and fire management, road development, mineral development, livestock grazing practices, vegetation alteration (timber harvest, forage production), alteration of flow regimes (by placement of dams and diversions), and crop production. Other factors such as noxious weeds, wildfire, and drought have also affected water quantity and quality.
- A large portion of riparian areas in the Decision Area are not in proper functioning condition (approximately 56 percent).
- Boundaries of the **Decision Area** have changed and land adjustment (disposal or acquisition) may require different land management activities.

The current condition of aquatic resources is reflective of many types of land use activities that have occurred on state, federal, and private land. The PA contains approximately 7,638 river and stream miles and 60,976 acres of lake/reservoirs in the nine primary 4<sup>th</sup> field HUCs. Approximately 239 miles of perennial rivers and streams are found within the Decision Area (**Table 3-8**). BLM has lands adjacent to lakes and reservoirs in the PA, but does not specifically manage these water bodies.

HUC	Miles in the PA	Miles in the DA	Acres in the PA
Blackfoot	181.8	1.9	302
Big Hole	594.3	57.7	923
Boulder	600.6	37.8	558
Gallatin	1,231.1	0.05	1,098
Jefferson	438.8	30.3	1135
Shields	695.6	0.0	651
Upper Missouri	2,089.5	107.7	46,411
Upper Clark Fork	687.9	0.8	7,965
Yellowstone	1,118.3	3.1	1,933
<b>Total</b>	<b>7,637.9</b>	<b>239.35</b>	<b>60,976</b>

Many variables within a watershed can affect or influence the condition of aquatic resources. These variables include but are not limited to: land use practices, ownership, surface, and groundwater quality and quantity, and riparian habitat condition. **Table 3-9** presents conditions of select activities within the nine primary 4<sup>th</sup> field HUCs across the PA. Appendix J of the AMS generally describes the watersheds within each 4<sup>th</sup> field HUC.

### ***Habitat and Stream Condition***

Stream conditions vary across the PA because of the natural topography and natural and human-caused influences such as logging, mining, grazing, road construction, wildfire, landslides, drought, excessive precipitation, extreme floods, dam construction, and water diversion. These disturbances affect the morphology of streams at excessive rates (in the case of human caused influences) or may occur as more pulse-based influences associated with flooding.

Various components of fish habitat are functioning at risk or non-functional. It should be noted that stream segments on BLM land are typically short (in most cases, less than a mile), making these segments difficult to manage in trying to achieve or maintain proper functioning condition.

In the revised draft Forest Plan, the Beaverhead-Deerlodge National Forest (USDA-FS 2005a) discussed the range of aquatic habitat conditions that occur on

National Forest land. To a similar extent, these conditions also exist within the Decision Area, as often USFS and BLM land adjoin or are in close proximity to one another.

Upstream impacts from public and private land play a significant role in the stream conditions. New laws and land management techniques have reduced impacts across many of the aquatic systems on National Forest land and some improvement has occurred. In stream and riparian areas that have not recovered, poor habitat conditions continue and are exhibited by reduced pool quantity and quality, undesirable width-to-depth ratios, excessive fine sediment, reduced stream channel stability, lack of woody debris, excessive daily and seasonal temperature changes, dewatering and poor water quality (USDA-FS 2005a).

Fish migration and upstream movement are often limited by natural and human influenced fish passage barriers. **Table 3-9** contains information provided by MFWP (2005) regarding the number of fish barriers by watershed across the PA. This data set showed no fish barriers on BLM land with the exception of a man-made barrier on Muskrat Creek to prevent the upstream movement of brook trout into restored westslope cutthroat trout habitat.

### ***Riparian Condition***

The BLM's Riparian-Wetland Initiative for the 1990s established national goals and objectives for managing riparian-wetland resources on BLM land (Quigley *et al.* 1999). Riparian/wetland areas achieve proper functioning condition when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows.

Given the fragmented nature of land in the PA, the BLM-managed stream segments may be in proper func-

tioning condition, however upstream and downstream conditions may be different. Therefore, even though small segments may be in proper functioning condition, they may not have a significant impact on the stream system as a whole. **Table 3-9** contains information regarding the riparian condition of streams within the 4<sup>th</sup> field HUC within the Decision Area.

### ***Water Quality/Quantity***

Water quality and quantity are important for fish populations. Mining, road building, logging, and livestock use have degraded some streams. Irrigation is a major factor influencing water volume of many streams (USDI-BLM 1983). A detailed water quality and quantity discussion regarding 4<sup>th</sup> field HUCs in the PA is presented in the Water section above.

### ***Fish Species***

MFWP manages the native and non-native fish populations in the PA. Records from MFWP (2005) indicate stocking of native and non-native fish began as early as 1923 in the PA. Many different species were stocked with varying frequency and intensity since the stocking program began. Salmonid species that were stocked included westslope and Yellowstone cutthroat trout, rainbow trout and hybrid combinations thereof, brook trout, brown trout, lake trout and bull trout, as well as Chinook and Coho salmon. Arctic grayling were also stocked. Stocking records indicate that fish were stocked in mountain lakes, creeks, streams, small and large rivers (**Table 3-10**).

Endangered, threatened, and sensitive aquatic species are given special consideration if there is concern with population viability, limited distribution, risks to habitat, or other factors that influence management actions in the Decision Area. Five fish species, including bull trout, Yellowstone and westslope cutthroat trout, northern redbelly dace, finescale dace hybrid, and fluvial arctic grayling have special-status in management considerations (**Table 3-10**).

Bull trout occur in the PA in the upper Clark Fork watershed near Anaconda and in the Blackfoot River. There is no BLM-managed land in close proximity to bull trout in the Upper Clark Fork; however, BLM does manage land near the Blackfoot River where bull trout are present.

As **Table 3-10** and **Table 3-10a** indicate, many fish species are found across the PA, providing a diverse fishery and ample recreational opportunities to the public. The presence of salmonids and other special-status fish species is an important aquatic resource component that is used by state and federal officials to evaluate stream health, provide recreational opportunities and can be important in cultural and socioeconomic considerations.

**Table 3-10** identifies miles of stream occupied by salmonids and special-status fish species as they relate to the 4<sup>th</sup> field HUC in the PA and Decision Area, respectively. **AMS Figures 2-21a** through **2-21i** show by 4<sup>th</sup> field HUC, the surveyed locations of westslope cutthroat and Yellowstone cutthroat trout.

Genetic introgression of native species of salmonids (specifically, westslope and Yellowstone cutthroat trout) with introduced or hatchery fish has been evaluated by the MFWP across portions of the PA. Overall, lands in the Decision Area are more closely related to current and historic westslope cutthroat trout habitats than Yellowstone cutthroat trout habitats. Available information for westslope cutthroat trout is summarized in **Table 3-11** and displayed in **AMS Figures 2-22a, 2-22b, and 2-22c**.

**Table 3-9  
Current Condition and Trend by 4<sup>th</sup> Field HUC**

Watershed Activity	4 <sup>th</sup> Field HUC								
	Blackfoot	Big Hole	Boulder	Gallatin	Jefferson	Shields	Upper Missouri	Upper Clark Fork	Upper Yellowstone
BLM Managed Acres Within the PA	932	58,983	40,341	872	40,748	223	147,827	649	8,010
Public Land Acreage	81,394	311,434	306,219	504,161	193,720	86,394	785,132	195,625	550,243
Private Land Acreage	45,355	95,108	179,777	518,934	271,468	428,115	1,109,465	325,325	443,811
Total Acres of Watershed Within the PA	126,749	406,542	485,996	1,023,095	465,188	514,509	1,894,597	520,950	994,054
Primary land use e.g. Grazing, Recreational, Agricultural, Wilderness	Grazing/ Recreation	Grazing/ Recreation	Grazing/ Farming	Farming/ Residential Development	Grazing/ Farming	Grazing/ Farming	Grazing/ Farming	Historic Mining/ Grazing/ Farming	Grazing/ Recreation
Special-Status Species <sup>1</sup> Presence in PA	BT, WCT	YCT, AG, WCT	YCT, WCT,	YCT, AG, WCT	WCT	YCT	YCT, WCT	YCT, AG, BT, WCT	YCT
Special-Status Species Presence on Decision Area	WCT	YCT, AG, WCT	WCT	None Present	WCT	None Present	WCT	WCT	None Present
Miles of 303d Listed Streams in the PA	42.6	128.3	180.8	186.1	158.4	119.5	337.3	288.9	125.3
Miles of 303d listed Streams on the Decision Area	None	10.7	11.2	None	None	1.9	21.6	None	0.3
Stream Miles of PFC in Decision Area <sup>2</sup>	NA	41.1	8.9	NA	14.6	NA	52.5	NA	12.3
Stream Miles Functioning at Risk (FAR) in Decision Area	NA	31.4	16.1	NA	16.7	NA	35.8	0.6	0.8
Stream Miles Nonfunctioning (NFU) in Decision Area	NA	1.5	6.6	NA	4.98	NA	21.2	NA	NA
Surveyed Fish Barriers in the PA <sup>3</sup>	1	7	13	16	3	0	65	13	0

<sup>1</sup> Yellowstone cutthroat trout (YCT); westslope cutthroat trout (WCT); bull trout (BT); Arctic grayling (AG).

<sup>2</sup> Proper Functioning Condition data from Butte Field Office BLM, NA indicates no information was available.

<sup>3</sup> From MFWP database.

**Table 3-10  
Stream Miles of Fish Species of Interest in the PA and Decision Area by 4<sup>th</sup> Field HUC\***

Fish Species	Status <sup>A</sup>	4 <sup>th</sup> Field HUC																	
		Blackfoot		Big Hole		Boulder		Gallatin		Jefferson		Shields		Upper Missouri		Upper Clark Fork		Upper Yellowstone	
		PA	DA	PA	DA	PA	DA	PA	DA	PA	DA	PA	DA	PA	DA	PA	DA	PA	DA
Yellowstone cutthroat trout	1	NA	NA	17.7	6.0	10.7	NA	100.9	NA	NA	NA	408.5	NA	1.0	NA	8.8	NA	466.7	0.32
Arctic grayling	2	NA	NA	66.8	4.34	NA	NA	80.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bull trout	2	57.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	66.2	NA	NA	NA
Westslope cutthroat trout	1	148.0	2.00	62.0	1.96	36.9	2.96	58.6	NA	22.7	1.33	NA	NA	122.6	3.82	213.0	0.82	NA	NA
Brook trout	NA	91.7	1.94	301.7	17.3	244.2	9.42	378.8	NA	111.3	10.5	165.8	NA	513.2	23.7	183.9	NA	210.6	NA
Brown trout	NA	61.7	1.90	53.8	4.34	71.7	4.70	335.3	NA	99.2	3.24	191.9	NA	430.1	14.01	96.0	NA	247.3	0.72
Rainbow trout	NA	3.9	NA	145.2	12.84	149.3	5.23	425.9	NA	96.9	3.06	68.9	NA	540.9	13.61	55.6	NA	306.1	1.06
Golden trout	NA	NA	NA	NA	NA	NA	NA	6.5	NA	NA	NA	NA	NA	NA	NA	9.0	NA	NA	NA
Yellowstone Cutthroat trout X rainbow trout	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.37	NA

Source: Information was obtained from MFWP databases and is pertinent to the streams they have surveyed. There may be other un-surveyed streams in the PA that also contain similar species.

<sup>A</sup> 1= BLM Sensitive; 2 = Federally listed as Threatened

PA = PA; DA = Decision Area

**Table 3-10a**  
**Fish Species Occurrence in the Butte Field Office Planning Area**

Common Name	Scientific Name	Native or Non-Native	Probable Distribution in the Planning Area	Status
Goldeye	<i>Hiodon alosoides</i>	Native	Yellowstone Drainage	None
Shorthead redbhorse	<i>Moxostoma macrolepidotum</i>	Native	Yellowstone Drainage	None
Largescale sucker	<i>Catostomus macocheilus</i>	Native	Clark Fork Drainage	None
White sucker	<i>Catostomus commersoni</i>	Native	Missouri River and Yellowstone Drainages	None
Longnose sucker	<i>Catostomus catostomus</i>	Native	Clark Fork Drainage	None
Mountain sucker	<i>Castostomus platyrntnchus</i>	Native	Missouri River Drainage	None
Bigmouth buffalo	<i>Ictiobus cyprinellus</i>	Native	Missouri River Drainage	None
Common carp	<i>Cyprinus carpio</i>	Non-native	Missouri River Drainage	None
Goldfish	<i>Carassius auratus</i>	Non-native	Missouri River Drainage	None
Utah chub	<i>Gila atraria</i>	Non-native	Missouri River Drainage	None
Northern pikeminnow	<i>Ptychocheilus oregonensis</i>	Native	Clark Fork Drainage	None
Redside shiner	<i>Richardsonius balteatus</i>	Native	Clark Fork Drainage	None
Golden shiner	<i>Notemigonus crysoleucas</i>	Non-native	Missouri River Drainage	None
Northern redbelly dace	<i>Phoxinus eos</i>	Native	Missouri River Drainage	None
Northern Redbelly X Finescale Dace	<i>Phoxinus eos x phoxinus neogaeus</i>	Native	Missouri River Drainage	BLM - Sensitive
Longnose dace	<i>Rhinichthys cataractae</i>	Native	Missouri River Drainage	None
Lake chub	<i>Couesius plumbeus</i>	Native	Missouri River and Yellowstone Drainages	None
Flathead chub	<i>Platygobio gracilis</i>	Native	Missouri River Drainage	None
Fathead Minnow	<i>Pimephales promelas</i>	Native	Missouri River Drainage	None
Central mudminnow	<i>Umbra limi</i>	Non-native	Clark Fork Drainage	None
Western mosquitofish	<i>Gambusia affinis</i>	Non-native	PA-Wide	None
Kokanee salmon	<i>Onchornchus nerka</i>	Non-native	Missouri River Drainage	None
Rainbow trout	<i>Oncorhynchus mykiss</i>	Non-native	PA-wide	None
Westslope cutthroat trout	<i>Oncorhynchus clarki lewisi</i>	Native	PA-wide	BLM - Sensitive
Yellowstone cutthroat trout	<i>Oncorhynchus clarki bouvieri</i>	Native to Montana but not all waters on the RA	PA-wide (mountain lakes only)	BLM - Sensitive
Golden trout	<i>Oncorhynchus aquabonita</i>	Non-native	High Elevation Lakes	None

Common Name	Scientific Name	Native or Non-Native	Probable Distribution in the Planning Area	Status
Brown trout	<i>Salmo trutta</i>	Non-native	PA-wide	None
Brook trout	<i>Salvelinus fontinalis</i>	Non-native	PA-wide	None
Bull trout	<i>Salvelinus confluentus</i>	Native	Clark Fork and Black Foot Drainages	USFWS - Threatened
Lake trout	<i>Salvelinus namaycush</i>	Non-native	Missouri River and Clark Fork Drainages	None
Arctic grayling (fluvial)	<i>Thymalus arcticus</i>	Native	Park Lake, Missouri Drainage; Big Hole Drainage; and Heart Lake in the Clark Fork Drainage	BLM - Sensitive
Mountain whitefish	<i>Prosopium williamsoni</i>	Native	PA-wide	None
Channel catfish	<i>Ictalurus punctatus</i>	Native	Missouri River Drainage	None
Stonecat	<i>Noturus flavus</i>	Native	Missouri River Drainage	None
Black bullhead	<i>Ameiurus melas</i>	Non-native	Missouri River Drainage	None
Burbot	<i>Lota lota</i>	Native	Missouri River Drainage	None
Black crappie	<i>Pomoxis nigromaculatus</i>	Non-native	Missouri River Drainage	None
Pumpkinseed	<i>Lepomis gibbosus</i>	Non-native	Missouri River and Clark Fork Drainages	None
Bluegill	<i>Lepomis macrochirus</i>	Non-native	Missouri River Drainage	None
Smallmouth bass	<i>Micropterus dolomieu</i>	Non-native	Missouri River Drainage	None
Largemouth bass	<i>Micropterus salmoides</i>	Non-native	Missouri River Drainage	None
Slimy sculpin	<i>Cottus cognatus</i>	Native	Clark Fork Drainage	None
Mottled Sculpin	<i>Cottus bairdi</i>	Native	Missouri River Drainage	None
Yellow perch	<i>Perca flavescens</i>	Non-native	Missouri River and Clark Fork Drainages	None
Walleye	<i>Sitzaostedion vitreum</i>	Non-native	Missouri River Drainage	None

<sup>1</sup>Planning Area-wide includes: portions of the Madison, Jefferson, Gallatin, Boulder, Clark Fork, Blackfoot, Big Hole, Missouri River and Yellowstone Rivers.

Source: Montana Department of Fish Wildlife and Parks, 2005.

**Table 3-11**  
**Westslope Cutthroat Trout Introgression Within the Planning and Decision Areas**

Watershed	Status <sup>1</sup>	Stream Miles	
		PA	Decision Area
Big Hole	1	31.22	1.43
	2	11.84	
	5	2.88	
	6	3.65	
Blackfoot	1	103.45	0.05
	2	10.93	
	5	22.04	
	6	15.99	1.90
Jefferson	1	6.4	
	5	8.17	
	6	6.61	0.14
Boulder	1	28.85	2.96
	2	3.45	
	5	1.61	
Gallatin	1	4.18	
	2	9.22	
	3	23.16	
	6	17.94	
Upper Missouri	1	44.40	0.49
	2	20.06	0.05
	3	6.60	0.47
	4	15.23	0.84
	5	9.83	0.04
	6	30.65	2.08
Upper Clark Fork	1	52.56	
	2	15.83	
	5	36.26	0.83
	6	108.3	

<sup>1</sup>Status: 1 = Unaltered; 2 = < 10% Introgression;  
3 = 10 – 25% Introgression 4 = > 25% Introgression  
5 = Suspected Unaltered; 6 = Potentially Altered

### **Restoration**

MFWP, BLM, and the USFS collaborate in an ongoing effort to conserve westslope cutthroat trout in Muskrat Creek, a tributary to the Boulder River. The relatively high quality aquatic and riparian conditions as well as the remnant westslope cutthroat trout population provide an excellent opportunity for westslope cutthroat trout restoration in this stream. A wooden barrier was constructed near the USFS boundary at river mile 7.6 in 1997. Since that time, brook trout have been annually removed (using electrofishing) upstream of the barrier to a natural barrier at river mile nine, above which the brook trout do not occur.

In 1997, native westslope cutthroat trout were also re-located above the natural barrier (formerly a fishless section of stream). The westslope cutthroat trout re-located above the natural barrier survived and reproduced in the upper basin and by 2002 the trout had expanded upstream to the headwaters (approximately river mile 13.5) as well as downstream throughout the stream. Removal of brook trout between the man-made barrier and natural barrier has been successful. In the summer of 2003, only 18 brook trout were found in July and no

brook trout were captured during an extensive effort of four electrofishing passes in October. All the brook trout captured during July 2003 were age 2 and older fish confirming that no brook trout were successfully re-cruited to the population during the past three years. No brook trout were captured during 2004 or 2005 and approximately 5.9 miles of Muskrat Creek is once again considered to have a restored and protected population of westslope cutthroat trout. MFWP now uses this stream as a donor source of fish to re-establish westslope cutthroat trout populations in other streams within and beyond the PA boundaries.

### **WILDLIFE**

Important wildlife habitats include wetlands and riparian areas, coniferous forests, shrublands, grasslands, snags (standing dead trees), cliffs and rocky outcrops, and caves and abandoned mines. Seasonally important habitats include big game winter ranges, calving and fawning areas, raptor nest sites, bat breeding and hibernation sites, waterfowl nesting areas, sage grouse and sharptail grouse courtship (leks) and nesting areas, wolf denning and rendezvous sites, and grizzly bear habitat. The PA is

an important wildlife linkage area that connects the Yellowstone Ecosystem, the Continental Divide, the Gravelly Mountains, the Tobacco Root Mountains, the Belt Mountains, and the Northern Continental Divide Ecosystem allowing the potential for movement and genetic exchange among geographically dispersed wildlife populations. The extents of the various habitats are shown in **Table 3-4**.

Populations and distribution of wildlife in the PA have been influenced by past management activities that have altered habitat or caused disturbance including agricultural activities (including livestock grazing), mining, timber management, exclusion of fire (colonization by conifers into grasslands and shrublands), recreation, urban and suburban expansion, highway and road construction.

While the BLM manages habitat for a variety of wildlife species, it is the MFWP that has responsibility to manage wildlife populations.

## Habitats

### *Grassland/Shrubland*

Sagebrush grasslands are critical areas for a variety of wildlife species as they provide critical winter range for game species and there are many species that are sagebrush obligates.

Grassland and shrubland communities have been identified to be dominant communities within the winter ranges of antelope, elk, mule deer, moose, and bighorn sheep within the PA. Sagebrush is one of the only shrubs that have levels of crude protein high enough to sustain large herbivores throughout the winter. Other shrublands that occur within the PA include low sagebrush, bitterbrush, and mountain mahogany.

Both grassland and shrublands provide habitat for a variety of wildlife species by providing forage, cover, and water. Species that utilize these habitats include: mule deer, elk, pronghorn antelope, coyote, red fox, badger, jackrabbit, pygmy rabbit, black-tailed prairie dog, sage grouse, ferruginous hawk, Swainson's hawk, mountain plover, sage thrasher, sage sparrow, Brewer's sparrow, long-billed curlew, northern harrier, prairie falcon, Baird's sparrow, chestnut-collared long spur, loggerhead shrike, marbled godwit, McCown's longspur, Sprague's pipit, western rattlesnake, and Columbian, Wyoming, and Richardson's ground squirrels.

There are a variety of factors that reduce the quality and availability of grassland and shrubland communities in the PA. Fire suppression has probably had the greatest influence within these communities, as changes in fire regimes have resulted in encroachment of conifers into grassland and shrubland communities; thereby reducing the grassland/shrubland habitat (Heyerdahl et al. 2006). The introduction of noxious weeds has also resulted in a loss in grassland habitats in some areas. In addition, grazing can degrade and influence grassland/shrubland

habitats when stocking rates are at levels that cause a decline in rangeland health.

### *Dry Foothills / Woodlands*

Open savannah-like communities of Douglas-fir and ponderosa pine adapted to dry conditions occupy sites at upper elevations of grasslands and shrublands. These communities are important to wildlife species such as flammulated owls, which utilize large snags for nesting habitat. Large ponderosa pine and Douglas-fir snags occur in low densities but persist on the landscape for long periods and provide a critical habitat component. While conifer encroachment into grasslands and shrublands is resulting in a loss of these habitats, areas of conifer encroachment provide habitat for a wide variety of birds, small mammals, and big game animals. Woodlands have been identified as important communities within winter range for elk, moose, mule deer, bighorn sheep, and white-tailed deer. Mountain mahogany communities can be particularly important in some areas by providing winter range for big game animals. These areas can also be critical for providing transitional habitat between winter and summer range and travel corridors for wildlife.

Some of the species that can be found in these communities include: mule deer, white tailed deer, big horn sheep, elk, and moose and coyote, bobcat, mountain lion, black bear, yellow-pine chipmunk, red squirrel, striped skunk, sharp-shinned hawk, Cooper's hawk, blue grouse, hairy and downy woodpeckers, chickadees, mourning dove, finches, evening grosbeak, jays, Clark's nutcracker, nuthatches, spotted towhee, dark-eyed junco, mountain bluebird, Williamson's sapsucker, northern flicker, common nighthawk, olive-sided flycatcher, dusky flycatcher, golden-crowned kinglet, Swainson's thrush, hermit thrush, Townsend's solitaire, solitary vireo, western tanager, Cassin's finch, pine siskin, western small-footed myotis, long-eared myotis, silver-haired bat and hoary bat.

### *Cool, Moist Conifer Zone*

Cool, moist coniferous forest stands within the PA provide habitat for a variety of wildlife species. Some of these species include: elk, moose, deer, black bear, grizzly bear, lynx, mountain lion, wolverine, fisher, marten, goshawk, cooper's hawk, sharp-shinned hawk, boreal owl, three-toed woodpecker, black-backed woodpecker, hairy woodpecker, Williamson's sapsucker, northern flicker, and hermit thrush. This community can also be very important for providing winter range for big game species such as elk, moose, and white-tailed deer.

Snags and down wood are major wildlife habitat components of the ecosystem. Their natural abundance and distribution have been altered by decades of land conversion, fire suppression, timber and firewood harvest, and mining activities. Standing snags provide foraging, roosting, denning, and nesting habitat for a number of wildlife. A variety of cavity nesters and forest mammals

rely on the presence of large diameter snags for reproduction and protection. In addition, there are several sensitive species that are dependent on old growth habitat and the downed woody material that is found within these stands. Maintaining a diversity size and age classes is very beneficial for forest wildlife species.

As snags decay and fall to the ground, they become down wood and provide food and shelter for different species. Down wood also stores nutrients and moisture, and aids in soil development.

### ***Subalpine Fir***

Snags occur in pulses of high density subalpine fir, spruce, lodgepole pine, and occasionally Douglas-fir, that historically persisted for short periods of time (5-25 years). Snags can occur over extensive areas (10's to 1,000's) of acres. Large, unfragmented patches of burned or insect killed stands are critical for species that depend on this type of habitat such as black-backed and three-toed woodpeckers, and the Canada lynx that requires large areas of young subalpine and lodgepole pine forest for foraging.

The wildlife species that utilize these habitats are many of the same species that are found in the cool, moist conifer habitat. Some of these species include: elk, deer, moose, lynx, wolverine, grizzly bear, black bear, pine marten, boreal owl, blue grouse, Clark's nutcracker, and a variety of migratory birds. These communities are not as susceptible to the impacts of fire suppression and timber management.

### ***Wetland/Riparian***

Riparian areas are important because they generally have better quality soils than the surrounding hillslopes and, because of their position lower in the landscape, often retain moisture over a longer period. Riparian areas support a higher diversity of plants and animals than non-riparian land. This is a result of the wider range of habitats and food types present as well as the proximity to water, microclimate, and refuge. Many native plants are found only, or primarily, in riparian areas, and these areas are essential to many animals for all or part of their lifecycle. Riparian land also provides a refuge for native plants and animals in times of stress, such as drought or fire, and plays a large role in providing corridors for wildlife movement.

Although riparian zones may occupy a relatively narrow band, they are critical to maintaining the biodiversity of the more extensive, adjoining uplands. For example, over 75 percent of the animal species in arid regions need riparian habitats at some stage of their life cycles. A variety of wildlife species utilize wetland/riparian habitats. Some of these species include: white-tailed deer, moose, bobcat, beaver, otter, mink, coyote, and a variety of small mammals such as skunks, shrews, mice, weasels, and voles as well as numerous bat species. Lynx are known to use riparian areas as dispersal corri-

dors and for hunting snowshoe hare. Wetland/riparian habitats support the highest densities and diversity of breeding birds such as: bald eagle, Swainson's hawk, red-tailed hawk, owls, great blue heron, flycatchers, woodpeckers, belted kingfisher, spotted sandpiper, western wood-peewee, white-crowned sparrow, yellow warbler, song sparrow, other warblers, and a variety of migratory birds.

Rivers, streams, ponds, and wetlands provide important habitat for migrating waterfowl such as redheads, pintails, goldeneye, bufflehead, Canada geese, and snow geese. These habitats also provide habitat for breeding waterfowl including common merganser, wood duck, ruddy duck, lesser scaup, cinnamon teal, blue-winged teal, green-winged teal, northern shoveler, American widgeon and gadwall. Although habitat for waterfowl is found throughout the Planning Area, these habitat types are limited in the Decision Area.

### ***Aspen***

Aspen stands are relatively rare in Montana when compared to the other Rocky Mountain States, but where they occur they support a diverse avifauna. It is often the only broadleafed tree within coniferous forests and therefore provides unique foraging substrates for a variety of insectivorous birds. Its suckers, twigs, and bark are used by wintering ungulates, particularly deer, elk, and moose. Snowshoe hare and cottontail rabbit feed on its twigs and buds, while ruffed grouse are highly dependent on aspen buds in winter. Aspen also provides cavities and snags for cavity dependant wildlife.

Producing profuse suckering from aspen regeneration practices does not ensure the reestablishment of new aspen stands. Suckers are highly palatable to some wildlife, such as elk and moose, and entire stands of young aspen can be lost to browsing. In addition, young aspen are quite fragile and susceptible to physical damage caused by trampling from hoofed animals, including livestock. For these reasons, efforts to reestablish aspen in small localized areas often fail. Isolated pockets of young aspen tend to draw elk, moose, and deer to these areas resulting in unacceptable levels of browsing. Similarly, efforts to reestablish aspen in areas of heavy livestock use often result in excessive damage to young trees.

### ***Insect and Disease***

Dwarf mistletoe provides a source of vertical and horizontal diversity through gap creation, and production of snags, brooms and down woody material. Many species of mammals, birds, and arthropods can take advantage of the favorable structure mistletoe infection provides, while other species use mistletoe plants or host tissues associated with infection for food.

The abundance of dwarf mistletoe is directly correlated with species diversity and bird density (Bennetts 1991). There is also a strong positive relationship between the occurrence of dwarf mistletoe in an area and the number

of snags used by cavity-nesting birds (Bennetts 1991). Witches' brooms are commonly used for nest sites, roosting sites, and cover by a number of bird species. The large mistletoe brooms on Douglas-fir are often used as nesting platforms by several owls, accipiters (including the cooper's hawk, goshawk, and sharp-shinned hawk) and passerines. Brooms are also used for roosting cover by grouse. The plant itself is also a food source for some birds (notably Douglas-fir dwarf mistletoe for blue grouse), mule deer, elk, squirrels, chipmunks, and porcupine.

## Wildlife Corridors

Wildlife travel corridors are a vital component of habitat for a variety of species. Corridors are travel routes used by wildlife to allow them to disperse to new core areas. Corridors allow for seasonal movements between summer and winter ranges for species such as elk and deer. Corridors are also important for movement of young animals dispersing from their place of birth to establish new territories and home ranges. This can be critical for territorial species such as mountain lion or grizzly bear. A corridor may also be used for daily movements from loafing to foraging areas.

Habitat fragmentation and isolation of populations as a result of degradation or elimination of corridors can result in small, vulnerable populations. Isolated populations are more vulnerable to stochastic events and can be negatively impacted by inbreeding depression. The primary causes for habitat fragmentation are activities related to development such as road building, recreational activities, and residential and commercial developments. Fragmentation of habitat is a concern within the PA as 49 percent of the PA is privately owned and has the potential to be developed. However, 85 percent of Decision Area lands are contiguous with other public lands (**AMS Figure 2-14**). The majority of this land is contiguous with National Forest System land and 75 percent of the blocks of BLM land that are contiguous with other public lands are larger than 1,280 acres. These larger areas that are connected to other public lands provide an opportunity for management of wildlife corridors and core habitat.

Factors that are considered in evaluating corridors include: topography, habitat quality, road density, riparian presence, human developments and activities, vegetative cover and land ownership patterns. It is important to identify wildlife corridors and manage to protect and maintain food, cover, and security and minimize mortality factors.

The Interagency Grizzly Bear Committee (IGBC) identified approaches to managing wildlife linkage areas on public land (IGBC 2004). Some of their recommendations for management include:

- Maintain appropriate amounts and distribution of natural foods and hiding cover in linkage zones to

meet the subsistence and movement needs of target wildlife species.

- Avoid constructing new recreation facilities or expanding existing facilities within linkage zones.
- Avoid other (non-recreational) new site development or expansions that are not compatible with subsistence and movement needs of target species in linkage zones.
- Pursue mitigating, moving, and/or reclaiming developments and disturbed sites that conflict with the objective of providing wildlife linkage.
- Manage dispersed recreational use to maintain suitability of approach areas for identified target species. Avoid issuing new permits or additional use days for recreational activities that may conflict with wildlife linkage objectives.
- Manage roads and trails in linkage zones to facilitate target species movement and limit mortality risk, displacement, and disturbance.
- Manage livestock grazing to maintain wildlife forage and hiding cover and to minimize disturbance, displacement, and mortality of target wildlife species.
- Work with adjacent landowners, planners, and other interested parties to improve linkage opportunities across multiple jurisdictions.
- Manage human, pet and livestock foods, garbage, and other potential wildlife attractants to minimize the risk of conflicts between people and wildlife.

Considerable research has been conducted on wildlife corridors within the Northern Rocky Mountain Region. Walker and Craighead (1997) identified potential corridors within Montana using GIS and 'umbrella' species. The 'umbrella' species they selected included grizzly bear, elk and mountain lion. They identified corridors that had the highest likelihood of successful transfer between the Greater Yellowstone Ecosystem and the Northern Continental Divide Ecosystem and many of these corridors occur within the PA. The corridors identified for grizzly bear occur in the Gallatin, Bridger, and Big Belt mountain ranges. Secondary corridors occur in the Taylor-Hilgard, Gravelly, Tobacco Root, White-tail/O'Neil, and Boulder mountain ranges. Corridors for elk were identified to occur in the north end of the Absaroka, Bridger, and Big Belt ranges, while corridors for mountain lions occur in the Bridger and Big Belt mountains.

Craighead *et al.* (2002) modeled wildlife corridors within the Northern Rocky Mountain Region, delineated core and sub-core habitat areas, and described corridors based on their habitat quality. The model relies on a series of assumptions. One of the critical assumptions is that migrating animals would select the least-cost path or optimum path for travel and that these paths would be

**Table 3-12  
Corridor Quality in the Planning and Decision Areas**

Corridor Quality	Acres of Corridors in PA		Acres of Corridors in DA	
	Acres	% of PA	Acres	% of Decision Area
Core/Sub-core Areas	3,400,418	47	70,019	23
Highest Quality Corridors	223,139	3	22,533	7
Moderate Quality Corridors	534,990	8	61,971	20
Lowest Quality Corridors	838,933	12	45,564	15

those areas in which the animal would encounter fewer hazards, spend less time traveling, and travel through habitat with a higher probability of containing food and concealment, thus increasing the chance for survival. Corridors were developed based on the habitat needs of grizzly bear. Core areas were described as areas large enough for wildlife to forage and reproduce, while sub-core areas were areas that could act as stepping stones for wildlife as they move through the region. Corridors were described as areas of predicted movement between core and sub-core areas, where habitat quality is high, but not as high and contiguous as the core and sub-core areas. Based on this model, 70 percent of the PA is core, sub-core or corridor habitat, with 65 percent of the Decision Area in core, sub-core or corridor habitat. **Table 3-12** and **AMS Figure 2-15** display the acreages for core areas and corridors within the PA and BLM land within the PA.

Within the PA, almost half of the land represents core or sub-core habitat. Of the corridor habitat within the PA, the majority of the corridors are either moderate or low quality. The high quality corridors are located west of Anaconda along the Anaconda Mountains and along Elk Park Pass between Butte and Boulder.

## Big Game Animals

Nine species of big game animals occur within the PA. These species are elk, mule deer, white-tailed deer, moose, pronghorn antelope, bighorn sheep, mountain goat, mountain lion, and black bear. Much of the information presented below was based on reports developed by the MFWP. The PA falls entirely within Region 3 of the MFWP regional structure.

Habitat improvement projects occur on both private and public land within the PA. Prescribed burning, riparian restoration, thinning, reduction of conifer encroachment in grasslands and meadows, noxious weed control, riparian restoration, water development, and improved livestock grazing management are all management practices that have been implemented and improve big game habitat. The BLM also coordinates with private landowners, the USFS, and other management agencies to develop and implement habitat improvement projects.

### *Elk*

Elk are generalists exhibiting a wide habitat tolerance. They are distributed throughout the PA and western

Montana, but are most commonly associated with mountain ranges (Foresman 2001; MFWP 2003; Skovlin 1983). They utilize the majority of vegetation types found within the PA and are adapted to habitat in transitional areas as there is a negative correlation between levels of use and the distance from the interface between forest and nonforest communities (Skovlin 1983). This relationship is assumed to be due to elk dependence on security cover and the diversity of forage available in transitional areas.

Elk are both grazers and browsers. Their forage preferences vary among seasons and years, and are strongly related to forage availability (Nelson and Leege 1983). Elk migrate seasonally between winter and summer ranges with snow accumulation being the significant factor influencing migration. Wintering grounds are commonly located within foothill areas with south-southwest exposures and windblown ridges. Grassland and shrublands are typically used as winter range. Available winter range is commonly the limiting factor for elk populations; therefore, proper management of identified winter range is important for maintaining stable elk populations.

Approximately 30 percent (2,084,670 acres) of the PA is designated elk winter range, with approximately 188,000 acres of that being managed by the BLM (**AMS Figure 2-16**) (MFWP 1999a). Elk winter range within the PA occurs in predominately woodland and grassland/shrub communities. The PA also contains mapped calving and migration areas; however, the BLM manages only a small portion of this land.

Within the PA, there are approximately 10 Elk Management Units (EMU) as designated by the MFWP (MFWP 2004b). Elk populations within the majority of the EMU's have been either stable or increasing over the last 20 years. This is thought to primarily be a result of changes in hunting regulations from season-long, either sex seasons to antlered bull regulations and limited antlerless permits (MFWP 2004b). Additional factors influencing elk populations within the PA include the recent mild winters, which have resulted in less winter kill, reduced harvesting, and changes in land ownership. Within certain EMUs, land ownership has shifted from traditional landowners that allowed public access for hunting to non-traditional landowners that restrict hunting on their private property, thereby creating refuges for big game. The shift in land ownership and management

has been significant within some EMU's and has impacted harvest success and survey accuracy.

Livestock grazing, timber management and recreation are the most predominant uses of lands within the Decision Area and all of these activities can impact elk habitat. Approximately 80 percent of the Decision Area is managed for livestock grazing. Elk and cattle do have dietary overlap and can compete for forage, which can become critical on winter range. Cattle and elk do not typically utilize the same areas during the winter season as livestock are usually concentrated on private land. However, livestock grazing management has a significant impact on elk winter range as it influences the amount of residual forage that is available for elk.

The Decision Area provides recreational opportunities for the public as this area receives some of the highest levels of hunting on public land and the highest level of bull elk harvest (MFWP 2004b). Recreational activities, especially high levels of OHV use, can degrade elk habitat and cause disturbance to elk. Snowmobile recreation areas, when located within elk winter range, can deter elk from using those disturbed areas and can result in displacement. Roads can also have a significant impact on the quality of elk habitat. Winter range in the Decision Area is broken into 11 areas (Table 3-13) for analysis of big game winter range. Within each analysis area, the moving windows analysis was used to calculate open road density within winter range.

Within the Decision Area, the analysis areas with the lowest road densities (less than 1 mile per square mile) in elk winter range are the Big Hole (56 percent), Elkhorns (53 percent), Highlands (56 percent), Missouri (83 percent), Upper Missouri (64 percent), and Yellowstone (7 percent). The Missouri analysis area provides a large amount of elk winter range on BLM lands and also provides the highest quality habitat. Analysis areas with the highest road densities (greater than 2 miles per square

mile) in elk winter range are the Blackfoot (72 percent), Clancy (66 percent), and Granite Butte (67 percent).

Timber management is a common resource use in elk summer range within the PA. Timber harvest can have both positive and negative impacts on elk habitat. Timber harvest can improve elk habitat in many areas as it improves the cover to forage ratio. Ideally, cover to forage ratio should not fall below 60:40. The disturbance associated with the implementation of timber harvest can result in the temporary displacement of elk. In addition, the loss of security habitat and an increase in road density can have a negative effect on elk. Elk security measures are the inherent protection allowing elk to remain in an area despite increases in stress or disturbance associated with hunting season or other human activities. Security habitat areas are forested habitats with trees larger than 8 inches DBH, greater than 30 percent density and larger than 250 acres, nonlinear, at least 0.5 mile from an open road, and occupying at least 30 percent of the area used during autumn. Table 3-14 shows the total acres of security habitat by watershed in the Planning and Decision Areas.

<b>Watershed</b>	<b>Total Security Habitat Acres</b>	<b>BLM Security Habitat Acres</b>
Big Hole	63,016	5,808
Blackfoot	19,468	0
Gallatin	30,401	301
Jefferson	72,722	2,965
Upper Clark Fork	48,251	0
Upper Missouri	205,000	9,395
Upper Yellowstone	557,823	405

<b>Elk Winter Range Analysis Unit</b>	<b>Total Acres</b>	<b>Total Winter Range</b>	<b>Winter Range on BLM</b>	<b>BLM Acres</b>				
				<b>0 mi/mi<sup>2</sup></b>	<b>Low Density 0-1 mi/mi<sup>2</sup></b>	<b>Moderate Density 1- 2 mi/mi<sup>2</sup></b>	<b>High Density 2 -3 mi/mi<sup>2</sup></b>	<b>Very High Density &gt;3 mi/mi<sup>2</sup></b>
Big Belts	290,949	138,825	6,688	650	1,545	2,207	1,280	1,006
Big Hole	336,143	130,712	23,015	5,257	7,701	4,503	2,330	3,224
Blackfoot	127,398	55,705	445	0	49	76	50	270
Clancy	150,854	110,911	10,879	375	1,173	2,159	2,220	4,952
Elkhorns	641,976	140,437	28,080	4,149	10,816	8,515	3,033	1,567
Granite Butte	192,583	141,729	17,699	158	1,775	3,886	5,121	6,759
Highlands	84,049	57,933	26,407	6,125	8,746	6,204	3,630	1,702
Jefferson	834,418	208,531	33,378	5,706	7,353	7,002	6,003	7,314
Missouri	223,957	140,820	24,031	17,102	2,853	1,409	1,573	1,094
Upper Missouri	327,784	120,992	6,481	2,551	1,565	1,437	822	106
Yellowstone	731,613	159,748	3,252	1,583	787	660	222	0

### ***Mule Deer***

Mule deer are distributed throughout Montana and are found in open forested regions, plains, and prairies. They commonly inhabit foothill, coulee, or riparian areas within a grassland or shrubland habitat type. Mule deer can also be found in alpine, subalpine, montane, and foothill zones (Foresman 2001; Mackie *et al.* 1998). In seasonally harsh environments, like western and central Montana, mule deer tend to migrate between seasonal ranges (Mackie *et al.* 1998). Winter range is associated with areas accumulating minimal amounts of snow and tends to occur at low elevation, south and west facing slopes, and wind-blown ridges. Winter range is particularly important for maintaining healthy mule deer populations because the lack of high quality forage, cold temperatures, and increased energy demand associated with the winter season tends to limit and stress populations.

Mule deer will tend to browse year-round favoring species such as bitterbrush, mountain mahogany, sagebrush, and deciduous shrubs. Forbs and herbaceous plants become an important part of their diet in late spring and summer, while shrubs are critical in the fall and winter.

Mule deer are distributed throughout the PA. Approximately 95 percent of the PA represents mule deer habitat. Thirty-four percent (2,445,000 acres) of the PA is year-round/winter range for mule deer with 206,800 acres (8 percent) of that being located on BLM land (AMS **Figure 2-17**) (MFWP 1999a). The majority of the mule deer year-round/winter range within the PA occurs in grassland/shrubland and woodland communities.

The last MFWP published report discussing the status of mule deer in Region 3 was completed in 2002 (MFWP 2002d). This report stated that the mule deer populations within Region 3 were relatively stable and static from 1996 to 2001. The report also stated that recruitment was improving within populations and it was expected that populations would tend to be on the increase.

### ***White-Tailed Deer***

White-tailed deer occur throughout Montana and are adapted to a variety of habitats (Foresman 2001). They are common along river bottoms and adjacent uplands in the PA. Habitat disturbance resulting from agriculture and logging have been beneficial to white-tailed deer and has facilitated range expansion (Smith 1991).

White-tailed deer make extensive use of riparian habitat and hardwood forests. Riparian cover appears to influence abundance of white-tailed deer and they are more commonly associated with agriculture than mule deer (Mackie *et al.* 1998). White-tailed deer prefer grasses and forbs during spring and early summer, and then switch to new-growth leaves and twigs of small trees and shrubs. Browse is very important for white-tailed deer year-round. In agricultural areas, cultivated crops are important dietary components (Mackie *et al.* 1998).

Approximately 20 percent (61,328 acres) of the Decision Area is identified as general white-tailed deer habitat (MFWP 1999a). The common vegetation communities within this habitat include riparian forests and habitats and woodlands.

### ***Moose***

Moose are closely associated with densely forested and riparian habitats and depend upon woody vegetation, preferably in early successional stages that occur following disturbances (Foresman 2001; Franzmann 1981). They tend to use mountain meadows, river valleys, wetlands, and clear cut areas in the summer and utilize willow flats and mature coniferous forests in the winter. They prefer feeding on forbs and aquatic or woody vegetation depending on the season. Moose are adapted to deep snow and extreme cold temperatures and have difficulties coping with warmer temperatures (above 20 °C) (Foresman 2001).

Moose are distributed widely throughout the PA where suitable habitat is present. Within the PA, there are 2,398,598 acres of general moose habitat, which is approximately 33 percent of the PA. Of the general moose habitat in the PA, the BLM manages six percent (18,559 acres) (MFWP 1999a). An estimated 13 percent of the PA is moose general/winter habitat. A significant portion of the moose habitat in the Decision Area is found within the Big Hole and Boulder river basins. In addition, Mount Haggin Wildlife Management Area (56,151 acres) occurs within the PA and has a management goal of providing year-round habitat for moose.

The last completed Progress Report on moose done by the MFWP was in 2001 (MFWP 2001a). The trend information presented in this report was based on harvest and hunter day trends and indicated that moose populations within Region 3 had some fluctuations between 1996 and 2001, but were relatively stable.

### ***Pronghorn***

Pronghorn are found within open sagebrush or grassland areas within the PA. Sagebrush grasslands are the preferred winter habitat as browse is a critical food source during this period. Maintenance of healthy range condition is important for pronghorn management as forbs are important during the spring fawning period. The highest annual mortalities are generally related to spring blizzards. Pronghorn tend to avoid areas with vegetation higher than 38 cm as it interferes with their visibility and detection of predators (Yoakum 1978).

Approximately 16 percent (1,143,677 acres) of the PA represents pronghorn habitat with the BLM managing 72,559 acres of that habitat (MFWP 1999a). The majority of this habitat is located in the Boulder River basin and the Elkhorn Mountains. The last MFWP published report discussing the condition of pronghorns within Region 3 was completed in 2002. This report stated that during the period of 1996 to 2001, antelope populations

within the region were stable and the trends generally remained unchanged (MFWP 2002c). Approximately 90 percent of the pronghorn overall distribution and winter range within the PA occurs in the grassland/shrubland zone.

Pronghorn can be in conflict with livestock grazing, especially range fences. Fences can inhibit the movement of pronghorn because they have a tendency to crawl under the fences rather than jump over them. This can become a serious issue in the winter, especially severe winters, as fences can bisect major winter migration routes and, as snow levels become deep, the pronghorn are unable to crawl underneath the fences. Sheep, mesh or field fence can also prevent the movement of pronghorn because these woven wire types of fence do not allow pronghorn to crawl beneath. To allow for pronghorn to pass under fences, wire fences should be designed with 3 wires placed at 16-inch, 26-inch, and 36-inch heights.

### ***Bighorn Sheep***

Bighorn sheep have a limited distribution within the PA and typically use areas with cliffs, mountain slopes, or rolling foothills. Winter habitat generally occurs on open slopes or ridges where grass is available. Grass and shrubs are common food sources during the winter while grass, sedges, and forbs are heavily used in the spring and summer. Winter range is the limiting factor for bighorn sheep herds; therefore, identification and management of winter range is important for management of healthy bighorn populations.

Bighorn sheep tend to forage in open areas with low vegetation such as grasslands, shrublands, or mixes of these and avoid foraging on slopes with shrub or canopy cover in excess of 25 percent and shrubs 2 feet (60 cm) or higher. Proximity to escape cover and open aspects with good visibility are important features of quality bighorn sheep habitat, particularly for females with young. Bighorn sheep prefer open habitats which facilitate predator detection and enhance visual communication of alarm postures.

Approximately 712,000 acres within the PA are bighorn sheep habitat. Winter range is approximately 187,000 acres of that with the BLM managing 54,000 acres (29 percent) (AMS Figure 2-18) (MFWP 1999a). The majority of the winter range mapped within the PA occurs in the Upper Missouri area, the Elkhorn Mountains and the Big Hole River Basin. The dominant vegetation communities in this habitat are grassland/shrubland and woodland communities.

Bighorn Sheep have been re-introduced into three areas in the PA; Sleeping Giant Wilderness Study Area, Soap Gulch (Camp Creek) and Shep's Ridge (Indian Creek/Crow Creek). The last published report done by MFWP discussing the condition of bighorn sheep within Region 3 was completed in 2002. The Sleeping Giant population was declining prior to 1999 due to poor nutri-

tion (MFWP 2002b). The population seemed to be increasing until 2001 at which time a die-off within the population was documented. Approximately 50 sheep were relocated to Soap Gulch/Camp Creek between 2000 and 2001. The Camp Creek population experienced a die-off between 1994 and 1995 due to a pneumonia complex. Six years after the die-off, the recruitment was minimal, although the animals appeared to be healthy. The Shep's Ridge population was healthy and expected to continue growth, as of 2002 (MFWP 2002b).

Bighorn sheep are highly susceptible to some strains of *Pasteurella* carried by domestic sheep. Bighorn sheep usually die after exposure to specific strains of *Pasteurella* from healthy domestic sheep.

### ***Mountain Goats***

Mountain goats utilize areas with steep, broken terrain and can sometimes utilize subalpine forests. They typically utilize distinct summer and winter ranges with snow accumulation strongly influencing selection of winter range. Mountain goats utilize south facing slopes, canyon walls and windblown ridges in the winter, and meadows, ravines, cliffs, and sometimes forests in the summer. Common food sources include grass, sedges, lichens, and shrubs. Mountain goats are fairly sensitive to disturbance and overharvest.

Mountain goats have been transplanted in various locations within the PA. Within the MFWP Region 3, four of the populations are native, and the rest either are transplants or are the result of dispersing transplant populations. The last Mountain Goat Progress Report completed by the MFWP (MFWP 2001b) indicated that the majority of the populations within Region 3 were either stable or increasing.

Limited mountain goat range occurs within the PA and populations have been steadily declining over the last decade. Due to low population numbers, accurate census data is limited. Within the PA, there are approximately 705,000 acres of mountain goat habitat mapped with the BLM managing about 19,000 acres (3 percent) (MFWP 1999a). The majority of this habitat occurs in the Upper Missouri area. There are four known individual mountain goats utilizing BLM land within the Sleeping Giant Wilderness Study Area. The population has been decreasing since the early 1990's when the population contained 50 individuals. The vicinity of the Sleeping Giant Wilderness Study Area provides approximately 15,000 acres of mountain goat habitat.

### ***Black Bear***

Black bears use a variety of habitats depending on seasonal variation in diet and availability of food. Black bears are omnivorous; however, a significant portion of their diet consists of berries, fruits, grasses, sedges and inner bark. The entire PA is black bear habitat; however,

they tend to prefer dense forested areas, riparian areas, open slopes, and mountain meadows (Foresman 2001).

The most recent Black Bear Progress Report compiled by the MFWP Region 3 was completed in 2002 (MFWP 2002e). These reports were based on the harvest data received from 1996 to 2001. The harvest trends during these years indicated that bear populations in Region 3 were declining; however, the significance of this decline was not discussed. The report also identified that the majority of black bear harvesting within Region 3 occurred in the eastern portion of the region.

Black bears tend to be relatively tolerant of land uses as they have a large home range and can utilize a variety of habitats. Recreation, road development, and timber management are land uses that tend to have the greatest impacts to black bear habitat. Road development within the PA is at a moderate level of 1.8 miles per square mile (mi/mi<sup>2</sup>) and has not been identified as negatively impacting black bear habitat. Timber harvest can cause temporary disturbance and displacement of black bears; however, small timber cuts can improve black bear habitat by increasing the vegetation diversity.

### ***Mountain Lion***

Mountain lions are distributed throughout the PA where suitable habitat is present. They use a variety of vegetation types, depending on prey availability, cover, and preference for areas with minimal human disturbance. Mountain lions typically prefer mountainous and foothill areas; however, in eastern Montana, they are commonly associated with riparian areas and woody draws. Mountain lions are carnivorous and feed on a variety of animals. However, they prefer deer, elk, porcupine, and rabbit.

### ***Gamebirds***

The PA provides habitat for a variety of upland gamebirds and waterfowl. Blue grouse and spruce grouse occupy the coniferous forests, while ruffed grouse, sharp-tailed grouse, and Merriam's turkey are found in dryer coniferous forests, brushy draws, riparian areas, or grassland areas with a strong presence of shrubs. Sage grouse are a sagebrush obligate species and are discussed further under the sensitive species section. Ring-necked pheasant, chukar, and gray partridge are also found in the grasslands and croplands within the PA. Ducks and geese also utilize the PA for nesting and brood rearing.

The last published Progress Report on upland gamebirds within Region 3 compiled by the MFWP was completed in 1996 (MFWP 1996). This report discussed harvest levels as an indicator of population. A general trend of decline within the late 1980s followed by an increase in the 1990s was observed with all the gamebird species with the exception of the grouse. Ruffed, spruce, blue, and especially sage grouse all experienced a decline throughout 1987 to 1996. There was little data available

for snipe, chukar, and mourning dove as little harvest for these birds occurred during the period covered.

## **SPECIAL STATUS SPECIES**

Special-status species are those species listed as threatened or endangered under the Endangered Species Act (ESA), species proposed or candidates for listing, and species designated as "sensitive" by BLM.

### **Fish**

#### ***Bull Trout (Listed Threatened)***

In the PA, critical habitat includes portions of the Clark Fork River. Historically, bull trout were well distributed throughout the upper Clark Fork but are now rare or non-existent in the main stem Clark Fork River between the Blackfoot River and Warm Springs Creek (MBTSG 1995). Bull trout do reside however, in the Blackfoot River. Some sections of Warm Springs Creek contain bull trout but they are primarily resident populations residing in the headwaters and Barker Lake, Storm Lake, Twin Lakes, Cable Creek, and Foster Creek.

According to the "Upper Clark Fork River Drainage Bull Trout Status Report", Warm Springs Creek is a core area and nodal habitat for bull trout (MBTSG 1995). Core areas are drainages that currently contain the strongest remaining populations of bull trout. They are usually relatively undisturbed and need to have the most stringent levels of protection as they can potentially provide stock for re-colonization. Nodal habitat includes waters containing migratory corridors, over-wintering areas and other critical habitat.

#### ***Westslope Cutthroat Trout (BLM Sensitive)***

The westslope cutthroat trout is a sub-species of cutthroat trout native to Montana. Its natural range is on both sides of the Continental Divide; excluding the Yellowstone River drainage.

In the PA, westslope cutthroat trout are found in the Blackfoot, Clark Fork, Upper Missouri, Madison, Jefferson, Gallatin, Boulder, and the Big Hole rivers as well as many of their tributaries. **AMS Figures 2-21a through 2-21i** depict current habitat in the PA known to support westslope cutthroat trout. Some of the streams in the PA that support westslope cutthroat trout are small and have very low late summer flows. Small young of the year and yearling westslope cutthroat trout can be found in streams less than 18 inches in width.

There are four primary reasons for the decline of this species. First, habitat has been lost due to poor grazing practices, historic logging practices, mining, agriculture, residential development, and the lingering impact of forest roads. Fish have been unable to use spawning habitat due to dewatering of streams for irrigation and because of barriers created by dams and road culverts.

Second, non-native species (brook trout, lake trout, brown trout, and northern pike) out-compete juvenile cutthroat trout for food or prey on cutthroat trout. Barriers that disrupted historical migration routes for westslope cutthroat trout have sometimes served to protect them from non-native species.

A third reason for decline is hybridization with other species. Westslope cutthroat trout hybridize with rainbow trout and other non-native cutthroat trout subspecies. Many remnant genetically pure cutthroat trout populations, on both sides of the Continental Divide, are located above barriers that protect them from non-native species.

The fourth cause of decline has been overfishing. Westslope cutthroat trout are highly susceptible to angling (Behnke 1992) but it is uncertain how much of an impact this has had on the species' overall decline.

Montana has developed a Conservation Agreement (MFWP 1999b). This agreement prioritizes protecting genetically pure populations first, then slightly introgressed populations.

### ***Yellowstone Cutthroat Trout (BLM Sensitive)***

The historical distribution of Yellowstone cutthroat trout is believed to have included much of the Yellowstone River basin, including portions of the Clark Fork of the Yellowstone River, Bighorn River, and Tongue River basins in Montana and Wyoming, and parts of the Snake River basin in Wyoming, Idaho, Utah, and Nevada (Behnke 1992). In recent times, the majority of the indigenous populations in Montana inhabit headwater streams, although the Yellowstone River main stem also supports large numbers of indigenous Yellowstone cutthroat trout. Due to the stocking of Yellowstone cutthroat trout, the distribution of this fish in lakes has actually increased, as it is now believed that over 100 lakes in Montana support pure Yellowstone cutthroat trout, some of which are found in the PA.

Nonnative fish may be the greatest threat to the persistence of Yellowstone cutthroat trout. Because Yellowstone cutthroat trout and rainbow trout readily hybridize and produce fertile offspring, hybrid populations often become established. Introductions or invasions of brown trout and brook trout have led to displacement of cutthroat trout throughout the western U.S.

The widespread stocking of nonindigenous populations of Yellowstone cutthroat trout often leads to genetically homogeneous populations and may be detrimental to their long-term persistence.

The influence of other nonnative organisms also threatens the persistence of Yellowstone cutthroat trout. Yellowstone cutthroat trout are probably susceptible to infection by whirling disease. The effects of New Zealand mud snail on trout populations and aquatic ecosystems are unknown but also could be detrimental. This snail is presently found in the Madison, Snake, and Yel-

lowstone rivers and is likely to be inadvertently introduced (probably by anglers) into additional waters.

Habitat degradation is thought to favor certain nonnative fishes and can directly affect Yellowstone cutthroats. Because many populations of Yellowstone cutthroat trout possess complex life histories relying on movement among diverse habitats, disruptions in habitat quality or availability may lead to extinction of isolated populations.

Historically, intensive harvest by anglers altered the size structure and abundance of Yellowstone cutthroat trout in some waters. However, harvest restrictions appear to protect Yellowstone cutthroat trout under severe angling pressure.

### ***Arctic Grayling (BLM Sensitive)***

The Arctic grayling is a native species to Montana and the only remaining indigenous fluvial population in Montana is found in the Big Hole River. Currently, Arctic grayling are found in the Big Hole River, in the Madison River near Ennis, or in small, clear, cool lakes with tributaries suitable for spawning. In the PA, Arctic grayling are found in the Big Hole River and Park Lake within the Missouri River drainage and Heart Lake within the Clark Fork Drainage.

The fluvial Arctic grayling was formally classified as a Candidate species in 1991. A petition to upgrade the status of the fluvial Arctic grayling to Endangered was submitted in October 1991. A recent finding on the petition recommended that listing was not warranted since the population does not constitute a distinct population segment as defined by the ESA.

Although fluvial Arctic grayling inhabit the entire Big Hole River, highest densities occur in the vicinity of Wisdom. The majority of spawning occurs near Wisdom in the main stem and several tributaries. Fluvial Arctic grayling rear in the vicinity of where they hatch; thus, the Wisdom area provides the majority of rearing habitat. Moderate densities of Arctic grayling reside between the mouth of the North Fork Big Hole River and Dickie Bridge. Limited spawning occurs in lower reaches of several tributaries within this reach. Rainbow trout and brown trout increase in abundance below Dickie Bridge, where Arctic grayling are found in low densities.

Factors potentially threatening survival of Arctic grayling in the Big Hole River include water quality and quantity, competition with introduced species, predation, habitat degradation, and angling. Water quantity issues include drought and recruitment limitation due to sudden runoff events. Sudden increases in stream flows during hatching and emergence of larval Arctic grayling may decrease survival and limit recruitment in the Big Hole River. Extreme flood flows may also severely impact Arctic grayling recruitment in the Big Hole River.

Extreme low flows during severe drought decrease survival of older Arctic grayling due to high water tempera-

tures, increased susceptibility to predation, and diminished habitat volume. Diversion of water for agriculture has exacerbated persistent drought conditions. All salmonid species in the upper Big Hole River have declined in abundance during the present drought.

The distribution of Arctic grayling in the Big Hole basin suggests that they are being displaced by non-native brown and rainbow trout through competition. Predation on juvenile Arctic grayling by all non-native species is also a source of mortality.

Historically, angling may have impacted fluvial Arctic grayling populations in Montana because they are easily caught by anglers and susceptible to over-harvest; however, catch-and-release-only regulations enacted in 1988 in the Big Hole River appear to adequately protect the Arctic grayling population from over-exploitation.

Another factor potentially limiting grayling in the Big Hole River is habitat degradation. Degradation of riparian vegetation and stream banks by cattle grazing, mass willow removal, and dewatering the river for agricultural uses have negatively impacted fish habitat. High levels of fine sediments, high mid-summer water temperatures, and loss of suitable habitat volume have impacted Arctic grayling in the Big Hole River.

#### ***Northern Redbelly Dace Hybrid (BLM Sensitive)***

The northern redbelly dace x finescale dace hybrid (*Phoxinus eos* x *P. neogaeus*) is a Montana species of special concern, Class C. It was placed on the species of concern list due to its rarity and unusual form of genetic reproduction. Northern redbelly dace prefer quiet waters such as beaver ponds, bogs, and clear streams. The finescale dace likes similar habitat but is also found in larger lakes. These dace spawn in the spring and early summer.

Further inventory is needed to better define dace distribution in Montana. Due to difficulties of field differentiation, it is likely that some waters thought to contain only northern redbelly dace may also have the hybrid.

## **Wildlife**

Following is a discussion of the current habitat and status of those species identified in **Table 3-15** to have the potential to occur within the PA.

#### ***Grizzly Bear (Listed Threatened, Northern Continental Divide Ecosystem Recovery Zone)***

Portions of two grizzly bear recovery zones overlap the PA. The very southeastern tip of the Northern Continental Divide Ecosystem Recovery Zone overlaps the northwest corner of the PA. The Yellowstone Ecosystem Recovery Zone overlaps the southern portion of the PA, north and east of Yellowstone National Park. Occupied habitat extends north of the Yellowstone Recovery zone to near Interstate-90, between Livingston and Bozeman (AMS Figure 2-19).

Within the Northern Continental Divide Ecosystem Recovery Zone, 17,100 acres occur within the PA; however, the BLM does not manage any of this land. Of the area that has been identified and delineated as occupied grizzly bear habitat within the Northern Continental Divide Ecosystem, 232,240 acres occur in the PA with approximately 8,000 acres (3 percent) of that being under BLM management. Within the Yellowstone Ecosystem Recovery Zone, 994,670 acres occurs within the PA; however, the BLM does not manage any of this land. Of the occupied grizzly bear habitat within the Yellowstone Ecosystem Recovery Zone, 1,881,415 acres occur in the PA with approximately 5,775 acres (less than one percent) of that being under BLM management.

The road density within the PA portion of the Yellowstone Ecosystem is low at an average of 1.0 mi/mi<sup>2</sup> of roads. The road density within the Northern Continental Divide Ecosystem is considerably higher with an average of 2.6 mi/mi<sup>2</sup>. This level is higher than the average road density for the entire PA which is 1.8 mi/mi<sup>2</sup>.

Grizzly bear corridors with the highest likelihood of successful transfer between the Greater Yellowstone and Northern Continental Divide Ecosystems occur in the Gallatin, Bridger, and Big Belt mountain ranges. Secondary corridors occur in the Taylor-Hilgard, Gravelly, Tobacco Root, White-tail/O'Neil, and Boulder mountain ranges (Walker and Craighead 1997).

Similarly, modeling predicted that 70 percent of the PA is core, sub-core, or corridor habitat, with 65 percent of the Decision Area in core, sub-core, or corridor habitat (Craighead *et al.* 2002).

#### ***Canada Lynx (Listed Threatened)***

Canada lynx are classified as a furbearer in Montana but the trapping season is currently closed. In Montana, lynx are found in mountain and forest regions. East of the Continental Divide the subalpine forests inhabited by lynx occur at higher elevations (1,650 to 2,400 meters) and are composed mostly of subalpine fir. Secondary habitat is intermixed Englemann spruce and Douglas-fir habitat types where lodgepole pine is a major seral species (Ruediger *et al.* 2000). Throughout their range, shrub-steppe habitats may provide important linkage habitat between the primary habitat types described above (Ruediger *et al.* 2000).

Approximately 30 percent of the PA is lynx habitat (cool, moist conifer zone and subalpine fir zone). Approximately eight percent (21,738 acres) of the Decision Area is cool, moist conifer zone, while one percent (1,796 acres) is subalpine fir zone. Based on lynx habitat and linkage zone mapping (USDA-FS and USDI-BLM 2004), approximately 212 square miles of lynx linkage areas occur within the PA.

Table 3-15 Special Status Wildlife Species in the PA				
Common	Scientific Name	Status	Found In PA?	Habitat
<b>Threatened and Endangered Species</b>				
Canada lynx	<i>Felis lynx</i>	Threatened	Yes	Wet forest habitats, with large woody debris, and suitable habitat for primary prey (snowshoe hare) present (usually above 4000 feet elevation).
Grizzly bear (Northern Continental Divide Population)	<i>Ursus arctos horribilus</i>	Threatened	Yes	Remote forest habitats with low road density and minimal human disturbance.
Black-footed ferret	<i>Mustela nigripes</i>	Endangered	No	Prairie habitats with large prairie dog colonies, marginal habitat present in PA.
Whooping crane	<i>Grus americana</i>	Threatened	No	Wetlands and meadows that provide food and resting habitat for migrating cranes. Migratory habitat present in PA.
Piping plover	<i>Charadrius melodus</i>	Threatened	No	Wetlands, lakes, and ponds having shorelines and beaches with sparse vegetation. Habitat not present in PA.
<b>Sensitive Bird Species</b>				
Baird's sparrow	<i>Ammodramus bairdii</i>	Sensitive	No	Prairie grasslands of northern and eastern Montana, PA outside range of occurrence.
Bald eagle	<i>Haliaeetus leucocephalus</i>	Sensitive (De-listed)	Yes	Nesting and perching trees near water with primary prey species (fish and waterfowl) present.
Black-backed woodpecker	<i>Picoides arcticus</i>	Sensitive	Yes	Foraging and nesting habitats in conifer forests that have insect infestations associated with fire and disease.
Black tern	<i>Chlidonias niger</i>	Sensitive	No	Colonial nester in marshes. Habitat present in PA.
Blue-gray gnatcatcher	<i>Poliophtila caerulea</i>	Sensitive	No	Breeding habitat in Montana is restricted to open stands of Utah juniper and limber pine with intermixed big sage. PA outside range of occurrence.
Brewer's sparrow	<i>Spizella breweri</i>	Sensitive	Yes	Short-grass prairie with scattered or abundant sagebrush, or other arid shrub habitats.
Burrowing owl	<i>Athene cunicularia</i>	Sensitive	Yes	Prairie grasslands and shrublands often in prairie dog or ground squirrel burrows.
Chestnut-collared Longspur	<i>Calcarius ornatus</i>	Sensitive	Yes (not in DA)	Native mixed-grass prairie.
Common loon	<i>Gavia immer</i>	Sensitive	Yes (migration)	Floating nest in lakes in or near emergent wetland vegetation. Migrant on lakes and reservoirs. Pres
Dickcissel	<i>Spiza americana</i>	Sensitive	No	Open meadows and grasslands in eastern Montana. PA outside range of occurrence.

**Table 3-15  
Special Status Wildlife Species in the PA**

<b>Common</b>	<b>Scientific Name</b>	<b>Status</b>	<b>Found In PA?</b>	<b>Habitat</b>
Ferruginous hawk	<i>Buteo regalis</i>	Sensitive	Yes	Grassland and shrublands in rolling foothills and middle elevation plateaus.
Flammulated owl	<i>Otus flammeolus</i>	Sensitive	Yes	Nests primarily in mature and old-growth ponderosa pine and Douglas-fir forests.
Franklin's gull	<i>Larus pipixcan</i>	Sensitive	Yes (migration)	Breeds on large relatively permanent prairie marsh complexes.
Golden eagle	<i>Aquila chrysaetos</i>	Sensitive	Yes	Prefers open habitats and nests on cliffs or large trees.
Great grey owl	<i>Strix nebulosa</i>	Sensitive	Yes	Nests in snags, cavities, and stick nests in mature conifer forest, often near meadows and forest openings.
Greater sage grouse	<i>Centrocercus urophasianus</i>	Sensitive	Yes	Obligately linked to sagebrush habitat for nesting and wintering. Historically, this species is present, but not documented breeding since 1992. Habitat is present.
Harlequin duck	<i>Histrionicus histrionicus</i>	Sensitive	No	Nests along large, fast-flowing mountain streams. Habitat Present in PA.
LeConte's sparrow	<i>Ammodramus leconteii</i>	Sensitive	No	Prefer wet meadows dominated by sedges or grasses. PA outside range of occurrence.
Loggerhead shrike	<i>Lanius ludovicianus</i>	Sensitive	Yes	Open shrub and grassland habitats.
Long-billed curlew	<i>Numenius americanus</i>	Sensitive	Yes	Nests and forages in prairie grasslands and shrublands.
Marbled godwit	<i>Limosa fedoa</i>	Sensitive	No	Breeds primarily in the Prairie Pothole Region with short-grass to mixed-grass prairie. PA outside range of occurrence, however, migratory habitat is present.
McCown's longspur	<i>Calcarius mccownii</i>	Sensitive	Yes (not in DA)	Characteristic of shortgrass prairie.
Mountain plover	<i>Charadrius montanus</i>	Sensitive	Yes	Arid shortgrass prairie, often in association with prairie dog colonies.
Nelson's Sharp-tailed sparrow	<i>Ammodramus nelsoni</i>	Sensitive	No	Nests in grassland, marsh edges, and herbaceous wetlands. PA outside range of occurrence.
Northern goshawk	<i>Accipiter gentilis</i>	Sensitive	Yes	Nests in mature to old-growth conifer and aspen forest
Peregrine falcon	<i>Falco peregrinus anatum</i>	Sensitive	Yes	Nests on ledges and cliffs, often near water with prevalent prey base (birds).
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	Sensitive	No	Open country, open groves of large trees or groups of scattered trees in fields, and old burns. Cavity nester. PA outside range of occurrence.

**Table 3-15  
Special Status Wildlife Species in the PA**

<b>Common</b>	<b>Scientific Name</b>	<b>Status</b>	<b>Found In PA?</b>	<b>Habitat</b>
Sage sparrow	<i>Amphispiza belli</i>	Sensitive	No	Nests in sagebrush/grassland habitats. Habitat present in PA.
Sage thrasher	<i>Oreoscoptes montanus</i>	Sensitive	Yes	Limited almost entirely to semi-dry regions and communities containing extensive sagebrush.
Sedge wren	<i>Cistothorus platensis</i>	Sensitive	No	Breeding habitat is wet meadows and marsh edges. PA outside range of occurrence.
Sprague's pipit	<i>Anthus spragueii</i>	Sensitive	Yes (not in DA)	Prefers native, medium to intermediate height prairie.
Swainson's hawk	<i>Buteo swainsoni</i>	Sensitive	Yes	Nests in trees, often in riparian areas.
Three-toed woodpecker	<i>Picoides tridactylus</i>	Sensitive	Yes	Breeds and forages in conifer forests with high incidence of insect infestation from fire, disease, or wind throw.
Trumpeter swan	<i>Cygnus buccinator</i>	Sensitive	Yes (not in DA)	Nests in emergent vegetation at edge of lakes and ponds.
White-faced ibis	<i>Plegadis chihi</i>	Sensitive	No	Large marshes and wetlands with emergent vegetation. Habitat present in PA.
Willet	<i>Catantrophorus semipalmatus</i>	Sensitive	Yes	Shallow wetlands in the northern Great Plains, nests mainly in native prairie and grasslands.
Wilson's phalarope	<i>Phalaropus tricolor</i>	Sensitive	Yes (not in DA)	Breeds around shallow, marshy wetlands on the plains.
Yellow rail	<i>Coturnicops noveboracensis</i>	Sensitive	No	Breeding habitat consists of wet sedge meadows and other wetlands. PA outside range of occurrence.
<b>Sensitive Mammal Species</b>				
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>	Sensitive	Yes	Associated with grasslands and shrub/grassland in relatively level sites.
Fisher	<i>Martes pennanti</i>	Sensitive	Yes (not in DA)	Mature conifer communities, often associated with riparian areas in boreal forests.
Fringed myotis	<i>Myotis thysanodes</i>	Sensitive	Yes	Variety of habitats from low to mid-elevation grass, woodland, and desert regions, up to and including spruce-fir forests.
Fringe-tailed myotis	<i>Myotis thysanodes pahasapensis</i>	Sensitive	No	Prefers dry, coniferous forests, ponderosa pine, and juniper. PA outside range of occurrence.

**Table 3-15  
Special Status Wildlife Species in the PA**

Common	Scientific Name	Status	Found In PA?	Habitat
Gray Wolf	<i>Canis lupus</i>	Sensitive (de-listed in March 2008)	Yes	Forest and shrubland habitats with adequate prey base of big game animals present.
Great Basin pocket mouse	<i>Perognathus parvus</i>	Sensitive	No	Desert and semi-desert habitats dominated by sagebrush and grassland communities. Marginal habitat present in PA.
Grizzly Bear (Yellowstone Population)	<i>Ursus arctos horribilus</i>	Sensitive (De-listed)	Yes	Remote forest habitats with low road density and minimal human disturbance.
Long-eared myotis	<i>Myotis evotis</i>	Sensitive	Yes	Often associated with forested stands containing old-growth characteristics, but found in habitats characterized by shrubland and juniper.
Long-legged myotis	<i>Myotis volans</i>	Sensitive	Yes	Primarily montane coniferous forest and riparian habitat.
Northern bog lemming	<i>Synaptomys borealis</i>	Sensitive	Yes (not in DA)	Open fens and forested wetlands with dense cover of mosses and sedges. Habitat present in PA.
Pallid bat	<i>Antrozous pallidus</i>	Sensitive	No	Associated with dry, desert environments, but range into oak and pine forests. PA outside range of occurrence.
Northern myotis	<i>Myotis septentrionatis</i>	Sensitive	Potentially	Mixed and coniferous forests. Hibernacula often occur in abandoned mines and narrow crevices.
Pygmy rabbit	<i>Brachylagus idahoensis</i>	Sensitive	Yes	Can be found in a variety of sagebrush structures, but have found to show a preference for dense stands of big sagebrush, often along drainages with alluvial soil deposition.
Spotted bat	<i>Euderma maculatum</i>	Sensitive	No	Roosts in arid habitats with cliffs and crevices and forages over meadows, wetlands, and water bodies. Habitat not present in PA.
Swift fox	<i>Vulpes velox</i>	Sensitive	No	Prairie habitats with high density of small mammals (ground squirrels or prairie dogs), its primary prey. PA outside range of occurrence.
Townsend's big-eared bat	<i>Plecotis townsendii</i>	Sensitive	Yes	Roosts and hibernates in caves and mines and forages over open areas with wetlands and riparian communities.
Western spotted skunk	<i>Spirogale gracilis</i>	Sensitive	Yes	Woody, brushy habitat often in riparian areas.
Wolverine	<i>Gulo gulo luscus</i>	Sensitive	Yes	Forages in remote areas of boreal forests and dens in high-elevation cirques.
White-tailed prairie dog	<i>Cynomys leucurus</i>	Sensitive	No	Grassland and sagebrush habitat of southeastern Montana. PA outside range of occurrence.

**Table 3-15  
Special Status Wildlife Species in the PA**

<b>Common</b>	<b>Scientific Name</b>	<b>Status</b>	<b>Found In PA?</b>	<b>Habitat</b>
<b>Reptiles and Amphibians</b>				
Snapping turtle	<i>Chelydra serpentina</i>	Sensitive	No	Large rivers in eastern Montana. PA outside range of occurrence.
Spiny softshell turtle	<i>Trionyx spiniferus</i>	Sensitive	No	Large rivers in eastern Montana. PA outside range of occurrence.
Boreal/Western toad	<i>Bufo boreas</i>	Sensitive	Yes	Uses a variety of habitats including low elevation beaver ponds, reservoirs, streams, marshes, lake shores, potholes, wet meadows, and marshes, to high elevation ponds, fens, and tarns at or near tree line.
Coeur d'Alene salamander	<i>Plethodon idahoensis</i>	Sensitive	No	Wet areas near waterfalls, with dense moss cover in extreme western Montana. PA outside range of occurrence.
Great Plains toad	<i>Bufo cognatus</i>	Sensitive	No	In Montana they seem to prefer the higher elevations of short-grass prairies or undifferentiated grasslands, meadows within open stands of ponderosa pine, and areas near streams and irrigated lands. PA outside range of occurrence.
Greater short-horned lizard	<i>Phrynosoma hernandesi</i>	Sensitive	Yes	Ridge crests between coulees, and in sparse, short grass and sagebrush with sun-baked soil. Current status is unknown.
Northern leopard frog	<i>Rana pipiens</i>	Sensitive	No	Wetlands and water bodies. Historically present but none documented recently.
Plains spadefoot	<i>Spea bombifrons</i>	Sensitive	Yes	Found in arid grasslands and sagebrush with sandy or loose soils; usually near permanent or temporary water bodies.
Milk snake	<i>Lampropeltis triangulum</i>	Sensitive	Unknown	Sandstone bluffs, rock outcrops, grasslands, open ponderosa pine and juniper stands. Habitat is present.
Western Hog-nosed snake	<i>Heterodon nasicus</i>	Sensitive	No	Arid areas, prairie grasslands and shrublands, floodplains with gravely or sandy soils. PA outside range of occurrence.

Sources: Foresman 2001; MTNHP 2004; MPIF 2000; Maxell et al 2003; Reichel and Flath 1995, MBDD 2005; Lenard et al. 2003.

### ***Gray Wolf (De-listed/BLM Sensitive)***

The gray wolf was de-listed from the Endangered Species Act in March, 2008. Before de-listing, the majority of the PA was within the Greater Yellowstone Recovery and Central Idaho Areas; populations in these areas were redesignated as nonessential experimental. A relatively small northwestern portion of the PA was in the Northwest Montana Recovery Area where wolves had endangered status. As reported in the 2004 Annual Report (USFWS *et al.* 2005), there are an estimated 835 wolves within the Northern Rocky Mountain Recovery Areas and 153 of those occur in Montana.

There essentially was no increase in the wolf population numbers in 2004 within the Greater Yellowstone Recovery Area and it is believed that the wolf population in this area has stabilized (USFWS *et al.* 2005).

### ***Bald Eagle (De-listed/BLM Sensitive)***

MFWP has been conducting bald eagle nest surveys since the early 1990's. Bald eagles have been documented throughout the PA. Breeding eagles can be found on the Missouri, Jefferson, and Yellowstone rivers. Resident bald eagle populations occur in the Upper Missouri River area at Hauser Lake and monitoring of these populations has occurred since the 1970's (Restani and Harmata 1997).

There are currently approximately 50 nest sites documented within the PA, although, not all of them are active annually. The mean brood size and nesting success has been steadily increasing for bald eagles within Montana. Bald eagle concentrations at Hauser Lake have been found to be strongly correlated to the presence of salmon (MBEWG 1994). From 1991 to 1996, 100 to 300 migrating eagles were identified to congregate at Hauser Lake. These numbers have declined due to a decline in kokanee salmon within the lake. By 2000, fewer than 20 bald eagles were documented utilizing the area. MFWP have been stocking the salmon at Hauser Lake in an attempt to restore the fishery, but have not been successful. The entire PA is potential winter habitat for bald eagles, although the larger rivers with fisheries are used more commonly.

### ***Golden Eagle (BLM Sensitive)***

In Montana, golden eagles eat primarily jackrabbits, ground squirrels, and carrion. They occasionally prey on deer and antelope fawns, small mammals, waterfowl, and grouse. Golden eagles nest on cliffs, in large trees, or occasionally on artificial structures such as power poles.

Approximately 60 percent of the PA is representative golden eagle habitat (grass and shrubland, woodland or agriculture). In 1996, surveys were conducted within the PA to determine population status and reproductive success (Markum and Harmata 1996). Within the 20,000 square kilometers (km<sup>2</sup>) that was surveyed, 84 breeding areas were located containing 142 nests. Only 29 percent

of the potential breeding areas were occupied and only six young were produced. These surveys were repeated in 1997 (Markum and Harmata 1997), and although they found that the number of pairs available for breeding, actual breeding attempts, and the overall number of young produced increased, the differences between years were not significant and were suspected to be due to proper survey timing and the use of aerial surveys.

The 1997 surveys documented 28 active breeding areas and 16 young produced.

### ***Burrowing Owl (BLM Sensitive)***

Burrowing owls are widely distributed east of the Continental Divide in Montana. They are typically associated with open grasslands and commonly use abandoned burrows of mammals for nest sites. Burrowing owls are opportunistic feeders and their diet varies with the seasons. Their historic range expands into the PA; however, there is no recent documentation of burrowing owls within the PA. The reduction in prairie dog populations is believed to be contributing to the decline of these owls.

### ***Brewer's Sparrow (BLM Sensitive)***

Brewer's sparrows are sagebrush obligate species that prefer sites with high shrub cover and large patch size (Ashley and Stoval 2004). Their open cup shaped nests are typically found in live big sagebrush. These sparrows occur within the PA and breeding habitat has been documented (Lenard *et al.* 2003).

### ***Sage Grouse (BLM Sensitive)***

Sage grouse are sagebrush obligate species that prefer sagebrush stands with a canopy cover of at least 20 percent and a height of 8 inches or higher. Research conducted in Montana found that breeding habitat usually occurs in sagebrush habitat with 20 to 50 percent sagebrush canopy cover (MSHWG 2005). Leks are typically located in areas of bare ground or low-density vegetation such as ridge tops. Nesting typically occurs within two miles of the lek and has a sagebrush canopy cover between 15 to 30 percent. Sage grouse populations in Montana are at low levels and are declining. State-wide, population numbers for sage grouse were relatively stable until 1984, while sage grouse declined from 1991 through 1996 and increased through 2000 (MSGWG 2005). Approximately nine percent (2,354,572 acres) of the statewide sage grouse habitat occurs within Region 3 and there are 36 known active leks in this region.

Historically, general sage grouse habitat comprised 1,620,000 acres within the PA, which has been reduced to approximately 340,000 acres. Within the PA, there are approximately 67,000 acres of sage grouse breeding/nesting habitat. These areas occur within the Big Hole River basin and the Yellowstone area. The BLM manages approximately 1,250 acres (2 percent) of the breeding/nesting habitat and 21,700 acres (6 percent) of

the general habitat (AMS **Figure 2-20**). MFWP monitors several leks in the PA; however, no sage grouse leks have been documented on BLM land in the PA since 1992.

### ***Sage Thrasher (BLM Sensitive)***

Sage thrashers are sagebrush obligate as they are common inhabitants of shrub-steppe communities that are dominated by big sagebrush. Nest-site selection is specific as most nests are located within or beneath sagebrush plants with high foliage and branch density (MPIF 2000). Dense patches of large sagebrush plants and low densities of exotic plants also seem to be an important habitat characteristic for sage thrashers. Documented breeding habitat occurs within the PA (Lenard *et al.* 2003).

### ***Chestnut-collared Longspur (BLM Sensitive)***

The Montana distribution for chestnut-collared longspurs is east of the Continental Divide on native mixed-grass and tall and short grass prairies. Chestnut-collared longspurs arrive on Montana breeding ground in late April and first clutches are initiated in early to mid-June (MPIF 2000). Flocking occurs as nesting ends in mid-August and migration begins in early September. Historic range occurs in the PA; however, there is no recent documentation of these birds using the PA (MBDD 2005; Lenard *et al.* 2003).

### ***Loggerhead Shrike (BLM Sensitive)***

Loggerhead shrikes breed throughout much of eastern Montana in a variety of habitats such as grassland prairies with scattered trees, riparian areas, woody draws, or cultivated land with shelterbelts. In Montana grasslands and shrub steppe, loggerhead shrikes tend to select areas with a significant presence of shrubs and forbs (Dechant *et al.* 1998). Loggerhead shrikes have been documented utilizing the PA (MBDD 2005; Lenard *et al.* 2003).

### ***Long-billed Curlew (BLM Sensitive)***

The long-billed curlew breeds throughout Montana and typically nests in the high plains, preferring well-drained native grasslands, sagebrush, and agricultural land with gentle rolling topography (MPIF 2000). Long-billed curlews are found throughout the PA (MBDD 2005; Lenard *et al.* 2003).

### ***McCown's Longspur (BLM Sensitive)***

Montana provides a large portion of the available breeding habitat for McCown's longspurs. They can be found throughout Montana, east of the Continental Divide. Historic habitat occurred within the PA; however, there have been no recent documentations of McCown's longspur using the PA (Lenard *et al.* 2003).

### ***Mountain Plover (BLM Sensitive)***

Research indicates that mountain plovers were historically widely distributed through the PA. Some early

naturalist reports suggest that they were not common, but always associated with short grass prairies (Knowles and Knowles 1998). Mountain plover surveys were conducted within some areas of the PA during 1991 to 1996 (Knowles and Knowles 1997). Plovers were generally associated with *Stipa comata* and *Bouteloua gracilis* habitat types. They were closely associated with slopes under five percent, vegetative heights under six cm, and greater than half the soil surface being bare ground or lichen. Reproduction was documented and approximately 150 mountain plovers were observed.

### ***Sprague's Pipit (BLM Sensitive)***

Research suggests that large areas of grassland are preferred by Sprague's pipit and, in some areas, a minimum area of 190 hectares is required (MPIF 2000). The historic range for Sprague's pipit occurred in the southeastern portion of the PA; however, there has been no recent documentation of these birds and only a small portion represents habitat (MBDD 2005; Lenard *et al.* 2003).

### ***Black-backed Woodpeckers (BLM Sensitive)***

In Montana, black-backed woodpeckers are most abundant in recent stand-replacing burns (Hill *et al.* 2002). Black-backs are most common in the northwest portion of the state; however, they have been documented in the Big and Little Belt Mountains and the Bridger Range. Surveys documented black-backed and three-toed woodpeckers nesting and successfully breeding in the Nursery Creek area in 2003. Nursery Creek (west side of Elkhorn Mountain Range) had a stand replacing fire in 2000 and was not salvage logged. Surveys for black-backs or three-toes were conducted in a salvage cut in the Boulder area in 2003 and neither was found.

### ***Three-toed Woodpeckers (BLM Sensitive)***

Three-toed woodpeckers are mainly found in northwest Montana; however, they have been documented within the PA (MBDD 2005; Lenard *et al.* 2003).

### ***Trumpeter Swan (BLM Sensitive)***

The trumpeter swans that breed within Montana are members of the Rocky Mountain population. Breeding trumpeter swans are not common in Montana but nest along the Rocky Mountain front where habitat is present. Wintering birds are mainly found in southwestern Montana. There is the potential for trumpeter swans to occur within the PA as breeding has been documented (MBDD 2005; Lenard *et al.* 2003).

### ***Willet (BLM Sensitive)***

Most of the documented occurrences of willets in Montana have occurred east of the Continental Divide in prairie wetlands. Willets prefer a mosaic of wetland types with adjacent grasslands for nesting and brood rearing. There is the potential for willets to occur within

the PA as breeding has been documented within the area (MBDD 2005; Lenard *et al.* 2003).

***Black-tailed Prairie Dog (BLM Sensitive)***

Historically, there was an estimated 1.5 million acres of black-tailed prairie dog occupied habitat in Montana. This has been reduced to an estimated 100,000 acres (Knowles 2005). Several prairie dog towns have been documented in the southern Elkhorn Mountains and in the Whitehall Valley (Knowles 2005).

There is only one documented prairie dog town within the Decision Area. The town is located at Holter Lake and is approximately 13 acres (402 mounds). BLM has issued a yearlong closure on the discharge of all weapons within the area of this town.

***Fisher (BLM Sensitive)***

Thought to be extirpated in Montana, fishers were reintroduced into western and northwestern Montana (Foresman 2001). Recently, verified fisher records have been documented in various mountain ranges of western and south-central Montana (Vinkey 2003), including the Beartooth Range. While there are no recent records of fisher in the PA (MTNHP 2004), potential habitat occurs in both the Planning and Decision Areas.

***Northern Bog Lemming (BLM Sensitive)***

Northern bog lemming habitat does occur within the PA and within the Decision Area. Although they have not been documented on BLM land, there is the potential for them to occur there.

***Spotted Skunk (BLM Sensitive)***

There are limited documented occurrences of spotted skunks in Montana and they have occurred in the south-western and south central portion of the state. There is the potential for spotted skunks to occur within the PA and within the Decision Area.

***Pygmy Rabbit (BLM Sensitive)***

Although pygmy rabbits have typically been associated with relatively tall, dense stands of basin big sage or Wyoming big sage, surveys completed by the BLM have found that pygmy rabbits also utilize stands of mountain, three-tip and low sage (Bocking 2005). Surveys also documented that pygmy rabbits will use stands of low, relatively open sagebrush. Montana is at the northeastern edge of the pygmy rabbits range. There has been documented burrow activity within the PA in the Big Hole River basin as recent as fall of 2004.

***Wolverine (BLM Sensitive)***

Wolverines occur in coniferous forests within the PA (Foresman 2001; Inman 2004). Wolverines are associated with alpine tundra and coniferous mountain forests of western Montana, especially in large wilderness areas. In Montana, Hornocker and Hash (1981) found most wolverine use in medium to scattered

timber, while areas of dense, young timber were used least. Wolverines avoided clearcuts and burns, crossing them rapidly and directly when they were entered at all. Wolverines in the Northern Rocky Mountain region are typically associated with fir, pine, and larch. Aspen and cottonwood stands may also be used in riparian areas and riparian areas may be important winter habitat.

Wolverines do not appear to be dependant on any particular vegetative habitat type habitat requirements appear to be large, isolated tracts of wilderness supporting a diverse prey base, rather than specific plant associations or topography. Dispersing individuals can be found far outside of usual habitats.

In the Decision Area, wolverines may be found at high elevation near Great Divide, Mount Thompson, and Sleeping Giant as well as within linkage corridors. The Sleeping Giant area may provide an important linkage corridor for wolverine between the Big Belt Mountains. A dead wolverine was located by MFWP on the Sheep Mountain ridgeline in the Clancy area. Wolverine tracks and cache were observed by MFWP in the Great Divide area within 2-4 miles of BLM lands.

***Townsend's Big-eared Bat (BLM Sensitive)***

The occurrence of Townsend's big-eared bat has been documented in at least 25 Montana counties (Foresman 2001) including counties in the PA. Lewis and Clark Caverns, along the southern border of the PA, contain one of four known nursery colonies in Montana (Tipton 2004).

A roosting site was documented on BLM land in Soap Gulch (2003) during AML surveys. Ample foraging habitat and extensive limestone outcrops within the PA provide roosting habitat for Townsend's big-eared bats.

***Fringed Myotis (BLM Sensitive)***

Western Montana is on the northeastern limit of the distribution of fringed myotis (Foresman 2001). Surveys conducted in 2003 on BLM land near the Big Hole River documented fringed myotis in three locations during mist netting. These bats were found between 5,800 to 6,000 feet elevation. Fringed myotis were also detected in five locations using bat detectors.

***Long-eared Myotis (BLM Sensitive)***

Long-eared myotis are distributed throughout Montana (Foresman 2001). Long-eared myotis were documented utilizing the Big Hole River area during the 2003 surveys conducted on BLM land.

***Long-legged Myotis (BLM Sensitive)***

Long-legged myotis range throughout Montana (Adams 2003). Mist net surveys conducted on BLM land within the Big Hole River area in 2003 documented long-legged myotis utilizing the area.

**Plains Spadefoot (*BLM Sensitive*)**

There are documented occurrences of plains spadefoot in the PA (Maxell *et al.* 2003).

**Boreal (Western) Toad (*BLM Sensitive*)**

While still widespread in western Montana, surveys suggest that populations of boreal toads may be declining (Maxell *et al.* 2003). Boreal toads occur in the PA where there is suitable habitat (Maxell *et al.* 2003) and have been found in the Decision Area in Halfway Creek in the Whitetail Pipestone area.

**Northern Leopard Frog (*BLM Sensitive*)**

Once widespread in Montana, leopard frogs appear to be extinct over much of western Montana, west of the Continental Divide (Maxell *et al.* 2003). According to Maxell *et al.* (2003), this species is currently known from only two sites west of the Continental Divide and evidence suggests that populations may have been extirpated from Jefferson County.

**Greater Short-horned lizard (*BLM Sensitive*)**

Short-horned lizards’ distribution is poorly documented east of the Continental Divide (Maxell *et al.* 2003). While there are old records of this species in Gallatin County, the current status of the species is unknown.

**Plants**

Special-status species are listed as threatened or endangered under the Endangered Species Act, proposed or candidates for listing, or designated as “sensitive” by BLM (Table 3-16).

**Musk-root (*BLM Sensitive*)**

Musk-root grows in vernal moist places in mountains, often at the bottom of undisturbed, open rock slides with cold air drainage. There are 11 known occurrences in the state, one historically on BLM land in Jefferson County.

**Sitka Columbine (*BLM Sensitive*)**

Sitka Columbine is an herbaceous perennial with stems which are four inches to two feet high and arise from a

Common and Scientific Name	Status	Habitat
Muskroot <i>Adoxa moschattelina</i>	Sensitive 1 occurrence on BLM land	Vernally moist area below talus slopes in mountains
Sitka columbine <i>Aquilegia Formosa</i>	Sensitive No occurrences on BLM land	Moist soil of open coniferous, cottonwood, or aspen forests in the montane to subalpine zone.
Sapphire Rockcress <i>Arabis fecunda</i>	Sensitive 4 occurrences on BLM land	Steep slopes with big sagebrush or mountain mahogany and sparse tree cover on Madison limestone
Lesser rushy milkvetch <i>Astragalus convallarius var. convallarius</i>	Sensitive 6 occurrences on BLM land	Grassland and open pine woodlands
Idaho sedge <i>Carex idahoensis</i>	Sensitive 1 occurrence on BLM land	Moist alkaline meadows, often along streams
American yellow lady’s slipper <i>Cypripedium parviflorum</i>	Sensitive 1 occurrence on BLM land	Fen, damp mossy woods, and seepage areas
Linearleaf fleabane <i>Erigeron linearis</i>	Sensitive 3 occurrences on BLM land	Dry, often rocky soil from the foothills up to moderate elevations, frequently with sagebrush.
Prostrate hutchensia <i>Hutchinsia procumbens</i>	Sensitive No known occurrences on BLM land or in PA	Vernally moist, alkaline soil of sagebrush steppe in the valley to lower montane zones
Dwarf purple monkeyflower <i>Mimulus nanus</i>	Sensitive 3 known occurrences in PA	Dry, open, often gravelly, or sandy slopes in the valleys and foothills.
Lemhi beardtongue <i>Penstemon lemhiensis</i>	Sensitive 2 occurrences on BLM land	Moderate to steep slopes often on open soils
Mealy primrose <i>Primula incana</i>	Sensitive Known occurrences in PA	Saturated, often calcareous wetlands
Ute ladies’ tresses <i>Spiranthes diluvialis</i>	Threatened No known occurrences on BLM land	Wetlands and swales in broad open valleys, often with calcium carbonate accumulations

Source: BLM and Montana Natural Heritage Program

simple or branched root crown. The plant grows in moist soil of open coniferous, cottonwood, or aspen forests in the montane to subalpine zone. The plant is known from eight locations in southwest Montana near the Madison and Gallatin county boundary.

***Sapphire Rockcress (BLM Sensitive)***

Sapphire rockcress is an endemic species, known from 21 locations, occurring only in the mountains of southwestern Montana. It is typically found in sagebrush grasslands on steep, dry slopes of limestone-derived soils, on warm exposures with sparse vegetation. It is known to occur in the Decision Area (Silver Bow County) where it grows with mountain mahogany, juniper, or limber pine woodlands. Fire has been frequent in habitats with sapphire rockcress, but the sparse vegetation does not usually carry fires well. Factors that affect the long-term persistence of this species are noxious weed encroachment, grazing and trampling, mining, and herbicide application (MTNHP n.d.).

***Lesser Rushy Milkvetch (BLM Sensitive)***

Lesser rushy milkvetch is known from 14 locations near Helena, with six of these locations on BLM lands. It grows in grassland and shrublands often in association with bluebunch wheatgrass, fescue species, and mountain big sage.

***Idaho Sedge (BLM Sensitive)***

Idaho sedge is a regional endemic known from 40 locations in southwestern Montana. One of these occurrences is on BLM land in Silver Bow County. This species grows in moist, alkaline, subirrigated, streamside meadows with other grasses and sedges. Shrubby cinquefoil may also be present. Idaho sedge can withstand light to moderate livestock utilization, but declines under heavy grazing (MNHP n.d.).

***American Yellow Lady's Slipper (BLM Sensitive)***

There are 72 known occurrences of yellow lady's slipper in Montana, with three in the PA in Lewis and Clark and Gallatin counties. One of these occurrences is on land administered by BLM. This species grows in fens, damp mossy woods, seepage areas, and moist forest-meadow margins in valleys and mountains.

***Linearleaf Fleabane (BLM Sensitive)***

There are four known occurrences of linearleaf fleabane in the PA; three locations are managed by the BLM in the Scratchgravel Hills area. Mining, grazing, and the encroachment of exotic weeds are factors that may affect long-term population stability. Linearleaf fleabane grows on dry, often rocky soil from the foothills up to moderate elevations, frequently with sagebrush. The low stature of this plant probably means that it responds positively to livestock grazing. Leafy spurge and spotted knapweed threaten populations in the Scratchgravel

Hills. Observations suggest that this species may respond positively to disturbance.

***Prostrate Hutchinsia (BLM Sensitive)***

Prostrate hutchensia is an annual that flowers in June and matures in July. The plant grows in vernal moist, alkaline soil of sagebrush steppe in the valley to lower montane zones. The plant has been found in areas adjacent to, but not in the PA itself.

***Dwarf Purple Monkeyflower (BLM Sensitive)***

Dwarf purple monkeyflower is only known from a few extent occurrences in the state, plus two historical collections. Populations are generally small and in habitats susceptible to weed invasion. The plant is found in dry, open, often gravelly, or sandy slopes in valleys and foothills. It has been found in three locations in the PA, one of which is adjacent to land managed by the BLM.

***Lemhi Beardtongue (BLM Sensitive)***

There are 83 known occurrences of Lemhi beardtongue in southwestern Montana, including two in Silver Bow County on land administered by the BLM. This regional endemic, occurring only in southwestern Montana and adjacent Idaho, grows on moderate to steep east and southwest-facing slopes in habitat dominated by sagebrush and bunchgrasses. Fire suppression may be a factor in the range-wide decline. Monitoring studies in Beaverhead County have found that recruitment dramatically increased after fire treatment, consistent with tendency of fire-adapted species to emerge from seed banks following removal of litter and duff (MNHP n.d.).

Noxious weed infestations, especially spotted knapweed tend to invade habitats occupied by Lemhi beardtongue, especially following fire.

***Mealy Primrose (BLM Sensitive)***

Mealy primrose is known from 22 locations in Montana of which 10 are in the PA. This species grows in saturated wet meadows, often calcareous, with sedges and grasses adapted to wetland growing conditions. Livestock grazing can have variable effects on mealy primrose. Grazing by livestock removes seed heads but does not kill the plant and associated removal of sedges and grasses by grazing reduces shading and allow regrowth from the basal rosettes. Lowered water tables, through draining of wetlands or channel downcutting are the primary threat (MNHP n.d.).

***Ute Lady's Tresses (Threatened)***

This rare orchid is known to occur at 12 sites in Montana, all on private or state land, mostly in Gallatin, Jefferson, Madison, and Broadwater counties. It grows in wetlands and swales and wet meadows in broad, open valleys, with calcareous carbonate accumulations. It grows in the Piedmont Swamp in Jefferson County.

## WILDLAND FIRE MANAGEMENT

### Historic Fire Regime

Coarse-scale definitions for historical fire regimes were developed by Hardy *et al.* (2001) and Schmidt *et al.* (2002). The historical fire regimes are based on average years between fires (frequency) combined with the severity (amount of replacement). The regimes are shown in **Table 3-17**. Historic fire regimes for the PA are shown on **AMS Figures 2-11a, 2-11b, and 2-11c**.

### Fire Regime Condition Class

A Fire Regime Condition Class (FRCC) is a classification of the departure from the historic fire regime (Hann and Bunnell 2001). The classification is based on a relative measure describing the degree of departure from the historical natural fire regime. **AMS Figures 2-12a, 2-12b and 2-12c** shows fire condition classes for the PA.

In FRCC 1, vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances are considered within the natural (historical) range of variability. Fire behavior, effects, and other associated disturbances are similar to those that occurred prior to fire exclusion (suppression) and other types of management that do not mimic the natural fire regime and associated vegetation and fuel characteristics. Composition and structure of vegetation and fuels are similar to the natural (historical) regime. The risk of loss of key ecosystem components (e.g. native species, large trees, and soil) is low.

In FRCC 2, there is a moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances. Fire behavior, effects, and other associated disturbances are moderately departed.

Composition and structure of vegetation and fuel are moderately altered. Uncharacteristic conditions range from low to moderate and the risk of loss of key ecosystem components is moderate.

In FRCC 3, there is a high departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances. Fire behavior, effects, and other associated disturbances are highly departed (more or less severe). Composition and structure of vegetation and fuel are highly altered. Uncharacteristic conditions range from moderate to high and the risk of loss of key ecosystem components is high.

Generally, the consensus among fire ecologists (Brown and Smith 2000; Crane and Fisher 1986; Hardy and Arno 1996) is that the structure and composition of most forest communities in the west, including the PA, have been altered by exclusion of natural cycles of fire. Fire suppression in the last century has reduced the frequency and spatial extent of fires in many forest communities. Fire suppression generally has lengthened intervals between fires, contributing to the creation of dense stands with high levels of fuel.

The paradigm most often adopted relative to the historic role of fire is that low to moderate intensity fires increases dominance of Douglas-fir and ponderosa pine on relatively dry sites. These periodic fires pass through the forest, burning needles and debris on the forest floor and lower branches of trees. Fires reduce numbers of seedlings; remove dense understories of saplings and pole-size trees, and thin overstory trees. Prior to fire suppression efforts, fire rarely reached the tree crowns and therefore usually did not kill the large, mature ponderosa pine and Douglas-fir. Exposure of mineral soil, in openings caused by fire, perpetuated reproduction of Douglas-fir and ponderosa pine in a mosaic pattern.

Under pre-settlement fire regimes, low-elevation forests were often more open. Pre-1900 fires often covered large areas and were characterized by uneven burning patterns that resulted from the mosaic pattern of stand structure. Past burn mosaics increased the probability that subsequent fires would also burn in a mixed pattern (Brown and Smith 2000).

<b>Regime</b>	<b>Frequency and Severity</b>
<b>I</b>	0–35 year frequency and low (surface fires most common) to mixed severity (less than 75 percent of the dominant overstory vegetation replaced).
<b>II</b>	0–35 year frequency and high (stand replacement) severity (greater than 75 percent of the dominant overstory vegetation replaced).
<b>III</b>	5–100+ year frequency and mixed severity (less than 75 percent of the dominant overstory vegetation replaced).
<b>IV</b>	35–100+ year frequency and high (stand replacement) severity (greater than 75 percent of the dominant overstory vegetation replaced).
<b>V</b>	200+ year frequency and high (stand replacement) severity.

Source: Hardy *et al.* (2001) and Schmidt *et al.* (2002)

Prior to aggressive fire suppression, wildfires of variable intensity and severity periodically occurred. Stand-replacement fires, especially in the cool Douglas-fir and subalpine fir types were the norm under pre-settlement conditions.

Fire suppression is the most extensive cause for departure from the historic fire regime. However, other causes include invasive species (e.g. weeds, insects, and diseases), management activities affecting forest composition and structure (e.g. large trees removed in a frequent surface fire regime), and grazing.

### Current Wildland Fire Management

**Table 3-18** outlines the Fire Management Zones and their predominant Fire Management Categories in the Fire/Fuels Management Plan.

Current policy is to control all wildfires burning on or threatening public land within the first burning period. Modified suppression areas were established based on consideration of the following criteria:

- Values at Risk.
- Fire behavior.
- Fire occurrence.
- Beneficial fire effects, including but not limited to a reduction of fuel loading.
- Fire suppression costs.
- Consistency with other agency plans and policies.

### Wildland Fire History

According to the Butte Field Office Fire Management Plan, there were 194 reported wildland fires between 1980 and 2003, of which 53 percent were human-caused. Local fire departments (non-federal) may or may not report wildland fires to the BLM. An average of eight fires burned an average of 1,348 acres per year (USDI-BLM 2004f).

Direction for fire and fuels management needed to protect other resource values and broad levels of treatment over 10 years, as described in the Fire/Fuels Management Plan are shown by category in **Table 3-19**.

<b>Fire Management Zone<sup>1</sup></b>	<b>Category</b>	<b>FMZ Acres<sup>2</sup></b>	<b>BLM Acres in FMZ<sup>2</sup></b>
1. Absoraka Foothills	C	67,700	3,900
2. Big Belt Mountain	C	360,300	7,200
3. Big Hole River Corridor	C	68,800	11,100
4. Blackfoot (See Missoula Field Office)	C	340,800	0
5. Boulder River	B	264,400	14,300
6. Clancy/ Marysville	C	299,600	28,200
7. Elkhorn Mountains	C	482,900	68,900
8. Fleecer Mountain	C	284,300	18,100
9. McCartney/ Rochester	C	273,600	28,100
10. North Hills	B	33,900	6,300
11. Pipestone	C	369,300	41,000
12. Scratchgravel Hills	B	126,900	7,900
13. Sleeping Giant/Sheep Creek	C	82,600	20,500
14. Spokane Hills and North	B	156,500	6,800
15. Three Forks	C	485,000	31,200
16. Wise River Townsite	B	10,100	1,400
17. Bozeman/ Livingston Scattered Tracts	A	1,714,300	7,300

Source: USDI-BLM 2004b

<sup>1</sup> Category and associated treatments only apply to BLM land within each zone.

<sup>2</sup> Acres are approximate.

<b>Table 3-19 Fire Management Categories</b>			
<b>Category A</b>	<b>Category B</b>	<b>Category C</b>	<b>Category D</b>
<b>Description</b>			
Fire is not desired at all (8,000 acres).	Unplanned fire is likely to cause negative effects (81 million acres).	Fire is desired to manage eco-systems, but current vegetative condition creates constraints on use (252 million acres).	Fire is desired; no constraints on its use (200 acres).
<b>Fire Management Activities</b>			
Mitigation and suppression required. Fire should not be used to manage fuels.	Suppression required. Fire and non-fire fuel treatments may be used	Suppression may be required. Fire and non-fire fuel treatments may be used	Suppression may not be necessary. Both fire and non-fire treatments could be used
<b>Rationale for Categorization</b>			
Direct threats to life or property. Eco-systems not fire dependent. Long fire return intervals.	Unplanned ignitions would have negative effects on ecosystems unless mitigated	Significant ecological, social, or political constraints	Few ecological, social, or political constraints. Less need for fuels treatment.
<b>Fire Suppression Considerations</b>			
Emphasis on prevention, detection, and rapid suppression response and techniques.	Emphasis on prevention/education and suppression.	Emphasis on reducing unwanted ignitions, resource threats, and fuels accumulations.	Emphasis on using planned and unplanned wildfire to achieve resource objectives.
<b>Multiple Fire Priority<sup>1</sup></b>			
<b>Highest</b>	<b>High</b>	<b>Medium</b>	<b>Lowest</b>
<b>Anticipated type and level of fire/fuel treatments, including treating areas that were previously treated:</b>			
<1,000 acres mechanical	105,000 acres prescribed fire 74,000 acres mechanical 37,000 acres chemical weed treatment	192,000 acres prescribed fire 84,000 acres mechanical 149,000 acres chemical weed treatment	2,000 acres fire use or prescribed

Source: H-1601-1 Land Use Planning Handbook (USDI-BLM 2005a) and IM No. 2002-034

<sup>1</sup>If multiple fires were burning, Categories A and B would generally receive priority for fire management resources.

## CULTURAL RESOURCES

Currently in the Butte Field Office there are 1,174 historic properties. Of these, 538 are prehistoric sites, 506 are historic sites, eight contain both prehistoric and historic components, and 130 sites on private land were recorded due to the effects of federal projects. In addition, 63 sites have been determined to be eligible for listing on the National Register of Historic Places, and 65 sites that have been determined not to be eligible for listing. The Butte Field Office has two historic properties listed on the National Register: the Crow Creek Ditch-and-Flume System, and the McCormick Feed and Livery sign. The Butte Field Office boundaries host segments of two national trail systems; the Lewis and Clark National Historic Trail, and the Continental Divide National Scenic Trail.

Cultural Resources managed by BLM are assigned to one of six Use Categories, summarized as follows:

**Scientific Use** Applies to any cultural property determined to be available for consideration as the subject of scientific or historical study at the present time, using currently available techniques.

**Conservation for Future Use** This category is reserved for any unusual cultural property which, because of scarcity, a research potential that surpasses the current state of the art, singular historic importance, cultural importance, architectural interest, or comparable reasons, is not currently available for consideration as the subject of scientific or historical study that would result in its physical alteration.

**Traditional Use** This category is to be applied to any cultural resource known to be perceived by a specified social and/or cultural group as important in maintaining the cultural identity, heritage, or well being of the group.

**Public Use** This category is applied to any cultural property found to be appropriate for use as an interpretive exhibit in place, or for related educational and recreational uses by members of the general public.

**Experimental Use** This category is applied to a cultural property judged well-suited for controlled experimental study, to be conducted by BLM or others concerned with the techniques of managing cultural properties.

**Discharged from Management** This category is assigned to cultural properties that have no remaining identifiable use.

Complete Use Category definitions are located in **Appendix K – Cultural Resources**, subsection .42; A-F.

### Prehistoric Sites

Prehistoric sites from each of the cultural periods identified for the Northwestern Plains region have been documented in southwest Montana. The oldest occupations in the PA come from the Paleo-Indian period, about 12,000 to 8,000 years ago.

An increase in occupational intensity during the Middle Plains Archaic (ca. 5,000–3,100 Before Present [B.P.]) is evidenced by comparatively frequent occurrence of projectile points diagnostic of the McKean technocomplex. This increase in prehistoric use is punctuated during the Late Plains Archaic (ca. 3,100–1,400 B.P.). Corner-notched Pelican Lake-type projectile points are more profuse than any other single diagnostic point style identified in southwestern Montana (Davis *et al.* 1980; Deaver and Deaver 1986; Foor 1994). The Late Prehistoric Period (ca. 1,400–200 B.P.) is also represented, corresponding with an era of increased moisture and resultant improved habitat conditions for buffalo and other large ungulates (Bryson *et al.* 1970; Fredlund 1979). Side-, corner-, and tri-notched arrow points, characteristic of the “Old Women” type, commonly occur in association with open camps, communal kills, lithic workshops, and as isolated finds (Davis *et al.* 1980; Taylor *et al.* 1984; Deaver and Deaver 1986).

While occupational intensity varied through time, site patterns appear to have remained relatively constant. The majority of prehistoric sites, regardless of their age or apparent cultural affiliation, can be classified into one of seven types based on their suspected functions or the presence of unique attributes. The types include: 1) lithic scatters, 2) habitations, 3) stone cairns and alignments, 4) toolstone quarries, 5) hunting sites, 6) rock art and ceremonial sites, and 7) trails.

**Lithic scatters** are the most commonly identified sites. They consist of concentrations of waste flakes and occasionally cores and complete or broken tools. Lithic scatters may reflect a range of functional activities, from the initial reduction of locally obtained toolstone to the production of formal tools such as projectile points or scrapers. While some lithic scatters may mark the former locations of prehistoric camps, the absence of domestic artifacts and features suggests that they generally represent brief, intermittent occupations. This site type is pervasive throughout southwest Montana and occurs in nearly all environmental settings. Deaver and Deaver (1986) found that of the 199 sites recorded in the Decision Area within Broadwater, Deer Lodge, Gallatin, Jefferson, Park, and the southern half of Lewis and Clark Counties prior to 1986, 121 (61 percent) are lithic scatters.

**Habitations** are the second most common prehistoric site type in southwest Montana. They range from small, briefly occupied field camps to expansive base camps containing features attributable to multiple extended-family groups. These sites typically have evidence of hearths (fire-cracked rock concentrations), and artifactual remains of food processing and/or preparation. The remains of residential structures are occasionally apparent and may consist of natural land form features, such as rock shelters, or purposefully constructed dwellings. In general, researchers believe that the stone rings found

at some habitation sites were used to hold down the covers of tipis.

**Stone cairns and alignments** occur in a wide range of environmental settings in southwest Montana, and many have been recorded in the Planning and Decision Areas. Individual features take a range of forms and based on their landscape position, it is occasionally possible to determine site functions. Linear arrangements of cairns often designate prehistoric trails or may have functioned as drive lines for communal kills. Isolated features or small groups of cairns located on prominent ridge lines or mountain crests may mark vision quest sites or other ceremonial activities.

**Toolstone quarries** are areas where prehistoric peoples obtained raw materials to be used for the manufacture of stone tools. Quarries are associated with exposures of fine-grained glassy rocks such as chert, chalcedony, quartzite, and vitreous basaltic stone.

**Hunting Sites** represent areas where groups of people worked collectively to force small herds of ungulates - including bison, pronghorn, and bighorn sheep - into preselected kill areas. Communal kills are the best documented of the prehistoric hunting sites in southwest Montana. Often the animals were herded over cliffs, where the fall killed or maimed them. In other cases, brush or pole enclosures were constructed and once animals were herded inside they were killed using projectiles or blunt instruments. Communal kills generally contain dense animal bone deposits, as well as associated projectile points and meat/hide processing tools. Kill sites usually occupy lowland settings along major rivers or streams that provide topographic features favorable for herding and containing/killing animals. Small numbers of sites representing this type have been recorded within PA (Scarborough 1975; Deaver and Deaver 1986).

Hunting blinds are another type of prehistoric hunting site known to exist in southwest Montana, including the Decision Area (Kiely, pers. comm. 2003). A hunting blind typically is found near a game trail or watering spot, and usually appears as a crescent-shaped rock. They were built and used by prehistoric people to lay-in-wait in order to ambush game.

**Rock art and ceremonial sites** represent highly personal cultural manifestations that are oftentimes inter-related. In southwestern Montana, rock art sites consist entirely of pictographs—images that are painted on rock faces, boulders, or other outcrops. They typically appear as monochrome panels with simple line drawings of human figures, animals, tally marks, and geometric designs. Rock art sites often occupy vertical bedrock faces that form narrow canyons at the mouths of tributary streams (Greer and Greer 1998).

**Trails** used by prehistoric people originally linked all the major valleys and ridge line systems in southwestern Montana. Few however, have been documented, in large

part due to modern alterations to their associated features. The Old North Trail and the Indian Creek Trail are two examples of routes used by prehistoric people in Montana. There is no consensus about the locations of these trails, however.

## Historic Sites

Mining-related sites are the most common historic sites in the PA. These sites span from the period from the early 1860s to after World War II, and many retain evidence of more recent development. Site complexity ranges from individual prospect pits and test trenches to concentrations of adits, shafts, waste-rock dumps, and remains of industrial structures such as mills. Placer mining sites also exist in the PA and almost universally are identified by accumulation of placer tailing (man- or machine-made piles of gravel) along a creek or river. A placer mine is often accompanied by a network of ditches and dams. Residential buildings in various states of decay and other domestic features can be found at both lode and placer mine sites. The PA also contains remnants of towns (in various states of decay) that appeared in response to the residential, commercial, and social needs of miners and their families. The bulk of the larger and/or complex mine sites and towns are on private rather than public land (McDaniel 1975; McCormick and Quivik 1991; Park 1993a; Park 1993b; Sanders 1993; Sanders 1996; Peterson and Melhs 1996; Rossillon 1997; Travis 1997a; Travis 1997b; Sanders and Walker-Kunz 1998; Fairchild and Horstman n.d.a; Fairchild and Horstman n.d.b).

Most mining-related sites lie within districts, organizational frameworks historically imposed over a fairly concentrated area of mining activity. Historic mining districts all or partly within the Decision Area include Austin, Boulder, Clancy, Colorado, Confederate Gulch High Ore Creek, Marysville, McClellan/Mitchell, Melrose, Indian Creek, Pipestone, Radersburg, Scratchgravel Hills, Stemple, Whitehall, and Winston. Most of these districts have been minimally recorded to date. The great copper mining and smelting complex of Butte-Anaconda is also within the PA. Unlike most other mining districts in the area, it has been subject to intensive inventory.

Agricultural-related resources are the second most common historic site type documented in the PA. Due to the region's short growing season, large farmsteads and/or homesteads are rare, especially in comparison to much of eastern Montana. Raising livestock rather than cultivation of crops (other than hay) dominated the region's agricultural development. Cattle and sheep ranches and dairy farms tend to be widely scattered in favorable areas such as along streams and near upland springs, and with few exceptions are located on patented (i.e., private) rather than public land. A variety of site types which historically played ancillary roles in ranching/farming operations have been documented within the Decision Area. The most prevalent of these site types are

dams and ditches, cow camps, sheep camps, line shacks, and isolated corrals (Davis *et al.* 1980).

Several historic roads and railroad lines also exist in the PA. Road and railroad alignments are mostly confined to private land and, in the case of roads, state-owned land. Similar to agricultural properties, sites secondary to the development and/or use of a road or railroads have been identified in the Decision Area. To date these include construction camps and signs. Some of the other more common historic properties known to exist in the PA are timber camps and sawmills, and remnants of trails and/or wagon roads. A few isolated graves and an airplane crash site have been recorded in the Decision Area (Stoner 1981; USDI-BLM 1983; McCormick 1997).

Several of the known cultural resource sites in the Decision Area have been determined eligible for listing in the National Register of Historic Places. Of these, however, only two sites have been listed.

## PALEONTOLOGICAL RESOURCES

Paleontology is a discipline that combines biology and geology in the study of fossils. Fossils are paleontological resources that include the body remains, traces, or imprints of plants or animals that have been preserved in sedimentary deposits during past geologic or prehistoric times.

Fossils and fossil-bearing deposits occur in Paleozoic, Mesozoic, and Cenozoic rocks throughout the PA, and range in age from 600 million years to recent. Important fossil resources within the PA focus on vertebrate fossils that are of scientific interest from a variety of points of view (for example: dinosaur skeletons, nests and eggs, turtle remains, or horses and camels). Most of these vertebrate fossils occur in Cenozoic Era rocks, from the Paleocene to the Pliocene, approximately 65 million to 1.6 million years ago. In the PA, the Cenozoic fossils come mostly from Eocene and Miocene epochs. These strata are most well known for containing horses and camels.

Paleozoic and Mesozoic sediment (deposited 600 million to 65 million years ago) in the PA most commonly contain marine invertebrates, although non-marine invertebrates, fish and reptiles occur as well. Within these various sedimentary units, fossil density and occurrence ranges from sparse to abundant. Some individual sedimentary beds are composed of predominantly fossil and shell fragments (fossiliferous), while others may rarely contain fossils. The Madison, Kootenai, and Morrison formations are important stratigraphic units that contain these fossils (Davis *et al.* 1980). The stratigraphic section has been described in some detail by Freeman and others (1958) and Klepper and others (1971). Their work indicates which sedimentary units contain fossils, the most commonly observed fossil types, and occasionally provide an indication of the fossil density or abundance. Exposures and fossil occurrences in the Paleozoic and

Mesozoic stratigraphic units of the PA are similar to those found commonly across southern Montana and are, therefore, not considered to be either unusual or unique (Davis *et al.* 1980).

GIS analysis for the PA shows that only three fossil specimens have been recorded as flying reptiles; seven fossil specimens have been terrestrial dinosaurs; 61 specimens have been marine reptiles, and 189 specimens have been fossil mammals. By far the most productive formations are Tertiary sedimentary rocks and sediments. The largest collection of recorded paleontological localities (60) is located in Jefferson County, containing mixed specimens of mammals and marine reptiles. But while Jefferson County has the largest number of recorded fossil localities and specimens, no terrestrial dinosaurs are included in those known localities.

## VISUAL RESOURCES

The visual resource inventory includes a general discussion regarding VRM Classes. Under the current Headwaters RMP, specific VRM Classes were assigned to areas characterized by high visual resources (river corridors and Wilderness Study Areas). All other public land was not designated a specific VRM Class until a project occurred in that area. At that time, VRM Classes were assigned according to BLM's VRM Handbook.

VRM Class I was assigned to WSAs. Management practices within this class must not be noticeable by the casual observer.

VRM Class II was assigned to special recreation areas or Areas of Critical Environmental Concern and some river corridors. VRM II allows for minimal visual disturbance from management activities that should be indiscernible to the casual observer.

VRM Classes have been assigned to some land based on specific project plans within the PA since 1983. VRM Classes consider special management areas, key observation points, scenic quality, distance zones, and sensitive areas.

## RESOURCE USES

### FOREST AND WOODLAND PRODUCTS

**Table 3-20** summarizes the commercial forest land acres. The Decision Area contains 87,797 acres of commercial forest land. Under current BLM policy (BLM Manual 5251.11), forest and woodland stands are classified as commercial forests when they are producing or capable of producing at least 20 cubic feet of wood per acre per year of commercial tree species. The predominant commercial species are Douglas-fir, lodgepole pine, and ponderosa pine, with minor amounts of subalpine fir and spruce.

Designation	Acres
Total Forested Acres (CFL + woodland)	110,350
Commercial Forest Land (CFL)	87,797
Suitable CFL	82,815
Nonsuitable CFL	4,982
CFL Set Aside for Wildlife <sup>1</sup>	8,035
CFL Set Aside for Recreation	7,076
CFL Set Aside for Wilderness Recommendations	7,939
Total CFL Set Aside	28,032
Total Available Base (Suitable CFL-Total CFL Set Aside)	54,783
TPCC Restricted Base <sup>2</sup>	42,650
Non-restricted Base (Total Base Restricted Base)	12,133
Allowable Cut (million board feet per decade)	27.21
Miles of Road Construction (Miles of Permanent road per decade)	55
Acres Cut per Decade (@ 3 thousand board feet per acre)	9,069

CFL = Commercial Forest Land

TPCC = Timber Production Capability Classification

<sup>1</sup> Set Aside – Forest areas that have been removed from general forest management and the use of silvicultural techniques to meet forest production goals.

<sup>2</sup> TPCC Restricted Base – Forest areas where specific silvicultural treatment methods and/or techniques may be restricted on a case-by-case basis to prevent or mitigate specifically identified resource impacts.

The forested acres have changed since 1984 due to a change in the Decision Area boundary and several large land exchanges.

Approximately 5,169 acres of forested public land in the PA has been treated by forest management since 1984. The majority of forest treatments were selective harvests in mature stands. Nearly half of the acres (2,052 acres) treated since 1984 where forest salvage and restoration planting treatments on a portion of the 5,178 acres of commercial forest burned by wildfires in 2000. Wildfire suppression has kept forest structure changes from wildfire to less than one percent of all disturbances.

Approximately 60 to 80 percent of the forest land effected by the larger wildfires in the Decision Area were completely consumed by stand replacement fire intensities, potentially resulting in a quarter to half of the area considered to be deforested as very little seed source remains for natural regeneration.

An estimated 29,000 areas of conifer colonization of grass-shrub vegetation types has occurred over the last several decades with similar conifer establishment problems developing in the open forest types, dry forest meadows and woodlands that have become heavily overstocked by young conifer trees as well, converting stands to high fuel loadings and closed canopy conditions, particularly in the WUI.

In the 1984 Headwaters RMP estimated resources could support an annual allowable cut of 2.6 to 2.9 million

board feet. The estimate amounted to an average of 867 acres per year or a total of 17,333 acres over the 20 years since the 1984 plan was established.

There are 22,553 acres of woodland, which are forest communities often occupied by noncommercial species such as limber pine, juniper, mountain mahogany, or quaking aspen, and are often accompanied by Douglas-fir and ponderosa pine. **Table 3-21** presents a summary of forested woodland acres by county.

County	Current Woodland Acres
Beaverhead	271
Broadwater	4,935
Deer Lodge	18
Gallatin	409
Jefferson	9,139
Lewis and Clark	5,570
Park	506
Silver Bow	1,705
<b>Total</b>	<b>22,553</b>

## LIVESTOCK GRAZING

Of the approximately 307,309 acres of public land in the PA, 273,039 acres are managed as part of 237 grazing allotments ranging in size from 4 acres to 13,118 acres. Thirteen allotments are currently vacant. Seven allot-

ments are managed by other BLM or USFS offices. The number of allotments grazed by cattle, horses, and sheep is 210, 5, and 3 respectively, with three additional allotments grazed by both cattle and sheep and one grazed by both horses and sheep. Resource allocation within an allotment is based on AUMs (the amount of forage needed to sustain one animal unit, or its equivalent, for one month). AUMs required for livestock are based on the nutritional needs specific to each livestock class. The domestic livestock permitted to graze on allotments in the PA includes cattle (24,139 AUMs), sheep (1,286 AUMs), horses (240 AUMs), and buffalo (12 AUMs). **AMS Table 2-15** displays allotment information in a tabular form. **AMS Figures 2-13a, 2-13b and 2-13c** show the grazing allotments in the PA.

## Grazing Permits and Leases

The following Affected Environment discussion is based upon the grazing regulations and guidance in effect at the time the RMP was published. New regulations with a few legally challenged exceptions become effective August 11, 2006.

Grazing preference or preference is defined as a superior or priority position against others for the purpose of receiving a grazing permit or lease. Grazing use in the allotment is authorized through issuance of grazing permits or leases. The permits and leases and attendant activity plans describe the livestock class, intensity, duration, and timing of grazing as well as fences, water developments, and other range improvements to be installed. BLM analyzes effects of proposed grazing according to the NEPA process and prepares an Environmental Assessment (EA) prior to permit issuance or renewal. Most permits and leases are valid for a period of 10 years.

Details of management may be incorporated into an Allotment Management Plan that becomes part of the lease or permit. These plans include grazing instructions specified to meet resource condition, sustained yield, multiple uses, economic, and other objectives. In the PA, the trend is to focus more on reviewing management during the rangeland health evaluation process rather than to develop new plans (Thompson, pers. comm. 2004a). Currently, 41 of the 226 allotments (18 percent) have approved Allotment Management Plans. Five of these are Coordinated Resource Management Plans (CRMPs) developed in conjunction with USFS land in the PA.

The BLM authorizes permittees to use the land for grazing by establishing an allocated amount of forage a permittee may graze on an allotment (this is referred to as "active use"). A permittee may enter temporary nonuse status when operators do not wish to graze for financial, operational, or related reasons or where resource conditions do not allow for grazing. Alternatively, if excess resource is available as a result of favorable weather and good growth conditions, the BLM may temporarily

authorize the permittee to graze in excess of the established level of use. If the permittee chooses to allow another operator to graze livestock on their permitted allotments livestock control agreements must be filed with and approved by the Authorized Officer.

## Range Health Standard Assessments

The conditions of resources on each allotment are determined through assessment and monitoring. From these assessments, the potential impacts of grazing are evaluated in the context of standards for rangeland health and guidelines for grazing administration. A BLM interdisciplinary team evaluates allotments in accordance with established rangeland health standards and guidelines. Standards are descriptions of the desired condition of the biological and physical components and characteristics of rangeland. Guidelines are management approaches, methods, and practices that are intended to achieve a standard.

Allotment evaluations include identification of factors influencing the condition of the resources. Where current grazing management practices or levels of grazing use on the public land are a significant factor in failure to achieve rangeland health standards, BLM has until the next grazing season to start implementing corrective actions.

Such actions may include adjustment to grazing duration, timing, intensity, forage utilization, or installation or implementation of range improvement projects. Permittees, interested publics and other agencies are consulted and actions are analyzed according to the NEPA process prior to implementation of corrective actions. To date, 110 allotments have been assessed as to whether they meet Land Health Standards.

Permanent monitoring points established in accordance with the objectives of the 1984 RMP planning effort are used to evaluate upland and riparian sites throughout the PA. Upland monitoring stations are located in key areas and include transects assessed using Daubenmire's method of ocular plant cover estimation and photo points. Riparian areas and wetlands are primarily monitored using cover board photo points (Thompson, pers. comm. 2004a). The trend observed in long-term monitoring of these locations is used to assess the health and condition of these areas and provide a basis for adjusting management, including grazing, as appropriate.

## Range Improvement Projects

Range improvements are installed and projects are implemented to improve condition or facilitate management of resources. In the PA, most range improvements consist of items such as fences, wells, and spring developments. Fences are used to keep livestock of various permittees' separate, control the season of use, and exclude grazing from selected areas. Water improvements help improve distribution of livestock and alleviate pressure on natural water sources such as streams and wet-

lands as well as providing water for some species of wildlife. Other range improvement projects such as prescribed burning are used to produce an immediate change in vegetative or environmental conditions that will lead to improved rangeland health or utility.

Range improvements can be authorized on public land under a Cooperative Range Improvement Agreement or Range Improvement Permit. Cooperative Range Improvement Agreements are used to authorize permanent structural improvements such as reservoirs. Range Improvement Permits only authorize installation of removable improvements such as livestock handling facilities. Proposed projects funded by BLM are prioritized based on evaluation of the need and costs as they relate to expected benefits. All improvements are constructed according to BLM standards and specifications.

### **Prohibited Acts**

Permits or leases and preference may be cancelled and civil penalties may be applied as a result of grazing rules violations. The BLM is responsible for monitoring use on the land it administers.

### **Factors Influencing Grazing**

A variety of environmental, economic, and social factors weigh heavily in planning decisions related to livestock grazing in the Decision Area. Grazing management is adjusted during renewal of permits and leases and at other times as appropriate in response to these factors. Site-specific factors influence management to a more notable degree, but the following factors influence grazing management in each of the management areas.

### **Wildlife Habitat**

One objective of allotment management is to maintain and, where possible, enhance wildlife habitat. Protection of federally listed species and species of special concern occasionally requires intensive management that is sensitive to the wildlife needs. In addition, maintaining available forage for big game animals, especially on winter range, can conflict with livestock grazing. Livestock grazing is adjusted as appropriate to ensure wildlife habitat requirements are taken into account in accordance with the 1984 Headwaters RMP.

### **Riparian Areas and Wetland**

Riparian and wetland areas are integral to maintaining many ecosystem processes and maintaining their health and function is a high priority. Succulent vegetation, shade, and water are often associated with these areas. Issues related to riparian and wetland conditions are a dominant factor driving changes in allotment management. While most upland communities meet condition and health standards, riparian areas frequently are in need of more intensive management to improve conditions. During review of grazing leases and permits, appropriate management tools and guidelines for grazing

management options are considered and prescribed as necessary to improve the condition of riparian and wetland areas (Thompson, pers. comm. 2004b).

### **Noxious Weeds**

Noxious weeds effectively compete against native vegetation for resources and continue to expand in the PA. These weeds are unpalatable to most classes of domestic livestock and their expansion reduces the amount of available forage. Control of noxious weeds is an integral part of allotment management.

### **Forest Encroachment**

Encroachment of forests onto areas traditionally managed as rangeland impacts utility of the area for use by livestock by reducing herbaceous productivity and forage availability. As forest stands colonize rangeland, palatable species are replaced by woody species and sparse understory vegetation. The reduction in available forage reduces the carrying capacity (AUMs) of the area, thereby restricting livestock grazing until such time as rangeland vegetation is allowed to reestablish. This reduction in forage also increases livestock and wildlife conflicts as they compete for the same resource.

### **Urban Interface and Recreational Conflicts**

Subdivisions and land purchased for recreational purposes has an effect on allotment management and grazing. Frequently, private land next to or near allotments is sold to private citizens not engaged in the livestock business. The change in land use adjacent to public land directly influences the use of public land. Increased recreational use, increased public awareness of livestock use, and improved access often result in conflicts.

## **MINERALS**

Mineral uses are divided into four categories based on laws regarding their disposition:

- Leasable fluid minerals, which includes oil and gas, coal bed natural gas (methane), and geothermal resources;
- Leasable solid minerals (coal);
- Locatable minerals (metals, some limestone and building stone); and
- Salable minerals (sand and gravel, some limestone and common varieties of flagstone).

Leasable minerals are defined under the Mineral Leasing Act (February 1920; 43 CFR 3000-3599, 1990) and include: coal, phosphate, oil, oil shale, gas, sodium, native asphalt, and solid and semi solid bituminous rock. In more recent years, potash and geothermal resources, and sulphur in New Mexico and Louisiana, were added to minerals that are considered leasable. The rights to these minerals on public land may only be acquired by

competitive leasing. In the discussion below, leasable minerals are divided into fluid and solid.

Locatable minerals are minerals for which the right to explore or develop the mineral resource on federal land is established by the location (or staking) of lode or placer mining claims and is authorized under the General Mining Law (May of 1872). Locatable minerals include metallic minerals (gold, silver, copper, lead, zinc, molybdenum, uranium, etc) and non-metallic minerals (fluorspar, asbestos, talc, mica, limestone, etc).

Salable minerals were designated under the Materials Act (July 1947), which authorizes the disposal of petrified wood, and common varieties of sand, stone, gravel, pumice, cinders, and clay through a contract of sale or a free use permit. Uncommon varieties of these same minerals are locatable.

Much of the information provided in this section regarding the potential for mineral resources in the PA is derived from the Butte Field Office Mineral Potential Report (Kirk 2005).

## LEASABLE FLUID MINERALS

### *Oil and Gas*

There are no producing oil and gas wells in the Butte Field Office. Recent activity within the BFO includes 14 dry holes drilled since 1983. (If no economically producible oil or gas is discovered, a well is called a “dry hole”). One well has been drilled to total depth in Park County and another spud in. The first well is to be tested in the fall of 2007. By 1982, much of the BFO had been leased. However, as leases expired, very few leases were issued after 1988. Currently there are 98 authorized federal oil and gas leases (including Forest Service minerals) within the Planning Area (PA) covering 143,739 acres. In addition, approximately 37,732 acres are covered by suspended lease nominations, pending completion of this RMP.

With respect to oil and gas resources, the Butte Field Office is partially within the Rocky Mountain (Montana) Overthrust Belt and partially within the Southwest Montana Province (USGS 1995; Perry 1995a-b). Both areas are considered highly prospective for oil and gas. Both source rocks abundant in organic carbon and porous reservoirs exist in the Paleozoic stratigraphic section. Faults and folds related to these structural provinces have produced structural traps for oil and gas. The historically productive Central Rocky Mountain Foreland Province lies to the east of the Rocky Mountain Overthrust Belt and immediately to the north and east of the PA.

Knowledge of the existing geologic setting for oil and gas resources in the PA is based on bedrock geologic mapping, geophysical data, and the 110 dry oil and gas wells drilled in the general area of the PA (AMS Figure 2-2). While 110 wells may seem like many tests, only 37

of those wells were drilled to a depth of 5,000 feet or more. Only 21 of those deep tests were located within the boundaries of the Butte Field Office. The wells shallower than 5,000 feet did not adequately test the area.

### Occurrence and Development Potential

To provide guidance to planners on possible future oil and gas activity, the BLM uses a two stage mapping process, called: 1) occurrence potential; and 2) development potential mapping (USDI-BLM 2004a). Occurrence potential is a measure of the likelihood of an area to contain oil and gas, regardless of current economics and current accessibility to the area. Development potential is the current estimate of the probability that oil and gas drilling will occur in the future. Both types of mapping are dynamic and can change as new data becomes available. In frontier areas like southwest Montana where drilling is sparse, one deep test or discovery well can rapidly change the occurrence and development potential of an area.

The following factors are evaluated when creating occurrence potential maps:

- The existence (or lack) of USGS designated oil and gas plays,
- The thickness of the sedimentary rock package, the existence (or lack) of producing oil and gas fields,
- The presence (or lack) of buried source rocks with the potential to generate hydrocarbons,
- The presence (or lack) of reservoir rocks (the hydrocarbon “sponge”), and
- The presence (or lack) of adequate hydrocarbon seals and traps.

The USGS has used “play analysis” in the preparation of their national oil and gas assessments. A play is a set of discovered or undiscovered oil and gas accumulations that exhibit nearly identical geological settings and characteristics. Therefore, a play is defined by the geological properties responsible for the real or potential accumulations of oil and gas resources. In the USGS assessments, only oil and gas accumulations of at least one million barrels of oil (MMBO) or six billion cubic feet of gas (BCFG) are considered when plays are defined and assessments of significant resources are made. In the national USGS analysis about 700 plays are grouped into 72 provinces that, in turn, are grouped into eight regions. This PA covers parts of two provinces, the Montana Overthrust and Southwest Montana Provinces and contains all or parts of ten plays. Seven of the plays are hypothetical because there has been no production associated with the plays and three of the plays are confirmed as there has been some historical production, but not within the PA.

The potential for occurrence of oil and gas in the Butte Field Office PA has also been classified by BLM staff geologists and summarized in the mineral report prepared for this RMP. Occurrence potential is shown for

the entire PA on **Figure A-1** in **Appendix M – Fluid Minerals**, including congressionally designated wilderness areas, since the occurrence potential is based solely on geology, which continues beyond the wilderness boundaries. Areas classified as having a high potential for occurrence of oil and gas are reserved for proven oil and gas producing provinces. There are no areas of “high” oil and gas occurrence potential in the PA. This is because of the distance to the nearest producing field. Moderate occurrence potential means an area with an apparent unmetamorphosed sediment thickness above the Precambrian Archean basement rocks of 2,500 feet or more in a currently non-productive province and containing probable source rocks and reservoir beds. Low occurrence potential areas were classified using two slightly different standards. Under the first, they are areas having sediments with less than 2,500 feet of thickness or those areas with insufficient evidence to learn the thickness of the sediment. Under the second standard they are areas with 1,000 to 3,000 feet of sediment cover over the Pre-Cambrian rock. Those areas with very low occurrence potential are primarily:

- Precambrian outcrops,
- Highly metamorphosed areas that are not proven overthrusts with a section of sediments likely below the thrust sheets, or
- Large areas of outcrop of younger intrusive rocks (i.e., the Boulder Batholith, between Helena and Butte).

### Reasonably Foreseeable Development

At the time the 1984 Headwaters RMP was prepared, little additional leasing was anticipated to take place because most available leases had already been acquired under existing established leasing regulations with appropriate stipulations for special conditions. It was also anticipated that a relatively large number of permits to drill might be sought, given the accelerated level of exploration activity that was being driven by economic conditions at the time and relatively new discovery of prospects for deep structurally trapped oil in the Montana Overthrust Belt. Laws, regulations, and rules were in-place to provide guidance with these leasing and permitting activities. It was anticipated that oil and gas drilling would be a part of the foreseeable future of resource development within the PA.

Despite the flurry of exploration activity in the Montana Overthrust Belt in 1983, the only two areas of oil and gas production were in Teton and Pondera Counties, east of the Rocky Mountain Front in areas are no longer within the PA.

The Reasonably Foreseeable Development (RFD) scenario is an estimate of oil and gas activity expected because of resumed oil and gas leasing in the PA. The scenario is hypothetical in that drilling may occur anywhere in the PA where an oil and gas lease allowing surface occupancy is issued. Actual drilling proposals

that result from leasing, if any, will likely differ in location from those anticipated by this RFD scenario. It is also possible that leasing could result in either more or fewer drilling proposals than presented in the scenario. A summary of the RFD scenario prepared for this RMP follows.

Four areas were identified during preparation of the RFD scenario as having the highest potential for conventional oil and gas exploration and drilling activity in the Planning Area. Each of the four areas is associated with one or more play areas defined by the USGS. These areas are further described and also mapped in **Appendix M** of this document. Area #1 is referred to as the “Southern Deerlodge Valley Basin Area”. This area occurs in the southernmost portion of a fault bounded Tertiary-aged basin that is located in the Deerlodge Valley. Area #2 is referred to as the “Imbricate Thrust Zone”. The area occurs both to the north and east of Helena, Montana, in a sequence of sediments that are thick and structurally thickened by imbricate thrust faulting associated with the Eldorado and Reff thrust faults. Area #3 is referred to as the “Helena Salient Gas Play Zone”. This zone occurs over a very large area in the east-central portion of the Planning Area. Area #4 consists of the “Crazy Mountain Oil and Gas Play.” This area occupies most of the northern portions of Gallatin and Park Counties in the easternmost portion of the Planning Area as a broad extensive area of potential oil and gas resources.

The Bill Barrett Corporation recently (May 2, 2007) initiated a four well drilling program in northern Park County within the Butte Field Office boundaries. The four locations are located in T. 4 N., R. 8 E. and T. 5 N., R. 8 E., None of the locations are located on Federal minerals. The first well in the program (the Draco #10-15, NW<sup>1</sup>/<sub>4</sub>, SE<sup>1</sup>/<sub>4</sub>, Sec. 15, T. 4N, R. 8E) to be spud in has reached total depth and it has apparently had production casing set (September 14, 2007, Rocky Mountain Oil Journal). The Press has announced that it will be tested in the fall of 2007. The second well is being drilled as this is written (October, 2007). For purposes of this RMP it is assumed by the BLM that two of the wells in this drilling program will be producing wells and that these two wells would each have two producing development wells drilled, one of which would be a federal well. The BLM has also assumed that these would be gas wells. This area has not been identified as an additional analysis area in **Appendix M** as the areas identified there are areas of forecast exploration activity. This area is an actual prospect that is being drilled. The BLM does not have detailed information on the prospect and does not wish to guess on its size and surface dimensions.

Based on the analysis in the RFD scenario, it was estimated that up to 19 conventional oil and gas wildcat wells (exploratory wells drilled in an area with no existing production) might be drilled in the PA in the next 15

to 20 years. Of these 19 wells, it is estimated that 13 would be “dry” holes. Dry holes would be plugged and abandoned with surface reclamation occurring shortly afterward. It is further estimated that six of the wells could be completed for production. Each of the discovery wells would probably prompt additional step-out wells. A “step-out well” is a well drilled adjacent to or near a proven well to establish the limits and continuity of the oil or gas reservoir or to assist with production. It was estimated that 12 step-out wells would be drilled, two for each discovery. For analysis purposes seven of the producing wildcat and step-out wells are assumed to be BLM.

### ***Coal Bed Natural Gas***

As the name suggests, coal bed natural gas resources are sources of natural gas that are intimately associated with coal deposits. The gas is generated by degradation of buried organic material as a byproduct of its conversion to coal by either thermal (burial) or microbial activity. Often the coal deposit is saturated with water; and the gas generated is typically trapped under pressure by groundwater within the coal beds. Drilling and relieving the water pressure allows the gas to be released from the coal bed aquifer.

There are very few significant coal deposits within the PA and therefore little potential for exploration or development of coal bed natural gas resources outside of the Trail Creek and Livingston coal-fields. In 2001, J. M. Huber Corporation applied for a permit to drill one coal bed natural gas well in the southeastern part of the PA, on private land. This proposed well would have targeted potential gas reserves possibly associated with the Trail Creek coal-field, near Bozeman Pass, east of Bozeman. These coal-fields are not located on BLM administered public land; however, the BLM does administer a small number of isolated tracts of split estate minerals in the Trail Creek coal deposit area. This permit to drill was granted by the State of Montana, but legal action involving Gallatin County and the formation of a local zoning district delayed drilling of the well. The permit to drill expired in January of 2003. This area is referred to as Area #5 in the RFD. This is an area on Bozeman Pass where an area of coal bed natural gas potential is associated with the coal deposit on the Pass.

It is anticipated that as many as 40 wells would be drilled for coal bed natural gas in limited and scattered areas of known sub-bituminous coal resources located in Gallatin and Park Counties; most likely in the Trail Creek Road area near Bozeman Pass (Livingston and Trail Creek Fields). It is envisioned that initially 16 exploration wells would be drilled, and that six of these would discover coal bed natural gas resources that would warrant the drilling of an additional 24 step-out wells to develop the resources. These would all likely be non-federal wells based on the small percentage of federal ownership in the area.

### ***Geothermal Resources***

Geothermal resources are naturally occurring heat sources that can potentially be used for heat or generating power. The structural geologic setting of the PA is ideal for development of geothermal resources. In addition, there is an extensive naturally occurring geothermal system developed around the Yellowstone volcanic center.

Geothermal resources are rated by temperature:

- Low temperature, less than 194° F;
- Moderate temperature, 194-302° F; and
- High temperature, greater than 302°F.

No high temperature geothermal resources have been identified in Montana. Although there are many known geothermal springs in the PA, only a small number of them have been developed commercially (for example, Chico Hot Springs, Bozeman Hot Springs, Fairmont Hot Springs, Broadwater Athletic Club, etc.), and none of those are on public land.

There are three Known Geothermal Resource Areas (KGRAs) on public land within the PA; Boulder Hot Springs, Corwin Springs, and Marysville.

The Boulder Hot Springs is a large KGRA located near Boulder, in Jefferson County. Temperatures are variable and low, and the resource is probably only useful for recreation, heating for buildings, or possibly agricultural use. Most of the outlying springs are only useful for recreational or small space heating.

The Corwin Springs KGRA is located along Highway 191 about seven miles northwest of Gardiner, in Park County, along the Yellowstone River near Yellowstone Park. Some interest was expressed in developing this geothermal resource for heating purposes in the early 1990s on private land. The proposal was somewhat controversial at the time, and in January 1994 a Water Rights Compact between the NPS and the State of Montana placed limits on the development of all water resources (and geothermal resources in particular), adjacent to Yellowstone Park in Montana (similar actions were taken in Idaho). The purpose of this controlled groundwater area is to protect the geothermal resources at Yellowstone National Park. This federally managed hot springs has not been offered for a lease sale.

The Marysville KGRA is located about 12 miles northwest of Helena, Montana. This geothermal resource was identified by anomalous geothermal heat flow and does not have any surface expression of a hot spring. Temperatures are moderate (around 100°C (212°F) and no useable resource was developed (1983). In 1997 a geothermal lease application was filed as a non-competitive offer and included land within the Marysville KGRA. Because it was a non-competitive lease offer within a designated KGRA, the BLM rejected the offer. After an appeal the lease offer was withdrawn.

The Boulder and Marysville KGRAs have been offered for lease sale in the past but have not had any bidders. There has been no recent interest in leasing any of the three areas.

## Leasable Solid Minerals

### *Coal*

In the southern part of the PA, the small Trail Creek, Livingston, and Electric (Gardiner) coal-fields, although historically mined, are still undeveloped. Historical underground production was small; production began in about 1870 and was completed by 1947, reaching a peak in about 1910. Although some production was used for heating purposes, most production was used in metal smelters and steam engine locomotives. Much of the coal was converted to coke for use in the smelters in hundreds of small coking ovens (Alt and Hyndman 1986). It is likely that significant underground reserves of coal remain in the area, but given the small size of the fields, their location with respect to recent rural residential development, and the fact that the coal needs to be mined from underground makes future development unlikely. Other sporadic undeveloped and sub-economic deposits of coal and lignite occur throughout the PA.

### *Phosphate*

Extensive deposits of the Permian Phosphoria Formation have been historically mined from the Maiden Rock area south of Butte. Mining for phosphate here probably peaked in the early 1950s when the phosphate was used to supply an elemental phosphate plant at Silver Bow, west of Butte. These mines were underground mines and resulted in significant underground development. Activity here ceased in the 1970s. There are phosphate resources remaining both at the Maidenrock area and south and to the east, north of the Humbug Spires, but the development of the phosphate fields in Idaho, where the mines could be developed as open cut mines, has rendered these resources as uneconomic.

## Locatable Minerals

### *Metals*

Mineral deposits of gold, silver, copper, lead, zinc, and molybdenum are present within the PA (AMS Figure 2-3). Because of the unusually abundant mineral wealth in the Butte Field Office, this area contains some of the most famous mining districts in Montana, including: Butte, Corbin-Wickes, Basin, Scratch Gravel Hills, Marysville, Radersburg, Helena, Elkhorn, Boulder, Emigrant, Jardine, and New World.

Active metal mines in the PA include:

1. The Golden Sunlight Mine, an open pit gold mine northeast of Whitehall opened in 1981. The mine has operated continuously since then and is scheduled to close in approximately 2010;

2. Montana Tunnels Mine, an open pit polymetallic mine (lead, zinc, silver, gold) located west of Jefferson City opened in 1985 and is scheduled to close in 2011; and
3. Montana Resources Mine (the Butte mine), an open pit copper and molybdenum mine with associated silver and gold byproducts. Mines in the Butte area have operated more or less continually since the 1860s and this is the current pit, following on from previous open pits in the district, the Berkeley Pit and the Continental Pit. The mine has reserves that extend many years.

### *Limestone*

Three active limestone mines are located within the PA. These mines process high-calcium limestone for chemical and industrial uses.

The Indian Creek Mine is on public land adjacent to and within the Montana Army National Guard's Limestone Hill Training Area, west of Townsend, in Broadwater County. A proposal by the Montana Army National Guard to withdraw the area from the public land laws, including the mining law, is currently in progress. A Legislative EIS has been prepared for Congress, which ultimately determines whether, and under what conditions, the withdrawal is granted. Under the Preferred Alternative the Montana National Guard would manage all resource uses except minerals, which would continue to be managed by the BLM. The Ash Grove Cement Company produces limestone from its Montana City Quarry. The Trident Mine, another limestone mine, is north of Three Forks, in Gallatin County.

### *Marble and Slate*

A small marble quarry has been operated intermittently at the south end of the Limestone Hills area and west of Townsend. Marble from this quarry has been shipped internationally for use as pedestal and column bases.

Two slate building stone quarries are located in the PA. One is in Soap Gulch area near Melrose (south of Butte) and the other quarry, the Gates Stone Quarry, is located in Towhead Gulch. Another series of small open-cut mines or quarries in the Gardiner area have mined travertine for decorative building or ornamental uses. Operation of these quarries has been intermittent and they often reopen and operate to meet a specific demand.

## Salable Minerals

The PA currently has three salable material operations on public land. Two sand and gravel pits are located in the Limestone Hills west of Townsend. One of the pits is inactive and the other pit is used by the Army National Guard for road surfacing material. The third, a community flagstone pit, is located near Montana City.

## RECREATION

### Recreation Opportunities

Recreational activities available within the Decision Area include big game hunting, upland bird and waterfowl hunting, fishing, mountain and road biking, camping, backpacking, horsepacking, river rafting, canoeing and kayaking, swimming, lake boating, downhill skiing and snowmobiling, OHV use, picnicking, archery, organic materials gathering, organized festivals, and viewing wildlife and landscapes. No Recreation Opportunity Setting classifications currently exist to guide appropriate levels of recreation experiences, services, and developments.

BLM land along the Madison, Big Hole, Jefferson, Missouri, and Yellowstone rivers, offer some of the most outstanding sport fishing opportunities in the United States. The State of Montana classifies many reaches of these streams as Class I or "blue ribbon" fisheries. In addition the Butte Field Office manages intensively used land and highly developed sites along Holter, Hauser, and Toston Reservoirs on the Missouri River.

### Recreation Management Areas

Specific recreational resources in the Decision Area include five Special Recreation Management Areas, one Extensive Recreation Management Area (ERMA), and 49 developed recreation sites, seven of which are fee sites (AMS Figures 2-24a, 2-24b, and 2-24c). Fee collections at developed sites are used to maintain, operate, and improve facilities and services. An SRMA is an area where BLM prioritizes management efforts to provide specific recreational activities and opportunities (AMS Figure 2-25). These areas usually require higher levels of recreational management. An ERMA is an area not specifically designated as an SRMA and includes all BLM land outside the SRMAs where uses are generally dispersed and management primarily custodial. This extensive area includes the Continental Divide Trail, three popular OHV riding areas, and several developed recreation sites where both dispersed and concentrated

recreation activities occur. The primary objectives for managing the ERMA are resource protection, public safety, and user satisfaction. Within this extensive area, public services, monitoring, improvements, and facility maintenance are conducted at a lower scale. Information on visitor usage of SRMAs and the ERMA is provided in Table 3-22.

#### *Holter Lake/Sleeping Giant SRMA*

The Holter Lake/Sleeping Giant Special Recreation Management Area totals 19,000 acres and is located on both sides of Holter Lake about 30 miles north of Helena. The SRMA includes a portion of the Lewis and Clark National Trail, the Sleeping Giant ACEC, the Sleeping Giant and Sheep Creek Wilderness Study Areas, seven developed recreation sites and about 30 dispersed boat-in camp sites. Both of the Wilderness Study Areas are recommended for wilderness designation and are currently closed to motorized uses. Four of the seven developed recreation sites are fee sites:

- Beartooth Landing.
- Woodsiding Trailhead.
- Sleeping Giant Trailhead.
- Departure Point: Fees – Camping \$10, Day Use \$2, Season Day Use Pass \$25.
- Holter Lake Dam: Fees – Camping \$6.
- Holter Lake Recreation Site: Fees – Camping \$10, Day Use \$2, Season Day Use Pass \$25, Group Picnic Reservations \$50.
- Log Gulch Recreation Site: Fees – Camping \$10, Day Use \$2, Season Day Use Pass \$25, Group Picnic and Camping Reservations \$50.

This SRMA is a high use area especially along Lake Holter. Primary recreation opportunities in this SRMA include camping, picnicking, boating, fishing, swimming, hiking, hunting, and viewing wildlife, spectacular landscapes, which feature Beartooth Mountain and the Gates of the Mountains Canyon.

<b>RMA</b>	<b>Visits</b>	<b>VUD<sup>1</sup></b>	<b>% of Total Visits</b>	<b>% Total of VUDs</b>
Headwaters ERMA	644,100	507,048	52%	44%
Holter Lake/Sleeping Giant SRMA	159,250	253,396	13%	22%
Humbug Spires SRMA	19,000	24,146	2%	2%
Lewis and Clark Trail SRMA	277,600	254,884	22%	22%
Scratch Gravel Hills SRMA	13,950	4,609	1%	0%
Upper Big Hole SRMA	133,200	113,916	11%	10%
<b>Totals</b>	<b>1,247,100</b>	<b>1,158,000</b>	<b>100%</b>	<b>100%</b>

<sup>1</sup>One VUD = 12 hours.

Source: USDI-BLM 2005c

### ***Lewis and Clark Trail SRMA***

The Lewis and Clark Trail Special Recreation Management Area totals about 16,300 acres of BLM land. It is a corridor that encompasses the lower reaches of the three rivers forming the Headwaters of the Missouri River (Jefferson, Gallatin, Madison) and the uppermost segment of the Missouri to Hauser Lake Dam. Missouri River reservoirs within this SRMA include Toston, Canyon Ferry, and Hauser Lakes. This SRMA includes the Lewis and Clark Historic Trail, two recently acquired areas (Ward and McMaster Ranches), 15 developed recreation sites, and numerous dispersed use sites along the lakes and river shorelines. Two of the 15 developed recreation sites are established fee sites.

- Clark's Bay Day Use Site: Fees – Day Use \$2, Season Day Use Pass \$25 and Group Picnicking Reservations \$50.
- Devil's Elbow Recreation Site: Fees – Camping \$10, Day Use \$2, Season Day Use Pass \$25 and Group Camping Reservations \$50.
- Two Camps Vista.
- Spokane Bay.
- French Bar.
- White Sandy Recreation Site: Fees – Camping-\$10.00 and Group Camping Reservations-\$50.00.
- Ward Ranch Historical Site.
- Spokane Bay Trailhead.
- McMaster Hills West Trailhead.
- McMaster Hills East Trailhead.
- Spokane Hills South Trailhead.
- Lombard Recreation Site.
- Crimson Bluff.
- Lower Toston Recreation Site.
- Toston Dam Recreation Site.

The Lewis and Clark Trail SRMA is located between Helena, Bozeman, and Whitehall. Primary recreation opportunities include camping, power boating, river floating, fishing, swimming, horseback riding, hiking, hunting, and viewing wildlife/scenic landscapes.

### ***Scratchgravel SRMA***

The Scratchgravel Hills Special Recreation Management Area totals about 5,500 acres and is located immediately northwest of Helena. The area provides numerous day-use recreation opportunities. Residents of Helena and subdivisions around the Scratchgravel Hills area are the primary users of the community-based SRMA. This area includes numerous secondary roads and trails and three developed recreation sites none of which have fees:

- Head Lane Trailhead.
- Tumbleweed Trailhead.
- John G. Mine Trailhead.

Primary recreation opportunities provided by the Scratchgravel Hills SRMA include hiking, jogging, horseback riding, OHV riding, mountain biking, folging, and limited fall hunting. Conflicts between motorized and non-motorized users are occurring. This area is currently closed to shooting outside the fall hunting season, open fires and fireworks. A cooperation management agreement exists with Lewis and Clark County to provide support services in the area.

### ***Humbug Spires SRMA***

The Humbug Spires SRMA totals about 11,000 acres and is located about 26 miles south of Butte along Interstate 15. A portion of this area was designated a BLM Primitive Area in 1972. Approximately 8,800 acres of the Humbug Spires Wilderness Study Area is recommended for wilderness designation. This SRMA is characterized by irregular drainages and hills that are forested with Douglas-fir and lodgepole pine. Special features include the numerous granite rock spires (nine rise 300 to 600 feet), Moose Creek, numerous riparian areas, old growth timber, and lush meadows. This SRMA contains one site, the Moose Creek Trailhead, which provides important access to an established hiking trail.

The Humbug Spires SRMA area offers many quality opportunities for primitive and unconfined recreation. Primary activities include hiking, tent camping, backpacking, stream fishing, horseback riding, rock climbing, fall hunting, wildlife viewing, nature photography, and snowshoeing. The SRMA is closed to motorized vehicle use.

### ***Upper Big Hole River SRMA***

The Upper Big Hole River Special Recreation Management Area totals about 15,000 acres of BLM land. The area is located west of Interstate-15 and Divide, along the Upper Big Hole River in Silver Bow, Beaverhead, and Deer Lodge counties. This SRMA includes numerous access roads, trails, 11 developed recreation sites, and numerous dispersed use locations along the river. One of the 11 developed recreation sites has an established fee.

- Divide Bridge Campground: Fee – Camping \$6.
- Sawmill Gulch Trailhead.
- Divide Bridge Day Use Area.
- Jerry Creek Bridge.
- Dickie Bridge Recreation Site
- Bryant Creek Recreation Site.
- East Bank Recreation Site.
- Sawlog Gulch.
- Pintlar Creek.
- Maiden Rock East.

The Big Hole River offers some of the most outstanding sport fishing opportunities in the United States, especially during the famous salmon fly hatch season. The State of Montana has classified this river as a Class I or "blue ribbon" fishery. Other opportunities in the area include camping, picnicking, river floating, hunting, hiking, driving for pleasure and nature observation, which are all focused within the river corridor.

### ***Headwaters ERMA***

The Headwaters Extensive Recreation Management Area includes all BLM land not identified as an SRMA. This public land totals about 238,000 acres. Primary recreation site/areas include three OHV riding areas, three popular rock climbing areas, hiking trails, trailheads, river access sites, campgrounds and numerous dispersed use areas.

There are 12 developed recreation sites within this ERMA none of which have established fees, including:

- Carbella Recreation Site.
- Buffalo Hump Recreation Site.
- Crow Creek Recreation Site.
- Duck Creek Recreation Site.

- Galena Recreation Site.
- Radersburg OHV Site and Trailhead.
- Ohio Gulch OHV Site and Trailhead.
- Sheep Mountain Trailhead.
- Pipestone OHV Trailhead.
- Four Corners OHV Trailhead.
- Whiskey Gulch OHV Trailhead.
- Sheep Camp Recreation Site.
- Ringing Rocks Recreation Site.

### **Recreation Use**

In 2003, 65 percent of visitors' time was spent engaging in recreation activities outside of developed recreation sites (USDI-BLM 2004c). In 2003, the ten most popular uses in the Decision Area included: camping; driving for pleasure, fishing, hiking, running, walking, big game hunting, OHV use, picnicking, power boating, swimming, and wildlife viewing (USDI-BLM 2003d). Camping and freshwater fishing had the most visitors and Visitor User Days (VUD) out of the top ten recreation activities in the Decision Area (USDI-BLM 2003d) (**Table 3-23**).

**Table 3-23**  
**2005 Decision Area Visits and Visitor Use Days by Primary Recreation Activities**

<b>Recreation Activity</b>	<b>Visits</b>	<b>Percentage of Total</b>	<b>Total Visitor Days</b>	<b>Percentage of Total</b>	<b>Concentrated Visitor Days</b>	<b>Dispersed Visitor Days</b>
Fishing	166,100	13%	113,000	10%	83,000	30,000
Motorized Water Activity	159,300	13%	58,000	5%	38,000	20,000
Motorized Vehicle Travel	153,700	12%	115,000	10%	15,000	100,000
Hunting/Archery	151,500	12%	170,000	15%	0	170,000
Camping	147,600	12%	427,000	37%	337,000	90,000
Wildlife/Natural Viewing	146,800	12%	57,000	5%	17,000	40,000
Foot Travel	124,700	10%	99,000	9%	30,000	69,000
Picnicking	73,800	6%	26,000	2%	20,000	6,000
Non-motorized Boating	36,400	3%	27,000	2%	8,000	19,000
Swimming	24,900	2%	18,000	2%	14,000	4,000
Snow Skiing	18,900	2%	21,000	2%	21,000	0
Snowmobiling	18,500	1%	10,000	1%	0	10,000
Biking	12,500	1%	2,000	0%	0	2,000
Rock Climbing	6,300	1%	9,000	1%	0	9,000
Horseback Riding	6,100	0%	6,000	1%	0	6,000
<b>Totals*</b>	<b>1,247,100</b>	<b>100%</b>	<b>1,158,000</b>	<b>100%</b>	<b>583,000</b>	<b>575,000</b>

<sup>1</sup> One VUD = 12 hours

Source: USDI-BLM 2005c

## Special Recreation Use Permits

The Butte Field Office manages about 25 Special Recreation Use Permits each year. The primary activity for 14 of these permits is big game hunting. Most hunting outfitter/guides pursue mule deer, elk, upland birds, bear, and mountain lions. The Special Recreation Use Permits for hunting are for day use only. No hunting camps exist within the Decision Area. Special Recreation Use Permits are also issued for rock climbing in the Humbug Spires, Indian Creek, and Allen Spur. Recreation use permits are also frequently issued for folging, horseback riding, OHV group riding events, mountain biking events and other social gatherings.

All existing permits have been issued on a first-come, first-served basis. The authorized term for most existing permits is five years although policy allows for extensions up to 10 years when appropriate. Fee collecting for these special use permits are used to offset administrative costs, monitor approved activities and protect recreation resource values for future use.

## Recreation Facilities

BLM has developed recreation sites on Hauser Lake and Holter Lake through donations under Federal Energy Regulatory Commission licensing agreements and exchanges with the State of Montana. Developed sites include Devil's Elbow Campground and the Clark's Bay Day Use Site on Hauser Lake, and Log Gulch Campground and Departure Point on Holter Lake.

Most dispersed developed recreation sites in the Decision Area contain picnic tables, vault toilets, improved boat launching ramps, and some parking areas. The Butte Field Office road system provides access to various trailheads throughout the area. Many of these sites have been acquired by BLM through exchanges and donations from the state and counties.

Recreation facility information collected from the developed-site inventory of Butte Field Office Facility Asset Management System (FAMS) database is summarized in Table 3-24.

Type of Site	Number of Sites	BLM Prior to 1984	Developed or Acquired Since 1984
Campground	17	3	14
Day Use Site	8	3	5
River/Reservoir Access	4	1	3
Trailhead	17	0	17
Interpretative	3	1	2
<b>Total</b>	<b>49</b>	<b>8</b>	<b>41</b>

## TRAVEL MANAGEMENT, ACCESS AND FACILITIES

This section describes transportation facilities and their maintenance as well as other types of facilities administered by the BLM. Travel route availability decisions (open, closed or limited) are determined through site-specific Travel Management Plans. Most of the larger tracts of public lands have legal public access via existing federal, state, and county roads (AMS Figures 2-23a, 2-23b, and 2-23c). Many smaller tracts of public lands do not have legal access. In most cases, such parcels do not have resource values/demands that justify the costs for acquiring access. There are some situations where road segments to and within these parcels are important for a given resource use or to provide through access to other lands and are therefore included in the transportation plan.

### Roads

The transportation road and trail system provides physical access for the public to state, private, and other federal lands throughout the Decision Area. Demands for the existing transportation network are directly related to the resources and uses within the PA. A transportation system is needed to maintain access for commercial activities (e.g. livestock grazing, timber harvest, mineral development, outfitting and guiding), non-commercial activities and casual use (e.g., OHV use, hunting, fishing, rafting, camping, bird watching, recreational driving, firewood gathering), and for administrative access to manage/protect resources and property.

The Decision Area has approximately, 856 miles of BLM system roads or trails with 510 miles recorded in FAMS. These roads and trails are within eight different counties and accessible via federal, state and county roads (Table 3-25).

County	Miles
Beaverhead	50.4
Broadwater	201.2
Deer Lodge	12.2
Gallatin	0.8
Jefferson	261.4
Lewis and Clark	219.3
Park	4.2
Silver Bow	106.8
<b>Total</b>	<b>856.3</b>

Source: Facility Asset Management System (FAMS) Road Inventory (Appendix L of AMS).

The primary federal roads within the PA include Interstate-15, US-89, US-191, and US-287 Interstate-90 and US-12. Almost all of the BLM roads are single lane consisting of natural, compacted soils. A few high usage roads (maintenance level 4 and 5) are double lane with improved aggregate surfaces. There are also approximately 3 miles of paved, bituminous base roads associated with recreation sites. On average, approximately 80 miles of BLM roads are maintained annually by BLM crews. While the maintenance levels are identified for roads, funding often does not allow BLM to meet the maintenance provisions of the assigned levels.

Gates and cattle guards on the road system are constructed and maintained using available funds from multiple programs. These facilities are monitored and maintained as part of the Transportation and Facilities program.

### Trails

The Butte Field Office maintains approximately 80 miles of motorized and non-motorized trails. The condition of these trails is periodically assessed and recorded under the BLM FAMS system. Maintenance is performed as capabilities allow through the recreation and facility maintenance programs. State trail grants and BLM Challenge Cost Share funds are critical sources of revenue for maintenance. Funding often does not allow BLM to fully meet maintenance level provisions.

### Administrative Sites

The Butte Field Office has two Administrative Sites: Belmont and Bull Mountain Communication Sites. Radio communication service calls are done by BLM personnel from the Montana State Office. Department of the Interior requires these structures have a Periodic Review of each asset performed at a minimum of every three years, and a Comprehensive Condition Assessment performed a minimum of once every five years. Maintenance is performed on these two sites on an “as needed” basis.

### Recreation Sites

The Butte Field Office is a high use recreation area, with 49 developed recreation sites. Types and usage is covered under Recreation Use. Tracking of maintenance is done through the FAMS database with a work order process in the development stage. The Department of the Interior requires these facilities have a Periodic Review of each asset performed at a minimum of every three years, and a Comprehensive Condition Assessment performed a minimum of once every five years. Maintenance is performed on these sites annually. BLM has a five year plan, which allows for funding on deferred maintenance and capital improvement assets. This competitive, BLM-wide funding addresses high cost backlog maintenance needs. An example of the use of this fund-

ing is the replacement of approximately 35 vault toilets with concrete, handicap accessible restrooms.

### Bridges

The Butte Field Office currently manages three bridges that are all associated with OHV trails in the Pipestone area. Condition assessments are conducted every two years; major culverts are assessed on a 10 year cycle. These facility assets are recorded and tracked through the FAMS database. Maintenance of these bridges will continue to be performed on an “as needed” basis.

### Signs

The Butte Field Office currently maintains hundreds of signs throughout the Decision Area. Most of these signs are associated with roads, recreation sites, and OHV riding areas. Sign categories are Regulatory, Directional, Traffic Control, Informational, and Identification. All signs are monitored annually and maintained on an “as needed” basis. A GIS data system has been developed to locate and record all field office signs. Most new signs are ordered as needed on an annual basis through the BLM National Sign Shop in Rawlins, Wyoming.

### Land Ownership

Most of the larger tracts of public land have legal public access via existing federal, state, and county road systems. Many smaller tracts of public land do not have legal access. In most cases, such parcels do not have resource values to justify public interest in acquiring access. Some small tracts along rivers serve as important public access points and require protection of existing legal access or acquisition of new legal access.

## TRAVEL MANAGEMENT

Public expectations and demand for motorized and non-motorized recreation has changed substantially since the completion of the 1979 Dillon MFP and 1984 Headwaters RMP Plans. Advances in motorized and non-motorized recreation travel technology and use have increased the public’s ability to traverse conditions and terrains not previously envisioned. As a result, motorized travel has led to adverse resource impacts, as well as increased conflict between motorized and non-motorized users, particularly at urban/rural interfaces. Public interest and demand for motorized and non-motorized travel opportunities are expected to continue to increase.

### Travel Management Plans

Areas within the Butte Field Office that have existing travel plans include:

- Elkhorn Mountains – “limited” area designation – (with the exception of an approximately 632 acre “open” OHV use area near Radersburg).
- Clancy-Unionville – “limited” area designation.

- Whitetail-Pipestone – “limited” area designation - (with the exception of an approximately 5 acre “open” motorized motorcycle hill climb area).
- Sleeping Giant – “limited” area designation.

These areas are described briefly below. Environmental documents for each of these previously completed site-specific travel plans are available at the Butte Field Office.

### ***Elkhorn Mountains***

The Elkhorn Mountains travel management area is located along the east side of Interstate I-15, between Boulder and Helena. The Elkhorn Mountains Travel Management Plan, established August 1995, is a cooperative project between the Helena and Deerlodge National Forests and the Bureau of Land Management. The Travel PAs consists of approximately 160,000 acres of National Forest lands and 68,205 acres administered by the Bureau of Land Management. The plan was developed in collaboration with the Montana Department of Fish, Wildlife and Parks because of high wildlife values and designation of the Forest Service portion of the Elkhorns as a Wildlife Management Unit. This plan represents a balance between motorized travel opportunities and protection of resource values. No management changes were necessary in order to comply with the 2003 Statewide OHV ROD.

### ***Clancy-Unionville***

The Clancy-Union Travel PA is located along the west side of I-15, approx. 3 miles northwest of Clancy, Montana, approximately 10 miles south of Helena. Clancy-Union consists of 5,820 acres. The Final Decision Notice for the Clancy-Unionville vegetation manipulation and travel management Environmental Impact Statement was signed February 2000. Although the travel management planning portion of the EIS analysis was developed jointly by the Forest Service (Helena National Forest) and the BLM, this (above referenced) Record of Decision is specific to only BLM actions. The selected alternative provides a system of designated roads and trails to ensure a wide variety of motorized and non-motorized recreation opportunities while protecting important resource values. No management changes were necessary in order to comply with the 2003 Statewide OHV ROD.

### ***Whitetail-Pipestone***

The Whitetail-Pipestone Travel PA is bounded by I-15 in the west, I-90 in the south, and Montana State Highway 399 in the East. Whitetail-Pipestone consists of 28,648 acres. In 1995, the Forest Service and Bureau of Land Management issued a Notice of Intent to prepare a joint EIS for Whitetail-Pipestone analysis area. In June 1998, the BLM issued an Emergency Closure Order restricting motorized use to existing roads and trails until a decision could be issued. In 2000, the Forest Service withdrew from the project due to budget reasons. The

BLM decided to proceed with an Environmental Assessment (smaller project area), and in March 2003 the travel plan for the BLM portion of this area was completed. The selected alternative provides a system of designated roads and trails to serve the needs of a wide variety of area users, while protecting important resources of the area (cultural, wildlife, vegetation, soil, and water). A plan amendment was initiated in concert concurrent with the travel plan EA. The plan amendment was approved August 2002, and converted a number of areas previously managed as Open to Restricted (Limited). No management changes in Whitetail-Pipestone were necessary in order to comply with the 2003 Statewide OHV ROD.

### ***Sleeping Giant***

The Sleeping Giant travel management area is located along the east side of Interstate I-15, approximately 30 miles north of Helena. It is bordered on the east by Hauser Lake and the Missouri River; and in the north by the small town of Wolf Creek. Totaling 18,300 acres, Sleeping Giant includes 11,609 acres of BLM lands managed as an ACEC, and 6,691 acres of BLM lands managed for multiple use. The ACEC contains two Wilderness Study Areas (Sleeping Giant, 6,666 acres; Sheep Creek WSA, 3,801 acres).

This travel plan was completed in March 2004. The plan protects the important resources of the area (WSAs, ACEC, wildlife, soils, vegetation, water quality, and cultural) while providing a designated system of roads to serve the needs of a variety of area users. No management changes were necessary in order to comply with the 2003 Statewide OHV ROD.

### ***Other***

Additional travel planning has been completed for several smaller “sub-planning” areas, including the Big Hole (Southwest Interagency Travel Management Plan), Confederate Gulch, Sawlog Creek, the Great Divide Ski area, and Nez Perce Ridge road. Several “emergency area closures” are in effect as well, pending future travel planning. The emergency area closures include the North Hills, Sawmill Gulch, Ward Ranch, the McMasters, and Spokane Hills.

In accordance with the 2003 OHV ROD and plan amendment, the Butte Field Office has identified and prioritized nine additional areas, all with “limited” area designations, needing site-specific travel planning. The nine proposed areas include:

- Helena (focus area – Scratchgravel Hills). High Priority
- East Helena (focus area – North Hills). High Priority
- Lewis and Clark County Northwest (focus area – Marysville). High Priority
- Boulder/Jefferson City. High Priority

- Upper Big Hole River. High Priority
- Missouri River Foothills. Moderate Priority
- Jefferson County Southeast. Moderate Priority
- Broadwater County South. Moderate Priority
- Park/Gallatin. Moderate Priority

The five high priority TPAs are described below.

## Helena Travel Planning Area

The Helena TPA area contains 10,162 acres of BLM lands within the 95,492-acre TPA. The majority of lands in the TPA are privately owned (56,499 acres) with USFS lands making up a substantial portion as well (23,911 acres). The approximately 52.2 miles of BLM roads make up about 7.5 percent of the approximate total of 694 road miles in the entire TPA. Most roads (528 miles) are on private lands.

Two sub PAs, known as *Scratchgravel Hills* and *Birdseye*, are focal points for current traveling planning efforts. A number of small isolated tracts (overall total of 3,106 acres), are scattered throughout the remainder of the Travel PA. **Maps 6 through 9** depict the Helena TPA.

The Scratchgravel Hills area is 4 miles north of the Helena City limits, and contains approximately 5,403 BLM acres, in 18 sections. The Scratchgravels are characterized by gently rolling to moderately steep terrain varying in elevation from 3,700 to 5,200 feet above mean sea level. The Scratchgravel Hills have a dry climate. Average minimum/maximum temperatures are 8/29° Fahrenheit in January and 52/84° Fahrenheit in July. Average precipitation is approximately 12 inches. Average annual snowfall is 48 inches. Average number of days with snow on the ground is 61.

Seven soil series are represented in the Scratchgravel Hills. Most soils are highly erodible and several series are very shallow. Rock outcrops are prevalent in several mapping units. Existing vegetation at lower elevations include grasses, forbs, and scattered shrubs with patches of occasional juniper and ponderosa pine woodlands, with carpet-like areas of pine/fir colonization commonly occurring. Higher elevations and north facing slopes are dominated by ponderosa pine forest with a bunchgrass or fescue under-story that commonly contains stagnant, old Douglas-fir seedlings.

The Birdseye area lies 1.5 miles southwest of the Scratchgravel Hills, and contains approximately 2,655 BLM acres, in eight sections. The Birdseye area is similar in character, but the eastside rain shadow effect is much more pronounced with stubby limber pine and Douglas-fir trees dominating the open woodland areas. Ponderosa forest values are few, limited to north slopes bordering some of the deeper draws.

Scratchgravel Hills and Birdseye constitute islands of undeveloped hills surrounded by an area experiencing steady residential growth. According to the 1984 Scratchgravel Hills Comprehensive Management Plan, the Scratchgravel area contained 300 homesites in three major subdivisions and several smaller developments. Since that time, residential housing has continued to grow, with over 1,000 residential homes currently located in and around these same areas (U.S. Census Bureau 2000). Two additional residential developments, Big Silver Creek, and Cornerstone Village, are being planned. Big Silver Creek development will be located near the northwest corner of Scratchgravel Hills, adjacent to Big Silver Creek road. If approved, 82 residential units will be constructed on approximately 1,500 acres. The Cornerstone Village development will be located southeast of the Scratchgravel Hills, bordered by Franklin Mine Road on the north, and Head Lane on the west. If approved, Cornerstone Village will consist of over 800 single family dwellings located on 284 total acres of land. The development will also include a 300 person school occupying 30 acres.

As a result, the character of the area is rapidly changing from a rural setting to a residential neighborhood setting.

As the population and residential development of these areas continues, a significant increase in recreational and other uses of the Scratchgravel Hills and Birdseye areas is projected.

### *Existing Land Use*

#### Recreation

Existing recreational use of the Scratchgravel Hills area is well established. There is an extensive network of roads and trails used by hikers, joggers, horseback riders, motorcyclists, OHV riders, and 4-wheel drive enthusiasts. Some “folging” and paintball game activity has occurred during the recent years. Hunting is considered marginal, big game numbers are low. Current management prohibits the use of fireworks and the discharge of firearms (except during hunting season).

Snow cover in the Scratchgravel Hills is generally inadequate for snowmobiling or cross country skiing. As a result, the area provides convenient winter time hiking, mountain bike, motorized travel and horseback recreation opportunities for local residents as well as those from the city of Helena.

As throughout the west, this combination of rapid urbanization and increased recreational use has led to sharp conflicts; between area residents, recreation users, and among recreational users themselves. The majority of conflict stems between non-motorized and motorized recreational use activity. As expressed during the public scoping meeting, many area residents deliberately located near Scratchgravel Hills in order to pursue recreational interests.

This TPA contains three developed recreation sites (Head Lane, John G. Mine, and Tumbleweed Trailheads) and one Special Recreation Management Area (Scratchgravel Hills). All remaining lands within the TPA are managed as part of the Butte FO Extensive Recreation Management Area. There are no existing and potential Special Designations within this TPA.

### **Mineral/Energy Development**

The Scratchgravel Hills is an area which contains precious and base metals in both hard rock and placer deposits. Historic production came from numerous small mines throughout the area. Over the years there have been a large number of patented and unpatented mining claims distributed throughout the area. While presently only a few claims are maintained, increases in precious metal prices could increase the mineral activity level.

### **Range Management**

Thirteen grazing allotments exist in the Helena TPA. The largest allotment is the Granite Creek allotment in the Birdseye area. Due to the extended drought conditions, the amount of active grazing use has declined in the last 4 to 5 years. Grazing use may increase if wetter climate conditions return.

### **Forest and Fire Management**

There are approximately 3,100 acres of forest and woodland in the Helena TPA. The Scratchgravel Hills portion was withdrawn from general forest management in the Headwaters RMP during the last 20 years. The closed pine forest conditions and extensive colonization have left many areas with dense and hazardous fuels conditions. It is expected that the area would burn intensely with severe impacts similar to those seen to the east when the Spokane Hills near Canyon Ferry burned in 2000. The fuels in the area are classified in the moderate to high hazard range. In 2000/2003 a fuels hazard assessment was done for the Scratchgravel Hills area. Findings from that assessment show that in the forested areas, 52 percent of forested stands rated high; and 37 percent of forested stands rated moderate for hazardous fuels conditions in the Scratchgravel Hills Fire Management Zone. In consideration of the WUI (Wildland/Urban Interface) that surrounds the area, the Scratchgravel Hills are a high priority for fuels reduction work. Mechanical fuel reduction work has been conducted in the Silver Creek area within 500 feet of the public/private land boundaries over the last several years. More mechanical projects are anticipated to reduce the fuels and enhance the health of the forest ecosystems.

### **Cultural/Historic**

Prehistoric sites in the Scratchgravel Hills are very sparse, even though they are relatively close to the Montana City Archeological District. They consist mainly of lithic scatters and may or may not be related to activity

in the archeological district. European sites in the Scratchgravel Hills are related to mining. Placer mining started in the Scratchgravel Hills earlier than in Last Chance Gulch, but was never very productive. Several lode mines were developed later, but the area never produced as well as the other districts in the Helena area.

### **Military Activity**

The Montana State National Guard is known to use portions of the Birdseye area during training activities.

### ***Important Resource Issues***

#### **Wildlife**

The Helena TPA is heavily populated with subdivisions, ranches, and development, especially near the town of Helena. Although human development is extensive in the TPA, habitat is still available for those wildlife species that depend on grassland/shrublands and dry forests.

BLM lands in the TPA are dominated by grassland and shrubland habitats (6,501 acres) as well as dry Douglas fir and ponderosa pine forests (3,700 acres).

Grasslands and sagebrush habitats within the TPA provide habitat for elk, mule deer, pronghorn antelope, badger, coyote, red fox, mountain cottontail, whitetail jackrabbit, ground squirrels, and other small mammals.

Forests in the TPA provide habitat for species including but not limited to: elk, moose, mule deer, coyote, red fox, bobcat, cougar, black bear, mountain lion, mountain cottontail, marmot, red squirrel, and other small mammals.

The TPA also provides habitat for numerous forest and grassland bird species including but not limited to: pileated, hairy and downy woodpeckers, Cooper's hawk, sharp-shinned hawk, red-tailed hawk, blue grouse, hairy and downy woodpeckers, dusky flycatcher, pine siskin, western tanager, black-capped chickadee, red-breasted nuthatch, mountain bluebird, Townsend's solitaire, dark-eyed junco, Cassin's finch, pine siskin, red crossbill, western meadowlark, Swainson's hawk, red-tailed hawk, horned lark, mountain bluebird, prairie falcon, chipping sparrow, savannah sparrow and vesper sparrow.

Critical fawning and foraging habitat for pronghorn antelope was historically located in the southwest section of Scratchgravel Hills. Year-round pronghorn habitat was also historically found in the northeast corner of the Helena TPA. Although portions of the area still provide pronghorn habitat, due to the extensive amount of development around Helena, the area no longer provides high quality pronghorn habitat.

A 50,000 acre strip through the middle of the Helena TPA continues to provide winter range for mule deer. The entire western half of the TPA, approximately 56,400 acres, is winter habitat for elk.

The Birdseye section of the Helena TPA is within a wildlife movement corridor that provides a connection between the Northern Continental Divide Ecosystem and the Greater Yellowstone Ecosystem. This corridor also provides for local daily movements and seasonal movements between higher elevation summer range along the Continental Divide and lower elevation winter range. This corridor is predominately moderate quality due to fairly high road densities in the TPA (greater than 2 mi/mi<sup>2</sup>).

This TPA also provides habitat for several BLM sensitive species including; golden eagle, flammulated owl, Brewer's sparrow, long-billed curlew, ferruginous hawk, Swainson's hawk, and long-eared bat.

The long history of mining in the area has created habitat for bats and surveys have been conducted to determine bat use of the area. Eighteen abandoned mines were surveyed in 2002 and 2003 in the Scratchgravel Hills. Bat species identified during these surveys included: western small-footed myotis, long-legged myotis, hoary bat, big brown bat, and several unknown myotis species. As a result of surveys, five abandoned mines were closed with bat gates.

### **Aquatics/Fisheries**

This 95,500 acre TPA is found within the Upper Missouri watershed. There are approximately 71 miles of perennial streams and 37 miles of fish bearing streams on all land ownerships in the TPA. Non-native fish species found in the TPA include brook, brown, and rainbow trout. Native fish found in the TPA include white sucker, longnose sucker, westslope cutthroat trout, and mottled sculpin.

On BLM lands, there are approximately 6.0 miles of perennial stream, 2.0 miles of fish bearing stream and 5.5 miles of intermittent stream. Fish species found in streams managed by the BLM include non-native brook trout and native westslope cutthroat trout.

In the entire TPA, there are five streams (Skelly Gulch, East Skelly Gulch, Threemile Creek, Greenhorn Creek, and Silver Creek) with westslope cutthroat trout (BLM sensitive species). Westslope cutthroat trout are found throughout approximately 20 miles of stream. Genetic testing has been completed on two streams (Threemile and Skelly Gulch) and has confirmed these fish to be 100 percent genetically pure.

In the Helena TPA, there are two streams on BLM lands (Skelly Gulch and Greenhorn Creek) where westslope cutthroat trout have been confirmed. Greenhorn Creek provides approximately 1 mile of habitat for westslope cutthroat trout and these fish have not had genetic testing to confirm their purity. Skelly Gulch also provides approximately 1.0 mile of habitat for westslope cutthroat trout and genetic testing has confirmed these fish to be 100 percent genetically pure.

### **Water Resources**

Within the entire Helena TPA there are six streams (totaling about 37.9 stream miles) that are listed as impaired water bodies by Montana Department of Environmental Quality. Impaired reaches of two of these streams, Sevenmile Creek (0.1 mile), and Skelly Gulch (0.8 mile) flow through BLM managed lands. Siltation is identified as one of the impairment types for both of these streams.

### **Riparian**

Approximately 7.8 miles of riparian reaches and associated habitat are found in the Helena travel planning area. Current condition ratings on these reaches include 3.7 miles in Proper Functioning Condition, 1.6 miles Functioning-At-Risk condition, and 1.7 miles in non-functioning condition. Trends on most reaches are upward or static.

Currently, the roads having the biggest impacts on riparian conditions in this TPA are the county road along Sevenmile Creek and the access road paralleling Skelly Gulch. Both roads deliver extra sediment to these streams as well as affecting creek banks.

### **Sensitive Plants**

The overall TPA contains populations of two sensitive species, linearleaf fleabane, and lesser rushy milkvetch. Both species grow in the Scratchgravel Hills area. Linearleaf fleabane grows on dry, often rocky soil from the foothills up to moderate elevations, frequently with sagebrush. Lesser rushy milkvetch grows in grassland and shrublands often in association with bluebunch wheatgrass, fescue species, and mountain big sage. Noxious weed infestations pose the greatest threat to these species' long-term health and viability.

### **Noxious Weeds**

The primary noxious weeds in the Helena TPA are leafy spurge, Dalmatian toadflax, whitetop, spotted knapweed, houndstongue, and Canada thistle.

In the Scratchgravel Hills area, leafy spurge is present throughout the area with the highest densities found in draws. Dalmatian toadflax infestations are spreading throughout the southern edge and located sporadically in other areas. Whitetop, spotted knapweed, houndstongue, and other undesired species are found in small, scattered infestations.

In the Birdseye area, leafy spurge, houndstongue, Canada thistle, and spotted knapweed are found in small to moderate infestations along roadways, drainages and some upland areas. Dalmatian toadflax, whitetop, and other invasive species like bull thistle and common mullein have been observed.

## Soils

Seven soil series are represented in the Scratchgravel Hills. Many of the soils are highly erodible and several series are very shallow.

## Minerals

The mineral potential of the Scratchgravel Hills is rated as high by the Montana Bureau of Mines and Geology. This high mineral potential in conjunction with the high number of mining claims in the area suggests the continuing potential for small scale mineral exploration and placer operations.

### *Summary Public Scoping Comments*

Two public scoping meetings were conducted for the Helena TPA (December 1, 2004 and January 6, 2005). Both meetings were especially well attended by residents of the Scratchgravel Hills area. The majority of the written and oral comments received during the meetings centered on conflicts between motorized and non-motorized recreation users. Representatives of both user groups expressed a wide range of points of view, with discussions leading to the inevitability of the need for cooperation and resolution among conflicting uses. Some participants felt that although the Scratchgravel Hills area is not overly large, accommodations for both motorized and non-motorized uses could be made. Strategies included creating separate areas of use for motorized and non-motorized activities.

Other public issues and concerns included:

- Illegal activities - A number of comments were made during both meetings concerning a range of illegal activities, including dumping, drug use, underage alcohol use, unattended camp fires, and vandalism. There was widespread agreement that most of these activities were associated with motorized use, and oftentimes occurred after dark.
- General need for improved mapping/signing and trailhead facilities.
- Active enforcement of completed travel plan.
- Soil erosion.
- Noxious weeds.
- Wildland fire.

## East Helena Travel Planning Area

The 200,991-acre East Helena TPA contains 20,039 acres of BLM lands. There are approximately 71 miles of BLM road, making up about 8 percent of the approximate total of 892 road miles in the TPA. The majority of roads (690 miles) lie on private lands.

The area lies in the Helena Valley, which has a dry climate. Average minimum/maximum temperatures are 8/29 degrees Fahrenheit in January and 52/84 degrees

Fahrenheit in July. Average precipitation is approximately 12 inches. Average annual snowfall is 49 inches.

Five sub-PAs, known as the North Hills, Mt. Bend, Ward Ranch/Centennial Gulch, McMasters Hills/Spokane Bay, and Spokane Hills/Breaks areas, are focal points for current traveling planning efforts. In addition, there are a number of smaller, isolated tracts scattered throughout the remainder of the East Helena TPA that may also require travel planning. Of the five, the North Hills has the most need for travel management, based on road density and current use levels. **Maps 10 through 13** present the East Helena TPA.

The North Hills area lies approximately three miles north of Lake Helena, and occupies 4,708 acres. The North Hills are bordered on the west, north, and south by private property, and by the Missouri River on the east. The majority of the North Hills are characterized by gently rolling to moderately steep terrain varying in elevation from 4,100 to 5,280 feet. The area along the Missouri River has a number of sheer, vertical rock cliffs that extend down to the river's edge. With the exception of several large open meadows, the lower elevations are vegetated with a moderately thick ponderosa pine forest; and occasional juniper and scattered shrubs. The higher elevations and north facing slopes are dominated by pine/fir forest with a bunchgrass or fescue under-story.

During the late summer of 1984, the northern half of North Hills was burned in a major wildfire. The fire resulted in severe impacts to many of the pine stands located on the north and east aspects of American Bar, Foster and a number of secondary drainages. Following the fire, emergency stabilization efforts (grass reseeding) were undertaken to reduce sedimentation into Holter Lake. Due to the lack of natural forest seed sources, areas that have converted to grass and downed log habitats will likely remain deforested for decades.

Mt. Bend is located approximately 3 miles east of Lake Helena, on the west side of York Bridge. Approximately 1,106 acres in size, Mt. Bend is bordered by Hauser Lake on the north and east, and by private property on the west and south. Mt. Bend can be described as a steep hill, ascending in elevation from south to north, and then descending again in the north to the Hauser Lake shoreline. The south facing slopes are vegetated by grasses, scattered trees and shrubs, while the higher elevations and north facing slopes are dominated by pine/fir forest.

The Ward Ranch/Centennial Gulch area is located along the eastern shore of Hauser Lake. Approximately 4,361 acres in size, it is bordered by Hauser Lake on the west, USFS lands in the north and east, and private property and Bureau of Reclamation lands on the south. The area extends north for approximately 7 miles, from the Riverside Recreation Site to Soup Creek; and varies in width from one to two miles. The area is composed of a combination of pre-existing BLM lands and the newly ac-

quired 2,200 acre Ward Ranch. The physical environment is similar in nature to the North Hills and Mt. Bend areas, and is characterized by gently rolling to moderately steep terrain varying in elevation from approximately 3,600 feet along Hauser Lake to 4,750 feet near the York Bridge area. The topography along the Missouri River varies from gently sloping foothills hills and valley meadows, to steep rock cliffs. With the exception of several large open meadows (and some cleared ranch lands), the lower elevations are vegetated with a moderately thick ponderosa pine forest; and occasional juniper and scattered shrubs. Higher elevations and north facing slopes are dominated by pine/fir forest with a bunchgrass or fescue under-story.

The McMasters Hills/Spokane Bay area is located at the southern end of Hauser Lake, approximately 2.5 miles west northwest of Canyon Ferry Dam. Approximately 1,588 acres in size, the area is bordered on the north by a combination of BLM, private, and Bureau of Reclamation lands (which in turn is bordered by Hauser Lake); and by private property on the west, south, and east. The area is composed of a combination of pre-existing BLM lands and the newly acquired McMaster's (North) ranch complex. The terrain varies in elevation from 3,750 to 4,100 feet. The southern portion of the McMasters Hills/Spokane Bay area is characterized by open valley land, and is the site for the McMaster's ranch complex, located adjacent to Spokane Bay and Spokane Creek. The ranch complex includes several cultivated fields, developed ponds, corrals/fences, residential housing, and an assortment of ranch buildings. With the exception of the ranch complex, which has mature cottonwood trees growing along Spokane Creek, the lower elevations are vegetated with native grasses, cacti, and a few scattered juniper and pine trees. The northern portion of the McMasters Hills/Spokane Bay area is a mosaic of steep sided ridges rising 300 to 400 feet above the valley floor, with rolling benches. The upper elevations are vegetated with sagebrush, native grasses, small groups of ponderosa pines, and several formerly cultivated fields planted to crested wheatgrass.

The Spokane Hills/Breaks area is located along the western shore of Canyon Ferry Lake. Approximately 7,492 acres in size, the Spokane Hills/Breaks area is bounded on the north, west, and south by private property. The east boundary is bordered by Bureau of Reclamation lands, which in turn are bordered by Canyon Ferry Lake. The Spokane Hills/Breaks area is composed of 6,286 acres of BLM lands (including the newly acquired McMaster's "South" ranch complex) and 1,205 acres of Conservation Fund lands. The area extends north for approximate 9 miles, from the White Earth Recreation Site to the Lorelei Recreation Site, and varies in width from 0.5 to 1.5 miles. The area is characterized by steep sided ridges punctuated by drainages and gullies. The Spokane Hills burned in their entirety on both the public domain and McMasters properties in the major Bucksnot Wildfire of 2000. Approximately 60 to 80

percent of the forest stands burned intensely with few surviving trees for natural reforestation.

Each of the five areas could be described as an island of undeveloped land, surrounded by steady residential growth. This is particularly true for the North Hills focus area.

According to the 2000 U.S. Census, the North Hills had 121 homes, with an estimated population of 300 people living in and around the area.

### *Existing Land Use*

#### **Recreation**

Recreational use is well established for all five sub- PAs. Recreational use activities include: camping, hunting, target practice, hiking, jogging, horseback riding, mountain bike riding, and a range of motorized use (motorcyclists, OHV riders, and 4-wheel drive enthusiasts). Snow cover is generally inadequate for snowmobiling or cross country skiing. As a result, the sub-PAs provide convenient recreation opportunities for adjacent residents, as well as those from the city of Helena. Road density is relatively low for all five areas.

Three (travel related) emergency closures are in effect for the East Helena TPA, pending future resource and travel planning efforts. In 1991, in cooperation with the MFWP's "Block Hunting Management Program" the BLM restricted motorized travel in the North Hills to "designated open routes from October 15 to December 1". The purpose of the emergency closure was to minimize big-game harassment, soil erosion, vegetative loss, visitor safety hazards, and the spread of noxious weeds.

In 2004, an emergency closure was issued for the McMasters Hills/Spokane Bay sub-PA. With the exception of motorized access to the McMaster family residence/ranch complex, the closure prohibits all motor vehicle use from the former ranch lands. The purpose of the closure is to protect public health and safety, prevent the spread of noxious weeds, and protect cultural and historic values until a resource inventory is completed and public uses can be evaluated through resource management planning.

A 2004 emergency closure was also issued for the former Ward Ranch (Ward Ranch/Centennial Gulch sub-PA). Under the land transfer agreement, the former owner's will continue to reside at the ranch complex. The emergency closure restricts motorized public access from the ranch complex; non-motorized public access (hiking, horseback) is allowed. In addition, it provides an area shooting restriction for the protection and safety of the residents.

This TPA contains 11 developed recreation sites (White Sandy, Devil's Elbow, Two Camps Vista, Clark's Bay, Ward Ranch, Spokane Bay, French Bar, Spokane Bay TH, McMaster Hills W. TH, McMaster Hills E. TH, Spokane Hills S. TH) and one Special Recreation Man-

agement Area (Lewis & Clark National Historic Trail). All remaining lands within the TPA are managed as part of the Butte FO Extensive Recreation Management Area. Existing and potential Special Designation areas within this TPA include the Lewis & Clark NHT and the eligible Missouri River WSR segment below Hauser Dam.

### **Mineral/Energy Development**

The East Helena TPA includes several historic mining districts; Missouri River, York, Magpie Gulch, Confederate Gulch, Hellgate, Winston, and Park (Indian Creek). Most of these mining district are renowned for their placer mines, including the “bars” of the Missouri River; Ming’s, American, El Dorado, Spokane, French, and Dana’s. These bars hosted rich deposits of placer gold and sapphires. Production records are incomplete, but likely total around \$15,000,000. Confederate Gulch was the richest producer. The placer gold was derived from lode deposits associated with intrusives in the Elkhorns and Big Belts. Production from lode deposits continued until 2002 when the Apollo Gold Diamond Hill Mine up Indian Creek closed. Mineral properties at Winston and Miller Mountain have had considerable exploration. Other mineral resources in the East Helena TPA include decorative building stone from the Greyson Shale Belt formation, a moderate potential for oil and gas development, and a low potential for stratibound copper deposits.

Active claims are common in the areas with high potential and there are active notices in the East Helena TPA as well.

Overall, there is low potential for leasable fluid mineral development throughout federal mineral estate lands in the Butte Field Office. However, in this context, the Reasonably Foreseeable Development Scenario for the Butte RMP identified approximately 13,492 acres of federal mineral estate lands in this TPA where oil and gas development potential is slightly higher (low to moderate) and may potentially occur.

### **Range Management**

Ten grazing allotments exist in the East Helena TPA. The largest allotment is the Spokane Hills Individual allotment in the Spokane Hills/Breaks area. Due to the extended drought conditions and the 2000 Bucksnot fire, the amount of active grazing use has declined in the last four to five years. Grazing use may increase if wetter climate conditions return. BLM has cooperatively participated with private landowners, the State of Montana, the Bureau of Reclamation, and the Conservation Districts on a sheep and goat weed control project in the Spokane Hills/Breaks area the past three years.

### **Forest and Fire Management**

Approximately 9,150 acres of inventoried forest land exist in the East Helena TPA, which does not include the McMasters properties scheduled for inventory prior to

implementation of forest management activities. Active forest management activities have been limited as a result of budget considerations in the 1980s and 1990s to small forest product sales based on public requests, wildfire salvage and replanting. No large timber sales, landscape vegetation treatments or fuel management projects have occurred, except on the McMasters properties in the Spokane Hills under private management where a number of clearcuts and selected harvest occurred in the 1970s while the property was privately owned. The McMasters’ areas fully regenerated after the extensive clearcutting, but the 2000 wildfire eliminated all the regenerating trees in those areas and the overstory trees that had provided seed for the natural regeneration were also killed in most areas. No public salvage or replanting occurred in the North Hills area after the 1984 fire, but approximately 220 acres of timber salvage and 250 acres of replanting occurred on public domain within 3 years of the Bucksnot Fire in the Spokane Hills, cumulatively amounting to 10 percent of the burned public domain. No forest management or further fire rehabilitation work is currently scheduled in the burn areas. The remaining forested areas are heavily stocked with second growth ponderosa pine and will be considered for both fuel reduction and forest health treatment work to deal with identified fuels and forest health problems.

In 2000/2003 a fuels hazard assessment was done for the North Hills Area. Findings from that assessment indicate that 66 percent of forested stands rated high and 13 percent rated moderate for hazardous fuels conditions in the North Hills Fire Management Zone. In consideration of the WUI (Wildland Urban Interface) that surrounds the area, the East Helena TPA is a high priority for fuels reductions work in the future.

Fire suppression for the East Helena TPA was delegated to the Forest Service as part of the offset of fire protection responsibilities in Montana.

### ***Important Resource Issues***

#### **Wildlife**

This TPA provides a diversity of habitats from agricultural fields to high elevation forests. BLM lands in the TPA, however, are dominated by dry forests of Douglas fir and ponderosa pine (10,702 acres) and grassland/sagebrush habitats (9,249 acres).

Forests in the TPA provide habitat for species including but not limited to: elk, moose, mule deer, coyote, red fox, bobcat, cougar, black bear, mountain lion, mountain cottontail, marmot, red squirrel, and other small mammals.

Grasslands and sagebrush within the TPA provide habitat for elk, mule deer, bighorn sheep, pronghorn antelope, badger, coyote, red fox, mountain cottontail, white-tail jackrabbit, ground squirrels, and other small mammals.

The TPA also provides habitat for a variety of forest and grassland bird species including but not limited to: pileated, hairy and downy woodpeckers, Cooper's hawk, sharp-shinned hawk, red-tailed hawk, blue grouse, hairy and downy woodpeckers, dusky flycatcher, pine siskin, western tanager, black-capped chickadee, red-breasted nuthatch, mountain bluebird, Townsend's solitaire, dark-eyed junco, Cassin's finch, pine siskin, red crossbill, western meadowlark, Swainson's hawk, red-tailed hawk, horned lark, mountain bluebird, prairie falcon, chipping sparrow, savannah sparrow and vesper sparrow.

The majority of mule deer and elk winter range, approximately 42,000 acres, is located in the northern section of the East Helena TPA as well as along the shore of the reservoirs. The entire TPA is within pronghorn antelope habitat with approximately 20,000 acres of pronghorn winter range.

This TPA provides habitat for several BLM sensitive species including: golden eagle, flammulated owl, Brewer's sparrow, long-billed curlew, northern goshawk, ferruginous hawk, Swainson's hawk, and long-eared bat. The long history of mining in the area has created habitats for bats but surveys have not been conducted to assess use of these features. Habitat within the TPA also provides habitat for two BLM sensitive amphibians, the plains spadefoot, and the boreal toad. Several plains spadefoot toads were found in the late 1990s and 2001 in the southwest section of the East Helena TPA. Boreal toads were found near Canyon Ferry Lake.

The shorelines of upper Holter, Hauser, and Canyon Ferry Lakes provide good quality habitat for bald eagles, peregrine falcon, osprey, and numerous waterfowl.

### **Aquatics/Fisheries**

This 201,000 acre TPA is found within the Upper Missouri watershed. There are approximately 171 miles of perennial streams and 100 miles of fish bearing streams on all land ownerships in the TPA. Fish species found in the TPA include non-native brook, brown and rainbow trout, walleye (Missouri River) as well as stocked Yellowstone cutthroat trout in Beaver Creek.

Native fish species found in the TPA include; white sucker, mountain whitefish, longnose dace, longnose sucker, stonecat, burbot, westslope cutthroat trout, and mottled sculpin.

On BLM lands, there are approximately 7.6 miles of perennial stream and an additional 1 mile of fish bearing stream.

In the entire TPA, there are approximately 14 miles of stream with westslope cutthroat trout. There are no streams on BLM lands in the TPA that provide habitat for westslope cutthroat trout in the East Helena TPA.

Spokane Creek (McMasters Hills/Spokane Bay area) is an important riparian area. The creek provides spawning habitat for brown trout, rainbow trout, and salmon in

Hauser Lake. Additionally, the associated riparian area provides habitat for several plant and animal species as well as acting as a filter for water flowing into Hauser Lake.

### **Water Resources**

Within the entire East Helena TPA there are seven streams (including the Missouri River), totaling about 44.2 stream miles, that are listed as impaired water bodies by Montana Department of Environmental Quality. Impaired reaches of two of these streams, Trout Creek (0.3 miles), and Prickly Pear Creek (0.9 miles) flow through BLM managed lands.

Canyon Ferry Reservoir and the Missouri River from Canyon Ferry Dam to Hauser Lake are both identified as impaired water bodies on the MDEQ 303(d) list. Canyon Ferry Reservoir has impairments related to excess nitrogen and ammonia as well as excess algal growth, likely related to municipal point source discharges, septic systems, agriculture, and abandoned mine lands. Canyon Ferry also has excessive arsenic and thallium attributed to contamination from abandoned mine lands. Missouri River from Canyon Ferry Dam to Hauser Lake has impairments primarily related to excessive nutrients and oxygen deficiency. These impairments are attributed to dam construction, grazing in riparian or shoreline zones, municipal point source discharges, and septic systems.

### **Riparian**

Approximately 22.3 miles of riparian reaches and associated habitat are found in the East Helena travel planning area. Current condition ratings on these reaches include 4.4 miles in Proper Functioning Condition and 17.9 miles in Functioning-At-Risk (FAR) condition. Most of the FAR reaches are associated with the lake/river shoreline of Hauser lake/Missouri River. Trends on most reaches are upward or static. Currently, BLM roads or trails are having minimal impacts on riparian conditions in this TPA.

### **Sensitive Plants**

The North Hills and Spokane Hills areas have likely habitat for a sensitive species—lesser rushy milkvetch. Populations of this species have been found in both areas on private land.

### **Noxious Weeds**

The primary noxious weeds in the East Helena TPA are leafy spurge, spotted knapweed, Dalmatian toadflax, houndstongue, and Canada thistle. Small infestations of Russian knapweed and diffuse knapweed have been found and promptly treated.

In the North Hills area, large infestations of low to moderate density leafy spurge occur throughout this sub-PA. Other noxious weeds present are Canada thistle, Dalmatian toadflax, and small patches of Russian knapweed.

In the Mt. Bend area, large infestations of Dalmatian toadflax occur throughout this sub-PA. Leafy spurge, houndstongue, and spotted knapweed are also present.

In the Ward Ranch/Centennial Gulch area, large infestations of Dalmatian toadflax and spotted knapweed occur throughout this sub-PA. Scattered infestations of Canada thistle, leafy spurge, and houndstongue have been observed. Undesirable invasive species present include prickly pear cactus and large infestations of musk thistle.

In the McMasters Hills/Spokane Bay area, several infestations of Dalmatian toadflax, leafy spurge, spotted knapweed, and Canada thistle are present. Scattered infestations of musk thistle were also observed.

In the Spokane Hills/Breaks area, there are large infestations of spotted knapweed, Dalmatian toadflax, and leafy spurge in this sub-PA. Noxious weeds present in smaller patches are Canada thistle, Russian knapweed, and diffuse knapweed.

### Soils

Soils range in depth from shallow to very deep and are typically very to extremely gravelly loams and clay loams with a few sandy loams. Soils formed from argillites, quartzite, volcanics, alluvium, or limestone.

### Cultural/Historic

Cultural resources in the Helena valley reflect all of the ways of life that have been used since people have lived in Montana. Prehistoric Native American hunting sites and living areas are as old as 10,000 years. They may be tool material sites, or rock features that probably served a number of uses before the arrival of Europeans. After their arrival, site types diversified to include European activities – mostly related to mining and ranching. The Ward and McMasters ranches were established before the turn of the 19<sup>th</sup> century. The Ward family engaged in mining and logging, as well as ranching. The McMasters ranch began as a blacksmith's shop servicing the local stage and individual travelers. As time passed, the family gradually turned to ranching full time.

### Summary Public Scoping Comments

A well attended public scoping meeting was conducted for the East Helena TPA on November 30, 2004. Most of the written and oral comments received focused on the North Hills sub-PA; however several comments were also received for the newly acquired Ward and McMasters' ranch lands.

The majority of comments centered on conflicts between motorized and non-motorized recreation in the North Hills. A number of participants felt that accommodations could be made for both motorized and non-motorized uses. Strategies included creating separate areas of use for motorized and non-motorized activities, and seasonal closures. Other participants advocated prohibiting all motorized travel in favor of horse and pedestrian travel,

arguing the area is too small to provide motorized recreation opportunities.

Other issues and concerns were raised during the meeting included:

- Illegal activities - Dumping, drug use, underage alcohol use (keg parties), unattended camp fires, vandalism, and unauthorized travel.
- Target Shooting - A number of comments were made regarding unsafe and irresponsible shooting (trees destroyed).
- General need for improved boundary marking, signing, maps, and separate trailhead facilities for motorized and non-motorized users.
- Enforcement – Proactive law enforcement, increased uniformed patrols by BLM staff.
- Soil erosion.
- Noxious weeds.
- Wildland fire - In particular, WUI concerns adjacent to North Hills.

## Lewis and Clark County Northwest Travel Planning Area

The 406,700-acre Lewis and Clark County Northwest TPA contains approximately 17,037 acres of BLM lands. There are approximately 68 miles of BLM roads, making up about 4.7 percent of the approximate total of 1,448 road miles in the TPA. The majority of roads (819 miles) lie on private lands.

Weather patterns for the lower elevations are similar to the Helena Valley, with average minimum/maximum temperatures of 8/29 degrees Fahrenheit in January, and 52/84 degrees Fahrenheit in July. Average annual precipitation is approximately 12 inches, with an average annual snowfall of 49 inches. Annual precipitation levels for the higher elevations range from 20 to 30 inches, with annual snowfall averaging 150 inches.

Four sub-PAs, known as Marysville/Great Divide Ski, Stemple Pass, Sieben Ranch, and Lincoln have been identified for planning efforts. Of the four, the Marysville/Great Divide Ski area has the most need for travel management, based on road density, current use level, and public scoping comments. **Maps 14 through 17** depict the Lewis and Clark County Northwest TPA.

The Marysville/Great Divide Ski sub-PA is located about 25 road miles northwest of Helena, Montana, and occupies approximately 12,178 acres. Marysville/Great Divide is bordered on the north and east by a combination of private and state lands, and on the west and south by USFS and private lands. The majority of the area is characterized by moderate (25 to 30 percent) to steep (50 percent) slopes. Elevations range from 5,700 to 7,230 feet. Upper elevation north and east facing slopes are heavily forested by lodge pole pine and sub-alpine fir,

while mid to lower elevations are Douglas fir and ponderosa pine. Low to upper elevation, west and south facing slopes are vegetated by fescue and bluebunch wheatgrass.

The Sieben Ranch sub-PA is located approximately 25 miles north of Helena, along the west side of Interstate-15. The sub-PA occupies approximately 1,612 acres. Sieben Ranch is bordered on the east by I-15, and on the north, west, and south by a combination of private and state lands. Medicine Rock Creek is the predominant feature, and flows easterly for approximately two miles through a moderately steep “V” shaped canyon. A graded dirt road parallels the creek bottom. Elevations range from 5,000 to 5,750 feet with the canyon’s north facing slopes ascending steeply from the creek bottom. North facing slopes are vegetated by a moderately dense forest of fir and ponderosa pine, while the dryer less steep south facing slopes are populated by pine. Open meadows are located along the bench tops, and along the southerly facing slopes.

The Stemple Pass sub-PA is located approximately 13 miles north of Marysville, and occupies approximately 2,040 acres. The physical environment is very similar to the Sieben Ranch sub-PA. Virginia Creek is the predominant feature, and flows easterly for approximately two miles through a deep “V” shaped canyon. Elevations range from approximately 4,900 to 6,500 feet with the canyon’s north and south facing slopes both ascending steeply from the creek bottom. The slopes are vegetated with moderately dense forest of spruce, fir, and ponderosa pine. Open meadows are located along the bench tops, and occasionally along the slopes.

The Lincoln sub-PA is located approximately 5 miles west of the town of Lincoln, and occupies approximately 894 acres. The physical environment is similar to the Sieben Ranch and Stemple Pass sub-PAs, but has higher levels of precipitation (approximately 15 to 19 inches). The Blackfoot River is the predominant feature, and flows westerly for approximately 1.5 miles through a “U” shaped canyon. Elevations range from approximately 4,250 feet along the river benches to 5,187 feet at Long Point. North facing slopes are vegetated by a moderately dense forest of western larch and fir, while the dryer south facing slopes are populated more heavily by ponderosa pine. Open meadows are located along the bench tops, and occasionally along the slopes.

### ***Existing Land Use***

#### **Recreation**

Recreational use is well established for the Marysville/Great Divide Ski area, particularly for winter sports. Winter sport activities include: snowmobiling, downhill skiing, backcountry skiing, ski racing, snowboarding, and snowshoeing. An extensive network of roads and trails support a wide range of off-season activities, including: camping, hunting, target practice, hiking, jogging, horseback riding, mountain bike riding, and

motorized use (motorcyclists, OHV riders, and 4-wheel drive enthusiasts).

Marysville was a thriving mining town in the late 1800’s, with a population of 4,000 at its peak. The core of Marysville is still present with approximately 50 structures in use and about 71 full time residents according to the 2000 U.S. Census. Additional residential development is located in the Canyon Creek and Little Prickly Pear areas.

The 1,600 acre Great Divide Ski resort, lies above the town of Marysville on the east flank of Mount Belmont, about 1 mile northeast of the Continental Divide. The Great Divide Skiing Company operates the resort under a lease agreement with the BLM (leasing approximately 900 acres) and private property owners. Great Divide Ski resort is not a destination resort (no lodging available), and relies heavily on a local market based in Helena. Visitation has increased from about 6,000 in the mid-1980s to over 60,000 during the 1998-1999 ski season. Approximately 1,200 visits are expected on a typical heavy use day. Current facilities include four chairlifts and a tow, a lodge (day-use only), a maintenance shop, snowmaking system, slope lighting system, parking lot, and 130 named trails.

The Stemple Pass, Sieben Ranch, and Lincoln sub-PAs receive limited recreation use. Stemple Pass and Sieben Ranch areas are frequented by big game hunters during the fall.

This TPA contains no developed recreation sites or SRMAs. All TPA lands are managed as part of the Butte FO Extensive Recreation Management Area. The only Special Designation in this area is a three-mile segment of the Continental Divide National Trail.

### **Mineral/Energy Development**

The Marysville mining district is located west of Marysville. Production began in the early 1870s and by 1935 the district had produced \$31million dollars worth of gold and silver. No production records are available since that time. Recent production has been limited to the Belmont in the late 1980s and early 1990s. There are reportedly still reserves remaining in the Belmont.

Historical information in BLM’s LR2000 records indicates that 3,357 claims have been active throughout the Marysville area since 1977. Today only 40 claims remain active. While this decrease in the number of mining claims represents in part depletion of the high grade gold and silver deposits, it also represents cycles in the mining industry. The Montana Bureau of Mines and Geology evaluation ranked much of the area as having high mineral potential for future production. Additionally claims surrounding Bald Butte have been purchased by United Bolero for their molybdenum potential (molybdenum is used for steel hardening). Best estimates for reserves are 150 to 200 million tons at 0.05 to 0.07%

molybdenum. During winter 2006, Bolero began mining and is shipping ore to Philipsburg for processing.

Future mining production is always difficult to predict because it is a cyclic business that depends on technological abilities and market demand. However future mining nearly always reoccurs in old districts as these are the mineralized areas and multiple types of mineralization often occurs together. Therefore, the Marysville sub-PA has high potential for future mining and exploration.

Overall, there is low potential for leasable fluid mineral development throughout federal mineral estate lands in the Butte Field Office. However, in this context, the Reasonably Foreseeable Development Scenario for the Butte RMP identified approximately 20,640 acres of federal mineral estate lands in this TPA where oil and gas development potential is slightly higher (low to moderate) and may potentially occur.

### **Range Management**

Fifteen grazing allotments exist in the TPA. The largest allotments are the Empire Creek, Drumlummon-Skelly, and Edwards Mountain allotments in the Marysville/Great Divide Ski sub-PA. Due to the extended drought conditions, the amount of active grazing use has been reduced in the last 4 to 5 years. Grazing use may increase if wetter climate conditions return.

### **Forest and Fire Management**

Approximately 11,500 acres of inventoried forest land occur in the Lewis and Clark County NW TPA. The general character of the vegetation is forested in each of the sub-PAs, with large areas of cool, moist conifer and sub-alpine fir zones, and lower elevations dominated by the dry conifer zone. Some of the most productive forest lands in the Butte Field Office area occur in this area. Forest stands are mainly second growth, having been heavily affected by harvesting and use starting with area settlement in the late 19<sup>th</sup> century and continuing through the present. Few old growth stands exist and large wildfire events have not occurred since 1910. Most stands are considered to be commercial forest, and have few current limitations or restrictions as to the silvicultural practices and treatment techniques that may be utilized for forest management. With the exception of the Medicine Rock area, these lands are adjacent to and blend in with the Continental Divide Landscape, where a landscape analysis was completed by the Helena National Forest in 1996.

The Lewis and Clark County NW TPA has considerable areas of WUI (Wildland Urban Interface). The general character of the vegetation is forested in each of the sub-PAs, with large areas of cool, moist conifer and sub-alpine fir zones, and lower elevations dominated by the dry conifer zone. The fuels in the area are classified in the moderate to high hazard range. In 2000/2003 a fuels hazard assessment was done for the Marysville area.

Findings from that assessment show that 33 percent of forested stands are rated high and 40 percent are rated moderate for hazardous fuels conditions in the Marysville Fire Management Zone. In consideration of the wild-land urban interface that surrounds the area, the Lewis and Clark County NW TPA is a moderate to high priority for fuels reductions work in the future.

Fire suppression for the Lewis and Clark County NW TPA was delegated to the USFS as part of the offset of fire protection responsibilities in Montana.

### **Cultural/Historic**

Lewis and Clark County hosts a number of archeological resources dating back as long as Montana has been inhabited, at least 10,000 years. Site types include the entire range of subsistence types; hunting, game and plant processing and general habitation, and religious sites are present in the area. The arrival of Europeans is elusive in the archeological record. The presence of European goods does not necessarily indicate contact, but trade for those goods. However, a few ranches and numerous mines began to populate the area to the extent that their remains make up the dominant site type in the area.

Marysville began as a mining camp that grew up around the Drumlummon mine, discovered in the late 1860s by Irish immigrant, Tom Cruse. In 1876, Cruse relocated his old claim, the Drumlummon, and prospected for about six years before hitting a very rich vein of silver. He built a five-stamp mill at the upper end of Silver Creek, and the town of Marysville began. In 1883, Cruse sold his mining interests to an English company for \$1,500,000. They proceeded to build two large stamp mills in Marysville, which operated for another 10 years. The waste piles from the mines were so rich that they were profitably leached two separate times.

### **Important Resource Issues**

#### **Wildlife**

The Lewis and Clark TPA straddles the Continental Divide and historically provided high quality habitat for a variety of wildlife species. This TPA provides a diversity of habitats from agricultural fields to high elevation cool, moist forests.

BLM lands in the TPA are dominated by cool, moist forest with dry Douglas fir at the lower elevations (13,047 acres) and sagebrush and grassland meadows (3,990 acres). Forests in the TPA provide habitat for species including but not limited to: elk, moose, mule deer, coyote, red fox, bobcat, cougar, black bear, mountain lion, pine marten, river otter, beaver, snowshoe hare, mountain cottontail, marmot, red squirrel, and other small mammals.

Grasslands and sagebrush within the TPA provide habitat for elk, mule deer, coyote, red fox, mountain cottontail, ground squirrels, and other small mammals.

The TPA also provides habitat for forest and grassland bird species including but not limited to: pileated, hairy and downy woodpeckers, Cooper's hawk, sharp-shinned hawk, red-tailed hawk, blue grouse, hairy and downy woodpeckers, dusky flycatcher, pine siskin, western tanager, black-capped chickadee, red-breasted nuthatch, mountain bluebird, Townsend's solitaire, dark-eyed junco, Cassin's finch, pine siskin, red crossbill, western meadowlark, Swainson's hawk, red-tailed hawk, horned lark, mountain bluebird and chipping sparrow.

Mule deer winter range is located along the eastern half of the TPA (158,140 acres) as well as near Lincoln (21,500 acres). Elk winter range is also located in the lower elevations along the eastern half of the TPA (193,800 acres) as well as around Lincoln (55,500 acres).

The western half of the TPA is within a wildlife movement corridor that provides a connection between the Northern Continental Divide Ecosystem and the Greater Yellowstone Ecosystem. This corridor also provides local daily movements and seasonal movements between higher elevation summer range along the Continental Divide and lower elevation winter range. Although this corridor has fairly high road densities (greater than 2 mi/mi<sup>2</sup>) the quality of the corridor is moderate to high to wildlife based on the large amount of federal lands in the area.

The western half of the TPA (231,600 acres) is within the occupied range of grizzly bear extending south from the Northern Continental Divide recovery zone.

The Lewis and Clark County NW TPA is within the former Northwest Montana Recovery Area for the gray wolf. In 2003, a den site with a single female and five pups was located just south of the Great Divide Ski Area. The den was subsequently disturbed by humans and the female moved the five pups to an unknown location. Currently, there is one known pack in the area. Due to livestock loss, two other local packs were exterminated in February 2003.

Approximately 112,250 acres of cool, moist forest in the TPA provide habitat for the Canada lynx. The majority of lynx habitat is located in the western half of the area between Lincoln and Marysville. Dry, mature Douglas-fir, lodgepole pine, and ponderosa pine forest types at lower elevations provide habitat for the northern goshawk.

Two BLM sensitive amphibians have been found within the Lewis and Clark TPA, the boreal toad and the Northern leopard frog. Another BLM sensitive species, the wolverine, has also been documented west of the Continental Divide in the TPA.

The long history of mining in the Marysville area has created numerous habitats for bats. Bat species identified during surveys include: Townsend's big-eared bat (BLM

sensitive species), silver-haired bat, big brown bat, and several unknown myotis species.

### **Aquatics/Fisheries**

This 406,700 acre TPA is found within the Upper Missouri (257,265 acres) and Blackfoot (149,435 acres) watersheds. There are approximately 238 miles of perennial streams and approximately 292 miles of fish bearing streams on all land ownerships in the TPA. Fish species found in the TPA include non-native brook, brown, and rainbow trout. Native fish species found in the TPA include; white sucker, mountain whitefish, longnose dace, longnose sucker, westslope cutthroat trout, mottled sculpin, and bull trout.

On BLM lands, there are approximately 7.0 miles of perennial stream, 11 miles of fish bearing stream and 6.3 miles of intermittent streams. Non-native fish species found on BLM lands in the TPA include brook, brown, and rainbow trout. Native fish found on BLM lands in the TPA include; white sucker, mountain whitefish, longnose dace, longnose sucker, westslope cutthroat trout, mottled sculpin, and bull trout. In the entire TPA, there are approximately 220 miles of stream with westslope cutthroat trout of varying genetic purity and approximately 65 miles with bull trout.

On BLM lands, westslope cutthroat trout are found in nine streams for approximately 7.7 miles. The longest length of stream with westslope cutthroat trout is Virginia Creek, with 2 miles. Only three streams have had genetic testing; the Blackfoot River, Sauerkraut Creek, and Sawmill Gulch. Of these streams, only Sauerkraut Creek was found to have 100 percent genetically pure westslope cutthroat trout (less than 0.1 mile is on BLM managed lands). The Blackfoot River flows through the northwest corner of the TPA near the town of Lincoln and provides the only bull trout habitat in the Butte Field Office. Bull trout are found in approximately 2.0 miles of the Blackfoot River in the Decision Area.

### **Water Resources**

Within the entire Lewis and Clark County NW TPA there are 19 streams (totaling about 111.9 stream miles) that are listed as impaired water bodies by Montana Department of Environmental Quality. Impaired reaches of five of these streams (Blackfoot River – 1.9 miles, Jennies Fork – 0.2 mile, Little Prickly Pear Creek – 0.7 mile, Silver Creek – 0.03 mile, and Virginia Creek – 2.0 miles) flow through BLM managed lands. Key types of impairment include heavy metal contamination, siltation, and flow alteration.

### **Riparian**

Approximately 18.7 miles of riparian reaches and associated habitat are found in the Lewis and Clark Northwest travel planning area. Current condition ratings on these reaches include 11.1 miles in Proper Functioning Condition, 5.6 miles Functioning-At-Risk condition, and

1.7 miles in non-functioning condition. Trends on most reaches are upward or static.

Currently, the roads and trails having the biggest impacts on riparian conditions in this TPA are the county road along Ottawa Gulch, the trail along Woodchopper Gulch, the road along Empire Creek, the road in Towsley Gulch, and the county road paralleling Virginia Creek. All of these roads affect stream channels to some degree as well as delivering extra sediment during runoff events.

### **Sensitive Plants**

Habitat for yellow lady's slipper does occur in the Marysville area. No populations have been documented there however.

### **Noxious Weeds**

The primary noxious weeds in the Lewis and Clark County NW TPA are spotted knapweed, houndstongue, leafy spurge, Dalmatian toadflax, yellow toadflax, whitetop, and Canada thistle.

In the Marysville/Great Divide Ski Area, observed infestations include large patches of spotted knapweed with smaller infestations of houndstongue, whitetop, yellow toadflax, and Canada thistle. Undesirable weeds present include musk thistle and common mullein.

The majority of the Stemple Pass area has spotted knapweed infestations ranging from low to high canopy cover densities. This area has the largest single infestation of noxious weeds of the four sub-PAs.

In the Sieben Ranch area, large infestations of spotted knapweed with smaller infestations of houndstongue, leafy spurge, and Dalmatian toadflax occur in this area. Undesirable weeds present include bull thistle, musk thistle, and common mullein.

In the Lincoln area, small patches of spotted knapweed have been found in this sub-PA.

### **Soils**

Soils in the Lewis and Clark County NW TPA are from limestone, granite, argillite, and igneous rocks. They range from shallow to the very deep and in texture from gravelly loams and clay loams to extremely stony loamy sand. Limestone soils are the most stable and granite soils the most erosive.

### **Summary Public Scoping Comments**

A well attended public scoping meeting was conducted for the Lewis and Clark County NW TPA on December 2, 2004. Most of the written and oral comments received focused on the Marysville/Great Divide Ski sub-PA. There were many comments received regarding future management of the Continental Divide Trail. The majority of comments centered on conflicts between motorized and non-motorized recreation, including winter sports activities. A number of participants felt that ac-

commodations could be made for both motorized and non-motorized uses. Strategies included creating separate areas of use for motorized and non-motorized activities, and seasonal closures.

Other issues and concerns raised during the meeting included:

- Interagency Coordination – Maintain interagency connectivity and coordination with USFS and other adjacent agencies.
- Continental Divide Trail – Manage as non-motorized in cooperation with the USFS. Consider re-routing the existing trail away from existing or future planned motorized routes. Or, allow for motorized crossings at site specific junctions.
- Illegal activities – Dumping, drug use, underage alcohol use (keg parties), unattended camp fires, vandalism, and unauthorized travel.
- Access – Ensure access to mines and private property.
- General need for improved boundary marking, signing, maps, and separate trailhead facilities for motorized and non-motorized users
- Enforcement – Proactive law enforcement, increased uniformed patrols by BLM staff to ensure compliance with completed travel plan.
- Wildlife – Wildlife security and travel corridors.

### **Boulder/Jefferson City Travel Planning Area**

The 60,418-acre Boulder/Jefferson City TPA contains approximately 14,487 acres of BLM lands. There are approximately 61 miles of BLM roads, making up about 15.6 percent of the approximate total of 392 road miles in the TPA. The majority of roads (212 miles) lie on private lands.

The largest contiguous portion of the TPA lies west of the town of Boulder; bounded on the south and east by Interstate-15. The remaining portion of the TPA extends northwards up to the community of Corbin. Several additional small communities (Fuller, Comet, Amazon, and Wickes) also lie within the TPA. Elevations range from 5,000 feet near Boulder to approximately 8,000 feet at Mt. Thompson. **Maps 18 through 21** depict the Boulder/Jefferson City TPA.

The area experiences four distinct seasons. Weather patterns for the lower elevations are similar to those for the Helena Valley, with average minimum/maximum temperatures of 8/29 degrees Fahrenheit in January, and 52/84 degrees Fahrenheit in July. Average annual precipitation is approximately 12 inches, with an average annual snowfall of 48 inches. Annual precipitation levels for the higher elevations range from 20 to 30 inches, with annual snowfall averaging 30 to 60 inches.

The majority of the area is characterized by moderately steep mountain terrain (15 to 35 percent slopes), punctuated by a number of small perennial and seasonal streams. North facing slopes are vegetated by a moderately dense forest of fir and ponderosa pine, while the dryer less steep south facing slopes are populated by pine. Occasional open meadows are located along the bench tops, and along the southerly facing slopes. Small stands of aspen can be found along the riparian areas. The lower elevations (located along the west side of I-15) are characterized by open sagebrush meadows with scattered juniper and pine groves.

### ***Existing Land Use***

#### **Recreation**

The Boulder/Jefferson City TPA contains a relatively dense network of BLM administered roads. Several maintained county roads (Big Limber Gulch, High Ore Creek, Finn Gulch, and Wickes) provide primary vehicle access. The majority of recreation use is by local and area residents. Primary recreation activities include Big Game hunting (deer, elk), OHV use (motorcyclists, ATV riders, 4-wheel drive), and winter snowmobiling. Other activities may include camping, hunting, target practice, hiking, jogging, horseback riding, and mountain bike riding. With the exception of some old mine sites, there are no known destination points or points of interest.

This TPA contains no developed recreation sites or SRMAs. All lands within this TPA are managed as part of the Butte FO Extensive Recreation Management Area. There are no Special Designations within this TPA.

#### **Mineral/Energy Development**

The Boulder/Jefferson City TPA is highly mineralized and thus incorporates numerous historic mining districts including Alhambra-Warm Springs, Amazon, Basin-Cataract, Boulder, Clancy-Lump Gulch, Colorado-Wickes-Corbin-Gregory, Golconda, and Montana City. Placer mines in the general area date back to the 1860s. Estimates report that placer mining in Jefferson County drainages alone produced 109,629 ounces of gold and 39,628 ounces of silver from 1902 to 1948 (Roby *et al.* 1960).

Placer mining was followed by lode mining in several drainages throughout the area. In 1890 Roby reports that three concentrating mills, six stamp mills, and four smelters were operating in Jefferson County.

The Free Enterprise was the largest producer of uranium in the area, although other occurrences are present in the district. Radioactivity is associated with silicified and altered zones in the batholith (Popoff and Irving 1952).

Limestone for smelter flux was quarried near Montana City at the turn of the century.

Presently the Montana Tunnels mine, centered on a large diatreme, operates an open pit mine. From 1984 to 2005 Montana Tunnels produced 1.3 million ounces of gold, 20 million ounces of silver, 312 million pounds of lead, and 853 million pounds of lead. Present mine permits allow mining to 2007 and the company is submitting a proposal to expand the operation to 2011.

The Golconda District (WSA area) has several mineralized deposits delineated to date. These include 750,000 tons of economic gold resources at a grade of 0.052 ounces per ton gold and a porphyry stock work, copper-molybdenum deposit containing what is described as at least 100 million tons of mineralized rock. The copper prospect was dropped in the late 1970s due to a decline in the price of copper at that time (USBM and USGS 1990).

Due to the strong mineralization in the area it is likely that there will be future proposals to explore for and possibly develop mineral deposits at some time in the future.

#### **Range Management**

Ten grazing allotments exist in the Boulder/Jefferson City TPA. The largest allotments are the High Ore, Sugarloaf, Boomerang and Amazon allotments. Due to the extended drought conditions and the Boulder complex fires in 2000, the amount of active grazing use has been reduced in the last 4 to 5 years. Grazing use may increase if wetter climate conditions return.

#### **Forest Management**

Approximately 9,500 acres of inventoried forest land occur in the Boulder/Jefferson City TPA. The general character of the vegetation consists of large areas forested with dry Douglas-fir conifer types found mainly on north and east aspects that are bisected with dry meadows, and large areas of open grass and sage vegetation on southerly aspects and broad ridges. Warm and dry ponderosa pine stands are found on south and west aspects, north of the Boulder Hills in the drainages that flow north toward the Missouri River by Helena.

The forest stands are mainly second growth, having been heavily affected by harvesting and use starting with area settlement in the late 19<sup>th</sup> century and continuing through the present. As a result, very few old growth stands remain in the TPA. A large, 12,500 acre wildfire complex occurred in the summer of 2000, where approximately 72 percent of the 4,000 acres of burned forests on BLM lands were severely damaged by stand replacement fire, potentially resulting in a quarter of the area considered to be deforested as few live trees remain for forest reestablishment in the large burn areas. The BLM planted 690 acres of the most severely burned with native conifers seedlings in 2002 and 2003.

While most stands were considered to be commercial forest, uneven aged silvicultural practices and treatment techniques have been proposed in current land use plan-

ning that would leave substantial over-story canopy elements in many areas under most treatment scenarios and would also require higher frequency treatment activities to achieve and maintain desired conditions through future planning cycles. The lands, mainly in and south of the Boulder Hills are located in the Boulder River Landscape, where the joint landscape analysis was completed with the Beaverhead-Deerlodge National Forest in 1998. The remaining lands occur in the Continental Divide Landscape, where the landscape analysis was completed by the Helena National Forest in 1996.

### **Cultural Resources**

Cultural resources in the Boulder/Jefferson River valleys reflect all of the life-ways that have been used since people have lived in Montana. Prehistoric Native American hunting sites and living areas are as old as 10,000 years. There are tool material sites, rock features, shelters and various living areas that served a number of uses before the arrival of Europeans. After their arrival, site types diversified to include European activities – mostly related to mining and ranching.

### ***Important Resource Issues***

#### **Wildlife**

Habitat in this TPA is split almost evenly between Douglas fir or Douglas fir/lodgepole pine (30,000) and grasslands/shrublands (30,420 acres) with inclusions of willow, riparian habitat, and rocky outcrops. BLM lands in the TPA, however, are dominated by dry Douglas fir (9,500 acres) with sagebrush and grassland meadows (4,987 acres).

Forests throughout the TPA provide habitat for species including but not limited to: elk, moose, mule deer, coyote, red fox, bobcat, cougar, black bear, mountain lion, pine marten, snowshoe hare, mountain cottontail, marmot, red squirrel, and other small mammals.

Grasslands and sagebrush within the TPA provide habitat for elk, mule deer, pronghorn antelope, badger, coyote, red fox, mountain cottontail, whitetail jackrabbit, ground squirrels, and other small mammals.

The TPA provides habitat for forest and grassland bird species including but not limited to: pileated, hairy and downy woodpeckers, Cooper's hawk, sharp-shinned hawk, red-tailed hawk, blue grouse, hairy and downy woodpeckers, dusky flycatcher, pine siskin, western tanager, black-capped chickadee, red-breasted nuthatch, Townsend's solitaire, dark-eyed junco, Cassin's finch, pine siskin, red crossbill, western meadowlark, Swainson's hawk, red-tailed hawk, horned lark, mountain bluebird, chipping sparrow, savannah sparrow and vesper sparrow.

The Boulder/Jefferson City TPA provides winter range for elk and mule deer. The entire TPA is considered winter range for elk while the lower elevations along the eastern half of the TPA are winter range for mule deer.

The quality of winter range is extremely variable throughout the TPA due to topography, elevation, and seasonal weather patterns.

The Boulder/Jefferson City TPA provides habitat for several BLM sensitive species including: flammulated owl, Brewer's sparrow, long-billed curlew, northern goshawk, black-backed and three-toed woodpeckers and long-eared bat. The long history of mining in the area has created habitats for bats but surveys have not been conducted to assess use of these features.

### **Aquatics/Fisheries**

This TPA is found within the Upper Missouri (27,000 acres) and Boulder River (33,000 acres) watersheds. There are approximately 81 miles of perennial streams and 32 miles of fish bearing streams on all land ownerships in the TPA. Non-native fish species found in the TPA include brook, brown, and rainbow trout as well as stocked Yellowstone cutthroat trout in Cataract Creek. Native fish found in the TPA are westslope cutthroat trout and mottled sculpin.

On BLM lands, there are approximately 13.5 miles of perennial stream, 4 miles of fish bearing stream and approximately 13 miles of intermittent streams.

In the entire TPA, there are 16.5 miles of stream with westslope cutthroat trout in five streams (Kady Gulch, South Fork Quartz Creek, Sullivan Gulch, High Ore Creek, and Clancy Creek). All of the streams, with the exception of Sullivan Gulch, have 100 percent genetically pure westslope cutthroat trout.

BLM lands in the TPA provide approximately 3 miles of habitat for 100 percent genetically pure westslope cutthroat trout in the Boulder/Jefferson City TPA. Westslope cutthroat trout are found in 2 miles of High Ore Creek, 0.5 mile of Kady Gulch and 0.2 mile of Clancy Creek. High Ore Creek had extensive reclamation work within the stream and riparian area to restore the stream channel and water quality. Currently, rainbow trout, brook trout, and westslope cutthroat trout are found in the stream.

### **Water Resources**

Within the entire Boulder/Jefferson City TPA there are 10 streams (totaling about 32.8 stream miles) that are listed as impaired water bodies by Montana Department of Environmental Quality. Impaired reaches of seven of these streams (Basin Creek – 0.04 mile, Big Limber Gulch – 1.55 miles, Boulder River – 0.9 mile, Cataract Creek – 0.4 mile, Clancy Creek – 0.2 mile, Corbin Creek 0.1 mile, and High Ore Creek – 2.1 miles) flow through BLM managed lands. The most commonly identified impairments for these streams include siltation, heavy metals contamination, and direct habitat alteration.

### **Riparian**

Approximately 17.1 miles of riparian reaches and associated habitat are found in the Lewis and Clark North-

west travel planning area. Current condition ratings on these reaches include 2.0 miles in Proper Functioning Condition, 10.2 miles Functioning-At-Risk condition, and 5.0 miles in non-functioning condition. Many of the reaches were affected by historical mining. Trends on most reaches are upward or static.

Currently, the roads and trails having the biggest impacts on riparian conditions in this TPA are the county roads along High Ore Creek, the west fork of Spring Creek. BLM roads and trails affect riparian conditions along Kady Gulch, Boomerang Gulch, Black Jim Gulch, Stagecoach Gulch, and Big Limber Gulch. All of these roads affect stream channels and also deliver excess sediment during runoff events.

### Sensitive Plants

Muskroot was observed in this area in 1892. Some potential habitat at the base of talus slopes occurs in this area.

### Noxious Weeds

Noxious weed and non-native, invasive species are well-established and spreading rapidly in the Boulder/Jefferson City TPA. The primary noxious weeds in this area are Dalmatian toadflax, spotted knapweed, whitetop, houndstongue, and Canada thistle. Non-native invasive species found include musk thistle, common mullein, and black henbane. The spread of weeds on BLM lands is particularly apparent where surface soils or native vegetation are disturbed. Some of the major disturbance factors on BLM lands are construction of roads and OHV travel. A substantial number of infestations occur adjacent to roads, power lines, streams, ditches, and canals indicating that primary carriers of weed seed are vehicles and water. Ground-based activities, particularly those involving motor vehicles or equipment, disturb surface soils which has the effect of preparing a receptive seed bed for these pioneering weed species.

### Soils

Soils in this area are derived mainly from granite. Granite soils are more erosive and less stable than soils derived from other rocks. They are mainly cobbly sandy loams and loamy sand textures.

### Summary Public Scoping Comments

A public scoping meeting was conducted for the Boulder/Jefferson City TPA on November 16, 2004. The meeting was attended by six local residents. Most of the comments received during the meeting focused on Big Game hunting and winter sports (snowmobile) access. There were no comments or discussion regarding conflicts (either existing or potential) between motorized and non-motorized recreation, including winter sports activities. Other issues and concerns discussed during the meeting included:

- Interagency Coordination – Maintain interagency connectivity and coordination with USFS and other adjacent agencies, especially regarding winter snowmobile.
- Enforcement – Proactive law enforcement, increased uniformed patrols by BLM staff to ensure compliance with completed travel plan.

## Upper Big Hole River Travel Planning Area

The Upper Big Hole River TPA is a relatively long, narrow shaped area (approximately 60 by 18 miles) located in the southwest portion of the Butte Field Office. This 357,275-acre TPA contains approximately 63,108 acres of BLM land. It includes BLM lands located along the north and south banks of the Upper Big Hole River as well as a large contiguous section located east of Interstate-15, near the town of Divide. A large contiguous portion extends south from Divide to the town of Melrose and includes the Humbug Spires Primitive Area. There are approximately 165 miles of BLM roads, making up about 12.6 percent of the approximate total of 1,309 road miles in the TPA. The majority of roads lie on private (540 miles) and Forest Service (459 miles) lands.

The western boundary of the Upper Big Hole River TPA is located approximately 10 miles east of the town of Wisdom, at the Deer Lodge/Beaverhead county line. From the western boundary, the TPA extends east for 32 miles to the town of Divide (near Interstate-15), and then easterly for an additional 28 miles, terminating at the common Jefferson/Silver Bow/Madison County boundary line. At its widest point (adjacent to I-15), the TPA extends south for approximately 18 miles, from the Feely Hill/I-15 exit to the town of Melrose. **Maps 22 through 25** depict the Upper Big Hole River TPA.

Weather patterns for the lower elevations are similar to those for Butte, Montana (elevation 5,549 feet). January has average temperatures of 28.4 degrees Fahrenheit for a high, and 4.2 degrees Fahrenheit for a low while July has average temperatures of 80 degrees Fahrenheit for highs, and 45 degrees for lows. Average annual precipitation is approximately 12 inches, with average annual cumulative snowfall 20 inches.

Annual precipitation levels for the higher elevations range from 20 to 30 inches, with annual snowfall averaging 36 to 60 inches.

The majority of the area is characterized by moderate (25 to 30 percent) to steep (50 percent) slopes, particularly along the Big Hole River corridor. Elevations (for BLM lands) range from approximately 5,200 to 7,200 feet. Upper to mid elevation north and east facing slopes are vegetated with sub-alpine fir, Douglas fir, spruce, and scattered aspen groves. Upper to mid-south facing slopes are vegetated with lodgepole pine. Low elevation, west and south facing slopes are vegetated with sage-

brush, lodge pole pine and occasional junipers. Vegetation along the Big Hole River corridor consists of sagebrush, willow, occasional cottonwood trees, and native grasses.

### ***Existing Land Use***

#### **Recreation**

Recreation use is well established in the Upper Big Hole River TPA, with fishing and big game hunting topping the list. The Big Hole River is one of Montana's finest trout streams, and has gained national recognition as a premiere fly fishing destination point.

From late May until the middle of June, fly-fisherman from all over the country come to the Big Hole for its "Salmon fly" hatch. The hatch begins around Twin Bridges and moves upstream as far as the East Bank Recreation site. The hatch moves 3 to 5 miles a day. The Big Hole River is the only river in the lower 48 states to host a large population of Arctic Grayling. The Big Hole hosts rainbow, brown, cutthroat, and brook trout. Rocky Mountain whitefish are also present.

Big game hunting is also well established in the Upper Big Hole TPA. The area receives use by local as well as non-resident hunters. Big game species include elk, mule deer, whitetail, antelope, black bear, mountain lion, and moose.

Other known recreational activities include: hiking, horseback riding, auto/OHV touring, upland game bird hunting, canoeing, kayaking, rock-hounding, gold panning, wildlife observation, and rock climbing (Humbug Spires).

A drive along the Big Hole River, from Divide west to Wisdom, and from Divide south to Twin Bridges, illustrates the importance of the Upper Big Hole to the regional economy. A number of motels, rental cabins, private/public campgrounds, restaurants, and outfitter and guide businesses are located along the river. A larger number of motels, sporting good stores, and outfitter and guide businesses located in the surrounding communities of Butte, Anaconda, and Dillon benefit directly from the Big Hole River as well.

This TPA contains 12 developed recreation sites (Divide Bridge CG, Sawmill Gulch TH, Divide Bridge Day Use, Titan Gulch, Jerry Creek Bridge, Dickie Bridge, Bryant Creek, East Bank, Sawlog Gulch, Pintlar Creek, Maiden Rock East, and Moose Creek TH) and two Special Recreation Management Areas (Upper Big Hole River and Humbug Spires). All remaining lands within the TPA are managed as part of the Butte FO Extensive Recreation Management Area.

Existing and potential Special Designations include Humbug Spires WSA, the Upper Big Hole eligible WSR, and the Humbug Spires potential ACEC.

#### **Mineral/Energy Development**

The Highland Mountains experienced both early placer production and later free-milling ore from lode mines producing gold silver copper, lead, and zinc. Rich ores were worked locally in arrastres or stamp mills or were shipped to local mills. Most production was recorded up to about 1937.

Moose Creek, Upper Camp Creek, and Soap Gulch each contained enough mineralization to classify as their own districts. Placer gold was worked intermittently but lack of high enough grades and sufficient water inhibited larger scale production. None of these areas carried sufficient grade or tonnage to yield larger scale profitable mines and production did not carry past the late 1930s.

Recent exploration has focused on placer deposits near the mouth of Soap Gulch and large scale targets for lead/zinc in the upper reaches of the drainage. A decorative slate operation is presently permitted in Soap Gulch. Phosphate from the Phosphoria Formation was produced on a larger scale in the area, and activity and interest have continued until recently.

Much of this area is strongly mineralized and may continue to see exploration and possible development in the future as commodity demands change over time.

#### **Range Management**

There are 42 grazing allotments in the Upper Big Hole TPA. The largest allotments are the Camp Creek Jerry Creek, and Copp-Jackson allotments. Due to the extended drought conditions, the amount of active grazing use has been reduced in the last 4 to 5 years. Grazing use may increase if wetter climate conditions return.

#### **Forest Management**

Approximately 30,000 acres of inventoried forest land that are managed by the Butte Field Office are located in the Upper Big Hole TPA. The general character of the vegetation is forested with large areas of cool, moist conifer and sub-alpine fir zones. The lower elevations and south facing slopes north of the Big Hole River are dominated by the dry conifer zone, mountain shrubs, or open grassy slopes. These are some of the most productive forest lands in the Butte Field Office. The forest stands are mainly second growth, having been heavily affected by harvesting and use starting with area settlement in the late 19<sup>th</sup> century and continuing through the present. There are few old growth stands and large wild-fire events have not occurred since 1910. Most stands are considered to be commercial forest and have few current limitations or restrictions as to the silvicultural practices and treatment techniques that may be utilized for forest management. Exceptions occur in the Humbug Spires WSA which is managed under non-impairment guidelines for lands under wilderness review, and the forested areas in close proximity to the Big Hole River and the nearby recreational developments where visual

characteristics are important considerations in all management activities and vegetation treatments. The lands south of the Big Hole River are located in the Pioneer Mountain Landscape, where the joint landscape analysis was completed with the Beaverhead-Deerlodge National Forest in 1998.

### **Cultural/Historic**

Cultural resources in the Upper Big Hole River valley reflect all of the ways of life that have been used since people have lived in Montana. Prehistoric Native American hunting sites and living areas are as old as 10,000 years. The most well-known resource in the area is the Nez Perce Trail, the path taken by Chief Josef and the Nez Perce tribe as they engaged the US Army in 1877. The formally recognized trail does not include land in the Butte Field Office management unit, but the Big Hole River provided a means of escape for the warriors and their families. There are tool material sites, rock features, shelters and various living areas that served a number of uses before the arrival of Europeans. After their arrival, site types diversified to include European activities – mostly related to mining and ranching.

### **Important Resource Issues**

#### **Wildlife**

This TPA provides a diversity of habitat from low elevation grasslands/shrublands to high elevation cool, moist forests. Upper Big Hole Travel Planning area is the “Crown Jewel” of wildlife habitat in the Butte Field Office. The TPA consists of a wide variety of vegetation that provide habitat for a multitude of wildlife species.

Forests in the TPA provide habitat for species including but not limited to: elk, moose, mule deer, coyote, red fox, bobcat, cougar, black bear, mountain lion, pine marten, river otter, beaver, snowshoe hare, mountain cottontail, marmot, flying squirrel, red squirrel, long-tailed weasel, and other small mammals.

Forested lands in the eastern portion of the Travel Plan area, including the Moose Creek drainage, provide a transition zone from lower elevation winter range to higher elevation wet forest type used by black bear, lynx, gray wolf, beaver, mink, coyote, and other forest associated species.

Grasslands and sagebrush within the TPA provide habitat for elk, mule deer, pronghorn antelope, bighorn sheep, coyote, red fox, badger, mountain cottontail, ground squirrels, and other small mammals. To the east, the Soap Gulch and Camp Creek drainages are dominated by grassland and sagebrush that provide important habitat for grassland species and sagebrush obligates including species such as sage grouse and sage thrasher. Other BLM sensitive species found in these habitat types include: long-billed curlew, brewer’s sparrow, Swainson’s hawk, and golden eagle.

The TPA provides habitat for a diversity of forest and grassland bird species including but not limited to: pileated, hairy and downy woodpeckers, Cooper’s hawk, sharp-shinned hawk, red-tailed hawk, great-horned owl, blue grouse, hairy and downy woodpeckers, dusky flycatcher, pine siskin, western tanager, black-capped chickadee, red-breasted nuthatch, Townsend’s solitaire, dark-eyed junco, Cassin’s finch, pine siskin, red crossbill, western meadowlark, Swainson’s hawk, red-tailed hawk, horned lark, mountain bluebird, and chipping sparrow.

BLM lands in the Big Hole Valley provide critical elk and mule deer winter range as well as calving habitat. BLM lands are within the transition zone between grassland/shrubland and forested habitats and provide essential habitat requirements for big game.

The eastern portion of the Travel Plan area also provides critical winter range for elk and mule deer as well as year round habitat for bighorn sheep.

Nearly the entire TPA is within core or subcore habitat. The Big Hole Valley provides a critical link from north to south and the east half of the Travel Plan area provides a corridor from the Highland Mountains to the Pintler/Pioneer Mountains. This corridor also provides for local daily movements and seasonal movements between higher elevation summer range along the Continental Divide and lower elevation winter range.

There are more known sightings of threatened, endangered and BLM sensitive species in this TPA than in any other area in the Field Office. Known sensitive species to occur in the PA include: arctic grayling, westslope cutthroat trout, boreal owl, boreal toad, spotted frog, tailed frog, wolverine, northern goshawk, pygmy rabbit, great gray owl, flammulated owl, four different bat species, fisher, sage grouse, sage thrasher, pileated woodpecker, golden eagle, Brewer’s sparrow, long-billed curlew, and the bald eagle.

Threatened or endangered species known to occur in the Planning Area include; Canada lynx and the grizzly bear.

The higher cool, moist forest in the Travel Plan area provides habitat for the Canada lynx. Dry, mature Douglas-fir and lodgepole pine forest types at lower elevations provide habitat for the northern goshawk. Almost all the known nest sites for the northern goshawk in the Butte Field Office occur in the Big Hole watershed.

The Upper Big Hole Valley has the northernmost known population of pygmy rabbits.

Although the Planning area is not within a designated recovery or distribution zone for grizzly bear, the entire western half of the TPA, is considered to be high quality habitat for grizzly bear and sightings of grizzly bears often occur.

## Aquatics/Fisheries

The Big Hole River is a world renowned trout fishery and is one of only a few free flowing rivers left in the west. The lower Big Hole is classified as a Blue Ribbon Fishery and hosts rainbow, brown, westslope cutthroat and brook trout. Rocky Mountain whitefish are also present. The river is refuge for the last wild population of fluvial Arctic grayling, a trout species now limited to the Big Hole River in the lower 48 states.

There are approximately 223 miles of perennial streams and 276 miles of fish bearing streams on all land ownerships in the TPA. Fish species found in the TPA include non-native brook, brown, rainbow trout, stocked Yellowstone trout and common carp. Native fish found in the TPA include: white sucker, longnose sucker, burbot, arctic grayling, westslope cutthroat trout, and mottled sculpin.

On BLM lands, there are approximately 41 miles of perennial stream, 19 miles of fish bearing stream and 31 miles of intermittent stream. Fish species found in the TPA include non-native brook, brown, rainbow trout, common carp and stocked Yellowstone cutthroat trout. Native fish found on BLM managed lands in the TPA include: white sucker, longnose sucker, burbot, arctic grayling, westslope cutthroat trout, and mottled sculpin.

As of 2003, there were 45 conservation populations of westslope cutthroat trout inhabiting 167 miles of stream within the Big Hole watershed. Almost all stream segments occupied by westslope cutthroat trout that showed no genetic introgression were classified as conservation populations.

In the Upper Big Hole TPA, there are 15 streams on BLM lands with westslope cutthroat trout and westslope cutthroat trout are found in approximately 19 miles of stream. Genetic testing has been conducted on cutthroat trout from eight streams; westslope cutthroat trout from Bear Creek and Fish Creek were found to 100 percent genetically pure.

Arctic grayling were once widespread in the Missouri River drainage upstream of Great Falls. During the 20th century, the range of fluvial grayling became restricted to the Big Hole River, which represents about four percent of its native range. The Montana Fluvial Arctic Grayling Restoration Plan was developed to recover fluvial Arctic grayling with the goal of at least five stable, viable populations distributed throughout at least three of the major river drainages within the historic range of Montana grayling. Reasons for decline of arctic grayling include: competition from non-native salmonids, overfishing, habitat degradation, drought, stream dewatering and irrigation diversions.

In the entire TPA there are seven streams with arctic grayling, and grayling are found in approximately 73 total miles of the seven streams.

In the Decision Area, arctic grayling are found within three streams in the TPA; the Big Hole River, Deep Creek, and LaMarche Creek. Arctic grayling are found within approximately 4.4 miles of stream on BLM lands.

In 1994, stretches of the river reached alarmingly low levels as drought conditions parched the region and irrigators diverted water for cattle and hay fields. That same year, the USFWS decided that protection of the grayling was "warranted but precluded" under the Endangered Species Act (ESA). In a 2007 ruling, the USFWS determined that listing was not warranted, as the fluvial arctic grayling does not constitute a distinct population segment as defined by the ESA. The river was also being considered by the Montana Department of Natural Resources and Conservation under a statute that called for identifying "chronically de-watered" rivers in the state. Such a designation would have meant installing measuring devices on all water diversions from the main stem of the river. The State of Montana precluded listing on the idea that cooperative efforts from local irrigators were needed to increase stream flows to 60 cubic feet per second (cfs). Ensuring a minimum in-stream flow for the long-term is necessary to protect a self-sustaining, healthy population of fluvial arctic grayling.

In 2004, the federal Natural Resources Conservation Service offered ranchers payment for not irrigating their hay meadows and pastures. The goal was to leave more water in the Upper Big Hole to aid in the survival of stream living grayling. During this year, the water level rose from 30 cfs to 159 cfs after irrigation stopped.

## Water Resources

Montana's Big Hole River winds through the mountain ranges, steep canyons and rolling sagebrush prairie south of Butte. This un-dammed river runs over 150 miles from its headwaters above Jackson, elevation 7,340 feet, to its confluence with the Beaverhead and Ruby Rivers in Twin Bridges, where they form the Jefferson River at an elevation of 4,600 feet.

Although the Big Hole watershed encompasses nearly 1.8 million acres, only about 2,000 people live in the area, many of them making their living by ranching and hay farming. Other uses for land within the watershed basin include tourism, recreation, and outfitting. The Big Hole River is also a water source for the city of Butte.

Approximately 419,946 acres of the Big Hole watershed are within the Butte Field Office with 61,236 acres (15 percent) managed by BLM, 209,147 acres (50 percent) of USFS lands, 46,074 acres (11 percent) state lands, and 103,489 acres (25 percent) of private lands.

Thirty-six water bodies in the Big Hole Watershed are on the draft MDEQ 303(d) list for a wide range of reasons including, but not limited to, metals contamination, flow alteration, habitat alteration, siltation, and stream-bank destabilization. Approximately 26.6 miles of

streams listed as impaired flow through BLM lands in this TPA.

### Riparian

The Upper Big Hole River TPA includes approximately 90 miles of riparian areas divided into 137 riparian reaches on BLM land. Some of the reaches were affected by historical mining, logging, and grazing regimes. Current condition ratings on these reaches include 50.2 miles in Proper Functioning Condition, 36.8 miles Functioning-At-Risk condition, and 1.5 miles in non-functioning condition. Trends on most reaches are upward or static.

Currently, the roads and trails having the biggest impacts on riparian conditions in this TPA are the roads along Camp Creek, Soap Gulch, McLean Creek, Moose Creek, Bear Creek, Sawlog Gulch, and Charcoal Gulch. Mitigation work has been conducted on all of these roads; however they all affect stream channels and sediment delivery to some degree.

### Sensitive Plants

Three BLM sensitive plant species—*Lemhi beardtongue* (*Penstemon lemhiensis*), *Sapphire rockcress* (*Arabis fecunda*), and *Idaho sedge* (*Carex idahoensis*)—are known to occur within the Upper Big Hole River TPA.

### Noxious Weeds

The primary noxious weeds in the Upper Big Hole River TPA are spotted knapweed, leafy spurge, yellow toadflax, Dalmatian toadflax, houndstongue, and Canada thistle. Small, isolated infestations of oxeye daisy and diffuse knapweed have been observed. Some undesirable, invasive species found include common mullein, black henbane, and musk thistle.

### Soil

Soils are derived mainly from three types of parent material, Limestone, Granite and mixed materials, mostly argillites. Limestone soils are the least erosive and the most stable. They are mainly very gravelly loams. Granite soils are the most erosive and least stable and are mainly cobbly sandy loams. Soils from mixed parent materials (argillites) are intermediate in erosiveness and stability between limestone soils and soils from mixed parent material.

### Summary Public Scoping Comments

A public scoping meeting was held for the Upper Big Hole TPA on November 15, 2004. The meeting was attended by four local residents. The majority of comments received concerned the adverse effects of motorized use on big game hunting. Several comments were made expressing concern over “too much motorized access”, and advocated reducing road density by closing redundant roads/trails, as well as designating specific non-motorized walk-in hunting areas. None of the comments received advocated increasing motorized use. The

overall tone of the comments was to maintain the “primitive” character of the Upper Big Hole River corridor and adjacent lands. Other issues and concerns discussed during the meeting included:

- Interagency Coordination – Maintain interagency connectivity and coordination with USFS and other adjacent agencies.
- Enforcement - Proactive law enforcement, increased uniformed patrols by BLM staff to ensure compliance with completed travel plan.
- Maps/Signs - Provide quality travel plan maps and designated route signs.
- Public Access- Seek public access (easements) to Alder Creek and Tie Creek.

## LANDS AND REALTY

The Butte Field Office (BFO) Lands and Realty program is responsible for management of land use authorizations including right-of-way grants, road use agreements, land use permits, leases, and easements; land ownership adjustments including land acquisition, disposal, exchange, transfer, and donation; access to BLM land; land withdrawals; and unauthorized use including trespass identification and abatement. The Lands and Realty program supports other BFO resource management programs and occasionally those of local, state, and other federal agencies. BLM land with unique or special values can be designated for specific purposes such as recreation development, and for cultural, historic, or other resource value protection. BLM can provide land for community expansion through public sale or exchange. BLM can also provide land for recreation and public purpose uses. Examples include, but are not limited to schools, community buildings, municipal/law enforcement facilities, hospitals, fire stations, parks, and recreation sites.

The 1984 Headwaters RMP encompassed 311,337 surface acres and 655,505 acres of federal mineral estate located in nine counties in west-central Montana including Broadwater, Cascade, Gallatin, Jefferson, Lewis and Clark, Meagher, Park, Pondera, and Teton (USDI-BLM 1983).

In April 1993, District Office (Field Office) jurisdictional boundaries were adjusted. The BFO now has the management responsibilities for eight counties: Broadwater, Deer Lodge, Gallatin, Jefferson, Lewis and Clark (southern portion), Park, Silver Bow, and a portion of Beaverhead County along the Big Hole River (**AMS Figures 2-27a, 2-27b, and 2-27c**).

Most of the BLM land (89 percent) is located in four counties, Broadwater, Jefferson, Lewis and Clark, and Silver Bow (**Table 3-26**). Most of the producing agricultural land in the resource area was patented under homestead laws, most known mineral land was patented under mining laws, and most of the forested land was withdrawn for administration by the USFS.

<b>County</b>	<b>Acres</b>
Broadwater	70,679
Deer Lodge	5,227
Gallatin	7,250
Jefferson	94,397
Lewis and Clark (southern portion)	63,510
Park	8,365
Silver Bow	45,221
Beaverhead (portion along Big Hole River)	12,660
<b>Total Acreage</b>	<b>307,309</b>

Some large blocks of BLM land still exist, but in general, historic disposal policies have resulted in a scattered land ownership pattern. Some of the BLM land consists of isolated tracts surrounded by private land or the tracts are situated next to National Forest Land. It is common to find very small BLM parcels among patented mining claims.

### Land Use Authorizations

The BFO analyzes requests for land use authorizations on a case-by-case basis and through the environmental review process, and applies mitigation measures and Best Management Practices.

Land use authorizations on BLM land include right-of-way grants; road use agreements; temporary use permits under several different authorities; leases, permits under Section 302 of FLPMA; airport leases under the Act of May 24, 1928; and Recreation and Public Purposes (R&PP) Act leases. For the purposes of this planning effort, R&PP patent transfers, unlike R&PP leases, are considered “land ownership adjustments” and are covered below under that heading.

The BFO administers approximately 554 rights-of-way, which encumber over 40,837 acres of BLM land (USDI-BLM 2004d). These existing grants are for a myriad of different facilities and are held by private individuals and groups as well as various business and government entities. Rights-of-way for roads, telephone lines, electric transmission lines, and pipelines constitute a major portion of existing land uses and requests for new authorizations. Various types of road rights-of-way are the most common types, accounting for 53 percent or over half of the total number of grants. Examples of additional types of rights-of-way facilities authorized within the Decision Area (DA) include water pipelines, communication sites, ditches, railroads, material sites, fiber optic lines, and a Montana Army National Guard training site. The BFO processes approximately 10 to 15 right-of-way actions annually. These include right-of-way applications for new facilities as well as amendments, assignments, renewals, or relinquishments of existing right-of-

way grants. Communication Sites and Utility Corridors are discussed below in a subsequent section.

The BFO administers seven FLPMA Section 302 leases involving about 910 acres of BLM land. This includes 904.91 acres at Great Divide Ski Area and 3.9 acres at Holter Lake Lodge under commercial occupancy lease, and a total of 1.39 acres for five occupancy leases. There are no permits or easements under Section 302 of FLPMA or airport leases located within the DA. One R&PP lease has been issued under Section 212 of FLPMA to the Last Chance Handgunners involving 39.1 acres (USDI-BLM 2004i). R&PP patent transfers are discussed below under the section Land Ownership Adjustment.

One of the larger tracts of BLM land, approximately 20,000 acres in the Limestone Hills west of Townsend, is utilized under a right-of-way grant to the Montana Army National Guard for military training purposes (USDI-BLM 1984b). The 30-year right-of-way was granted in 1984 and expires in 2014. Eighty-eight percent of the land in the training area is administered by the BLM, with the remainder under state and private ownership (USDI-BLM 2004e). Military training over the years has resulted in unexploded ordnance (UXO) contamination, particularly within the interior 5,000-acre impact area. Based on BLM policy, the BFO implemented an emergency closure on the impact area. The Montana Army National Guard was also advised that its right-of-way for the range would not be renewed upon expiration in 2014, and the only way to assure its continued use of the area was through a military withdrawal. In September 2003, the Department of the Army announced its intent to prepare a legislative EIS for the withdrawal of the approximately 20,000 acres of BLM land that support training exercises at the Limestone Hills Training Area.

## RENEWABLE ENERGY

Renewable energy includes solar power, wind, biomass, and geothermal resources. As demand has increased for clean and viable energy to power the nation, consideration of renewable energy sources available on public lands has come to the forefront of land management planning.

In cooperation with the National Renewable Energy Laboratory (NREL), the BLM assessed renewable energy resources on public lands in the western United States (BLM and DOE 2003). The assessment reviewed the potential for concentrated solar power, photovoltaic, wind biomass, and geothermal energy on BLM, BIA, and Forest Service lands in the west. Hydropower was not addressed in the BLM/NREL report.

**Concentrating Solar Power (CSP):** This technology uses sunlight concentrated on a single point to generate power. The BLM/NREL study indicates that the potential for this type of renewable energy lies primarily in states to

the south and southwest of Montana. No BLM lands within the DA were identified as having potential for this type of energy source. In keeping with this assessment, the BFO has not had any expressions of interest in developing CSP facilities on public lands.

**Photovoltaics (PV):** Photovoltaics technology makes use of semiconductors in PV panels (modules) to convert sunlight directly into electricity. The BLM/NREL study did not identify the BFO as one of the top 25 PAs for PV potential. To date, the BFO has not authorized any PV facilities strictly for commercial power production, nor has any interest been expressed by industry in developing such facilities on BLM lands.

**Wind Resources:** Wind power classes range from one (lowest) to seven (highest). BLM-managed lands in approximately 13 percent of the DA are Class 3 and higher. The BLM/NREL study did not identify the BFO as one of the top 25 PAs for wind energy potential. The Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States (BLM 2004b) categorizes BLM-administered lands into areas having low, medium, or high potential for wind energy development from 2005 through 2025, on the basis of their wind power classification. Wind resources in Class 3 and higher could be developed economically with current technology over the next 20 years. Class 3 resources have medium potential; resources in Classes 4 and higher have high potential. The Programmatic EIS identifies scattered public land parcels in the DA with medium or high wind resource potential that might be developed economically with current technology. **Map 40** shows lands within the DA with Class 3 or higher wind power potential.

Two sites in the BFO have been seriously considered for development by the private sector. One is on BLM lands south of Interstate 90 at Livingston, where a previous wind power project was located in the 1980s (**Map 40**). Park County has turbines on private land next to BLM at this location. The other site is at the Golden Sunlight Mine at Whitehall. Wind data is being collected there under a BLM permit at the present time.

Guidelines from the Wind Energy Development Programmatic EIS (ROD signed December 2005) would be used when considering wind energy projects on BLM land.

**Biomass:** The BLM/NREL study identified the BFO as one of the top 25 BLM planning units having high potential for biomass resources. However to date, utilization of small diameter forest material has been sporadic at best to non-existent. This is due to long haul distances to pulp facilities and low return pulp markets. Some of this material is used through personal use firewood permits. Utilization of this material for biomass related energy production has not been a factor. No such facility

exists in this region. Use of small diameter wood products or residue is currently encouraged when possible.

**Geothermal:** Geothermal resources are addressed under the *Energy Minerals-Fluid Leasable Minerals* section through the RMP.

The BFO has received inquiries from several individuals and companies regarding renewable energy projects. One of the primary limiting factors in site selection is access to power transmission interconnects, as well as acquisition of permits and power purchase agreements between the producer and owner of the power lines.

## Land Ownership Adjustment

Land ownership adjustment refers to those actions that result in the disposal of BLM land and/or the acquisition of non-federal land or interest in land.

Current planning guidance with respect to land ownership is provided by the 1984 Headwaters RMP and the 1979 Dillon MFP. Further and more specific guidance was provided by the “Land Pattern Review and Land Adjustment, Supplement to the State Director Guidance for Resource Management Planning in Montana and the Dakotas, 1984” (USDI-BLM 1984b). This guidance was later amended by the 1989 State Director’s guidance pertaining to access (see the *Access* section below). This direction established land exchange as the predominant method of land ownership adjustment. It also established retention, disposal, and acquisition criteria to be used in categorizing public land. Criteria in the supplement were used to identify retention and disposal zones within the DA.

There are approximately 298,944 acres (97 percent) of BLM land located within retention zones in the DA. These retention zones typically include the better blocked BLM lands that meet retention criteria. Although land in retention zones can be disposed of when significant public benefits are realized, the goal, generally, is to retain or enhance BLM land holdings within these zones. Land outside these retention zones is generally available for the full range of land ownership adjustment opportunities – including retention, exchange, sale, or transfer. Land ownership adjustment proposals in the DA are analyzed in project specific reviews using the aforementioned guidance.

The primary means of land ownership adjustment within the DA has been through exchange. Thirteen exchanges affecting BLM land and/or non-federal land within the PA have been completed since the implementation of the Headwaters RMP in July 1984.

The BFO has been using exchanges to improve public land ownership patterns by generally disposing of small, isolated tracts of BLM land with limited resource values and acquiring non-federal land with higher resource values adjacent to larger blocks of BLM land. Land in the DA has also been used in exchanges mandated by Congress for other agencies. During this same time

period, the BFO completed four Land and Water Conservation Fund purchases: one in the Devil’s Elbow area, two associated with Crimson Bluffs, the McMasters Ranch, and one on the Ward Ranch near Hauser Lake. Eight donations to the government were also processed: three for recreation sites (White Sandy, Log Gulch, and Holter Dam), three during the acquisition of Ward Ranch, and two during the acquisition of the Iron Mask property. The BFO completed three land sales, one southeast of Mount Helena, one near Montana City, and one east of Holter Lake.

**Table 3-27** lists land ownership adjustment actions for the PA since the approval of the Headwaters RMP in July 1984.

<b>Table 3-27 Land Ownership Adjustment Actions Since July 1984 in the Decision Area</b>			
<b>Type of Action</b>	<b>Number of Actions</b>	<b>Acres Disposed</b>	<b>Acres Acquired</b>
Public Sales	3	10	0
Purchases	4	0	140
LWCF Purchases	9	0	8,987
Donations	7	0	2,352
R&PP Patent transfers	5	1,168	0
Land Exchanges	13	23,290	18,895
<b>Total Acres</b>		<b>24,468</b>	<b>30,374</b>

Note that acreages are approximate.

The R&PP Act authorizes the issuance of a land patent, with reversionary provisions, for BLM land when it serves the public interest. The BFO completed five R&PP patent transfers since approval of the Headwaters RMP.

These are:

- 34.09 acres to the MFWP for a recreation site.
- 40 acres in Lewis and Clark County for a sewage treatment area.
- 71.62 acres to Jefferson County for a warehouse and storage area.
- 400 acres to Broadwater County for a shooting range.
- 622.38 acres to MFWP for expansion of the Bear-tooth State Wildlife Management Area.

During this same time period, no lands have been conveyed for agricultural entries under the Desert Land Act or Carey Act, nor have any lands been conveyed for airport grants, Indian allotments, color-of-title actions, railroads, or state grants.

## Access

For the purposes of this section, access refers to the physical ability and legal right of the public, agency personnel, and authorized users to reach public land. The lands and realty program primarily assists in the acquisition of easements to provide for legal access where other programs have identified a need.

Access to BLM land is an issue of concern to both agency personnel and the public. The PA’s existing fragmented ownership pattern of BLM land, intermingled with private, state, and other Federal land, complicates the access situation. While the BFO has and is currently making progress in terms of improving access to public lands, there are still areas within the PA that lack legal access. Current planning guidance with respect to access is provided by the Headwaters RMP as supplemented by guidance prepared by the Montana State Office on access (USDI-BLM 1989a).

In accordance with guidance in this latter document, the BFO has been focusing its access acquisition efforts on:

- Larger blocks of BLM land, which are designated for retention in BLM ownership.
- Areas with important resource values.
- Areas where public demand for access is high.
- Areas with substantial BLM investments.

Generally speaking, access is acquired from willing landowners on a case-by-case basis as needs or opportunities arise, using criteria and direction provided in the guidance referred to above.

The BFO uses acquisition of road and trail easements as the primary means of obtaining legal access to public lands where it does not currently exist. There are three types of easements: exclusive easements, where the BLM acquires full public rights to the road in perpetuity and exclusively manages all other road uses; nonexclusive easements, where the BLM acquires only the right to use the road in perpetuity but does not control other uses; and temporary easements, where the BLM acquires the right to use the road for only a fixed period.

Since 1984, the BFO has acquired 40 permanent exclusive easements, which provide legal access to BLM land for the U.S. and its assignees, licensees, permittees, and the general public. The BFO has acquired six permanent non-exclusive easements, which provide legal access to BLM land but usually do not include access for the general public. The BFO has also acquired 11 temporary easements, encroachment permits and easements or permanent easements for specific projects such as fences, livestock or water pipelines and troughs (USDI-BLM 2004d).

Since the completion of the Headwaters RMP in 1984, the BFO has acquired access-related easements at the average rate of about four per year. When possible,

emphasis for easement acquisition is on those roads or trails identified through a route analysis process.

Most of the larger tracts of BLM land have legal public access via existing federal, state, and county road systems. Many smaller tracts of BLM land do not have legal access. In most cases, such parcels do not have resource values to justify public interest in acquiring access. Some small tracts of BLM along rivers serve as important public access points and require protection of existing legal access or acquisition of new legal access.

Although used much less frequently than easement acquisition, the BFO uses land exchanges on occasion to acquire needed access to public lands. Access is typically just one of many benefits of these exchanges. The consolidation of BLM land ownership patterns by exchange has generally improved the access situation in the DA. When disposing of BLM parcels containing roads or trails necessary for access to other federal land, the BFO protects these access routes by reserving access rights in conveyance documents.

## Withdrawals

A withdrawal is a formal action that sets aside, withholds, or reserves Federal lands by administrative order or statute for public purposes. The effect of a withdrawal is to accomplish one or more of the following:

- Segregates (close) Federal land to the operation of all or some of the public land laws and / or mineral laws.
- Transfers total or partial jurisdiction of Federal land between Federal agencies.
- Dedicate BLM land for a specific public purpose.

Withdrawals can be categorized into three major types including:

- Congressional – legislative withdrawals made by Congress in the form of public laws. Examples include designation for wild and scenic rivers or wilderness.
- Administrative – withdrawals made by the President, Secretary of the Interior, or other officers of the executive branch of the Federal Government. Examples include stock driveways, resource protection, and public water reserves.
- Federal Power Act – power project withdrawals established under the Federal Power Act of June 10, 1920. These withdrawals are automatically created upon the filing of an application for hydroelectric power development with the Federal Energy Regulatory Commission (FERC).

There are approximately 6,300 BLM surface acres in the DA with some type of withdrawal on them. Types of withdrawals are described below.

**BLM Recreation Sites:** The BFO currently has one recreation site which is administratively withdrawn.

Devil’s Elbow Recreation Site is withdrawn from surface disposal and mining, but not from mineral leasing.

**Public Water Reserves:** These include a number of administrative withdrawal actions over the years for spring areas set aside for public use. These areas are scattered throughout the DA and are withdrawn from surface disposal and nonmetalliferous mining, but not from metalliferous mining and mineral leasing.

**BLM Protective Withdrawals:** This includes administrative withdrawals on lands acquired for wetland, riparian, recreation, and wildlife values. These lands are generally withdrawn from surface disposal and mining, but not from mineral leasing.

**USFS Administrative Sites:** These are administrative withdrawals for U.S. Forest Service administrative sites located outside Forest Service boundaries.

**Power Site Reserves and Classifications:** There are numerous power site reserves and classifications within the DA. These are administrative withdrawals that protect water/power development potential. Generally speaking, these sites are withdrawn from surface disposal only.

**FERC Power Project:** These withdrawals are administered by FERC. Lands included in an application for hydroelectric power development with FERC are automatically segregated from surface disposal. At the time FERC issues a license or preliminary permit, the lands are automatically closed to location and entry under the mining laws, but are still available for mineral leasing.

The BFO considers requests for new withdrawals and withdrawal revocations, extensions, or modifications on a case-by-case basis. Existing withdrawals are reviewed on a case-by-case basis prior to the end of the withdrawal period or as otherwise required by law to determine whether they should be extended, revoked, or modified.

It should be noted that while BLM land classifications are not formal withdrawals, they are considered “de facto” withdrawals since most land classifications also segregate public lands from the operation of all or some of the public land laws and/or mineral laws. A BLM land classification accomplishes one of the following:

- Determines if BLM land is suitable for certain types of entry (disposal or lease) under the public land laws (for example, R&PP Act leases and patents).
- Determines if BLM land is suitable for retention for multiple-use management.

Historically, much of the DA was under classification for retention for multiple-use pursuant to the Classification and Multiple Use Act (C&MU) of 1964. With the passage of FLPMA in 1976 and its direction that BLM lands generally be retained in public ownership, these C&MU classifications within the DA were deemed unnecessary and were terminated.

Any new classification actions since the completion of the 1984 Headwaters RMP have been in response to R&PP Act lease or patent applications or sale actions.

In September 2003, the Department of the Army announced its intent to prepare a legislative EIS for the withdrawal of approximately 20,000 acres of land that support training exercises at the Limestone Hills Training Area. The BFO is currently processing an application for the military withdrawal of 20,000 acres at the Limestone Hills Training Area and is a cooperating agency for the project EIS. A draft of the EIS is scheduled to be completed in the spring of 2007.

### Unauthorized Use

Trespass actions under the Lands and Realty program can be split into three separate categories. These include:

- Unauthorized Use.
- Unauthorized Occupancy.
- Unauthorized Development.

Unauthorized use refers to activities that do not appreciably alter the physical character of the public land or vegetative resources. Some examples of unauthorized use include the abandonment of property or trash, enclosures, and use of existing roads and trails for purposes that require a use fee or right-of-way. Unauthorized Occupancy refers to activities that result in full or part-time human occupancy or use. An example would be the construction, placement, occupancy, or assertion of ownership of a facility or structure (cabin, house, natural shelter, trailer, etc.). Unauthorized Development means an activity that physically alters the character of BLM land or vegetative resources. Examples include cultivation of public lands, road or trail construction or realignment, or unauthorized utility construction.

The BFO attempts to abate trespass through prevention, detection, and resolution. In the Lands and Realty program, priority for resolving trespass in the DA is accorded to those newly discovered ongoing uses, developments, or occupancies where resource damage is occurring and needs to be halted to prevent further environmental degradation. Lesser priority is accorded to those historic trespass cases where little or no resource damage is occurring. Lands and Realty trespass cases in this latter category are resolved as time permits.

### COMMUNICATION SITES AND UTILITY CORRIDORS

Twenty communication site rights-of-way occupying seven different communication site locations are authorized within the DA (AMS Figure 2-28 and Table 3-28).

Potential new users are encouraged to locate at the existing sites within existing facilities. Communication site plans exist for all seven sites.

<b>Communication Site</b>	<b>Legal Description (Principle Meridian, Montana)</b>
Boulder	T.6N., R.4W., Sec. 19, SE¼ NW¼
Bull Mountain	T.2N., R.3W., Sec. 18, SW¼ SE¼
Limestone Hills	T.6N., R.1E., Sec. 20, NE¼ NW¼
Montana City	T.9N., R.3W., Sec. 25, W½ NW¼
Mount Belmont	T.12N., R.6W., Sec. 34, Lot 9
Toston	T.4N., R.3E., Sec. 8, SE¼ NW¼
Wickes/Boulder Hill	T.7N., R.4E., Sec. 28, Lot 10

The DA is traversed by a number of rights-of-way that are authorized for utility uses. In accordance with the direction provided in the Headwaters RMP, attempts are made to group compatible right-of-way facilities where feasible. However, the BFO currently has no formally designated right-of way corridors.

### SPECIAL DESIGNATIONS

Special designations include Wilderness Areas, Wilderness Study Areas, Areas of Critical Environmental Concern, Research Natural Areas, Outstanding Natural Areas, National Recreation Areas, Back Country Byways, National Trails, watchable wildlife viewing sites, and Wild and Scenic Rivers.

There are no Research Natural Areas, Outstanding Natural Areas), National Recreation Areas, Back Country Byways, watchable wildlife viewing sites, or known caves of significance in the Decision Area. No rivers in the PA are currently managed under the Wild and Scenic Rivers Act of 1968. Indicators used to assess change to special designation areas are:

- Changes to administrative designations: consider changes to the number and type of areas, access to areas, and location of areas.
- Changes in availability of special areas in surrounding vicinity (outside Decision and PAs).

### AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Areas of Critical Environmental Concern are unique to the BLM. BLM regulations (43 CFR Part 1610) define an ACEC as an area “within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards.” While an ACEC may emphasize one or more unique resources, other existing multiple-use management can continue

within an ACEC so long as the uses do not impair the values for which the ACEC was designated.

## Laws, Regulations and Policies

Section 202(c)(3) of FLPMA mandates the BLM to give priority to the designation and protection of ACECs in the development and revision of land use plans. BLM Manual 1613 (USDI-BLM 1980a) describes the process followed to nominate ACECs and screen areas for their suitability or ACEC designation. The BLM's planning regulations (43 CFR 1610.7-2) establish the process and procedural requirements for designating ACECs in RMPs and RMP amendments.

## Existing ACECs

The 11,679-acre Sleeping Giant ACEC is adjacent to the Holter Lake Recreation Area complex and is primarily comprised of the Sleeping Giant WSA and Sheep Creek WSA (**AMS Figure 2-26**). The area is characterized by the same values discussed in the Wilderness Study Area section above.

## NATIONAL TRAILS

Portions of the Continental Divide National Scenic Trail and the Lewis and Clark National Historic Trail are in the Decision Area. About 226 miles of the Continental Divide National Scenic Trail traverse the PA, less than three miles of which are located within the Decision Area. Approximately 210 miles of the Lewis and Clark National Historic Trail traverses the PA along the Missouri, Jefferson, Gallatin and Yellowstone Rivers, as well as a cross-county segment from Belgrade to Livingston. BLM manages about 34,000 acres of public land along this national trail in close cooperation with the public and other federal, state, and local agencies under the Missouri/Madison Comprehensive Recreation Plan. BLM provides multiple public interpretative services throughout this corridor including numerous site location signs, the self-guided Two Camp Vista facility on Hauser Lake and partnership contributions to the Gates-of-the-Mountains kiosks on Holter Lake.

## WILD AND SCENIC RIVERS

No rivers in the Decision Area are currently managed under the Wild and Scenic Rivers Act of 1968 (Public

Law 90-542, as amended; 16 USC 1271-2287). The Wild and Scenic River Act was enacted by Congress to provide a national policy for preserving and protecting selected rivers and river segments in their free-flowing condition for the benefit and enjoyment of present and future generations. Section 5(d)(1) of the Act directs federal agencies to consider potential wild and scenic rivers in their land and water planning processes.

As part of the land use planning process for the Butte RMP, the BLM interdisciplinary team analyzed all river and stream segments in the PA that might be eligible for inclusion in the NWSRS. This included screening all PA rivers to identify those with BLM surface ownership. In addition, BLM coordinated with other federal and state river administering agencies and consulted applicable source listings such as the NPS Nationwide Rivers Inventory and the American Rivers Outstanding Rivers List. These initial screening and identification efforts resulted in a list of 164 rivers or river segments for further consideration in the inventory process.

Additional review focused on whether these 164 segments meet free-flowing criteria and contain any outstandingly remarkable values, as defined in the Wild and Scenic Rivers Act. Of the 164 river segments, four segments totaling 12 miles meet the eligibility criteria. These include segments on the Big Hole River, Missouri River, Moose Creek, and Muskrat Creek. Tentative classifications were assigned to each eligible segment as follows: Big Hole River – Recreational; Missouri River – Scenic; Moose Creek – Scenic; and Muskrat Creek – Scenic. See **Map 32** and **Appendix J – Wild and Scenic Rivers** for additional information.

## WILDERNESS AREAS

No BLM designated Wilderness Areas exist within the Decision Area. Portions of five Wilderness Areas administered by the USFS are located within the PA. No additional BLM lands other than Wilderness Study Areas described below have wilderness characteristics.

## WILDERNESS STUDY AREAS

There are six existing Wilderness Study Areas in the Decision Area (**AMS Figure 2-26** and **Table 3-29**). Under FLPMA, Congress directed BLM to inventory, study, and recommend public land under its administra-

<b>Name</b>	<b>Number</b>	<b>Total Acres</b>	<b>Acres Recommended for Wilderness</b>
Humbug Spires	MT-ISA-003	11,320	9,648
Sleeping Giant	MT-075-111	6,666	6,666
Sheep Creek	MT-075-11B	3,801	3,801
Black Sage	MT-075-115	5,917	5,917
Elkhorn Tack on	MT-075-114	3,575	3,575
Yellowstone River Island	MT-07-133	69	69

tion for wilderness characteristics. All Decision Area lands were inventoried for wilderness characteristics; no new lands acquired since the last wilderness review contain lands with wilderness characteristics. Section 603 of FLPMA requires the BLM to provide Congress with recommendations as to suitability or unsuitability of BLM Wilderness Study Areas (roadless areas greater than 5,000 acres and roadless islands) for Wilderness designation. Only Congress can ultimately decide which areas, if any, will be designated as Wilderness and added to the National Wilderness Preservation System.

### **Sleeping Giant**

The Sleeping Giant WSA consists of 6,666 acres. It was originally established in 1981, removed from further wilderness consideration in 1982, reinstated as a WSA in 1985, and enlarged in 1988 (USDI-BLM 1991a). It has steep, irregular topography with elevations ranging from 3,600 to 6,800 feet and is adjacent to the Holter Lake Recreation Area complex. The Sleeping Giant formation

is a well-known landmark visible from Helena. About half the area is forested. Seven miles of ridgeline hiking routes offer panoramic views of the Rocky Mountains. A portion of the Sleeping Giant area is part of the Lewis and Clark National Historic Trail. Several deteriorating structures near the river evoke the lifestyles of early settlers (USDI-BLM 1991a).

The Wilderness suitability study recommended the Sleeping Giant for Wilderness designation (USDI-BLM 1991a); this has been forwarded to Congress. This area is managed under the Interim Management Guidelines.

### **Sheep Creek**

Sheep Creek, a 3,801-acre WSA established in 1988, is immediately west of and adjacent to the Sleeping Giant WSA. The two areas are separated by a power line and associated maintenance road. Sheep Creek is characterized by steep topography with elevations ranging from 4,100 to 6,600 feet. About half the area is forested (USDI-BLM 1991a). The Wilderness suitability study recommended Sheep Creek for Wilderness designation (USDI-BLM 1991a). This WSA is being managed under the Interim Management Guidelines.

### **Black Sage**

Black Sage is a 5,917-acre WSA established in 1981. All sides of the area are bordered by private land, and there is no legal public access. The area is characterized by rolling hills with elevations from 5,000 to 6,000 feet. Approximately 40 percent of the area is vegetated with juniper, mountain mahogany Douglas-fir and limber pine; the remainder is comprised of grasses and sagebrush. No perennial water sources occur in the area, and there are no dominant features except for a forested ridge face in the central portion of the area. The Wilderness suitability study and EIS recommended the area as

unsuitable for Wilderness designation (USDI-BLM 1986); this has been forwarded to Congress. This Wilderness Study Area is managed under the Interim Management Guidelines.

### **Elkhorn Tack-on**

The Elkhorn Tack-on WSA was established in 1979. This WSA totals about 3,575 acres. The area is characterized by dense forests of lodgepole pine, Douglas-fir and ponderosa pine, three perennial streams and mountainous terrain (USDI-BLM *et al.* 1995). The BLM Elkhorn WSA is located immediately adjacent to the 64,522-acre Elkhorn Inventoried Roadless Area that is administered by the USFS. Because the portion located on BLM land is less than 5,000 acres, it is considered to be a Section 202 (FLPMA) tack-on to the USFS area. A Wilderness suitability study has not been completed. The Elkhorn WSA is being managed under the Interim Management Guidelines.

### **Yellowstone River Island**

Established in 1981, the Yellowstone River Island WSA is comprised of 69 acres. The area is roughly circular and about two thirds of a mile in diameter; the surrounding river frontage is private. The island is a relatively flat sand and gravel bar that varies from zero to ten feet above the river's low-flow level; the average elevation is 4,415 feet. The island's outer portions consist of cut banks and alluvial deposits formed by a very active portion of the Yellowstone River and, consequently, are constantly subject to change. The majority of the river now flows north of the island, whereas 50 years ago the majority flowed south. Vegetation is diverse and consists of dense pioneer shrubs (primarily willows) around the perimeter. The higher and more stable interior comprises about half of the island and is vegetated with cottonwood stands intermixed with open, grassy areas. There are several high-water channels within the WSA, some of which support marshy riparian vegetation. The Wilderness suitability study and EIS recommended the area as unsuitable for Wilderness designation (USDI-BLM 1986); this has been forwarded to Congress. The Yellowstone River Island WSA is being managed under the Interim Management Guidelines. There are no size requirements for islands.

## **SOCIAL AND ECONOMIC**

### **TRIBAL INTERESTS**

Indian Trust Resources are legal interests in assets held in trust by the federal government for federally recognized Indian tribes or nations or for individual Indians. Tribal treaties are negotiated contracts executed with the United States and are on essentially the same legal footing as treaties with foreign nations. Since the BLM manages portions of the ceded lands that are within the traditional use areas of the tribes, the BLM has a trust re-

sponsibility to provide the conditions necessary for Indian tribal members to satisfy their treaty rights and consider the potential impacts of BLM plans, projects, programs, or activities. Members of the tribes may exercise their hunting, fishing, and gathering rights on federal lands outside the boundaries of the reservation. Tribal members may also access and use places or resources that are important for religious or cultural reasons. Effective consultation and coordination with the tribes is necessary to identify any management issues with trust resources, treaty rights, or traditional or religious uses.

## PUBLIC SAFETY

### Abandoned Mine Lands

Mine wastes from historic mine sites now considered to be abandoned mine lands are a threat to human health and the environment. Abandoned mines also contain hazardous mine openings (HMOs) and physical safety hazards associated with historic mine operations and unstable slopes. Heavy metals associated with mine waste may pose a risk to human recreational users and to terrestrial and aquatic environments.

Old mine workings are found throughout Montana on land administered by BLM, USFS, and the State of Montana as well as on private land patented under the General Mining Law. Laws requiring the clean-up and proper closure of mines are relatively recent compared to this long history of mining law.

AMLs are inactive or abandoned mines located on or near public land where the owner or operator cannot be established, have no financial assets, or cannot assist with the reclamation of these mine sites. Mine waste present at abandoned or inactive mine sites generally include waste rock, mill tailings, and chemicals. Mine waste produced from the extraction or beneficiation of ore is considered exempt from hazardous waste regulations. The reclamation or clean-up of AML sites is often

the responsibility of public land management agencies if an owner or operator of the AML site can not be determined.

The BLM began inventorying AML sites in 1993 and continues to inventory, assess, and add to the existing AML inventory data as new sites are identified. The AML inventory data is used to assist with the prioritization, funding, and continued reclamation of AML sites. AML sites identified in the inventory include those on or potentially impacting BLM lands and may range from small, insignificant sites to larger environmental or HMO sites. Some areas have not been inventoried and new HMOs are reported every year by BLM employees or the public. The BFO has reclaimed 11 abandoned mine sites considered to be a threat to human health and the environment because of water quality related issues on BLM lands since the beginning of the AML program in 1997. A total of 49 HMOs considered to be physical safety hazards have been reclaimed. Twenty-seven HMOs are presently being assessed, and 51 are scheduled for reclamation over the next five years. It is expected that up to 100 HMOs with associated physical safety problems may need to be assessed and reclaimed in the Decision Area during the next 20 years.

### Hazardous Materials

Improper handling, storage, and disposal of hazardous material may pose a risk to recreational users and to terrestrial and aquatic environments (**Table 3-30**). Hazardous materials may legitimately be brought onto BLM land during weed control or resource development activities. The types of hazardous materials used for weed and insect control include herbicides and pesticides. The general types of hazardous materials that may be present during natural resource management include petroleum products (fuels and lubricants), solvents, surfactants, paints, explosives, batteries, acids, biocides, gases, antifreeze, and mineral products (mine waste, cement, and drilling materials).

**Table 3-30**  
**Activities and Associated Hazardous Materials**

Potential Hazard	Examples
Hazardous materials associated with historic and active mine operations	Acid rock drainage; Chemicals associated with processing ore or used in laboratories (i.e., cyanide); Explosives such as dynamite, ammonium nitrate, caps, and boosters; Heavy metals; Asbestos
Military operation	Unexploded ordinances; Aircraft wreckage
Illegal dumping	Unauthorized landfills; Dumping of barrels or other containers with hazardous substances on public land
Illegal activities	Drug Labs; Wire burn sites
Spillage of hazardous materials	Materials spilled from overturned trucks or train cars
Oil and gas activities	Hydrogen sulfide gas; Oil spills
Facilities on public land, either federal or private (under a right-of-way)	Leaky underground storage tanks; Asbestos

## SOCIAL AND ECONOMIC ENVIRONMENT

The Butte FO manages lands distributed across eight contiguous counties. Potential social and economic effects associated with the draft RMP include changes in employment, income, and quality of life. These effects are likely to occur primarily in Jefferson, Broadwater, Lewis and Clark, and Silver Bow counties where the majority of PA lands are located. Although the effects are likely to be relatively small in Beaverhead, Deer Lodge, Gallatin, and Park counties, these counties are also included in the following discussion.

The following sections present a general overview of the social and economic conditions of the eight study area counties and provide a baseline that the potential effects of the alternatives may be measured against. The discussion is organized into two main sections that address social conditions and economic conditions, respectively.

### Social Conditions

#### *Social Trends*

This section provides a brief overview of general social trends and changing attitudes toward public land management in western Montana.

The population in the eight county study area increased by 17 percent in the 1990s, compared to a 13 percent increase statewide, with net in-migration accounting for 72 percent of total growth in the study area counties. This is generally representative of the broader movement of people from urban areas to rural areas in western Montana that has been going on since the 1980s. In scenic areas, particularly those suitable for recreation, ranches are being sold for recreation uses or subdivided for homes. Some in-migrants buy smaller lots to ranch or farm but do not depend on economic return from the property as their primary source of income. Sometimes this in-migration has resulted in conflict between long-time rural residents and newcomers whose beliefs and values may challenge the existing way of life (USDI-BLM 2004j).

Social values associated with land and natural resources take many forms including commodity, amenity, environmental, ecological, recreation, spiritual, health, and security-related values (Stankey and Clark 1991). In the past, natural resource management has tended to emphasize commodity values. This emphasis has come into question in recent years and changing public attitudes toward the management of public lands and an increased emphasis on environmental protection have raised concerns in some parts of the West. Some groups have expressed concerns that changes in public land management are being driven by government officials and environmental advocates who do not have a true understanding of these lands or the people living nearby who depend on these lands for their livelihood and recreation. There is particular concern about the loss of traditional

uses of the land such as livestock grazing and cross-country vehicle use (USDI-BLM 2004j).

Comments received during the Butte RMP scoping process expressed concern over the cumulative loss of public land to private ownership and the loss of public access to public lands through access closures. Concerns were also expressed that access to public land has already been reduced by land exchanges and land pooling processes (USDI-BLM 2005b).

### *Demographic Characteristics and Trends*

#### **Population**

The eight-county study area had a total population of 206,900 in 2000, with county populations ranging from 4,385 in Broadwater County to 67,831 in Gallatin County. Major cities in the study area include Bozeman and Helena, with 2000 populations of 27,509 and 25,780, respectively. Butte is also a major city and regional center.

Montana is one of the least densely populated states in the country, with an average population density of 6.2 persons/mi<sup>2</sup> compared to a national average of 79.6 persons/mi<sup>2</sup>. The eight-county study area had an average population density of 11.1 persons per square mile, with county population densities ranging from 1.7 persons per square mile in Beaverhead County to 48.2 persons per square mile in Silver Bow County.

Total population increased in seven of the eight study area counties in the 1990s, with the largest increases occurring in Gallatin (34 percent), Broadwater (32 percent), and Jefferson (27 percent) counties. The population in Silver Bow County, in contrast, increased by just 2 percent over this period, while Deer Lodge County experienced a net decrease in population. Much of the overall increase in population was due to net in-migration, with increases tending to occur primarily in unincorporated areas in most counties (MDOC 2004a).

Population projections developed by the State of Montana in 1997 anticipate continued population growth through 2010 in all of the study area counties, with the exception of Deer Lodge and Silver Bow counties where population is expected to decrease by about 6.6 and 6.4 percent, respectively. Population is expected to grow particularly rapidly between 2000 and 2010 in Jefferson (22 percent), Gallatin (18.6 percent), Broadwater (17.2 percent), and Lewis and Clark (15.2 percent) counties. Population growth is projected for all study area counties from 2010 to 2020, with total population in the eight-county area projected to increase by 11.8 percent (MDOC 2004b).

#### *Race and Ethnicity*

Approximately 89.5 percent of Montana's population identified as White in the 2000 census. American Indian and Alaska Natives were the largest minority group accounting for 6 percent of the total state population. All

eight study area counties had predominantly white populations, with more than 94.7 percent of the total study area population identifying as White in the 2000 census. Hispanics/Latinos were the largest minority population accounting for 1.8 percent of the total study area population (Table 3-31).

### ***Income and Poverty***

Per capita income, which is calculated by dividing total personal income by population, was lower than the

statewide average in five of the eight study area counties in 2000, ranging from 83 percent to 99 percent of the state average in Broadwater and Silver Bow counties, respectively (Table 3-32). Per capita income in the remaining three counties ranged from 109 percent to 112 percent of the state average in Gallatin and Lewis and Clark counties, respectively.

The percent of the population below the poverty rate in 1999 was below the state average (14.6 percent) in five of the eight study area counties, ranging from 9.0 per

County/State	2000 Population	Percent of Total Population					
		White	Black/African American	American Indian/ Alaska Native	Other Race <sup>1</sup>	Two or More Races	Hispanic/Latino Origin
Beaverhead	9,202	94.4	0.1	1.4	0.3	1.1	2.7
Broadwater*	4,385	96.1	0.3	1.1	0.2	1.0	1.3
Deer Lodge	9,417	94.7	0.2	1.6	0.4	1.5	1.6
Gallatin	67,831	95.3	0.2	0.8	1.0	1.1	1.5
Jefferson*	10,049	95.2	0.1	1.2	0.5	1.5	1.5
Lewis and Clark*	55,716	94.4	0.2	1.9	0.6	1.4	1.5
Park	15,694	95.5	0.4	0.9	0.4	1.0	1.8
Silver Bow*	34,606	93.7	0.1	1.8	0.5	1.1	2.7
County Total	206,900	94.7	0.2	1.4	0.7	1.2	1.8
Montana	902,195	89.5	0.3	6.0	0.6	1.5	2.0

\*RMP-related effects are most likely to occur in these counties, where the majority of the PA lands are located.

<sup>1</sup> The "Other Race" category presented here includes census respondents identifying as Asian, Native Hawaiian and Other Pacific Islander or Some Other Race.

Source: Social Science Data Analysis Network, 2004

County/ State	Per Capita Income		Share of Per Capita Income <sup>1</sup>					
			Earnings		Transfer Payments		Dividends, Interest and Rent	
	2000 (\$)	% of State Average	% of Total	Change 1990-2000	% of Total	Change 1990-2000	% of Total	Change 1990-2000
Beaverhead	21,175	92	55	-1	19	1	26	0
Broadwater*	19,038	83	55	0	21	2	24	-2
Deer Lodge	19,641	86	51	2	26	-1	22	-1
Gallatin	25,139	109	66	4	9	-3	25	-2
Jefferson*	25,476	111	69	-2	12	0	19	2
Lewis and Clark*	25,623	112	55	-1	19	1	26	0
Park	20,469	89	53	3	18	-3	29	0
Silver Bow*	22,760	99	59	3	20	-1	21	-2
Montana	22,961	100	60	-1	19	1	26	0

\*RMP-related effects are most likely to occur in these counties, where the majority of the PA lands are located.

<sup>1</sup> Personal income consists of net earnings by place of residence, transfer payments (including income maintenance payments, unemployment, and retirement benefits), and dividends, interest, and rent.

Source: U.S. Bureau of Economic Analysis, 2003a

cent in Jefferson County to 12.8 percent in Gallatin County.

The percent of the population below the poverty rate in the remaining three counties ranged from 14.9 percent to 17.1 percent in Silver Bow and Beaverhead Counties, respectively (Table 3-33).

<b>County</b>	<b>Individuals Below Poverty Level</b>
Beaverhead	17.1%
Broadwater*	10.8%
Deer Lodge	15.8%
Gallatin	12.8%
Jefferson*	9.0%
Lewis and Clark*	10.9%
Park	11.4%
Silver Bow*	14.9%
Montana	14.6%

\*RMP-related effects are most likely to occur in these counties, where the majority of PA lands are located.

Source: U.S. Census Bureau, 2004a

***Affected Counties***

The following paragraphs provide a brief overview of the social and economic conditions in Broadwater, Jefferson, Lewis and Clark, and Silver Bow counties where the majority of the effects are expected to occur.

**Broadwater County**

Broadwater County has faced substantial growth since the 1980s. Growth pressures from Helena in adjacent Lewis and Clark County have affected the north end of the County, with growth in Three Forks/Gallatin County affecting the south portion of the county (Broadwater County Planning Board 2003).

The population in Broadwater County increased by 32 percent between 1990 and 2000 - the third highest increase in Montana. Much of this increase occurred in unincorporated areas, primarily on marginally productive agricultural land. Many new residents are attracted to communities with appealing environments and life styles. Long-term residents typically want to avoid increasing the current cost of building and living in the area (Broadwater County Planning Board 2003).

A scoping meeting for the Butte RMP was held in Townsend. Comments made during this meeting were largely concerned with weeds.

**Jefferson County**

Although historically important traditional resource-based industries—mining and ranching—continue to play an important role in Jefferson County’s local economy, new residents are also attracted to the convenient location and scenic beauty of the area. Jefferson County

identifies itself as the “undiscovered in-between”, located between Butte and Bozeman and between Butte and Helena (Northern Economics 2003). Recent economic trends influencing the county include the influx of population and development spilling over from Helena into the north part of the county and the decrease in employment in the Golden Sunlight Mine in the south part of the county (Northern Economics 2003).

A scoping meeting for the Butte RMP was held in Boulder. Comments made during this meeting were concerned with grazing and fire/fuels management.

**Lewis and Clark County**

The economy of Lewis and Clark County is mainly based on government employment and services, with services emerging as an increasingly important component of the overall employment mix. Lewis and Clark County and the Helena/East Helena area, in particular, serve as an important regional center, with many workers commuting to work there from Jefferson and Broadwater counties. The Helena Valley continues to account for much of the total County population and growth, with the majority of recent and ongoing growth occurring within unincorporated areas in the valley (Lewis and Clark County Planning Department 2004).

A scoping meeting for the Butte RMP was held in Helena. Comments made during this meeting were largely focused on issues surrounding access to public lands and land ownership adjustments. Weed management and fuel management policies were also identified as areas of concern.

**Silver Bow County**

The Butte-Silver Bow area is rich in mineral resources and the area’s colorful mining history has shaped almost all aspects of life in Butte-Silver Bow County. Population in Butte-Silver Bow has declined from a high of 60,313 in 1920 to just 34,606 in 2000. The social assessment prepared for the Beaverhead-Deerlodge National Forest planning process noted that Butte is currently in transition from being a one-company, working class, mining town, but does not appear to have identified a clear vision for its future. Butte is extremely pro-recreation and has a long history of conservation efforts (Northern Economics 2003).

Scoping meetings for the Butte RMP revision were held in Butte and Divide. Comments made during the Butte meeting were largely focused on issues surrounding access to public lands and land exchanges. Comments made in Divide, a small community located on the south edge of the county, were primarily concerned with potential impacts to grazing and the trade-off between environmental preservation and grazing rights.

***Affected Groups***

There are a number of different groups that could be potentially affected by the draft RMP. These groups may

be generally identified by their shared lifestyles and values. Lifestyle, as used here, may be broadly described as a combination of the activities, values, meanings, preferences, and ways of living in a particular place and time. Potentially affected groups include those associated with ranching, timber, and recreation, as well as permitted outfitters and guides, groups who give a high priority to resource protection, and groups who give a high priority to resource use.

The following brief discussions simplify what are often quite complex and unique values and attitudes and the groupings presented here are by no means mutually exclusive, with many ranchers, for example, also participating in recreation activities. It is also worth noting that personal attitudes, interests, and values often change over time.

### **Ranching**

Ranching is an important part of the history, culture, and economy of the eight study area counties. Many ranchers in southwest Montana consider their work a “way of life”, rather than simply a source of income (Northern Economics 2003). The land and their relationship to it is an important part of how they construct and evaluate their own identities, as well as those of their neighbors. Ranchers face many challenges today, including fluctuating cattle prices, increasing equipment and operating costs, and changes in federal regulations. Additional sources of income are often necessary to continue ranching and ranchers or their family members may also work as fishing guides or outfitters or elsewhere in town (Northern Economics 2003). There are currently 174 ranchers who lease Butte Field Office lands for grazing. For 20 of these ranch operations, the BLM lands account for more than one-third of their total AUMs.

Comments expressed during scoping for the Butte RMP included concerns about current livestock grazing and vegetation management programs, with comments stating that these programs are poorly managed and detrimental to vegetation, wildlife, foliage, and soil conditions. Other comments favored livestock grazing on public lands and improving forage for livestock, as well as wildlife. Others recommended that livestock grazing management be aimed at maintaining a sustainable grazing program that protects range and riparian resources, water quality, and fisheries (USDI-BLM 2005b).

### **Timber and Logging**

Loggers typically have a strong sense of occupational identity that is tied to their lifestyle and the natural environment that they work in and believe they understand well. The loss of a job for a logger typically involves a change in a valued way of life, as well as the loss of a paycheck. Reductions in timber harvest on area national forests have generated considerable controversy between loggers, mill workers, and timber industry representatives on the one hand and other groups who argue that

forests have other economic values, such as recreation and amenity values.

Timber employment is concentrated in only a few areas in the eight-county study area and lands managed by the Butte FO account for a very small portion of total harvest in this area. Timber related issue, raised during public scoping for this plan, included concerns regarding noxious weeds, fuel hazard reduction, and deal tree salvage.

### **Recreationists**

The recreation opportunities available in the eight-county study area play an important role in the quality of life of many local residents, as well as attracting visitors from elsewhere in the state and further afield. Many people have moved to the area or choose to stay in the area because of these recreation opportunities. Popular recreation activities in the PA include big game hunting; upland bird and waterfowl hunting; fishing; mountain and road biking; camping, backpacking, and horsepacking; river rafting, canoeing and kayaking; swimming; lake boating; downhill skiing and snowmobiling, OHV use; picnicking; archery; gathering organic materials; organized festivals; and viewing wildlife and landscapes.

These activities involve diverse groups of people and changes in recreation management can affect people who engage in particular recreation activities very differently. Recreationists tend to organize into interest groups. The Capital Trail Vehicle Association, which is primarily concerned with OHV use, accounted for approximately 58 percent of the comments received during the public scoping process for the Butte RMP (319 of 554 comments). As a result, the majority of the comments received on recreation were primarily concerned with OHV use. Concerns were expressed that demand for motorized recreational access has increased in recent years, while motorized access has decreased, largely as a result of federal land management action and policies that favor non-motorized users. Some commenting felt that public lands should be available to all users, both motorized and non-motorized, but some areas and trails should have limited types of use (hiking use only or OHV use only) where different types of use tend to be incompatible.

Others felt that non-motorized uses are presently favored over motorized uses and felt that this balance should be changed, with motorized users allowed equal access (USDI-BLM 2005b).

### **Permitted Outfitters and Guides**

The Butte FO authorized 19 Special Recreation Use Permits in Fiscal Year (FY) 2003. The primary activity for 13 of the Special Recreation Permits is big game hunting, with most big game hunting outfitter/guides pursuing bear in the fall and mountain lion in the winter. Special Recreation Use Permits are also issued for rock climbing in the Humbug Spires SRMA, with restrictions

that typically limit the activity to weekdays, so the general public can enjoy the resource on weekends without over-crowding (Rixford 2004). The Pipestone area is available for organized motorized vehicle events which require a permit (Rixford 2004). One person commenting during scoping requested that outfitters be able to take camping/river trips along the Big Hole River.

**Individuals and Groups who give a High Priority to Resource Protection**

A number of individuals and groups commenting during scoping for the Butte RMP expressed concern about resource protection issues, with particular emphasis placed on wildlife, fisheries, water issues, and special area designations. Comments included requests that habitat corridors for threatened, endangered, and sensitive species and the integrity and un-motorized character of all roadless areas be maintained. One person commenting recommended that the BLM identify impaired streams and implement restoration measures to support native fisheries. Water-related concerns included maintenance of hydrological and aquatic species goals, restoration of watershed health, and protection of riparian and wetland habitat and aquatic species. Many respondents identified areas for designation as special use areas. Areas identified included areas of critical environmental

concern, wild and scenic river areas, recreational river areas, and wilderness study areas (USDI-BLM 2005b).

**Individuals and Groups who give a High Priority to Resource Use**

A number of individuals and groups expressed concern about limitations being placed on the availability of public lands for commercial uses such as livestock grazing, mineral development, and timber harvest. These people believe that local communities depend on these industries, which are a primary source of high paying jobs to local economies. Comments received during scoping for this project requested that the RMP revision focus on beneficial economic and social use of public lands, not locking them up from development or public access. Some commenting indicated that they support protection of water, aquatic species, and wildlife, but not to the point that it resulted in detrimental effects to the local economy, lifestyle, access to public lands, and the development of public lands (USDI-BLM 2005b).

**Economic Conditions**

**Employment and Income**

There were a total of approximately 135,200 full- and part-time jobs in the eight-county study area in 2000 (Table 3-34).

	Total Employment		Share of Total (Percent)		1990-2000	
	1990	2000	1990	2000	Absolute Change	Percent Change
Total full-time and part-time employment <sup>1</sup>	98,044	135,231	100	100	37,187	38
<b>By Type</b>						
Wage and salary employment	75,511	102,817	77	76	27,306	36
Proprietors employment	22,533	32,414	23	24	9,881	44
<b>By Industry<sup>2</sup></b>						
Farm employment	3,755	4,204	4	3	449	12
Nonfarm employment	94,289	131,027	96	97	36,738	39
Ag. services, forestry, fishing and other	981	2,103	1	2	1,122	114
Mining	978	1,097	1	1	119	12
Construction	3,607	9,520	4	7	5,913	164
Manufacturing	4,565	6,402	5	5	1,837	40
Transportation and public utilities	4,579	5,303	5	4	724	16
Wholesale trade	2,881	3,925	3	3	1,044	36
Retail trade	18,206	26,399	19	20	8,193	45
Finance, insurance, and real estate	6,604	9,365	7	7	2,761	42
Services	28,083	42,115	29	31	14,032	50
Government and government enterprises	22,172	24,404	23	18	2,232	10
Federal, civilian	2,857	2,831	3	2	-26	-1
Military	1,400	1,125	1	1	-275	-20
State and local	17,915	20,448	18	15	2,533	14

<sup>1</sup> These figures, which are annual averages, include self-employed individuals, and full- and part-time jobs, with each job that a person holds counted at full weight.

<sup>2</sup> Totals by industry sector do not sum to the nonfarm employment total because actual numbers of jobs are not disclosed in some sectors in some counties to avoid disclosure of confidential information. Estimates for these items are, however, included in the totals. Source: U.S. Bureau of Economic Analysis, 2003b

The number of jobs increased by approximately 38 percent in the 1990s, with the largest increases occurring in the services, retail trade, and construction sectors. Employment increased in all sectors with the exception of the federal government sector, which experienced net job loss (Table 3-34). Employment increased in all eight counties over this period, with the largest increase (61 percent) occurring in Gallatin County. Gallatin County had the largest number of jobs in 2000 (51,661), followed by Lewis and Clark (38,839) and Silver Bow (18,988) counties (U.S. Bureau of Economic Analysis 2003b).

Annual average unemployment rates in the study area in 2003 ranged from 2.8 percent in Gallatin County to 6.5 percent in Deer Lodge County compared to a statewide average of 4.7 percent. Unemployment rates also exceeded the state annual average in Silver Bow (5.1 percent) and Broadwater (4.9 percent) counties (Montana Department of Labor and Industry 2004a).

#### **BLM Contributions to Area Economic Activity**

Butte Field Office operations and management make a direct contribution to area economic activity by employing people who reside in the area and by expending operations dollars. Management of BLM administered public lands and minerals is provided by a professional and administrative staff of about 60 permanent and other than permanent employees who are located in Butte. BLM expenditures in FY 2007 were about \$3.6 million for labor and \$4.3 million for operations (BLM, MIS, 2008). The response coefficients shown in Table 3-35 indicate how total local employment and total local labor income respond to a \$1000 change in local BLM expenditures.

<b>Economic Sector</b>	<b>Units</b>	<b>Total Employment (jobs/M units)</b>	<b>Total Labor Income (\$/M units)</b>
BLM salaries	\$	0.04	1,220
BLM Non-salary Expenditure	\$	0.01	330

Source: IMPLAN, 2007

#### **Potentially Affected Industries**

The following paragraphs provide an overview of the industries that could be affected by the draft RMP: forest products, recreation and tourism, agriculture, and mining.

The land managed by the Butte FO, approximately 311,000 acres, is distributed across eight large counties, and comprises just 2.6 percent of the total land area in these counties. As a result, the contribution of activities on Butte FO land to the economies of these counties is relatively small. This contribution may, however, be very important at the community level and especially for individuals who make all or part of their living from activities on or related to this land.

Total BLM management and land uses on BLM lands contribute less than one percent to employment and labor income in the local economy.

Table 3-36 displays the BLM-related contributions to the local economy by industry.

<b>Industry</b>	<b>Employment (jobs)</b>		<b>Labor Income (Thousands of 2007 dollars)</b>	
	<b>Area Totals</b>	<b>BLM-Related</b>	<b>Area Totals</b>	<b>BLM-Related</b>
Agriculture	4,441	78	\$89,671.1	\$1,795
Mining	1,487	23	\$132,836.1	\$1,496
Utilities	853	3	\$84,585.0	\$291
Construction	15,285	6	\$583,224.8	\$212
Manufacturing	5,704	39	\$230,657.7	\$1,177
Wholesale Trade	3,428	41	\$151,399.2	\$1,784
Transportation & Warehousing	3,717	26	\$146,698.4	\$965
Retail Trade	19,665	140	\$486,642.8	\$3,234
Information	2,416	6	\$129,140.8	\$283
Finance & Insurance	6,029	16	\$244,346.8	\$628
Real Estate & Rental & Leasing	7,287	19	\$238,873.3	\$592
Prof, Scientific, & Tech Services	11,396	22	\$485,902.7	\$785
Management of Companies	734	5	\$23,004.5	\$141
Admin, Waste Management & Rem. Svc.	4,968	14	\$102,256.1	\$297

Industry	Employment (jobs)		Labor Income (Thousands of 2007 dollars)	
	Area Totals	BLM-Related	Area Totals	BLM-Related
Educational Services	1,989	7	\$33,454.6	\$114
Health Care & Social Assistance	13,923	45	\$519,350.4	\$1,755
Arts, Entertainment, and Rec	4,530	59	\$62,651.3	\$977
Accommodation & Food Services	14,053	345	\$211,445.5	\$5,171
Other Services	9,196	41	\$171,101.1	\$696
Government	25,311	259	\$1,433,467.6	\$11,506
<b>Total</b>	<b>156,415</b>	<b>1,193</b>	<b>5,560,710</b>	<b>33,898</b>
<b>BLM as Percent of Total</b>	<b>---</b>	<b>0.76%</b>	<b>---</b>	<b>0.61%</b>

Source: IMPLAN/FEAST, 2007

Table 3-37 displays the employment and labor income by major BLM program area.

BLM Program Area	Total Number of Jobs Contributed	Labor Income (\$1,000)
Recreation	510	\$13,073.6
Wildlife and Fish	292	\$7,549.9
Grazing	11	\$197.9
Timber	106	\$2,999.9
Minerals	32	\$1,290.6
Ecosystem Restoration	10	\$335.6
Payments to States/Counties	144	\$5,563.3
BLM Expenditures	89	\$2,887.8
<b>Total BLM Management</b>	<b>1,193</b>	<b>\$33,898.5</b>

Source: IMPLAN/FEAST, 2007

### Forest Products

Lumber and wood products accounted for approximately 1.7 percent of total covered employment in Montana in 2001. Lumber and wood products employment in the six study area counties where data are available ranged from 0.1 percent of total covered employment in Silver Bow County to 1.2 percent in Jefferson County (Montana Department of Labor and Industry 2004). Although data were withheld for Broadwater County, wood products play an important role in the county economy, employing 260 people in 2000, approximately 12 percent of total full- and part-time employment (Broadwater County Planning Department 2003).

Data compiled by the University of Montana's Bureau of Business and Economic Research (BBER), indicate

that there were a total of 44 forest products facilities in the eight study area counties in 1998.

These facilities included lumber mills, log home and log furniture manufacturers, and post and pole facilities, with log home facilities and lumber mills accounting for 36 percent and 32 percent of the total, respectively (BBER 2001).

Eighteen of these facilities were located in Gallatin County. Jefferson and Park counties accounted for six facilities each. Beaverhead and Lewis and Clark counties each accounted for five facilities. Two facilities were located in Broadwater County.

Annual harvest data, available at 5 year intervals, indicate that total timber harvest in the eight-county study area has decreased from a high of 113 million board feet (MMBF) in 1976 to just 61 MMBF in 1998. Much of this decline is a result of reductions in timber harvest on area national forests. Lewis and Clark County accounted for nearly half of the total harvest in the eight-county area in 1998 (BBER 2001).

Harvest from land managed by the Butte FO has fluctuated from year-to-year over the past two decades, at times quite dramatically. Harvest levels ranged from 33 thousand board feet (MBF) in 1995 to 1,683 MBF in 2001 (USDI-BLM 2004h).

Harvest from land managed by the Butte FO comprised less than 1 percent of total harvest from the eight-county area in 1987, 1992, and 1998, the years that total harvest data are available.

The relationship between harvest from BLM lands and the local economy is complicated by the fact that in 1998 eight counties, none of them in the study area, received more than 80 percent of all timber harvested in Montana. More than half of the total timber harvested in Lewis and Clark County in 1998 was, for example, processed outside the eight-county study area (BBER 2001). While the forest products sector accounts for a relatively small share of local employment, this employment is, of course, very important for the individu-

als involved. Employment in the forest products sector is relatively well paid. The average annual salary for the lumber and wood products sector in Montana was \$32,797 in 2001, compared to an average annual state salary of \$25,194 (Montana Department of Labor and Industry 2004b). Employment in the forestry and logging sector is, however, often seasonal or part-time and workers are often self-employed.

The response coefficients shown in **Table 3-38** indicate how total employment and total labor income respond to a MMCF change in local production for the economic sectors associated with timber management.

<b>Economic Sector</b>	<b>Units</b>	<b>Total Employment (jobs/MMCF)</b>	<b>Total Labor Income (M\$/MMCF)</b>
Logging	CF	55	1,460
Sawmills	CF	51	1,610
<b>Total</b>	<b>CF</b>	<b>106</b>	<b>3,070</b>

Source: IMPLAN, 2007

## Recreation and Tourism

Nonresident visits to Montana increased by approximately 27 percent or 2 million during the 1990s, increasing from about 7.5 million in 1991 to 9.5 million in 2001, with an estimated 9.7 million nonresident visits to the state in 2003 (The University of Montana, Institute for Tourism and Recreation Research [ITRR], 2002; 2004). Visitation data are not compiled at the county level, but it seems reasonable to assume that visitation to the eight counties also increased over this period.

Recreation and tourism is not classified or measured as a standard industrial category and therefore, employment and income data are not specifically collected for this sector. Components of recreation and tourism activities are instead captured in other industrial sectors, primarily the retail sales and services sectors. The contribution of travel and tourism to a local economy may, however, be estimated by assigning all or a portion of employment in other sectors to visitors. Using ratios developed for Missoula County (Ellard et al. 1999), travel-related, covered employment ranges from approximately 3.2 percent of total covered employment in Jefferson County to approximately 14.3 percent in Park County, compared to a statewide average of 7.2 percent (**Table 3-39**).

Employment in the recreation and tourism sector tends to be seasonal and relatively low paid, with a high proportion of the labor force self-employed. The travel related employment estimates presented in **Table 3-39**

	<b>Estimated Travel-Related Employment</b>	<b>% of Total Employment</b>
Beaverhead	329	9.9
Broadwater*	55	4.9
Deer Lodge	298	9.5
Gallatin	3,422	9.8
Jefferson*	69	3.2
Lewis & Clark*	1,550	5.4
Park	747	14.3
Silver Bow*	1,117	8.1
Montana	27,706	7.2

\* RMP-related effects are most likely to occur in these counties, where the majority of the PA lands are located.

1. Travel-related estimates and total employment data are based on ES-202 data compiled by the Montana Department of Labor and Industry. These data are a count of workers on the payrolls of business, nonprofit, and government establishments who are subject to Montana's unemployment insurance laws. Self-employed workers are included in these totals on a voluntary basis only. These data result in lower employment totals than the full- and part-time estimates developed by the U.S. Bureau of Economic Analysis.

2. Travel-related employment estimates were developed by assigning a portion of total employment in travel-related sectors to nonresidents using ratios from Ellard et al. (1999). Ellard et al.'s ratios were developed specifically for Missoula County based on national ratios and local business data. The application of these ratios to the eight study counties and the resulting estimates presented here should, as a result, be treated with caution and are provided only to give a general indication of the relative importance of travel-related employment to the eight area counties.

Sources: Ellard et al. 1999; Montana Department of Labor and Industry 2004b.

are based on shares of four SIC sectors: auto dealers and service stations, eating and drinking, hotels and lodging, and amusement and recreation services. The annual average salaries in these sectors in 2001 were \$22,833, \$9,399, \$12,931, and \$12,254, respectively, compared to an average annual state salary of \$25,194 (Montana Department of Labor and Industry 2004b).

The general estimates presented in **Table 3-39** provide some indication of the relative importance of travel-related employment by county, but it is important to note that not all of this employment is directly attributable to recreation use on land in the Butte PA. There are a number of other important recreation areas and attractions located within or in close proximity to the eight counties. Most of the travel-related employment in Park County, for example, where land managed by the Butte FO comprises just 0.4 percent of the county land area, is likely related to the county's proximity to Yellowstone National Park.

The response coefficients shown in **Table 3-40** estimate how total employment and total labor income respond to changes in recreation use for the economic sectors associated with recreation use.

**Agriculture**

The Census of Agriculture indicated that the eight-county study area had 2,801 farms and ranches in 1997, with nearly 60 percent of these engaged in cattle produc-

tion. Beaverhead County is Montana's largest cattle producer and accounted for approximately 40 percent of total cattle production in the eight-county area in 1997. Sheep and lambs are also produced in the area with about 416,000 head and 1,981 farms. Farmland comprised approximately 38 percent of the total eight-county area, compared to 63 percent statewide. The percent of farmland by county ranged from 22 percent of Deer Lodge and Silver Bow counties to 59 percent of Broadwater County (**Table 3-41**).

The overall market value of agricultural products sold in the eight-county area in 1997 was about \$190 million, with crops and livestock accounting for 37 percent and 63 percent of this total, respectively. Cattle and calves were the main livestock produced in the area, accounting for 53 percent of all agricultural products sold by value. Cattle and calves ranged from 31 percent of agricultural products sold by value in Broadwater County to 89 percent in Silver Bow County.

Farms in the eight-county area provided about 4,000 jobs in 2001, approximately 3 percent of total employment, compared to 5 percent statewide. Agricultural employment was relatively more important in Broadwater and Beaverhead counties, accounting for approximately 15 percent and 13 percent of total full- and part-time employment in 2001, respectively. Agricultural employment accounted for less than 5 percent of total employment in four of the remaining six counties: Sil-

**Table 3-40**  
**Response Coefficients Associated with Recreation Use**

Type of Recreation Use	Units	Total Employment (jobs/M units)	Total Labor Income (\$/M units)
Day Use	Visits	0.32	8,500
Non-local Overnight	Visits	1.57	38,400
Local Overnight	Visits	0.86	23,700

Source: Averaged from response coefficients from IMPLAN, 2007

**Table 3-41**  
**Number of Farms and Average Farm Size by County, 1997**

	Number of Farms	Land in Farms (acres)	% of Total County Area	Average Farm Size (acres)
Beaverhead	360	1,152,008	32	3,200
Broadwater*	219	452,744	59	2,067
Deer Lodge	83	101,657	22	1,225
Gallatin	835	759,944	46	910
Jefferson*	266	364,153	34	1,369
Lewis and Clark*	502	822,066	37	1,638
Park	420	749,103	42	1,784
Silver Bow*	116	100,181	22	864
Study Area Total	2,801	4,501,856	38	1,607
Montana	24,279	58,607,778	63	2,414

\*RMP-related effects are most likely to occur in these counties, where the majority of the PA lands are located.

Source: U.S. Department of Agriculture, 1999

ver Bow (1 percent), Gallatin (2 percent), Lewis and Clark (2 percent), and Deer Lodge (3 percent). Employment in the agricultural sector is often seasonal or part-time and workers are often self-employed.

Grazing fees and BLM allotments are measured in terms of animal unit months (AUMs). For a cattle operation, an animal unit (AU) is defined as one cow with a nursing calf or its equivalent. An AUM is the amount of forage needed to sustain that cow and calf for one month. AUMs are authorized by the BLM on an annual basis. Data from the Butte FO indicate that the total number of cattle grazing in the eight county study area has fluctuated over the last decade, ranging from approximately 219,000 in 1996 to about 188,000 in 2003 and falling below 200,000 for the first time in 2002 (USDI-BLM 2004c). Total AUMs in the eight county study area and AUMs authorized by the Butte FO vary from year-to-year.

Total AUMs over the last decade ranged from 2.25 million in 2003 to 2.63 million in 1996. Grazing on Butte FO-managed land in the eight-county area currently involves 185 livestock operators grazing on 385 separate allotments.

In Fiscal Year 2005, livestock grazing on BLM lands involved livestock operators who had 101 Section 3 grazing permits (i.e. grazing on public lands within grazing districts, BLM Manual 1373.12 (USDI-BLM 1980b)) and 84 Section 15 grazing leases (grazing on public lands outside of grazing districts). Fifty percent of revenues from Section 15 grazing fees on public domain lands are distributed to the state and counties; 12.5 percent of grazing fees from Section 3 leases are distributed to the state and counties. The combined total (Section 3 and Section 15) number of active AUMs in FY05 was 23,585 AUMs.

Of the estimated 2,250,000 AUMs in the eight-county area in 2003, with approximately 13,600 or 0.6 percent

of the total are provided by land managed by the Butte FO (Table 3-42).

AUMs on land managed by the Butte FO ranged from 0.02 percent of total AUMs in Broadwater County to 2.7 percent of the total in Jefferson County. The majority of the AUMs in the PA are located in Broadwater (30 percent), Jefferson (30 percent), and Lewis and Clark (12 percent) counties.

Although BLM forage comprises a relatively small share of total AUMs in the study area, this forage may be particularly valuable to livestock producers because grazing fees (\$1.35/AUM in FY2008) are considerably lower than the statewide average of \$16 per AUM (USDI, BLM, 2004i). Access to BLM and Forest Service grazing may be important to area livestock producers even though additional management costs are usually incurred to use these lands. The difference between the statewide average grazing fee (\$16/AUM) and the BLM fee (\$1.35/AUM) represents a consumer surplus to the permittee of up to \$14.65 per AUM. The total consumer surplus associated with 25,677 AUMs is up to \$376,000.

The response coefficients shown in Table 3-43 indicate how total employment and total labor income respond to changes in levels of livestock grazing.

<b>Class of Livestock</b>	<b>Units</b>	<b>Total Employment (jobs/M units)</b>	<b>Total Labor Income (\$/M units)</b>
Cattle and Horses	HMs	0.34	6,090
Sheep and Goats	HMs	0.14	1,190

Source: IMPLAN, 2007

<b>County</b>	<b>Total Cattle</b>	<b>Total AUMs</b>	<b>BLM AUMs<sup>1</sup></b>	<b>BLM % of Total AUMs</b>
Beaverhead	81,000	972,000	426	0.044
Broadwater*	12,700	152,400	4,151	0.027
Deer Lodge	5,700	68,400	483	0.71
Gallatin	22,900	274,800	1,013	0.37
Jefferson*	12,600	151,200	4,058	2.68
Lewis and Clark*	21,800	261,600	1,689	0.65
Park	25,300	303,600	723	0.24
Silver Bow*	5,500	66,000	1,119	1.70
<b>Total</b>	<b>187,500</b>	<b>2,250,000</b>	<b>13,662</b>	<b>0.61</b>

\*RMP-related effects are most likely to occur in these counties, where the majority of the PA lands are located.

AUMs – Animal Unit Months <sup>1</sup> BLM AUMS in this context refers to those AUMs within the Butte Field Office PA.

Source: USDI-BLM 2004c.

## Mining

Although mining has played a very significant role in the past in the PA, mining employment decreased as a share of total covered employment during the 1990s in all study area counties where data are available. In 2001, the mining sector accounted for less than one percent of total covered employment in four of the eight study area counties, compared to 1.4 percent statewide.

Mining employment did, however, account for approximately 14 percent of total covered employment in Jefferson County and 3.5 percent in Broadwater County (Table 3-44).

	<b>Mining</b>	<b>% of Total Employment</b>
Beaverhead	(D)	(D)
Broadwater*	40	3.5
Deer Lodge	26	0.8
Gallatin	63	0.2
Jefferson*	303	14.0
Lewis and Clark*	20	0.1
Park	5	0.1
Silver Bow*	145	1.1
Montana	5,542	1.4

\*RMP-related effects are most likely to occur in these counties, where the majority of the PA lands are located.

(D) – Disclosure suppression.

Source: Montana Department of Labor and Industry, 2004b.

The mining sector is typically well paid. The average annual salary for the mining sector in Montana was \$51,787 in 2001, compared to an average annual state salary of \$25,194. Average annual salaries by mining subsector ranged from \$41,000 for the mining and quarrying of nonmetallic minerals to \$57,486 for metal

mining (Montana Department of Labor and Industry 2004b).

The response coefficients shown in Table 3-45 indicate how total employment and total labor income respond to changes in mineral production for various commodities.

## Environmental Justice

Environmental justice refers to the fair treatment and meaningful involvement of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws, regulations, programs, and policies. It focuses on the consideration of environmental hazards and human health to avoid disproportionately high and adverse human health or environmental effects on minority and/or low-income populations. Black/African American, Hispanic, Asian and Pacific Islander, American Indian, Eskimo, Aleut, and other non-white persons are defined as minority populations by the Interagency Working Group convened under the auspices of the Executive Order. Low-income populations are defined as persons living below the poverty level based on total income of \$19,971 for a family household of four based on the 2000 census.

None of the defined minority populations represent more than 3 percent of the population in the PA, based on 2000 census numbers. There are no Indian Reservations located in or in close proximity to the PA.

Members of the Confederated Salish-Kootenai Tribes of the Flathead Reservation are known to use resources on public lands in the PA for cultural (and to a lesser extent subsistence) purposes. The Flathead Reservation had a 2000 American Indian population of 6,999.

In 1999, 14.6 percent of the persons living in the state of Montana had incomes below the poverty level. In the PA, the percent of persons living below the poverty level ranges from 9 percent in Silver Bow County to 17.1 percent in Beaverhead County. The average per capita income was \$17,151 for the State of Montana. In the PA, this compares to a low of \$15,580 in Deer Lodge County and a high of \$19,074 in Gallatin County.

<b>Mineral Commodity</b>	<b>Units</b>	<b>Total Employment (jobs/M units)</b>	<b>Total Labor Income (\$/M units)</b>
Oil and Gas Extraction (Natural Gas)	M Cubic Feet	0.03	2,260
Stone Mining and Quarrying (Crushed Stone Common variety)	Short Tons	0.05	2,060
Stone Mining and Quarrying (Crushed Stone High Purity)	Short Tons	0.05	2,100
Dimension Stone	Short Tons	2.56	103,570
Construction Sand and Gravel	Short Tons	0.05	2,120

Source: IMPLAN, 2007



# CHAPTER 4

## ENVIRONMENTAL CONSEQUENCES

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### HOW TO READ THIS CHAPTER

Chapter 4 presents the likely impacts on the human and natural environment in terms of environmental, social, and economic consequences predicted to occur from implementing the alternatives presented in Chapter 2. Chapter 2 also provides a summary comparison of the impacts in table format (see **Table 2-24**).

This chapter is divided into two main parts. The first part describes environmental consequences associated with proposed management in RMP alternatives for the Butte Field Office overall. The second part entitled “Environmental Consequences of Five Site-Specific Travel Plans” describes the effects of the site-specific travel plan alternatives (implementation decisions) for the Helena, East Helena, Lewis and Clark County NW, Boulder/Jefferson City, and Upper Big Hole River Travel Planning Areas. This portion of the chapter includes discussion of cumulative effects at the scale of each travel planning area as well as at the Decision/Planning Area scales.

The first part of this chapter describes the effects of the proposed management actions by RMP alternative on the resources, resource uses, special designations, and social and economic concerns present in the Butte Field Office Decision Area. Each section includes the following items:

- Effects Common to All Alternatives – this section describes impacts that are the same across all of the alternatives. This information is presented here to avoid repetition. Management actions that would not cause impacts are identified here and are not discussed further. Resources, resource uses, and programs that only have impacts that are common to all alternatives are only discussed in this section and are not discussed further.
- Effects of Alternative A
- Effects Common to Action Alternatives – this section provides analysis of similarities between Alternatives B, C, and D where they occur. Some resources do not have this section. **It is important to remember that these effects apply to Alternatives B, C, and D and are not restated in the individual alternative discussions.**
- Effects of Alternative B
- Effects of Alternative C
- Effects of Alternative D

Following the direct and indirect effects analysis, the following analysis appears:

- Cumulative Impacts

- Irretrievable or Irreversible Commitment of Resources; and
- Unavoidable Adverse Impacts

The *Introduction* section includes definitions of the types of effects that will be projected throughout the impact sections and the terminology used, discusses the availability of data, and identifies the BLM’s Critical Elements. This section is followed by the analysis assumptions and detailed description of impacts. Since mitigation measures and standard operating procedures have been included in the alternatives as design features, many potential impacts are reduced or eliminated. The section titled *Effects Common to All Alternatives* describes impacts that will not vary by alternative because management actions are the same in all the alternatives. These impacts are not discussed again. Additionally, for any given resource, some management actions will not affect the resource. If a management action is not discussed it is because the resource analyst determined there would be no impact.

Separate sections describing cumulative impacts, irretrievable and/or irreversible commitment of resources, and unavoidable adverse impacts are presented at the end of the chapter.

For ease of reading, analysis shown in Alternative A (or any other alternative) may be referenced in discussions of subsequent alternatives with such statements as “impacts would be the same as Alternative A” or “impacts would be the same as Alternative A, except for . . .” as applicable.

### INTRODUCTION

The analysis of effects associated with the alternatives is required by BLM planning regulations and by the Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (NEPA). The analysis presents best estimates of impacts. As required by NEPA, direct, indirect, and cumulative effects are discussed. When quantitative information is available, impacts have been calculated primarily through Geographic Information System (GIS) applications. This entailed using Arc Info or Arc GIS software to overlay and/or query various geographically mapped layers of resource information to generate or calculate data for various analyses. All quantitative information is approximate and could be subject to further refinement when considered at finer scales.

Because the alternatives describe an overall management framework, and not site specific locations for activities (generally), the environmental consequences are most often expressed in comparative, general terms. Impacts are quantified to the extent practical with available data.

In the absence of quantitative data, best professional judgment provides the basis for the impact analysis.

Impact analyses and conclusions are based on interdisciplinary team knowledge of the resources and the Planning Area, information provided by experts in the BLM or in other agencies, and information contained in pertinent existing literature. The baseline used for the impact analysis is the current condition or situation as described in Chapter 3 (Affected Environment).

Each resource analyst developed analysis assumptions to help guide the determination of effects, which are described in the beginning of each resource section.

## TYPES OF EFFECTS

Direct, indirect, and cumulative impacts are considered in this effects analysis, consistent with direction provided in 40 CFR 1502.16.

Direct impacts are caused by an action or implementation of an alternative and occur at the same time and place. Indirect impacts result from implementation of an action or alternative, but are usually later in time or removed in distance, and are reasonably certain to occur. Cumulative impacts result from activities combined with past, present, and future actions on all jurisdictions. Cumulative impacts also result from individually minor but collectively significant actions over time. Past and present impacts are reflected in the existing conditions.

Actions anticipated over the next 20 years on all lands in the Planning Area, including private, state (MFWP and DNRC) and federal (USFS, BOR, NPS, USFWS) ownerships, have been considered in the analysis to the extent reasonable and possible. This analysis is provided for each resource and program area and is general because decisions about other actions in the Planning Area would be made by many public and private entities, and the location, timing, and magnitude of these actions are not well known.

## ANALYSIS TERMINOLOGY FOR BUTTE RMP

The following list of definitions is used in the analysis of alternatives.

**Irretrievable Commitment of Resources:** result from actions in which resources are considered permanently lost.

**Irreversible Commitment of Resources:** result from actions in which resources are considered permanently changed.

**Negligible:** an effect at the lower level of detection; there would be no measurable change. Effects may not be readily noticeable.

**Low or Minor:** an effect is slight but detectable; there would be a small change.

**Medium or Moderate:** an effect is readily apparent; there would be a measurable change.

**High or Major:** an effect is severe; there would be a highly noticeable/ measurable change.

**Unavoidable Adverse Effects:** those that remain following the implementation of mitigation measures, and include effects for which there are no mitigation measures.

**Beneficial or Positive:** an effect promoting a favorable result for a specific resource or resource use. Could be used in short-term, long-term, or both short and long-term contexts.

**Adverse or Negative:** an effect that is detrimental or causes harm to a specific resource or resource use. Could be used in short-term, mid-term, long-term, or all three contexts.

**Neutral:** an effect that is neither beneficial nor adverse to a specific resource or resource use.

## SCOPE OF THE ANALYSIS

The impacts disclosed are limited to the temporal and geographic scope described below unless otherwise defined in the individual resource sections.

### Temporal Scope

- Short-term: effects lasting less than 5 years
- Mid-term: effects lasting 5-10 years
- Long-term: effects lasting more than 10 years

### Geographic Scope

- Decision Area – refers to lands in the planning where the BLM has authority to make land use and management decisions. This includes split estate lands where the federal government has retained subsurface minerals.
- Analysis Area – lands within the area to be analyzed. The analysis area is the decision area unless otherwise defined in the individual resource section.
- Planning Area – all land within the Butte Field Office administrative boundary regardless of ownership or jurisdiction.

## AVAILABLE DATA AND INCOMPLETE INFORMATION

The best available information pertinent to the decisions to be made was used in development of the RMP. Considerable effort was put forth to acquire and convert resource data into digital format for use in the plan—both from BLM sources and from outside sources such

as the Montana Natural Heritage Program. Certain information was unavailable for use, usually because inventories have either not been conducted, were not complete, or were not of consistent quality across the Planning Area. Some of the major areas where data are incomplete or substantially lacking are:

- Planning Area-wide vegetation by species
- Fire Regime Condition Classes determination and documentation for all vegetation types in the Decision Area
- Detailed soil survey for lands in Beaverhead County
- Certain wildlife inventory data (i.e. lynx denning habitat, occupied pygmy rabbit habitat)
- Wildlife monitoring data
- 100-year floodplain mapping
- Recreation monitoring data
- Route safety data

As a result, impacts cannot be quantified given the proposed management of certain resources. Where this occurs, impacts are projected in qualitative terms, or in some instances, are described as unknown. Subsequent project level analysis will provide the opportunity to collect and examine site-specific inventory data necessary to determine the appropriate application of the RMP level guidance. In addition, ongoing inventory efforts within the Planning Area continue to update and refine the information used to implement this plan.

## CRITICAL ELEMENTS

BLM considers 14 items as “Critical Elements of the Human Environment” that must be addressed during environmental analysis.

Currently no Wild and Scenic Rivers (WSRs) are designated in the Planning Area and thus there are no existing WSRs to address. Impacts related to proposed designations or findings are described under each respective Wild and Scenic Rivers section by alternative.

Floodplains and Prime/Unique Farmlands are generally not present on BLM-administered lands covered by this plan. Where they may occur, subsequent project level analysis for any projects with potential to impact Floodplains or Prime/Unique Farmlands would be prepared to address potential impacts.

The remaining 11 critical elements are addressed under pertinent sections of Chapter 4. These include: Air Quality, Areas of Critical Environmental Concern, Cultural Resources (addressed under Cultural Resources and Tribal Treaty Rights), Environmental Justice, Native American Religious Concerns (addressed under Cultural Resources and Tribal Treaty Rights), Threatened or Endangered Species (addressed under Special Status Species), Hazardous or Solid Wastes, Water Quality, Wetlands/Riparian Zones (addressed under Vegetation –

Riparian and Wetlands), Wilderness, and Noxious Weeds and Non-Native Invasive Plants (addressed under Vegetation—Invasive Species including Noxious Weeds).

## ANALYSIS ASSUMPTIONS AND GUIDELINES

A number of assumptions were made to facilitate the analysis of the alternative management actions. These assumptions set guidelines and provide reasonably foreseeable levels of development that would occur within the Planning Area over the analysis period (20 years). These assumptions should not be interpreted as constraining or redefining the management objectives and actions proposed for each alternative and described in Chapter 2. If a resource heading does not appear in the following sections, it is because no assumptions were made.

### GENERAL ASSUMPTIONS

- Sufficient funding and personnel would be available for implementation of any alternative.
- Implementation of all alternatives would be in compliance with all valid existing rights, federal regulations, bureau policies, and other requirements.
- Local climate patterns of historic record and related conditions for plant growth would continue during the analysis period.
- Appropriate maintenance would maintain the functional capability of all developments.
- The discussion of impacts is based on the best available data. Knowledge of the Planning Area and professional judgment, based on observation and analysis of conditions and responses in similar areas, are used to infer environmental impacts where data is limited.
- Acreages and other numbers used in the analysis are approximate projections for comparison and analytical purposes only. Readers should not infer that they reflect exact measurements or precise calculations.
- Adjustments made to the Preferred Alternative for travel management between the Draft RMP/EIS and the Proposed RMP/Final EIS were assessed to be so minor as to not cause any marked changes in analyses or conclusions based on road management. Therefore, while actual road mileage changes are reflected where pertinent in the Proposed RMP/Final EIS, road-based analyses (such as road density calculations, road-based moving windows analyses, and economic analyses) were not re-done since the Draft RMP/EIS.

## RESOURCE ASSUMPTIONS

### Air Quality

- Demand for clean air in the Planning Area is expected to remain constant.
- Increasing uses of the area for recreational and aesthetic reasons may lend importance to maintaining the current quality of the air, especially during seasons of high visitation.
- Vegetative treatment designed to reduce wildland fuels, including prescribed burning, would reduce wildland fire severity.

### Soil Resources

- Soil erosion would be mitigated through the use of best management practices and Land Health Standards described in **Appendix F**.
- This analysis assumes that any reduction in grazing preference by the BLM would cause a proportional reduction in actual use levels.
- BLM roads will continue to be maintained, with priority placed on those most heavily used by the public.
- State and major county roads will continue to be maintained to current levels and generally, county roads will not be abandoned. BLM facilities, mainly roads, will continue to be maintained, with priority placed on those most heavily used by the public.
- An increase in wildland fuel reduction activities in the analysis area will result in a decrease in fire severity.
- Natural process assumptions include: roads in the Butte Field Office will continue to erode from natural causes, increased vegetative cover would lead to reduced soil erosion, and removal of conifer encroachment could minimize accelerated soil erosion.

### Water Resources

- Water quality requirements will be achieved through the use of best management practices, implementation of Land Health Standards described in **Appendix F**, and working with the MDEQ in the future development of water quality restoration plans.
- Water quality meets or is moving towards State of Montana water quality standards.
- Water quality restoration plans and the establishment of Total Maximum Daily Loads (TMDLs) will improve water quality.
- Vegetative treatment designed to reduce fuels, including prescribed burning, will reduce wildland fire severity.

- Management prescribed for rivers found suitable for designation in the National Wild and Scenic Rivers system will protect the outstandingly remarkable values, tentative classification, and free-flowing nature of those segments.
- BLM roads will continue to be maintained, with priority placed on those most heavily used by the public.
- Process assumptions include: roads in the Butte Field Office will continue to erode from natural causes resulting in potential impacts on water quality in adjacent streams, increased vegetative cover will lead to reduced soil erosion and in certain instances reduced deposition of sediments into streams.
- The discussions of impacts on water from the four alternatives are based on the best available data. Knowledge of the analysis area and professional judgment from observation and analysis of conditions and responses in similar areas are used to infer environmental impacts where data is limited.

### Vegetative Communities

- Analysis of proposed vegetative treatments (except for noxious weeds unless otherwise stated) assumes that the high end of acreage treatment ranges would be implemented.
- Projections on how many decades may be necessary to reach certain vegetative conditions from proposed treatment rates are based on results from SIMPPLLE model runs.

### Forest and Woodlands

- The need to manage forests and woodlands will increase to accommodate multiple uses associated with fish and wildlife habitat, water yield, livestock grazing, fire activities, forest product removal, and recreation.
- Treatments will be successful and promote the desired changes in ecological succession that will restore vigor, vegetation production, and overall forest health, especially for warm, dry forest types and woodlands.
- The RMP applies the approach that has been used in recent coordinated landscape analysis with the Forest Service to provide a range of ecological conditions needed to maintain a natural range of species that were found in the area prior to settlement.
- Historic conditions (i.e., more frequent and widespread wildland fires that burn at less intensity) provide a more stable and healthy set of conditions that local native plants are more adapted to.

### ***Noxious Weeds***

- Noxious weeds on public lands will be controlled with a variety of methods, but will not be eradicated.
- Noxious weeds and invasive species populations will increase as a result of ongoing natural and human-induced activities (e.g., livestock and wildlife foraging, roads, vegetation treatments, wildland fire and recreational activities).
- The need to control noxious weeds will increase as public knowledge about the adverse effects of noxious weeds increases, as new noxious weeds are introduced, and as existing weed populations expand.
- Infestations of noxious weeds decrease diversity and vigor of desirable and native plant communities.
- Increases in noxious weeds are dependent on conditions favorable for weed establishment (e.g., there are seed source(s), safe sites for seed germination, and insufficient competition from other species to inhibit seedling growth).
- Under the action alternatives, acreage estimates of weed spread by alternative assume a “worst case” scenario where the high end of proposed acreage ranges of vegetation treatments would occur, combined with implementation of the low end of proposed weed treatment acreage ranges by alternative.

### ***Grasslands and Shrublands***

- The need to manage rangelands will increase to accommodate multiple uses associated with fish and wildlife habitat, livestock grazing, recreation, riparian habitat, and water quality.
- Over-utilization of rangelands will increase the spread of noxious weeds and the potential for sediment to enter streams and adversely affect water quality and the aquatic biota.
- Rates of conifer encroachment into grasslands and shrublands were estimated based on current vegetation mapping compared to historic vegetation portrayed by SIMPPLLE model runs, and the assumption that conifer encroachment began 100 years ago.

### ***Riparian and Wetlands***

- Buffers of relatively intact vegetation in riparian and wetland areas will reduce impacts on water quality, channel morphology, and the aquatic biota.
- Beavers are a natural and desirable component of riparian and wetland habitats.
- In alternatives that call for Riparian Management Zones, management of RMZs with a primary focus on riparian values (such as mechanical treatments of vegetation that improve vegetative conditions while providing for down woody material and habitat

complexity) will improve the ecological functional status of streams and associated riparian areas as wildlife habitat.

- Analysis assumes 80-foot site potential tree height.
- The functioning condition on approximately  $\frac{1}{3}$  of riparian areas is reduced due to factors sometimes outside the control of BLM’s management, i.e. roads, upstream dams, etc.
- Analysis assumes treatment figures for Alternative A are a continuation of what has occurred.

### **Wildlife**

- Vegetation treatments would be effective and produce the anticipated short-term and long-term results.
- Vegetation treatments would be implemented in the manner described in Chapter 2.
- Acreage indications of habitat improvement associated with vegetation treatments do not consider potential continuing loss of a particular habitat type due to continued fire suppression.
- The availability, quality, and amount of habitat correlates to the viability, health, and size of wildlife populations dependent on the habitat.
- There is a threshold level of disturbance or habitat degradation a species can sustain before the population viability is reduced.
- Management actions intended to benefit habitat for special status and/or priority species would benefit most other species occurring in the same vicinity.
- Demand for wildlife habitat is expected to increase given listings under the Endangered Species Act and increasing wildlife-based recreational activities in the Planning Area (wildlife viewing, hunting, etc.).
- Vegetative treatments would be expected to benefit wildlife habitat by moving vegetation towards a “range of natural variability.” Although it is recognized that modifying vegetation could remove or lessen the quality of habitat for some species (i.e. removing conifer encroachment from sagebrush to increase breeding and foraging habitat for sagebrush obligate species would remove hiding habitat for elk), overall, it is assumed that vegetative treatments would have long-term benefits to wildlife habitats.
- The more acres within a No Surface Occupancy or No Lease oil and gas stipulation, the more overall protection a wildlife species would have from oil and gas development. When comparing alternatives, those alternatives with more acres in NSO or NL would provide the least negative effects to wildlife. As with NSO and NL stipulations, when comparing alternatives, the more acres an alternative has within

a timing restriction, the more wildlife species would be protected from disturbance during crucial seasons of use.

## Fish

- Road decommissioning would be done properly with BMPs in place and sedimentation and other negative impacts from roads to the aquatic environment would diminish as the road becomes part of the natural landscape and topography.
- Water quality meets or is moving towards State of Montana water quality standards.
- Recreational demand, including fishing and other uses will continue to increase.
- Livestock type and stocking will remain relatively stable over the planning period.
- Management actions intended to benefit a specific habitat for special status species will likely influence other species within that same habitat. Given this, management of fisheries and other aquatic species habitat is not discrete, since actions that benefit one species, may provide adverse (or beneficial) effects on another.
- There is a direct correlation between the amount of quality habitat and fish populations and changes in habitat quality could cause an increase or decrease in fish numbers.
- The more acres within a No Surface Occupancy or No Lease oil and gas stipulation, the more overall protection a fish species would have from oil and gas development. When comparing alternatives, those alternatives with more acres in NSO or NL would provide the least negative effects to fish.

## Special Status Species

- Conservation measures to improve and secure habitat would continue to receive special consideration during planning.
- There would be changes in listed and special status species in the future.

## Wildlife

- Vegetation treatments would be effective and produce the anticipated short-term and long-term results.
- Vegetation treatments would be implemented in the manner described in Chapter 2.
- The availability, quality, and amount of habitat correlate to the viability, health, and size of wildlife populations dependent on the habitat.
- There is a threshold level of disturbance or habitat degradation a species can sustain before the population viability is reduced.

- The identification and delineations of habitat accurately represents the conditions on the ground; therefore, impacts to the delineated habitat areas would impact associated wildlife and wildlife habitat.

## Fish

- Assumptions for special status fish are the same as those under the Fish section above.

## Plants

- Harvest or collection of native plants and seeds for scientific study, medicinal, or commercial uses could increase, increasing the vulnerability of some rare species or populations.
- Noxious weed infestation and treatments will pose a risk to some special-status plants.

## Wildland Fire Management

- The Forest Service and Montana DNRC will continue to assume fire suppression responsibilities on BLM-administered public lands.
- Firefighter and public safety are dependent on access and wildland fire behavior. Fire behavior is dependent on fuel loadings (including invasive species), and stand structure.
- Vegetation treatments will be designed to reduce FRCC by one condition class (i.e. FRCC 3 would go to FRCC 2) after treatments.
- Category “A” polygons in each Fire Management Unit will only receive mechanical or chemical treatments and will lose the benefits of fire.
- Category “D” polygons in each Fire Management Unit will have the most flexibility.
- Acres in Fire Regime Condition Class (FRCC) 1 will remain in FRCC 1 during the 20-year analysis period.

## Cultural and Paleontological Resources

- Federal undertakings and unauthorized uses have the potential to cause irreversible disturbance and damage to non-renewable cultural and paleontological resources. BLM would continue to mitigate impacts to both resources from authorized uses through project abandonment, redesign, and if necessary data recovery investigations in accordance with the BLM National Cultural Programmatic Agreement, the Protocol for Managing Cultural Resources on Land Administered by the BLM in Montana, and Manual Series 8270 for paleontology.
- Without a 100 percent inventory of all public lands within the Decision Area, the exact number, kind, and variability of cultural and paleontological resources will be unknown. However, new sites and

localities would continue to be found and evaluated for eligibility for the National Register of Historic Places, and scientific significance, as additional inventories are completed for compliance on projects. Eligible cultural resources and significant localities would continue to be treated similarly and equally in terms of type, composition, and importance, but many would continue to deteriorate through natural agents, unauthorized public use, and vandalism. The BLM would continue to consult with Native American Tribes on traditional cultural properties and values that are of concern to them.

- All archaeological resources will be assessed according to BLM use categories. The demand for use of cultural resources is expected to increase. Interest from the general public in historical tourism and from Native Americans for traditional uses is expected to increase. The demand to use cultural resources by the academic community in scientific research would be expected to remain at current levels.
- The same pressures associated with cultural resources would be occurring with paleontological localities. BLM Manual Series 8270 integrates legislated directives from the Antiquities Act of 1906, FLPMA, and NEPA, for the protection of resources of scientific interest; and as such, outlines available protection measures and mitigation procedures for paleontological localities.

### Visual Resources

- As described in the Alternatives section in Chapter 2, short-term impacts on visual quality may occur for long-term resource benefit.
- Projects would be planned to meet VRM objectives and will result in VRM being met. For example, timber harvesting activities will consider the impacts on VRM, and mitigation would be included which would eliminate the long-term impacts of the timber harvesting on VRM.
- VRM objectives will be applied to all management actions and appropriate mitigation measures will be developed to ensure compliance with established visual resource classes except in cases involving threats to human life and property.

### Forestry and Woodland Products

- Estimated Probable Sale Quantities (PSQs) are reasonably achievable based on budgets and staffing levels.
- PSQ is based on all forests with over 10 percent canopy except acres with protections including Wilderness Study Areas and VRM Class I areas.
- Adequate access for forest management will be maintained. Closure of roads due to travel manage-

ment is reflected in the reduced acres of treatment proposed and anticipated PSQ.

- Land ownership adjustment would generally result in more consolidated land holdings by BLM, a reduction of isolated tracks needing management, and a reduction in tracks with poor or no access.
- Forest management, silvicultural, and treatment terms used assume definitions described in: Dictionary of Forestry, John A. Helms, editor, 1998. Society of American Foresters publisher, ISBN 0-939970-73-2.

### Livestock Grazing

- Under all alternatives, livestock grazing will be managed through implementation of the Standards for Rangeland Health and Guidelines for Livestock Grazing (**Appendix F**).
- Livestock grazing will be adjusted as appropriate to ensure wildlife habitat requirements are taken into account in accordance with the Butte Field Office RMP.
- During review of grazing leases and permits, appropriate management tools and guidelines for grazing management options will be considered and prescribed as necessary to improve the condition of riparian and wetland areas.
- Under all alternatives, a range of shrubland and grassland acres to be treated per decade is given. This analysis assumes the maximum number of acres will be treated.
- Under all alternatives, a range of acres to be treated for noxious weeds per decade is given. This analysis assumes the maximum number of acres will be treated unless otherwise stated.
- The cost of administering grazing allotments as forage reserve will be higher than administering them as normally permitted allotments.
- Any lands acquired from the Iron Mask Acquisition will be managed like the existing Indian Creek allotment as described under each alternative.

### Minerals and Geology

- Demand for mineral commodities, construction materials and energy resources will increase in the U.S. and within the Planning Area.
- Increased demand for energy and minerals will encourage exploration for potential resources from areas of known high and moderate potential within the Planning Area.
- It is assumed there will be no major change in the legal framework under which mineral leasing, mining claim location, or mineral material sales are conducted.

- BLM will provide opportunities and ensure accessibility to mineralized areas for mineral exploration and development.
- BLM will ensure alternatives in this plan will not compromise valid and existing mineral rights, federal regulations, bureau leasing policies and procedures, and BLM mineral sales requirements.
- There will continue to be controversy surrounding mineral development associated with a range of societal pressures. This controversy will require more BLM federal land managers' time and resources as they attempt to move federal properties forward through mineral exploration, permitting, development, and oil and gas exploration and development drilling activities.
- BLM will provide for timely permit evaluation and processing of federal energy and solid mineral exploration and development proposals.
- Adequate numbers of trained mineral personnel and sufficient funding will be available for exploration permitting, environmental analysis, permitting, and oversight during operations and reclamation.
- Potential impacts of developing mineral resources described herein are based on analysis of the best available data. Specific knowledge of the Planning Area and best professional judgment, based on observation and analysis of geologic conditions and mineral and energy occurrence in similar areas are used to infer environmental effects where data is limited.
- Acreage figures, tonnage, and ore grade values and other numbers used in the analysis are approximate projections for comparison and analytic purposes only. Readers should not infer that they reflect exact measurements or precise calculations.

### ***Leasable***

- All federal mineral leases will be subject to standard lease terms.
- Oil and gas exploration will occur as described in the reasonably foreseeable development scenario (RFD scenario) which predicts that as many as 19 conventional oil and gas wildcat wells (exploratory wells drilled in an area with no existing production) might be drilled in the Butte Field Office Planning Area in the next 15 to 20 years. Of these 19 wells, it is estimated that 13 would be "dry" holes (no economically producible oil or gas is discovered). It is further estimated that six (6) of the wells could have oil or gas discoveries, two (2) of which would become producers with one located on either BLM minerals or lands administered by the Forest Service, and the other located on privately owned mineral lands. Each of the discovery wells would probably prompt additional step-out wells. A "step-out

well" is a well drilled adjacent to or near a proven well to establish the limits and continuity of the oil or gas reservoir and/or to assist with production. It was estimated that 12 step-out wells would be drilled, two for each discovery. In all approximately 31 total conventional wells would be drilled. The amount of ground affected by this drilling activity would include surface disturbances from the construction of exploration drill roads and equipment staging areas (221 acres), and drilling pads (45.5 acres). Dry holes would be plugged and abandoned with reclamation of exploration drilling sites and access roads usually being completed within one to two years of drilling,

- The RFD scenario also forecasts the discovery and development of three conventional gas fields and one conventional oil field Planning Area-wide (including non-federal mineral estate). Discovery and development of these fields would include surface disturbances associated with drill pads (42 acres), access roads and staging areas (130 acres) and pipelines (318 acres). Although all surface disturbances could be reclaimed in the long-term, short-term reclamation would reduce the total area of surface disturbance to about 83 acres, two years after development of the fields.
- In addition to conventional oil and gas wells, it is anticipated that as many as 40 wells would be drilled for coal bed natural gas in limited and scattered areas of known sub-bituminous coal resources located in Gallatin and Park Counties; most likely in the Trail Creek Road area near Bozeman Pass (Livingston and Trail Creek Coal Fields). This activity is not forecast to occur on any federal mineral estate lands. It is forecast that two commercial fields would be discovered and require additional surface disturbances related to gathering and sales pipelines, and compressor stations.
- Exploration and development of two coal bed natural gas fields could include construction of four drill pads (one acre) and access roads (three acres). Reclamation would generally be completed within two years of completion of the dry holes. Discovery and development of the forecast two coal bed natural gas fields would include surface disturbances associated with 30 drill pads (7.5 acres, six discovery and 24 step-out wells), and access roads and pipelines that follow access roads (31.6 acres). This surface disturbance could be reduced to about 21.7 acres after short-term reclamation was completed. Based on projected well depths, it is assumed that produced water would be reinjected if technically possible and not disposed of on the surface. These activities are forecast on non-federal mineral estate lands.
- No federal geothermal leasing will likely occur in the Decision Area.

- None of the lands within the Sheep Creek, Sleeping Giant, Elkhorns Tack-on, Humbug Spires, or Yellowstone Island Wilderness Study Areas will be available for oil and gas leasing under any of the alternatives unless later released from their status as Wilderness Study Areas.
- Stipulation-specific acreages by alternative in tables 4-23, 4-27, 4-30, and 4-33 are presented for individual stipulations without consideration of overlap with other, potentially more protective (more restrictive of oil and gas exploration/development) stipulations. For example, a major constraint such as No Surface Occupancy (NSO) is generally a more protective stipulation for a resource than a moderate constraint such as Timing Limitations. In Table 4-27, a total of 498,973 acres of federal mineral estate lands are identified as having a Timing Limitation stipulation for big game winter/spring range. However, when mapped areas with major constraints (No Lease, or NSO stipulations) are overlaid onto these big game winter/spring range acres, approximately 236,443 of these acres would be protected with No Lease or NSO stipulations, while the remaining 262,530 acres would be protected with the Timing Limitation stipulation. In the case of the stipulation-specific acreages in these tables for “moderate” constraint stipulations (Timing Limitations, Controlled Surface Use), these numbers do not consider the overlap of “major” constraint stipulations (NSO, or No Lease areas), and they therefore underestimate the resource protection that would actually be provided for the subject resources if exploration and development were to occur. This effect is quantitatively assessed for moderate constraint stipulations that have substantial acreages associated with them: big game winter/spring range, bighorn sheep yearlong range, soil protection, and visual resource protection stipulations. It also plays a relatively minor role in at least one action alternative for other resources with moderate constraint stipulations, and with lower acreages associated with them such as sage grouse winter/spring range, grizzly bear denning habitat, gray wolf dens, and Special Recreation Management Areas.

### **Locatable**

- Most mineral commodities are currently at record high values when compared with values over the last 25 years. It is assumed that commodity prices will fluctuate around the current price level or increase modestly in the future. It is assumed that sustained or increasing prices will generate interest in exploration and development of mineral properties.
- The three currently operating large-scale metal mines within the Planning Area (Montana Tunnels, Continental Pit, and Golden Sunlight Mines) will either continue to operate under their respective Plans of Operations for the remainder of their planned life

(Continental Pit) or will apply for Plan Modifications that are ultimately approved to expand their operations and extend their mine-life (Montana Tunnels and Golden Sunlight Mine).

- Small-scale metal mining operations having less than 5-acres of surface disturbance are regulated by the state under a Small Miners Exclusion and by the BLM under a Plan of Operations. Active mineral exploration and mine development at this scale is expected to occur at varying levels of intensity within the Planning Area in the future.
- The Butte Field Office anticipates 4 to 10 placer mining operations operating under a Plan of Operations during any given year, with the actual number being a function of the price of gold.
- No exploration or development of phosphate resources will occur within the Decision Area.
- It is likely that modifications to the Plans of Operation will be sought for three currently operating limestone mines located on private (Montana City and Trident Quarries) and public lands (Indian Creek/Limestone Hills) within the planning area. The Indian Creek/Limestone Hills Mine is administered by BLM and DEQ, Trident and Montana City mines are administered by DEQ.

### **Salable**

- Demand for sand and gravel, riprap, and other mineral construction materials will increase at a moderate but steady rate in the future.
- The community pit, for a flagstone material located near Montana City and Conda Mining, Inc., which operates the Pipestone Stone Quarry that produces crushed rock, are both likely to continue limited production into the foreseeable future.
- The demand for boulders for sale for landscaping uses is likely to grow substantially in the future as long as high human population growth rates continue in southwestern Montana.
- The two active slate building stone quarrying operations within the Planning Area, the Soap Gulch area north of Melrose and the Gates Stone Quarry, located in Towhead Gulch west of Holter Lake, are likely to see continued small-scale production into the foreseeable future. It is also likely that the travertine quarries located north of Gardiner would be reopened for limited production from time to time in the future. The Soap Gulch quarry is the only one of these mines located on BLM lands.

### **Recreation**

- Demand for recreational use of public land is expected to increase in the future.

- Total visitor days, under the existing management, would increase about two-percent per year over the next 20 years.
- Increases are expected to be in water-based activities, hunting, fishing, rock climbing, hiking, wildlife viewing, and dispersed uses.
- Demand for developed recreation areas will increase, as will the demand of land for dispersed recreation.
- Developed recreation opportunities are described in detail in the management guidance for all alternatives.
- The amount of dispersed recreation opportunities were assessed by the approach each alternative took to managing the Recreation Opportunity Spectrum Settings and Special Recreation Management Areas.

### **Special Designations – Wilderness Study Areas**

- Congress may legislate wilderness decisions in the future. Therefore, management strategies have been developed for the six WSAs should they be dropped from wilderness review under the action alternatives.

### **Special Designations – Wild and Scenic Rivers**

- BLM can only recommend Wild and Scenic Rivers as suitable for possible designation by Congress. BLM will ensure that the outstandingly remarkable values associated with these areas are protected so that pending Congressional decisions are not compromised.

### **Travel Management and Access**

- Roads that are currently classified, or are to be reclassified in the “Limited” designation will confine all motorized public travel to designated routes, with exceptions for the following:
- Dispersed camping will be allowed within 300 feet of existing roads open to full-size vehicle only (unless otherwise designated) by the most direct route (site selection must be made by non-motorized means).
- Firewood gathering will be allowed under permit.
- Visitor-use and demand is likely to continue to increase for both motorized as well as non-motorized users.
- Demand for adequate public and agency access to public lands will remain high in the future.
- Changes in OHV and snowmobile design and technology will continue, enabling OHV users to travel

into areas that were once thought of as inaccessible due to terrain and water or soil features.

### **Transportation Facilities**

- State and major county roads will continue to be maintained to current levels and that in general, county roads will not be abandoned.
- BLM facilities, mainly roads, will continue to be maintained with priority placed on those most heavily used by the public.
- Road maintenance will be conducted on routes designated as open yearlong and open with restrictions.

### **Social and Economic**

- The planning area population will continue to increase as described in Chapter 3.
- Increased recreational demands, as described in the Recreation assumptions section will influence social aspects of the planning area.
- The social groups are defined to facilitate the discussion of social impacts. These discussions simplify what are often quite complex and unique values and attitudes and the groupings presented here are by no means mutually exclusive. For example, many ranchers also participated in recreation activities. It is also worth noting that personal attitudes, interests, and values often change over time. The social analysis will cover the groups and individuals that are most likely to be affected by this plan.
- Regional economic impacts are estimated based on the assumption of full implementation of each alternative. The actual changes in the economy would depend on individuals taking advantage of the resource-related opportunities that would be supported by each alternative. If market conditions or trends in resource use were not conducive to developing some opportunities, the impact on the economy would be different than estimated herein.
- Resource specialists projected annual resource outputs based on the best available information and professional judgment. The purpose of the economic analysis is to compare the relative impacts of the alternatives and should not be viewed as absolute economic values.
- All timber harvested within the analysis area would be logged by logging contractors, not households.
- Estimated PSQ outputs by alternative in the economic analysis are based on the upper end of the PSQ ranges described in Chapter 2 by alternative.
- Timber harvested within the analysis area would be distributed among the following sectors: sawmills and planing mills (90 percent), wood preservation (other manufacturing) (2 percent), veneer, and ply-

wood (5 percent), and prefabricated wood buildings (3 percent).

- The ratios of harvest to jobs and income used to assess the impacts of the alternatives are based on statewide ratios developed for Montana by the University of Montana.
- Baseline recreation demand is assumed to increase by two percent per year.
- Recreation visits are assigned to different user groups based on primary use. This does not account for the fact that recreation visitors may engage in one or more activity as part of a visit. Overnight visitors, who camp on Butte Field Office lands, for example, are identified as camping only even though they may also be pursuing a number of other different recreation activities.
- Projected recreation visits are distributed among different types of visitors based on the results of National Visitor Use Monitoring surveys conducted for the Beaverhead-Deerlodge, Gallatin, and Helena National Forests.
- The ratios of recreation visits to jobs and income used to assess the impacts of the alternatives are based on national ratios developed through the Forest Service's National Visitor Use Monitoring program.
- Non salary-related expenditures made by the Butte Field Office are assumed to be allocated to different economic sectors based on data compiled for the Beaverhead-Deerlodge National Forest.
- Public health and safety issues would receive priority consideration in the management of public lands.
- Demand for safe visits will increase with increasing numbers of public land users.

### ***Social and Economic Analysis Methods and Issues***

- The analysis area for the social and economic analysis consists of the eight southwest Montana counties that include lands managed by the Butte FO: Beaverhead, Broadwater, Deer Lodge, Jefferson, Gallatin, Lewis and Clark, Park, and Silver Bow counties.
- Potential economic impacts are assessed using the Forest Economic Analysis Spreadsheet Tool (FEAST) developed by the USDA Forest Service Inventory and Monitoring Institute (IMI) in Fort Collins, Colorado. This model uses a Microsoft Excel workbook as the interface between user inputs and data generated using the IMPLAN input-output modeling system.
- The FEAST analysis assesses the economic impacts of the resource outputs projected under each alternative. Resource outputs in this context are the amount of a resource (e.g., timber volume, AUMs,

recreation visits, etc.) that would be available for use under each alternative. Average annual resource outputs were projected by resource specialists for each alternative for the planning period based on the best available information and professional judgment. Impacts to economic well-being are measured in terms of employment and labor income by resource area.

- Employment and labor income estimates developed for this analysis include direct, indirect, and induced economic effects. Direct employment would, for example, be generated in the logging and sawmill sectors. Additional employment would be generated as the affected logging and sawmill operations purchase services and materials as inputs ("indirect" effects) and employees spend their earnings within the local economy ("induced" effects).
- Non-market values, including natural amenities and quality of life, non-use values, and ecosystem services, are addressed under Effects Common to All Alternatives. Potential impacts are assessed in qualitative terms, as appropriate.
- Wildland fire suppression costs are addressed under Effects Common to All Alternatives. This section provides average fire suppression costs per acre by fire size class. These costs are not provided by alternative because it is not possible to predict the level of non-prescribed wildland fire that would occur under any of the alternatives.
- The social analysis assesses the potential effects of different management actions on potentially affected social groups. These groups were identified based on past studies in and around the planning area and the results of public scoping conducted for the Butte RMP. This analysis addresses the potential impacts of the alternatives based on the issues and concerns raised by these groups during the public scoping process. The analysis draws upon ongoing discussions between the BLM and potentially affected publics, as well as discussions with subject matter experts involved in other parts of the analysis. The analysis is primarily qualitative with potential impacts ranked by alternative. Quantitative measures, such as acres in protected areas, harvest volumes, and recreation visitation, are used, as appropriate.
- The environmental justice analysis presented under Effects Common to All Alternatives assesses the potential for the proposed alternatives to have disproportionately high and adverse human health or environmental effects on minority and low income populations. The fair treatment and meaningful involvement of people of all races, cultures, and incomes in this planning process is also considered.

## Tribal Treaty Rights

- The BLM will continue to consult with Native American Tribes on issues relating to tribal traditional cultural properties and values.
- Interest from the general public in historical tourism and from Native Americans for traditional uses and practices is expected to increase.
- The BLM, as a governmental agency, will maintain special government-to-government relationships with federally-recognized Indian Tribes. Members of the seven recognized tribes in Montana such as the Blackfoot Tribe of the Blackfoot Reservation, Confederated Salish and Kootenai Tribes of the Flathead Reservation, and others tribes exercise their tribal treaty rights such as hunting, fishing, and gathering on non-tribal federal lands including those managed by the Butte Field Office. Native American treaty rights such as game fishing, hunting large and small game, and gathering natural resources for subsistence, medicinal, and cultural purposes are expected to continue and increase in the future.

## EFFECTS ON RESOURCES

### AIR QUALITY

#### Effects Common to All Alternatives

Under all alternatives, anticipated impacts on air quality from other resources, resource uses, or programs would be negligible to minor. An exception would be during periods of time when smoke from prescribed or wildland fires temporarily exceed air quality standards. This short-term impact could be analysis-area wide depending on the weather, location, number, and intensity of the fire(s) burning. Other potential sources of particulate emissions within the analysis area include dust from travel on unpaved roads, and dust and exhaust from construction or development activities.

Reducing the amount of forest and woodland subject to high severity impacts from wildland fire events by thinning, forest product removal, and prescribed burning methods would reduce the severity and extent of wildland fires and maintain air quality at desired future conditions to protect human health and the environment.

Burning slash in conformance with state air pollution regulations would continue to maintain the desired future condition goal of ensuring BLM authorizations and management activities comply with local, state, and federal air quality regulations, requirements, and implementation plans.

Particulate emissions of both types (PM<sub>10</sub> and PM<sub>2.5</sub>) within the analysis area are commonly produced during prescribed burns, wildland fire, private debris burning, agricultural burning, slash burning, and wood burning stoves and fireplaces. All of these activities can result in

smoke and soot emissions. These emission situations are generally transitory and do not pose significant risks to human health because exposures can often be minimized or avoided. However, smoke from large fires, especially the fine particulate fraction (PM<sub>2.5</sub>), can traverse great distances, sometimes thousands of miles, and can impact visibility in nearby and even distant Class I areas. Air quality and visibility can also deteriorate locally due to temporary climatological air stagnation events. Vegetation and fuel management activities that reduce the severity and extent of wildland fire would reduce impacts on visibility and the release of fine particulates throughout great distances.

Management of all resource uses to meet the Land Health Standards for air quality would maintain compliance with requisite measures for Prevention of Significant Deterioration in Federal Class I areas, such as Yellowstone National Park.

Striving to meet state and federal air quality standards in the interest of protecting human health potentially impacted by fugitive dust emissions, and meeting air quality standards for fugitive dust emissions from hazardous materials, would continue to meet the desired future condition goal of ensuring BLM authorizations and management activities comply with local, state, and federal air quality regulations, requirements, and implementation plans.

Current data indicate that both the National and Montana ambient air quality standards are currently met throughout most of the analysis area with the exception of several urban non-attainment areas within the analysis area. These non-attainment areas are guided by the state and are not within the jurisdiction of the BLM. Current BLM management practices are adequately ensuring compliance with current regulations, will not further degrade non-attainment areas, and meet the desired future condition.

#### Effects of Alternative A

Smoke created from prescribed burning could have short-term impacts on air quality within the local airshed. However, these impacts would be minimized by burning under controlled conditions. Prescribed burns that reduce the extent and intensity of wildfires would benefit air quality. Wildfires can produce greater impacts than prescribed fire since they can occur in less desirable conditions which can create larger more severe fires, producing more smoke, over longer periods of time.

#### Effects of Alternative B

Due to an increase in area potentially treated by prescribed fire producing more smoke, this alternative could have more short term impacts to air quality than Alternative A. However, by treating more acreage under controlled conditions, this alternative would reduce the

risks associated with wildfires during which smoke impacts to air quality could be severe.

### Effects of Alternative C

Due to a reduction in area potentially treated, this alternative would result in less short term smoke related impacts than with Alternative A. However, by reducing the amount of fuels treated under controlled conditions, the risk of more **large, severe** wildfires would increase. The potential for smoke created from high severity wildland fire could be greater because this alternative treats the fewest acres for fuels reduction, leaving more acres available for high severity wildland fire.

### Effects of Alternative D

This alternative would result in impacts very similar to alternative A. However, where fires are allowed to burn for resource benefits there could be slightly more long-term negative impacts on air quality within the airshed.

## SOIL RESOURCES

### Effects Common to All Alternatives

The following discussion addresses key soil concepts that are fundamental to understanding the discussion of effects to soils.

The main characteristics for evaluating the overall condition of soils are soil/site stability and hydrologic function. Soil/site stability reflects the capacity of a representative site to limit redistribution and loss of soils (including nutrients and organic matter) by wind and water. Hydrologic function reflects the capacity of the site to:

- Capture, store, and safely release water from rainfall, runoff, and snowmelt;
- Resist a reduction in this capacity; and
- Recover this capacity following degradation.

The following processes can be influenced by management activities:

- Soil compaction results from vehicles, construction equipment, people, and animals traveling over trails or land. Compaction can lessen the amount of precipitation that can infiltrate into soil and increase runoff, erosion, and sedimentation – in turn decreasing soil/site stability and hydrologic function, as well as soil productivity and plant vigor and diversity.
- Interception of precipitation results when precipitation falls on vegetation. When vegetation is removed, precipitation falls directly on the soil. This can increase surface erosion and sedimentation, and decrease the amount of time between initial precipitation arrival and peak surface runoff – in turn decreasing soil/site stability and hydrologic function.

- Infiltration is the process of precipitation entering and traveling through soil. Infiltration reduces the peak runoff during precipitation events by extending the period of runoff after a precipitation event. Infiltration also filters precipitation and reduces erosion and sedimentation. Most importantly, infiltration provides for moisture availability, which allows for the continued development of the soil profile. If infiltration is reduced, runoff and erosion will increase and soil/site stability and hydrologic function – as well as soil moisture availability, soil productivity, plant vigor and diversity – will decrease.
- Runoff can affect the amount of erosion and sedimentation, as well as flooding – both onsite and off-site. If runoff is increased, all of these effects can increase and soil/site stability and hydrologic function—as well as moisture availability, soil productivity, and plant vigor and diversity—will decrease.
- Erosion and sedimentation affect soil/site stability and hydrologic function. Erosion and sedimentation can destabilize the surface and subsurface cohesion of the soil. Increased sediment entering water bodies’ increases turbidity, increases width-to-depth ratios, and consequently increases temperature and dissolved oxygen saturation levels, and creates an adverse habitat for aquatic animals and plants.

If not properly managed, ground disturbance (such as road construction, maintenance, and use; mining activities; vegetation management activities) can lead to erosion and sedimentation, with associated degradations in soil/site stability and hydrologic function, as well as soil productivity and plant vigor and diversity.

The physical, chemical, and biological processes that occur in rangeland soils supply plants with nutrients and water. Microorganisms in the soil break down plant litter, releasing nitrogen, phosphorus, and other nutrients essential for plant growth. The texture, structure, and porosity of soil determine how much rain is captured and how much runs off during a storm. Soils are storehouses of water and nutrients for plants to draw on when they need them. The soil is a living system that is inextricably linked to nutrient cycles, energy flows, and other ecological processes of rangeland ecosystems.

Of the three principal processes involved in soil degradation—physical, chemical, and biological—livestock grazing may impact soils physically or biologically. Livestock grazing can compact soils where trampling or excessive trailing occurs. Wind or water erosion of soils may be accelerated if insufficient litter or plant cover is left after the grazing season, or if plant composition is changed by grazing practices. Soil structure can be affected by livestock grazing if biological or physical soil crusts are excessively damaged. Overgrazing can reduce the amount of organic matter, the carbon storing ability, and the kinds and numbers of microorganisms living in soils.

The following qualitative analysis of effects to soils is based on soil information for the Butte Field Office and on professional judgment. Effects to soils described above would occur to varying degrees by RMP alternative relative to the amounts and types of proposed activities by alternative. References to “effects to soils” in discussions below by alternative relate to the specific effects described above. Proposed management of the following resources, resource uses, or programs would have no anticipated impacts on soil resources: air quality, cultural resource, fisheries, paleontology, special status species, visual resources, wildlife, ACECs, wild and scenic rivers, wilderness study areas, economics, environmental justice, Indian trust resources, and social.

On Decision Area lands, the primary locations where soil compaction is occurring are roads, trails, and livestock trails. Many Decision Area soils have too many rock fragments for compaction layers to form.

Historically, some Decision Area lands were grazed by livestock excessively, reducing litter and ultimately changing plant composition which led to accelerated soil erosion. Due to modified livestock grazing practices, the extent of these impacts have been reduced in recent decades. However, localized areas where livestock congregate, particularly watering sites, livestock trails, and riparian areas, still have soil impacts described above.

Restoring vegetative communities to more historic conditions would have long-term benefits to soil stability by re-establishing more natural rates of interception, infiltration, runoff, and erosion processes.

Ground disturbance associated with timber harvest, vegetation treatments and fire management activities would generate accelerated soil erosion in the short to mid-term, and could increase soil compaction. Project design measures for these activities would contribute to the protection of soil resources and meeting the desired future condition of maintaining stable soil. Meeting the desired future condition in the long-term with these treatments would contribute to properly functioning watersheds that support productive plant communities consistent with site potential in the long-term. Requiring all forest resource uses and silvicultural practices to meet or move toward meeting Land Health Standards would contribute to properly functioning watersheds and support productive plant communities consistent with site potential.

Implementation of prescribed burning, mechanical treatments, or other appropriate methods to restore desired ecological conditions to grassland and shrubland communities would contribute to soil stability and soil productivity in the long-term.

Wildland fires change the physical, chemical, and biological properties of the soil. Severity of the impact would depend on the fuel type, duration, and fire intensity. Severe wildland fires decrease soil infiltration rates, cause accelerated erosion, and remove some nutrients.

Reduction of the extent and severity of wildland fires through prescribed burns and forest thinning while following the Montana Forestry Best Management Practices (DNRC 2004b) would reduce negative impacts on soil from severe wildland fire in the long-term. Effects to soils would generally occur to a lesser extent in areas of prescribed burning than in areas of wildland fires.

Protective measures for riparian areas would contribute to the protection of soil resources and meeting the desired future condition. Streambank erosion would be reduced in riparian areas that achieve proper functioning condition. Riparian areas in proper functioning condition have plants whose root masses are capable of withstanding high flow events and preventing streambank erosion.

Monitoring riparian and wetland areas for proper functioning condition would provide information needed to apply appropriate mitigation measures to protect soil resources.

Implementation of the Standards for Rangeland Health and BMPs would improve plant vigor and litter accumulation causing beneficial changes in organic matter content, soil structure, permeability, and productivity. Impacts on soils from management of abandoned mines and hazardous materials could also be short term if reclamation were conducted in accordance with the National Oil and Hazardous Substance Pollution Contingency Plan. Implementation of the guidelines for livestock grazing under “Standards for Rangeland Health” would benefit soil resources.

Restricting livestock grazing on the river shoreline north of Homestead Pasture in the Sleeping Giant ACEC from Memorial Day weekend through Labor Day weekend could result in an improvement in streambank stability and soil infiltration capacity.

Meeting or moving toward meeting Land Health Standards when planning for travel management would benefit soil resources by minimizing soil erosion and closing or eliminating unneeded roads.

Road and trail construction would create areas with some short-term and potential long-term accelerated soil erosion. Accelerated soil erosion from road construction, maintenance, and use would be minimized and mitigated through the changes in travel planning and management practices.

Implementing BMP’s at recreation sites could help meet Land Health Standards and benefit soil resources by minimizing ground disturbance to the extent necessary at these sites.

Requiring that all new leases, permits, rights-of-way, and easements be permitted in a manner consistent with meeting Land Health Standards would benefit soil resources by mitigating construction-related impacts on soil stability.

BLM actions to reduce or prevent accelerated soil erosion, mass movement, and streambank instability would enhance soil stability. BLM actions that would contribute to properly functioning watersheds and support productive plant communities include soil stabilization management practices and actions that preserve soil organic material and prevent or reduce soil contamination and soil compaction.

### Effects of Alternative A

Treatment of up to 5,250 acres of grassland and shrubland habitat; up to 5,100 acres of dry forest; up to 2,400 acres of cool, moist forest; and up to 30 acres of riparian areas per decade to restore vegetation communities would subject these acres to increased soil erosion and in some cases soil compaction effects described above under Effects Common to All Alternatives. Short to mid-term adverse effects to soils would likely be greater than with Alternative C but less than with Alternatives B and D. Long-term benefits to soil resources associated with restored vegetative communities follow the same pattern with Alternative A having greater benefits than Alternative C, but less than Alternatives B and D.

In Alternative A, there would be no seasonal restrictions on when prescribed fire could be implemented if in prescription. There could potentially be times when prescribed fire occurs in the summer months which may have more negative effects on soils than if burning occurs in cooler, moister spring or fall months.

Alternative A provides for approximately 7,300 acres in Fire Management Unit (FMU) designation "A" where wildland and prescribed fire is not desired. Fuels reduction treatments on these acres would be by mechanical methods without the use of prescribed fire. Because prescribed fire would not be used in these areas, a greater degree of ground disturbance may occur during fuels reduction treatments than in areas with other FMU designations. Soils may be subjected to greater ground disturbance related effects. Fire suppression response in these areas may also lead to more ground disturbance and associated impacts to soils because wildland fire is not desired and suppression tactics may be more aggressive in nature than in areas with other FMU designations.

Overall, Alternatives A and D would have greater impacts to soils (described above under Effects Common to All Alternatives) associated with livestock grazing than either Alternatives B or C. Livestock grazing would occur on approximately 273,000 acres in Alternatives A and D, 265,000 acres in Alternative B, and 262,000 acres in Alternative C. Managing livestock grazing in the McMasters Hills, Spokane Hills, and Indian Creek allotments as available for general grazing permits in Alternative A would impact soil resources greater than in Alternatives B and C, but the same as in Alternative D.

Alternative A allows for general grazing permits in eight allotments (Centennial Gulch, Free Coinage, Alder Creek, Charcoal Mountain Custodial, Dickie, Maiden Rock Custodial, Quinn Creek, and Wineglass Mountain) where grazing would not be allowed in either Alternatives B or C. With the exception of the Centennial Gulch allotment, these other allotments are generally on steep, forested terrain. Livestock use in these allotments would likely be transitory with relatively few soils impacts associated with them. With the continued implementation of Rangeland Health Standards, impacts to soils in the Centennial Gulch allotment would likely be limited to riparian, trailing and congregation areas.

Under current conditions (Alternative A), approximately 172 miles of motorized routes mapped on the BLM transportation system would remain closed. Impacts to soil resources described above under Effects Common to All Alternatives would reduce over time on these routes as they revegetate and soils stabilize.

The Controlled Surface Use (CSU) stipulation for oil and gas exploration and development on slopes greater than 30 percent on non-Boulder Batholith soils, or greater than 20 percent on Boulder Batholith soils, or areas of mass wasting would be in effect on 249,137 acres Decision Area-wide. Under Alternative A, soils on approximately 120,133 of these acres would be even more protected by overlapping NSO stipulations or No Lease areas, leaving about 129,004 acres protected by the CSU stipulation.

Other effects of Alternative A are described under Effects Common to All Alternatives.

### Effects Common to Action Alternatives

Implementation of a vegetation restoration program incorporating commercial harvests of forest products would contribute to soil stabilization in the long-term. Treatment of dry forest types and conifer-encroached grasslands and shrublands should reduce the soil erosion occurring in juniper dominated habitat types by increasing grass and shrub communities which would reduce the amount of bare ground. Redesigning, closing, or decommissioning roads that do not meet Land Health Standards could benefit soil resources by reducing soil erosion and compaction.

Consideration of habitat type, soils, fuel conditions, project objectives, and risk when planning prescribed fire would mitigate impacts on soil from burning.

Sites dominated by noxious weeds tend to have greater soil erosion than sites dominated by native vegetation. Active public education efforts and vegetation restoration activities proposed in Alternatives B, C, and D to control noxious weed spread could benefit soil resources by minimizing the spread of noxious weeds.

Provisions for erosion control through road management decisions would be more protective than existing requirements. Requiring road management activities to

meet, or move toward meeting Land Health Standards, including minimizing road and landing locations in RMZs; minimizing sediment delivery to streams from road surfaces; outslipping roadway surfaces where possible, and routing road drainage away from potentially unstable stream channels, fills and hillslopes would result in the protection of soil resources. Changes in designations from “Open” to “Closed” or “Limited” for routes that have accelerated soil erosion would benefit soil resources.

Requiring that relinquished allotments be subject to the maintenance of riparian values before re-offering the allotment for permit or lease would increase the likelihood that allotments adversely affecting water resources would not be reissued, or would be reissued with additional soil stability protection requirements.

Reseeding of disturbed areas where needed would contribute to soil stability.

Requiring the application of BMPs to minimize overall environmental impacts when issuing land use authorizations could improve soil stability through erosion control measures.

Watershed restoration projects designed to meet riparian standards would positively affect soil resources by moving toward proper functioning condition for riparian areas.

Change of existing travel management designations from “Open” to “Limited” for some roads in the Elkhorn Mountains, the warm-up area in the Whitetail-Pipestone area, and a portion of the 450-acre Radersburg OHV use area would result in the reduction of use intensity of some roads. This could have positive effects on soil stability through reduction in land use intensity and a lessening of effects to soils associated with ground disturbance described above under Effects Common to All Alternatives.

Continued route evaluations for site-specific TPAs using a repeatable, systematic process could result in the closure of additional roads exhibiting accelerated soil erosion.

Reduction of soil mass movement from burned areas, aboveground disturbances (primarily roads), and accelerated streambank erosion would positively impact soil resources by stabilizing soils.

Requiring erosion protection practices maintain, protect, or minimize disturbances to resources for all mineral operations would reduce the impact of surface disturbance on soil stability.

## Effects of Alternative B

Treatment of up to 11,800 acres of grassland habitat; up to 3,650 acres of shrubland habitat; up to 14,750 acres of dry forest; up to 3,750 acres of cool, moist forest; and up to 700 acres of riparian areas per decade to restore vege-

tation communities would subject these acres to increased soil erosion and in some cases soil compaction effects described above under Effects Common to All Alternatives. These short to mid-term adverse effects to soils would be greater under Alternative B than under Alternatives A and C, but less than under Alternative D. Long-term benefits to soil resources associated with restored vegetative communities would be greater under Alternative B than either Alternatives A or C, but less than under Alternative D.

In Alternative B there would be seasonal restrictions on when prescribed fire could be implemented, generally limiting application of prescribed fire to cooler, moister spring and fall months. This would lead to cooler, less severe prescribed burns, and could limit adverse effects on soils compared to Alternatives A and D where no seasonal restrictions would be applied. .

Overall, Alternative B (grazing on approximately 265,000 acres) would have greater impacts to soils associated with livestock grazing than Alternative C (approximately 262,000 acres), but less than Alternatives A and D (approximately 273,000 acres). Managing livestock grazing activities in the McMasters Hills, Spokane Hills, and Indian Creek allotments as forage reserve allotments in Alternative B would impact soil resources less than in either Alternatives A or D where they would be managed as available for general grazing permits. Alternative B would pose a greater impact to soils in the Indian Creek allotment than Alternative C in which the Indian Creek allotment would be unavailable for grazing but where McMasters and Spokane Hills allotments would be managed as forage reserve allotments as in Alternative B.

There would be no impacts to soils from livestock grazing in the Centennial Gulch, Free Coinage, Alder Creek, Charcoal Mountain Custodial, Dickie, Maiden Rock Custodial, Quinn Creek, and Wineglass Mountain allotments in Alternative B as these areas would be unavailable for grazing. Alternative C manages these areas the same as Alternative B and would therefore also have no livestock grazing-related impacts. Alternatives A and D would manage these areas as available for general grazing permits and would have livestock grazing-related erosion and compaction impacts associated with them in these areas.

Alternative B would close or decommission approximately 371 miles of routes in the Decision Area currently open to use by motorized vehicles, the second most of any alternative. This reduction in ground disturbance should reduce soil erosion more than in Alternatives A and D, but less than in Alternative C.

Requiring weed and erosion control practices in burned areas having documented sedimentation where sedimentation is definitively impacting adjacent streams would minimize accelerated erosion resulting from loss of deep-rooted vegetative cover. This would be more pro-

tective of soil resources than Alternatives A and D, but less than Alternative C where any accelerated erosion in burned areas would be treated.

Allowing new roads and facilities for mining operations inside Riparian Management Zones only when an alternative does not exist would provide additional riparian soil protection beyond that provided in Alternatives A and D, but less than in Alternative C where no roads or facilities would be permitted in RMZs.

The Controlled Surface Use (CSU) stipulation for oil and gas exploration and development on slopes greater than 30 percent on non-Boulder Batholith soils, or greater than 20 percent on Boulder Batholith soils, or areas of mass wasting would be in effect on 249,137 acres Decision Area-wide. Under Alternative B, soils on approximately 112,585 120,133 of these acres (7,548 fewer acres than under Alternative A) would be even more protected by overlapping NSO stipulations or No Lease areas, leaving about 136,552 acres protected by the CSU stipulation.

Overall, Alternative B would pose more impacts to soil resources than Alternative C, but less than Alternatives A or D.

### Effects of Alternative C

Treatment of up to 2,000 acres of grassland habitat; up to 750 acres of shrubland habitat; up to 4,800 acres of dry forest; up to 550 acres of cool, moist forest; and up to 200 acres of riparian areas per decade to restore vegetation communities would subject these acres to increased soil erosion and in some cases soil compaction effects as described under Effects Common to All Alternatives. These short to mid-term adverse effects to soils would be the least of all alternatives, but long-term benefits to soil resources associated with restored vegetative communities would be less in Alternative C than in any other alternative.

In Alternative C there would be seasonal restrictions on when prescribed fire and mechanical treatments could be implemented if in prescription. This could limit the effects on soils due to burning in the spring and fall when soil moisture is not as limited. It could also have the reverse effect with mechanical treatment by only allowing treatments in the spring or fall when the ground is wet and may cause more soil disturbance.

Alternative C has approximately 41,000 acres in the FMU designation "A" where wildland and prescribed fire is not desired. Fuels reduction treatments on these acres would be by mechanical methods without the use of prescribed fire. Because prescribed fire would not be used in these areas, a greater degree of ground disturbance may occur during fuels reduction treatments than in areas with other FMU designations. Soils may be subjected to greater ground disturbance related effects. Fire suppression response in these areas may also lead to more ground disturbance and associated impacts to soils

because wildland fire is not desired and suppression tactics may be more aggressive in nature than in areas with other FMU designations.

Prohibiting timber harvests in Riparian Management Zones in Alternative C would prevent some ground disturbing activities that could result in soil instability. Alternative C would more likely result in greater soil protection in riparian areas than Alternatives A, B or D.

Restricting firewood cutting to beyond 200 feet of live streams and 100 feet of intermittent streams would provide for the most down woody material as long-term nutrients for soils in riparian areas compared to any other alternative where firewood management is less restrictive (100 feet beyond live streams, 50 feet beyond intermittent streams in Alternatives B and D, SMZ law guidance in Alternative A).

Impacts to soils from livestock grazing would be slightly less in Alternative C than in Alternative B because three allotments (Indian Creek, Dog Paw, Sixmile Park County) available as either forage reserve allotments or for general grazing permits in Alternative B would not be available for grazing in Alternative C. All of these allotments would be available for general livestock grazing permits in Alternatives A and D and would therefore have soil impacts associated with them in these alternatives. Alternative C poses the least impacts to soils due to livestock grazing of all the alternatives.

Alternative C would close or decommission approximately 425 miles of routes currently open to use by motorized vehicles. This reduction in ground disturbance associated with motorized routes would reduce impacts to soils more than in any alternative.

Requiring weed and erosion control practices in burned areas having accelerated soil erosion would be more beneficial to soil resources than any other alternative where weed and erosion control practices would not necessarily be required (Alternatives A and D), or would only be required where sedimentation is observed to be impacting adjacent streams (Alternative B).

Under Alternative C new roads and facilities associated with mining operations would not be allowed in Riparian Management Zones. This would be more protective of riparian soils than any other alternative where mining-related roads and facilities could be constructed in riparian areas under certain conditions.

The Controlled Surface Use (CSU) stipulation for oil and gas exploration and development on slopes greater than 30 percent on non-Boulder Batholith soils, or greater than 20 percent on Boulder Batholith soils, or areas of mass wasting would be in effect on 249,137 acres Decision Area-wide. Under Alternative C, soils on approximately 234,076 of these acres would be even more protected by overlapping NSO stipulations or No Lease areas, leaving about 15,061 acres protected by the CSU stipulation. In the context of oil and gas exploration and

development, Alternative C would pose the least impact to soils of all alternatives.

Overall, Alternative C would be the most protective and would create the least impacts on soils.

## Effects of Alternative D

Treatment of up to 19,100 acres of grassland habitat; up to 6,800 acres of shrubland habitat; up to 18,200 acres of dry forest; up to 5,050 acres of cool, moist forest; and up to 1,700 acres of riparian areas per decade to restore vegetation communities would subject these acres to increased soil erosion and in some cases soil compaction. These short to mid-term adverse effects to soils would be greatest of all alternatives, but long-term benefits to soil resources associated with restored vegetative communities would also be greatest in Alternative D of all alternatives.

In Alternative D there would be no seasonal restrictions on when prescribed fire could be implemented if in prescription. There could potentially be times where prescribed fire occurs in the summer months which may have more effects on soils than if burn projects were implemented during cooler, moister spring or fall months.

Under Alternative D, allowing timber harvest in streamside management zones would be the same as under Alternative A (implementing streamside management zone BMPs) and would result in no additional protection to soil resources. Alternative D would be less protective than Alternatives B and C to soils in riparian areas.

Impacts to soils associated with livestock grazing would be the same as described for Alternative A.

Alternative D would close or decommission approximately 310 miles of routes currently used by motorized vehicles. This reduction in ground disturbance would reduce soil erosion more than in Alternative A, but less than in Alternatives B and C.

The Controlled Surface Use (CSU) stipulation for oil and gas exploration and development on slopes greater than 30 percent on non-Boulder Batholith soils, or greater than 20 percent on Boulder Batholith soils, or areas of mass wasting would not be in effect under Alternative D. Under this alternative these areas would be protected by standard lease terms and would be subject to greater potential soils impacts than under any other alternative.

Overall, Alternative D would create the greatest amount of impacts to soil resources of the action alternatives.

## WATER RESOURCES

### Effects Common to All Alternatives

Under all alternatives the BLM would strive to maintain or restore water quality to levels that fully support all achievable beneficial uses. However, water quality could still vary considerably while still meeting water quality

standards. The following discussion describes potential water quality impacts that could occur following the implementation of any of these alternatives.

Water Quality is highly dependent on stream form and function. Key factors include stream flow characteristics, sediment characteristics, channel gradient, channel geometry, bank stability, floodplain connectivity, and channel and floodplain roughness. All of these factors should be able to function naturally and be characteristic of the local soil type, climate, and landform. Key characteristics of functioning streams include the following:

- Willows or other native woody vegetation should be present on those sites that are capable of supporting these life forms. In addition, sedges or other wetland/riparian species should be present on sites capable of supporting these plants. These locally adapted plants provide substantial root strength and are very effective at maintaining bank stability, trapping and filtering sediments, and filtering nutrients and fecal contamination. This vegetation should be vigorous and diverse.
- Riparian ground cover should be present at near natural levels. This would minimize the amount of exposed soils and the likelihood that these soils would wash into streams during precipitation events. A high level of ground cover would also increase sediment, nutrient, and bacterial filtration and prevent these materials from washing into the streams following hillslope and valley bottom disturbances.
- The stream water surface should have a high degree of shading, resulting in cooler water in summer and reduced icing in winter.
- Portions of the primary floodplain should be frequently flooded (inundated every 1 to 5 years).

By managing riparian areas and wetlands to be at, or moving towards, proper functioning condition (PFC), there should be improvements in water quality. For example, if a reach has a declining or static trend we'd expect sediment production (or nutrient, bacterial, and thermal inputs) to stay at or exceed current levels. Using the same logic, if trends were improving we'd expect lower levels of these pollutants. This is because improving trends suggests that banks are stabilizing and producing less sediment. In addition, since the condition of riparian vegetation and stream banks can both be used to indicate how much time livestock spends in or adjacent to streams, they can also be used to evaluate potential nutrient and bacterial inputs. If trends are improving, it is likely livestock are spending less time by water bodies and inputs of pollutants are decreasing.

Water quality is often influenced by processes and activities that take place in upstream areas of the drainage basin. In a natural system, the water quality of headwater areas depends mainly on the mineral composition of the

local geology as well as the types of rock and sediments that groundwater passes through on its way to the stream. Farther downstream, water quality becomes more influenced by land use and land management activities, including discharges from both point and non-point sources. Land management activities have the potential to affect the following key attributes: sediment, temperature, nutrients, pathogens, and dissolved oxygen.

Sediment is generated when soils are disturbed and then delivered to a water body. High concentrations of suspended sediment can cause many adverse consequences, including the following:

- Increased turbidity or impaired water clarity,
- Reduced light penetration,
- Reduced ability of predators that rely on sight to capture prey,
- Clogged gills of fish and aquatic invertebrates,
- Reduced fish spawning success,
- Reduced survival of juvenile fish

Other impacts such as smothering the benthic community and changes in the composition of the bed substrate could result when sediment is deposited in slow-moving receiving waters. Suspended sediment is also an efficient carrier of toxic organic substances and trace metals because these substances can bind to sediment particles. Once sediment falls out of suspension, pollutants in enriched bottom sediments can pose a risk to benthic life and the aquatic food chain.

In areas starved of sediment, increases in sediment can benefit channel geomorphology and development of aquatic habitat by creating spawning habitat and sites for vegetation to become established. Thus, not all sediment effects are negative.

Elevated water temperatures can substantially affect organisms adapted to a cold water environment. A rise in water temperature of only a few degrees over ambient conditions can reduce the number of or eliminate sensitive invertebrates and fish. Large daily fluctuations in temperature can also result in adverse effects.

Nutrients are needed for photosynthesis for supporting the requirements of organisms at higher trophic levels. In freshwater aquatic systems, the main nutrients are phosphorus and nitrogen. In particular, phosphorus is a controlling factor on photosynthesis in aquatic systems. High concentrations can stimulate the growth of plants and algae. Excessive growth of plants and algae can do the following:

- Reduce the aesthetic appeal of the water for recreational users,
- Clog the habitat used by other aquatic organisms,
- Cause large daily swings in dissolved oxygen concentrations, and

- Cause other nuisance conditions.

Waterborne pathogens could result in various adverse effects on warm-blooded animals drinking the water and even some possible adverse effects on human contact recreation activities. The main indicator of pathogens is the presence of coliform bacteria, which are microorganisms that live in the intestines of both warm- and cold-blooded animals, including humans. These bacteria enter the hydrologic system through fecal material that enters into water bodies. The presence of fecal coliform can also show that other harmful bacteria or viruses might be present. Fecal coliform bacteria in water bodies on BLM-administered lands are usually a result of non-point sources of human and animal waste (both domestic animals and wildlife).

The amount of oxygen that can be dissolved in water differs with temperature. Cold water can contain more dissolved oxygen than warm water. The amount of dissolved oxygen present in relation to the amount that could be dissolved at a given temperature is referred to as the saturation level. Decomposition of organic matter by microorganisms depletes levels of dissolved oxygen in slow-moving receiving waters and lakes and reservoirs. When dissolved oxygen levels drop too low, waters can become uninhabitable for aquatic organisms and might result in fish kills. Factors resulting in increased dissolved oxygen levels include the following:

- Physical mixing and agitation of the water (aeration),
- Photosynthetic production of oxygen by aquatic algae and plants, and
- Lower water temperatures.

The vegetative structure of communities dominated by noxious weeds is often less effective at providing protective ground cover than those dominated by native vegetation. Therefore, uplands or riparian areas dominated by noxious weeds will often see increases in erosion and sediment production. Noxious weed-dominated communities are also less effective than native communities at providing bank stability and sediment and nutrients filtration. The following effects are specific to these alternatives and would occur. Proposed management of the following resources or programs would have no anticipated impacts on water resources: cultural resources, paleontology, visual resources, wilderness study areas, economics, environmental justice, Indian trust resources, social and economic environment, and tribal treaty rights.

Requiring actions on Decision Area lands to be consistent with Land Health Standards (designed to prevent non-point source water pollution) would positively affect water resources. The degree to which water resources would benefit depends on the site's physical and ecological potential, the required management practices, and the extent of use restrictions.

Of the 346 miles of riparian vegetation along rivers and streams in the Decision Area, 150 miles are in proper functioning condition (43%), 147 miles are functioning at risk (42%), 40 miles are non-functional (12%), 1 mile is unknown (<1%), and 8 miles are woody draws (2%). Actions that contribute toward achieving proper functioning condition for riparian areas would positively impact water quality as noted in the discussion above on stream form and function.

Ground disturbance associated with road construction, vegetation or fuel treatments, livestock grazing, watershed restoration, recreation site development, and small scale minerals operations would have the potential to create short to mid-term impacts to water quality as described above (primarily from sediment). However poorly placed livestock facilities, poorly located roads and trails, ongoing road use and maintenance, and large scale minerals operations would have the potential for long-term impacts (primarily from sediment) as described above.

Roads and trails in riparian areas could produce long-term sediment impacts and could also alter the physical stream channel. By evaluating existing roads and trails for conformance to Land Health Standards, and closing those that are substantially contributing to non-conformance, there could be a long-term sediment reduction. This could produce a moderate to major long-term benefit to water quality.

Road or bridge construction and maintenance is the most frequently listed (303d list) cause for water impairment in the Planning Area (on BLM). Requiring road management to meet, or move toward meeting, Land Health Standards would further protect or improve water resources. This is especially true in watersheds that contain streams impaired due to road construction and maintenance. On Butte FO managed lands, approximately 35 miles of stream segments are listed due to road-related activities. These stream segments are within the following watersheds: Big Hole River (18 miles), Jefferson River (4.9 miles), Boulder River (3.7 miles), and the Upper Missouri River (8.8 miles).

Reducing the backlog of identified deferred road maintenance projects could contribute to the reduction of pollutants to surface water from erosion.

The development of silvicultural practices to contribute to meeting Land Health Standards would positively affect water quality by moving toward, and maintaining proper functioning condition of drainages or watersheds from a water, sediment, and nutrient routing perspective

The use of State of Montana BMPs to address non-point source water pollution and compliance with the Montana Water Quality Act would provide protection to water resources. Specific projects would be reviewed on a case-by-case basis to mitigate impacts to water quality and to minimize potential impacts to public health, safety, recreation, wildlife, birds, fish, and livestock. The

level of protection would depend on the needs of the resource at risk and the extent to which the BLM is a land manager in a given watershed.

Collaboration with the MDEQ and local communities in the development of Water Quality Restoration Plans and Source Water Protection Plans could contribute to the restoration of up to 77.3 miles of impaired river segments in the Decision Area. The degree to which water resources would benefit would depend on the level of participation by the BLM, MDEQ, and watershed groups; as well as plan implementation, monitoring, and enforcement.

Watershed restoration projects designed to meet riparian standards would positively affect water quality by moving the watershed and riparian areas towards proper functioning condition.

Use of emergency fire rehabilitation funds to protect water resources could help maintain water quality by reducing sedimentation. This includes reducing sediment delivery from soil mass movements, surface erosion, and accelerated streambank erosion.

On abandoned mine lands the implementing of reclamation projects would benefit water quality by reducing heavy metal concentrations. On Butte FO managed lands approximately 49 miles of stream segments are listed due to AML-related sources. These stream segments are within the following watersheds: Big Hole River (10.7 miles), Jefferson River (2.9 miles), Boulder River (11.5 miles), Upper Missouri River (22 miles), and the Blackfoot (1.9 miles).

Assessment of proposed mine waste repositories to determine potential impacts on soil and water resources would provide additional protection to water resources if proposed repositories are required to adhere to BMPs adequately protective of water resources.

Maintaining existing water rights to ensure water availability for multiple-use management and proper functioning riparian and upland areas would reduce dewatering of surface water. This is important as pollutant concentrations and routing is dependent on flows.

Requiring users to obtain all necessary permits pertaining to water quality, wetlands and streams, and managing rivers to maintain sufficient flows and water quality to comply with the MDEQ Water Quality Standards would provide additional protection of water resources.

Some potential exists for contamination of subsurface aquifers during oil and gas drilling and production operations. This potential is mitigated by the casing and cementing requirements of Federal Onshore Oil and Gas Order No.2. This order specifies that all usable water zones must be protected. Protection involves setting and cementing casing through usable water producing sections encountered during drilling. All oil and gas wells are required to have cement placed in the annulus to ensure no cross-contamination of the aquifers. This

would prevent drilling fluids, as well as fluids and gases from other formations encountered in the wellbore from contaminating aquifers. This measure, when properly completed, adequately mitigates the anticipated impacts to ground water. The BLM reviews, and modifies as needed, each proposed drilling program to determine the adequacy of the casing and cementing program. A cement bond log may be required to verify the integrity of the cement.

Operators of onshore federal and Indian oil and gas leases must comply with Onshore Order No. 7 prior to disposal of produced water. Produced water is often highly saline and the potential exists for contamination of surface and ground water, soil and vegetation. The Onshore Order provides requirements and standards for the protection of surface and subsurface resources. Injection wells that are used to dispose the produced water must be approved by the Montana Board of Oil and Gas Conservation under the Underground Injection Control program. Information submitted in support of obtaining a underground injection control permit is accepted by the BLM in approving the disposal method, provided the information submitted in support of obtaining such a permit satisfies all applicable BLM statutory responsibilities and relevant requirements (including but not limited to drilling safety, down hole integrity, and protection of mineral and surface resources). Migration of produced water from the intended disposal zone and leakage to a usable water zone could occur upon failure of the casing and the equipment used to isolate the disposal zone (tubing and packer). There are numerous standards to insure that underground injection wells do not result in pollution of usable water sources, including periodic pressure testing of well casing, tubing, and packers to confirm integrity of the system and isolation of disposal zones.

Plugging programs for abandoned wells are designed to secure the well bore and prevent contamination to mineral or water bearing formations. Cement is pumped into the wellbore to seal any perforations. Cement is also pumped into the wellbore at certain formations to act as plugs to prevent migration of any fluids or gases that might enter the wellbore.

The Fluid Minerals Appendix (**Appendix M**) includes a more complete description of drilling operations, disposal of produced water and abandonment procedures, and the measures employed to protect usable water.

Striving to meet state and federal water quality standards in watersheds impacted by historic mining would move water resources toward proper functioning condition.

## Effects of Alternative A

The treatment of up to 5,250 acres of grassland and shrubland habitat; up to 5,100 acres of dry forest; up to 2,400 acres of cool, moist forest; and up to 30 acres of riparian areas per decade to restore vegetation communities could result in increased soil erosion and in some

cases, localized and minor short term sediment impacts (as described above in Effects Common to All Alternatives). However, there should be long-term benefits, as restored vegetative communities would lead to a more natural ground cover and reduced fuel loadings (lowering the risk of damaging high severity fires).

To reduce potential short term impacts associated with vegetative treatments, these actions would be subject to the Montana Streamside Management Zone (SMZ) Act. This law places restrictions on activities within 50 feet of streams with sideslopes less than 35 percent and 100 feet on streams with sideslopes greater than 35 percent. While the SMZ regulations would offer water quality protection, some vegetation removal could still occur within these areas. These disturbances could cause minor increases in water temperature; decreases in the amount of woody material delivered to the stream, and could cause local stream bank disturbances. These impacts would be partially mitigated through the implementation of site specific BMPs.

Livestock grazing would continue on approximately 273,000 acres. This could lead to additional inputs of sediment, nutrients, fecal contamination, and thermal loading. However, these inputs should be reduced (from current levels) through the implementation of grazing practices designed to ensure that riparian areas are either properly functioning or seeing improving trends.

Under current conditions (Alternative A) approximately 172 miles of motorized routes, mapped on the BLM transportation system, would remain closed (665 miles of roads and trails open to motorized use). Over time, erosion and sediment delivery would likely be reduced as these closed routes revegetate and soils stabilize.

Generally, road density is an indicator of overall watershed health and function. Watersheds with higher road densities tend to have lower water quality due to greater potential for erosion and subsequent sedimentation. Road density also is related to the distribution and spread of noxious weeds. Of all the alternatives, Alternative A maintains the most acres in high density roads (107,566 acres with greater than 2 mi/mi<sup>2</sup> road density) and the fewest acres in low density roads (116,236 acres with less than 1 mi/mi<sup>2</sup> road density).

Motorized routes within 300 feet of streams generally have greater potential to impact water quality through erosion and sedimentation, increased water temperatures (due to loss of shading vegetation), and direct alteration of stream channel morphology than those farther away. Under Alternative A, approximately 94.3 miles of motorized routes within 300 feet of streams would remain open to motorized use Decision Area-wide. This is the highest of any alternative and represents the greatest threat to water quality associated with motorized routes.

The continual unrestricted year-long motorized fording of the Big Hole River to access Sawlog Gulch would cause the most water quality impacts at this site relative

to any other alternative. However, this would be a localized short term impact

Managing to maintain Wild and Scenic River eligibility on all four eligible river segments (12 miles total in Upper Big Hole River, Upper Missouri River, Moose Creek, and Muskrat Creek) would likely improve water quality protection in these segments by limiting activities within a ¼-mile corridor on either side of each stream or river.

Continuing stream restoration activities associated with past mining and grazing would contribute to the general improvement of water resources. While these activities could produce short term impacts (sediment production) the long-term benefits derived from restoring natural function would outweigh these impacts.

Mineral operations permits would stipulate requirements and BMPs necessary to avoid or minimize adverse effects on water resources from structures, support facilities, and roads developed in relationship to mining activities.

Mitigating impacts to the extent possible on natural resources from extraction or salable minerals from previously disturbed sites would contribute to the maintenance of water resource quality in the vicinity of quarry or collection sites.

In the context of oil and gas development, Alternative A stipulates No Surface Occupancy within 500 feet of reservoirs, lakes, ponds and intermittent streams, or within 1,000 feet of perennial streams and rivers. This would minimize effects to water quality by requiring large buffers to aquatic features.

There are approximately 146,477 acres of federal mineral estate in the following municipal watersheds: Missouri River Siphon, Tenmile Creek Drainage, Big Hole River Intake, and Moulton Reservoir. The Reasonably Foreseeable Development scenario (RFD) for oil and gas development identified five sub-areas within the federal mineral estate where oil and gas exploration and development would most likely occur. The combined area of these sub-areas is approximately 116,295 acres. Of this total acreage, approximately 11,784 acres are located within the municipal watersheds listed above. All of these acres are located in the Missouri River Siphon municipal watershed. Under Alternative A, standard lease terms would apply in municipal watersheds that would allow relocation of proposed activity up to 200 meters (656 feet) to protect water quality.

### **Effects Common to Action Alternatives**

Managing riparian areas to provide the amount and distribution of large, woody material characteristic of natural aquatic and riparian ecosystems would help dissipate stream energy associated with high water flow, thereby reducing erosion and improving water quality. Riparian area management would also contribute to sediment filtering, capturing bedload, and aiding in

floodplain development. Improvements in floodwater retention and ponding would also contribute to groundwater recharge.

Cooperating with federal, tribal, and state wildlife management agencies and private landowners to identify activities that adversely affect water quality would beneficially impact water resources by providing BLM with a better understanding of resource use effects on water resources.

The opportunistic enhancement or restoration of habitat for westslope and Yellowstone cutthroat trout, Arctic grayling, and other special status aquatic species would benefit water resources by increasing stream channel complexity thereby making streams more resilient in high flow events, and stabilizing streambanks where needed.

Locating and maintaining roads to reduce sedimentation and restore or maintain riparian vegetation would benefit surface water resources.

The change of existing travel management designations from “Open” to “Limited” for some areas in the Elkhorn Mountains, the warm-up area in the Whitetail-Pipestone area, and a portion of the 450-acre Radersburg OHV use area would result in the reduction of cross-country motorized use. This could have a positive effect on water quality through reduction in land use intensity, reduction of sedimentation, and other pollutants to surface water.

Continued route-by-route evaluations for site-specific TPAs using a repeatable, systematic process could result in the closure of additional roads exhibiting accelerated soil erosion, which could reduce the amount of sedimentation to surface water.

Closing the Humbug Spires Potential ACEC yearlong to all motorized travel, prohibiting the construction of new roads and trails, and mitigating erosion on the existing trails would provide additional protection to surface water resources from sedimentation.

Restrictions to livestock grazing along the river shoreline north of Homestead Pasture in the Sleeping Giant ACEC from Memorial Day weekend through Labor Day weekend would provide additional protection to surface water resources in this area from sedimentation, loss of riparian vegetation and nutrient and bacterial loading.

Prohibiting the extraction of salable minerals from the Humbug Spires Potential ACEC would reduce the likelihood of vegetation loss, road construction and use, and other activities that could result in sedimentation impacts to water quality.

The No Surface Occupancy stipulation for oil and gas exploration in wetlands, floodplains, and riparian areas would prevent direct impacts to water quality and would protect water quality. Standard Lease Terms would also apply in which locations of exploration facilities could be relocated up to 200 meters to avoid impacting water

quality. This would afford a similar level of water quality protection on lakes, ponds, reservoirs, and intermittent streams as Alternative A, but would generally be less protective than Alternative A on perennial streams and rivers. However, under specific alternatives additional NSO stipulations of various widths to protect streams with sensitive fish species and blue ribbon fisheries values would provide more protection of rivers and some streams than under Alternative A.

Monitoring water quality to establish baseline conditions, identifying areas of concern, and documenting progress from mitigation measures would enable land stewards to track impacts from resource uses and the effectiveness of BMPs on water quality.

## Effects of Alternative B

While all alternatives would meet, or strive to meet, state water quality standards, Alternative B would produce better water quality than would Alternative A.

The treatment of up to 11,800 acres of grassland habitat; up to 3,650 acres of shrubland habitat; up to 14,750 acres of dry forest; and up to 3,750 acres of cool, moist forest per decade to restore vegetation communities could result in increased soil erosion and in some cases, localized and minor short term sediment impacts (as described above in Effects Common to All Alternatives). However, there should be long-term benefits as restored vegetative communities would lead to a more natural ground cover and reduced fuel loadings (lowering the risk of damaging high severity fires). These long-term benefits would be greater than those generated under Alternatives A and C, but less than those under Alternative D.

The establishment of Riparian Management Zones (RMZs), areas where the management emphasis would be on maintaining and restoring riparian processes, would increase water quality protection, when compared to Alternatives A and D. These RMZs are both wider and more protective than SMZs (used in alternatives A and D), as SMZs only apply to vegetative treatments. This could improve all aspects of water quality.

To achieve the maintenance and restoration of riparian function, mechanical treatment of up to 700 acres of riparian areas per decade could occur. This might create minor short-term sediment impacts (as noted under Effects Common to All Alternatives). However, improving the function of riparian areas would produce several long-term benefits to water quality. These long-term benefits would be greater than in Alternatives A and C (30 acres and up to 200 acres per decade, respectively), but less than in Alternative D (up to 1,700 acres per decade).

Overall, grazing related water quality impacts would be slightly reduced from alternative A (and also lower than Alternative D) because the McMasters Hills, Spokane Hills, and Indian Creek allotments would be managed as

forage reserves rather than as general grazing areas. The total amount of lands grazed (265,000 acres) would also be lower than Alternatives A and D (273,000 acres).

There would be no impacts to water quality from livestock grazing in the Centennial Gulch, Free Coinage, Alder Creek, Charcoal Mountain Custodial, Dickie, Maiden Rock Custodial, Quinn Creek, and Wineglass Mountain allotments in Alternative B as these areas would be unavailable for grazing. This would represent a reduction in grazing related impacts from alternative A (and D) and an improvement in water quality. Overall, grazing related improvements would be slightly less than those achieved under Alternative C.

Under Alternative B aerial application of herbicides to treat noxious weeds would not occur within a minimum of 100 feet of streams or wetlands. This measure would be more protective of water quality than Alternative A (no protection), and less protective than Alternative D (no spray within 200 feet) and Alternative C (no aerial application of herbicides at all).

Actions by the BLM to ensure that water quality protection provisions are followed when permitting activities would positively impact water quality.

Alternative B would close or decommission approximately 371 miles of routes in the Decision Area currently open to use by motorized vehicles, the second most of any alternative. This reduction in ground disturbance would reduce soil erosion and should produce a moderate to high long-term benefit to water quality (compared to the current conditions).

Alternative B would provide more acres of low density roads across the Decision Area (131,982 acres with less than 1mi/mi<sup>2</sup> road density) compared to Alternative A (116,236 acres) and Alternative D (123,073 acres) but less than Alternative C (141,264 acres). In the moderate road density category (1 to 2 mi/mi<sup>2</sup> road density), Alternative B would produce nearly 4,000 more acres of this category compared to Alternative A and this alternative has almost 20,000 acres less in the high road density category (greater than 2 mi/mi<sup>2</sup> road density) than Alternative A. This would represent a reduction in risks, associated with watershed conditions, from the current management situation.

Although some new permanent roads would be allowed for long-term forest management and mineral entry, both permanent and temporary road construction would be kept to a minimum. In addition, temporary roads would be decommissioned within one year of use. Alternatives B and C would both provide many protections to streams including minimizing road locations in riparian areas, minimizing sediment delivery from road surfaces, out-sloping road surfaces and minimizing disruption of natural hydrologic flow paths.

Under Alternative B, approximately 77.4 miles of motorized routes within 300 feet of streams would remain

open to motorized use Decision Area-wide. This is less than with Alternatives A and D (94.3 miles and 81.2 miles, respectively), but more than in Alternative C (73.7 miles). Alternative B would pose the second lowest threat to water quality (associated with roads in and near riparian areas) of all alternatives. It would also represent an improvement over existing conditions.

In the context of road design and maintenance, Alternative B would include measures such as minimizing road locations in RMZs, outsloping roadway surfaces where possible, routing road drainage away from streams, and installing stream crossing culverts to meet BLM standards of accommodating 25-year storm events. This is more protective of water quality and streams than Alternative A, slightly more protective than Alternative D, and less protective than Alternative C.

In the context of Wild and Scenic Rivers, Alternative B would provide more water quality protection than Alternative D (no rivers recommended as suitable), but less than Alternatives A and C. Alternative B would recommend Muskrat Creek (2.6 miles) and the Upper Missouri River (3.1 miles) as suitable for Wild and Scenic River designation. Designation and the subsequent Wild and Scenic River plans would likely protect water quality by minimizing ground disturbing activities within a ¼-mile corridor on either side of designated river segments. Alternative B would not recommend Moose Creek (4 miles) or the Upper Big Hole River (2.3 miles) as suitable for WSR designation whereas water quality in these two segments would be more protected in Alternatives A (managed to maintain eligibility) and C (recommended as suitable).

Under Alternative B, consideration to implement and meet pollutant reduction targets identified in Water Quality Restoration Plans (WQRPs) would be based on reasonableness, attainability, and available funding. This would provide more assurances that water quality would be improved than under Alternatives A and D which do not include specific provisions regarding WQRPs.

Increasing the likelihood of increasing or maintaining instream flows through consideration of water rights acquisitions (in both Alternatives B and C) could benefit water quality more than in Alternatives A and D where no consideration would be given to acquiring water rights. One stream segment on BLM-managed land is impaired due to dewatering: 0.06 miles of Pintlar Creek. Nineteen stream segments (about 32 miles of segments) on BLM-managed land are impaired due to flow alteration. Some of these stream segments would be restored by stabilizing flow rates through the control of water withdrawals.

Under Alternative B, requiring weed and erosion control practices in burned areas having documented sedimentation to surface water would benefit surface water resources more than in Alternatives A and D where no such provisions would be provided, but less than in

Alternative C where any accelerated erosion in burned areas would be mitigated.

Only allowing new roads and facilities, for mining operations, inside Riparian Management Zones when no other alternative exist would provide additional water quality protection beyond that provided in Alternatives A and D, but less than in Alternative C where no roads or facilities would be permitted in RMZs.

Under Alternative B a No Surface Occupancy stipulation for oil and gas exploration would be in place on approximately 146,477 acres in the following municipal watersheds: Missouri River Siphon, Tenmile Creek Drainage, Big Hole River Intake, and Moulton Reservoir. Protection provided by this stipulation would likely be most critical on approximately 11,784 acres of land in the Missouri River Siphon that are located within one of the sub-areas identified in the RFD as being most likely to have oil and gas exploration/development activity. This stipulation does allow for exceptions or modifications if the lessee can demonstrate that operations can occur within municipal watersheds without causing negative impacts to water quality at the intakes, or if the authorized officer determines that portions of municipal watersheds can be leased without causing water quality at intakes to violate drinking water standards. This would be more protective of municipal water supplies than standard lease terms in Alternative A and the Controlled Surface Use stipulation in Alternative D, but less protective than the No Lease stipulation in Alternative C.

## Effects of Alternative C

While all alternatives would meet, or strive to meet, state water quality standards, Alternative C would improve water quality from current conditions. In fact, it would produce better water quality than possible under all the other alternatives.

The treatment of up to 2,000 acres of grassland habitat; up to 750 acres of shrubland habitat; up to 4,800 acres of dry forest; and up to 550 acres of cool, moist forest per decade to restore vegetation communities could result in increased soil erosion and in some cases, localized and minor short term sediment impacts (as described above in Effects Common to All Alternatives). These impacts would be the least of any of the alternatives because Alternative C proposes the least amount of ground disturbance associated with vegetation treatments. However, this alternative would also generate the lowest level of long-term benefits (associated with restoring vegetative communities and associated ground cover and fuel loadings) than the other alternatives.

Like Alternative B, Alternative C proposes Riparian Management Zones (RMZs) where management emphasis would be on maintaining and restoring riparian resources. Since the RMZ widths in Alternative C would be greater than those in Alternative B, Alternative C would provide the greatest level of protection from land management activities.

To achieve the maintenance and restoration of riparian function, the mechanical treatment of up to 200 acres of riparian areas may occur per decade. This might create minor short-term sediment impacts as noted under Effects Common to All Alternatives. These effects would be greater than with Alternative A (30 acres), but less than with Alternatives B and D (up to 700 acres and up to 1,700 acres per decade, respectively). However, improving the function of riparian areas would produce several long-term benefits to water quality.

Alternative C is the only alternative where timber harvest would not be allowed in riparian areas. This would provide the most water quality protection from harvest related sediment and other pollutants. However, this could make it more difficult to manage these areas for specific characteristics potentially increasing long-term risk (i.e. reduce fuel loadings).

Overall, this alternative would produce the lowest level of grazing related impacts to water quality (and an improvement from current conditions). This is because the McMasters Hills and Spokane Hills allotments would be managed as forage reserves rather than as general grazing areas. In addition, the Indian Creek, Dog Paw, Six-mile Park County allotments would not be available for grazing. These three allotments would be available as either forage or general permits under Alternative B and available for general permits under alternatives A and D. In addition, the total amount of lands available for grazing (262,000 acres) would also be lower than under any other alternative (Alternative B = 265,000 acres; Alternatives A and D = 273,000 acres).

Under Alternative C no aerial applications of herbicide to treat noxious weeds would occur. This is more protective of water quality than any other alternative where aerial applications would occur with various “no-spray” riparian buffers in Alternatives B and D and no “no-spray” riparian buffer in Alternative A.

Alternative C would close or decommission approximately 425 miles of routes currently open to use by motorized vehicles. This reduction in ground disturbance associated with motorized routes would reduce impacts to water quality (primarily sediment) more than with any other alternative as these routes re-establish vegetation. . This reduction in ground disturbance would reduce soil erosion and should provide a moderate to high long-term benefit to water quality (compared to current conditions).

Alternative C would provide the most acres of low density roads (141,264 acres with less than 1 mi/mi<sup>2</sup> road density) compared to all other alternatives. This represents 25,000 more acres than currently exists. Alternative C would also produce the fewest acres with high road densities (road density greater than 2 mi/mi<sup>2</sup>) of all alternatives (26,000 fewer acres than current conditions). Of the action alternatives, Alternative C would produce 6,500 fewer acres of high road density com-

pared to Alternative B and 14,300 less than Alternative D. Having the lowest road density would suggest that there is less chance for roads to impact streams. This would indicate a lower risk to water quality than the other alternatives.

Under Alternative C, approximately 73.7 miles of motorized routes within 300 feet of streams would remain open to motorized use Decision Area-wide. This is less than with any alternative and would represent a reduction of 21.6 miles from current conditions. Therefore, Alternative C would pose the lowest impact to water quality associated with roads in and near riparian areas of all alternatives.

In the context of road design and maintenance, Alternative C would be the most protective of water quality of all alternatives. In addition to measures taken in Alternatives B and D, Alternative C also calls for stream crossings to accommodate 100-year storm events (compared to the BLM standard of 25-year storm events in the other alternatives). This would reduce the risk of culvert failure and associated channel impacts (scour and deposition).

In the context of Wild and Scenic Rivers, Alternatives C and A would provide the greatest level of water quality protection of all the alternatives. All four segments (12 miles) would be recommended as suitable for WSR designation in Alternative C. Water quality would likely be more protected in all four of these segments compared to Alternative B where only two segments would be recommended as suitable, and Alternative D where no segments would be recommended as suitable.

Alternative C proposes the designation of the Spokane Creek ACEC (14 acres). The entire potential ACEC is essentially a riparian area. Proposed ACEC management would increase protection of water quality in this area by not allowing new road construction, closing the area to new rights-of-way and R&PP leases, and providing for No Surface Occupancy for oil and gas exploration. These measures would not be in place under any other alternative because this potential ACEC is not proposed in those alternatives.

Under Alternative C, benefits associated with considering the acquisition of water rights from willing sellers would be the same as in Alternative B.

Requiring weed and erosion control practices in all burned areas having any accelerated erosion would benefit surface water resources more than with any other alternative. This is because Alternatives A and D have no requirements for this at all and Alternative B provides for this measure only when sedimentation effects are definitively taking place.

Under Alternative C BLM would commit to reducing pollutants in streams to target levels indicated in Water Quality Restoration Plans. This would benefit water quality more than with any other alternative because no

such commitment is made under Alternatives A or D; and under Alternative B meeting targets would be considered, but not necessarily committed to.

Prohibiting new mineral operation roads and facilities inside Riparian Management Zones would provide additional water quality protection (potentially to the extent of removing some stream segments from the impaired list). Alternative C would provide more water quality protection associated with mining operations than Alternatives A, B or D.

Alternative C includes the proposed withdrawal from mineral entry of approximately 180 acres of riparian areas in the Muskrat Creek drainage and would therefore provide greater water quality protection in that area associated with mining than any other alternative.

Under Alternative C the No Lease stipulation for oil and gas exploration would be in place on approximately 146,477 acres in the following municipal watersheds: Missouri River Siphon, Tenmile Creek Drainage, Big Hole River Intake, and Moulton Reservoir. This would essentially eliminate the possibility of impacts to water quality in municipal watersheds associated the oil and gas exploration and development.

## Effects of Alternative D

While all alternatives would meet, or strive to meet, state water quality standards, Alternative D would produce the least improvements to water quality than the other action alternatives. However, it would provide a slight improvement over what would occur under current management (Alternative A).

Treatment of up to 19,100 acres of grassland habitat; up to 6,800 acres of shrubland habitat; up to 18,200 acres of dry forest; and up to 5,050 acres of cool, moist forest per decade to restore vegetation communities could result in increased soil erosion and in some cases, localized and minor short term sediment impacts (as described above in Effects Common to All Alternatives). These impacts would be the greatest of all alternatives because Alternative D proposes the greatest amount of vegetation treatments. However, this alternative would also generate the greatest level of long-term benefits (associated with restoring vegetative communities and associated ground cover and fuel loadings) than the other alternatives.

Treatment of up to 1,700 acres of riparian areas per decade to restore riparian vegetation communities may occur. This might create minor short-term sediment impacts (as noted under Effects Common to All Alternatives). If at the project scale an approach that focuses on achieving site-specific riparian ecological objectives is used, this could create the potential for the greatest long-term benefits to water quality associated with improved riparian vegetative conditions of all alternatives. In many cases, treating riparian areas to meet a broad range of site-specific ecological objectives would likely lead to leaving greater quantities of trees, snags, and down

wood than if they are managed under the SMZ law. However, the riparian management prescribed under Alternative D would be SMZs as per the SMZ law. Allowing timber harvest in streamside management zones (within the up to 1,700 acres described above) would have similar effects as those described under Alternative A. If that management is conducted based on the SMZ law, Alternative D would be less protective of water quality associated with riparian timber harvest than either Alternatives B or C.

Effects to water quality associated with livestock grazing would be the same under Alternative D as those described for Alternative A.

Under Alternative D aerial spraying of herbicides to treat noxious weeds would not occur within 200 feet of streams or wetlands. This would be more protective of water quality than Alternatives A and B, but less than Alternative C.

Alternative D would close or decommission approximately 310 miles of routes currently used by motorized vehicles. This reduction in ground disturbance would reduce soil erosion and should provide a moderate to high long-term benefit to water quality (compared to current conditions). However, the improvement would be less than under Alternatives B and C.

Under Alternative D, approximately 81.2 miles of motorized routes within 300 feet of streams would remain open to motorized use Decision Area-wide. This is 13.1 miles less than currently exist but would leave more miles than under Alternatives B and C. As a result, Alternative D would pose the second greatest threat to water quality related to roads in and near riparian areas of all alternatives (but it would still represent an improvement over current conditions).

Alternative D would provide more areas with low road densities (less than 1 mi/mi<sup>2</sup> road density) than currently exists (123,073 acres versus 116,236 acres with Alternative A). However, it would have the least among the action alternatives. It would also provide a reduction in the amount of area with high road density (greater than 2 mi/mi<sup>2</sup> road density) from current conditions (95,481 acres versus 107,560 acres for Alternative A). However, this would be the lowest reduction among the action alternatives. These road densities suggest that this alternative would pose a reduced risk (to water quality) from current conditions, but the highest among the action alternatives.

In the context of road design and maintenance, Alternative D would be slightly less protective of water quality and streams than Alternative B, more protective than Alternative A, but less protective than Alternative C where stream crossings would be designed to accommodate 100-year storm events.

Alternative D would recommend no potential Wild and Scenic Rivers as suitable for WSR designation. There

would be no potential benefits to water quality in any of the four eligible river segments. This constitutes the least potential benefit to water quality of any of the alternatives.

Allowing new roads and facilities, associated with mining operations, to be built in riparian areas would impact water quality similarly to Alternative A and would be less protective than Alternative C.

Under Alternative D a Controlled Surface Use stipulation for oil and gas exploration would be in place on approximately 146,477 acres in the following municipal watersheds: Missouri River Siphon, Tenmile Creek Drainage, Big Hole River Intake, and Moulton Reservoir. This stipulation would allow for relocation of proposed roads, drilling sites, and other facilities, or application of appropriate mitigating measures to protect drinking water. This would be more protective of municipal water supplies than standard lease terms in Alternative A but less protective than the No Surface Occupancy stipulation in Alternative B or the No Lease stipulation in Alternative C.

## VEGETATIVE COMMUNITIES

### Effects Common to All Alternatives

#### *General Vegetation*

Proposed management of the following resources/resource uses/programs would have no anticipated impacts to vegetation: Geology, Paleontology, Back Country Byways, National Trails, Wild and Scenic Rivers, Environmental Justice, Hazardous Materials, Indian Trust Resources and Tribal Treaty Rights.

Seasonal restrictions, project access, development, and vegetative resources management activities are designed to reduce the amount of mineral soil exposure and length of time that the soils are exposed. In 2004, the use of Forestry Best Management Practices was demonstrated to be 96 percent effective in adequately limiting non-point source pollution in the 354 practices rated on federal lands (Montana DNRC, 2004). These practices would support soil fertility and productivity and would help maintain healthy and diverse vegetation.

Special Status Species Management could restrict the timing of some restoration activities, especially spring burning. Most timing restrictions occur during winter and breeding seasons. For example wolf den sites would be avoided during the denning period while raptor nests would be avoided during the breeding season. These restrictions could make implementation more difficult, but would not prevent restoration of vegetative communities.

Fire Management Unit (FMU) Designations affect vegetation variably by determining what application (tool) is allowed to treat vegetation and what the suppression response will be.

In FMU designation A, wildland and prescribed fire is not desired. Fire management emphasis would be placed on prevention, detection, rapid response, use of appropriate suppression techniques and tools, and non-fire fuels treatments. The effects on vegetation with non-fire fuels treatments would possibly be more ground disturbance, less nutrient cycling and less overall reduction in the fuel loadings due to no fire application. The suppression response may also lead to more ground disturbance due to the fact that wildland fire is not desired.

In FMU designation B wildland and prescribed fire are likely to cause negative effects, but these effects can be minimized or avoided through fuels management. The effects on vegetation would be similar to FMU A, except prescribed fire would be an alternative tool to use if appropriate; this would allow for more nutrient cycling and more fuel load reductions. Ground disturbance would be similar to FMU A, because the emphasis would still lean toward mechanical based treatment in this FMU designation. Suppression response would also be similar to FMU A but would allow more flexibility which may limit ground disturbance.

In FMU designation C natural, wildland fire use for resource benefit and prescribed fire is desired to manage ecosystem but constraints need to be considered. The effect on vegetation would be similar to FMU B except prescribed fire is desired and would be used in wider application compared to FMU B. Ground disturbance may be less and nutrient cycling and overall fuels load reduction would be greater with prescribed fire application. These areas would receive lower suppression priority in multiple wildland fire situations and would allow more flexibility which may limit ground disturbance.

In FMU designation D, natural wildland fire use for resource benefit and prescribed fire is desired to manage ecosystems with no constraints. The effect on vegetation would be similar to FMU C except wildland fire use for resource benefit is desired and would be used in wider application. Ground disturbance may be lessened and nutrient cycling and overall fuel load reduction would be greater with prescribed fire application. These areas would receive lowest suppression priority in multiple wildland fire situations and would allow more treatment flexibility which could limit ground disturbance.

Air quality restrictions from the Montana/Idaho Airshed Group and Montana DEQ could have a moderate but localized impact on restoration treatments that include prescribed burning by limiting the amount of burning that could take place at certain times or under certain air quality conditions.

Some cultural resource sites could be encountered and could have negligible effects on vegetative restoration activities by the designation of avoidance areas or possible restriction on implementation tools.

Development of new recreation sites would directly remove vegetation from sites where facilities are con-

structed and lead to altered vegetation near recreation sites from activities such as trampling, collecting fire wood, and picking wild flowers.

Use of new and developing technologies and industries would help achieve healthy forest and biomass utilization goals by broadening and varying the tools available for treatment and increasing the number of collaborative partners. These improvements would reduce the economic and budgetary constraints, and the number of declining vegetative situations that can be feasibly treated would be increased. These would provide for more positive impacts and improve the results of the treatments.

### ***Grassland and Shrublands***

Prescribed fire, timber harvest and other mechanical treatments would reduce conifer encroachment in grasslands and shrublands, helping to establish pre-fire suppression conditions. Grasses, forbs, and shrubs would increase in density and vigor with removal of conifers. Treatments would reduce the canopy coverage, potential conifer foliage impacts on soils (acidification and changes in soil microorganisms), and the direct competition of conifers with native grasses, forbs, and shrubs, setting back succession to a more open, seral condition.

The use of low intensity fires in broadcast burning should move these vegetative communities back toward historic conditions. Prescribed fire would consume above-ground biomass but would not cause mortality to most perennial herbaceous species. Fires would move relatively quickly through grasslands and shrublands and soil temperatures would not be sufficiently high to kill roots and growing points of most grasses and forbs. Most perennial herbaceous species would generally respond within one year with vigorous regrowth. Most annual species of grasses and forbs would reproduce from seeds following prescribed fire.

Relatively high rates of mortality would occur to seedlings and saplings of conifers and some species of shrubs that do not sprout from root crowns (e.g., big sagebrush and bitterbrush). Impacts to these shrub species could persist in the mid to long-term. Other species of shrubs sprout from root crowns following fire so there could be a shift in composition to higher percentages of shrubs that regenerate from root sprouts.

Mechanical treatments (no fire) would be used in most cases to remove conifer encroachment in shrubland communities and would have negligible mortality of desired shrub species associated with them. In these areas where fire is used as a treatment, some loss of desired species, such as sagebrush and bitterbrush, is expected. Use of low intensity fire and/or combination of low intensity fire and mechanical treatments to allow for a mosaic burn in these areas would minimize mortality of desired species. These treatments would have long-term benefits to shrublands due to elimination of competition from conifers.

Conifer removal treatments would create a mosaic of multiple successional stages; reducing the dominance of woody vegetation in grassland and shrubland communities and releasing suppressed, desired plants.

Treatments within sagebrush communities would emphasize improving or maintaining habitats for sage grouse and other sagebrush dependant species by removing conifer encroachment, creating a mosaic of grassland and sagebrush habitats, and regenerating decadent sagebrush. Project level objectives would be to prevent a decline in the quality and quantity of sagebrush communities.

Livestock grazing would stimulate biomass production for some grass species and most shrubs, and reduce production of other species (mostly forbs) that are sensitive to grazing. Plant species diversity may be reduced in localized areas near water sources or salt grounds where animals congregate. Species with low palatability, including most noxious weeds and some invasive species would increase in density on some sites, particularly those with severe ground cover loss or in bunchgrass communities.

By reducing biomass production, grazing could reduce the frequency and intensity of wildland fire by reducing fine fuels, which would favor encroachment of conifers into grasslands and shrublands. Livestock grazing would recycle plant nutrients through ingestion and deposition of waste.

Implementation of livestock grazing guidelines to promote vegetative recovery and maintenance would minimize these impacts and could result in a net improvement to the health of grasslands, sagebrush communities, and shrublands where grazing has caused degradation. Prescriptive grazing could be used as a management tool to achieve specific habitat objectives such as the reduction of noxious weeds.

Treatments to reduce noxious weeds in grasslands and shrublands could have short-term localized mortality of native plants (primarily forbs) associated with them but would benefit these areas overall by reducing or eliminating competition from noxious weeds and allowing native plants to dominate. The amount affected would vary with herbicide application method. Aerial application would be used on large areas of heavy weed infestations. Ground broadcast would be used on smaller areas of heavy infestations. Hand spot application would be the most common application method and would have little effect on other vegetation as the application would be target specific to the individual weed plants.

Roads through grassland and shrubland habitats would continue to preclude re-establishment of grassland and shrubland vegetative species within their footprints. Roads would also continue to facilitate introduction and spread of noxious weeds.

Leasing solid minerals would lead to disturbances and removal of vegetation during exploration and development. Reclaimed land could have reduced plant species diversity potentially for decades following mining.

Reclamation of abandoned mine lands would increase vegetation cover, productivity, and diversity in the long-term.

Sleeping Giant ACEC management restricting livestock grazing along the river shoreline north of Homestead Pasture from Memorial Day weekend through Labor Day would improve vegetation health and vigor.

### ***Forests and Woodlands***

Due to long-term fire suppression, forests and woodlands have become dense with fuel quantities increasing such that wildland fires often are more intense and severe than under historic fire regimes (Keane *et al.* 2002). In some cases this results in widespread stand replacement. This stand replacement could result in vegetation type conversion, severe erosion or the need for extensive restoration efforts, including tree planting.

Silvicultural treatments including harvest, thinning, other mechanical treatments, and prescribed fire would reduce conifer stocking in many areas and could create openings of various sizes to stimulate development of young stands. This is expected to enhance or maintain healthy vegetative structure; density; and species composition, pattern, and distribution; which would promote forest productivity and reduce the occurrence of forest disease and insect outbreaks. In addition, the severity of vegetative impacts resulting from wildfire events would be reduced.

Harvesting of Christmas trees, firewood, and other public demand forest products would generally take place near open roads, due to effort needed to first locate, cut down, and then physically remove the purchased product to the transporting vehicle. Removal of Christmas trees would reduce the density of conifer saplings by a small amount in some locations, although this is considered to be negligible as very few naturally grown saplings are considered to have acceptable Christmas tree qualities such as good crown conformation, color, and shape. Post and pole harvesting and removal of other woody materials would also contribute to thinning smaller trees and allowing larger diameter trees to dominate in the overstory canopy. While the removal of these and other types of forest products such as Christmas boughs, wildling transplants, and specialty furniture stock, may be obvious within a specific location, the amounts removed would generally be small, typically loaded in a pick-up truck, and the area affected would usually be less than 2 acres, with the cutting and removal being selective in nature.

Regeneration harvesting (i.e., clearcutting, seed tree harvest, and shelterwood harvesting) would tend to create openings for new forest regeneration often with

tree removals at levels similar to tree mortality observed in stand replacement burning. Thinning and selection treatments including mechanical treatment, and understory burning would reduce the density of seedling, pole, and medium-sized (9 to 15 inch DBH) trees resulting in a more open overstory canopy of larger trees.

Some larger trees would be removed in regeneration harvesting, group selection removal, insect control, and access requirements. Also, some large trees would be killed with burning prescriptions. This could increase snag density per acre and the amount of down woody material. Forests would be more open with a larger proportion of larger-diameter trees.

Removal of groups or stands of trees would result in seral vegetative conditions, similar to those found in newly establishing forest. Conifer seedlings regenerated naturally or artificially, would establish under open conditions that also stimulate the grasses or shrubs, until the developing tree canopies close, and trees dominate the treatment area (about 15 to 30 years). Such openings tend to favor pine species in mixed conifer types, while shelterwood and selective treatment methods favor regeneration of Douglas-fir, and subalpine fir at higher elevations.

Post and pole harvesting and removal of other woody materials would also contribute to thinning smaller trees, which would reduce wildland fire intensity and allow larger diameter trees to dominate the overstory canopy. This acreage, however, is negligible.

Based on 2004 insect surveys, approximately 15 percent of all mature forest types may be involved with some type of silvicultural treatment or insect control. Treatments to reduce the risk of epidemic levels of forest insects or disease would result in removal of affected trees or trees at risk for sustaining insect or disease epidemics. Treatments would create and promote forest stand structure and composition that is resilient to epidemic outbreaks, and may periodically require regeneration of new stands to reduce risks or infestations of pests such as mountain pine beetle or dwarf mistletoe. Resilient forests can be characterized by more open stands with more diversity in both structure and composition.

Insect control in post-wildland fire environments would be considered and/or implemented during emergency site stabilization and restoration activities, protecting large trees that are susceptible to infestation and mortality. This is expected to increase the rate of natural forest regeneration by retention of important live seed sources for the conifer species. Only Wilderness Study Areas would be excluded from insect control through infested tree removal or salvage techniques by BLM policy.

Where serious infestations already exist, direct suppression would regenerate a new stand or stand component in the opening created by the mortality and/or salvage.

Timber salvage operations would usually result from wildfires or insect infestations, and could consist of a variety of harvest methods including even-aged management. Salvage operations would reduce fuel loading and allow regeneration of lodgepole pine and Douglas-fir. Conversely, salvage operations in the spring may reduce soil productivity by compacting moist soils, which could result in lower regeneration establishment and slower growth. This effect would rarely occur because timber removal and heavy equipment work on Decision Area lands has generally been limited to conditions when the soils are frozen or dry. This restriction is a variation on Best Management Practices (BMP) designed to protect soil productivity and reduce soil loss, and it has been universally applied to all BLM salvage operations and any other timber harvesting work conducted in the Decision Area in the past.

Fuels reduction in the wildland urban interface would result in the removal of trees and shrubs to reduce the hazards associated with high intensity and severity wildland fires. Fuels reduction would decrease the density of seedlings and saplings and ladder fuels (lower tree branches) and would result in a more open forest dominated by larger-diameter trees.

On-site dispersal of woody material created by mechanical reduction or other management actions would contribute to cycling of nutrients and organic matter and provide nutrients for fungi, bacteria, invertebrates and other organisms that are an integral part of forest ecosystems.

Wildland fire suppression would affect vegetation by preventing fires that: reduce fuel loading; decrease tree density; and regenerate lodgepole pine and aspen stands. However, suppression also prevents severe soil scorch and other detrimental effects associated with high-severity wildland fires.

VRM Classes I and II would limit some types of restoration tools available, such as creating large openings in the forest canopy. Impacts would be negligible with the majority of restrictions affecting the Big Hole River corridor, where visual quality is an important resource. Such prescriptions could be modified to smaller openings, group selections, or other means of partial cutting.

The designation of ACECs would have minor impacts to forest and woodlands. Management to protect relevant and important values could place restrictions in some ACECs that would prevent certain types of vegetative treatments.

Placement of new permanent roads for access would reduce the amount of healthy forest land by approximately 2½ to 3 acres per mile of road, as the forest vegetation would not be able to regenerate in those locations. However, the use of temporary roads for access would retain forest productivity in those locations after abandonment and rehabilitation.

## Dry Forest

Dry forest treatments would help restore the historic structure and composition of dry Douglas-fir, ponderosa pine, and limber pine forests. Treatments would reduce conifer stocking and stimulate ground vegetation, thereby restoring conditions consistent with pre-fire suppression conditions. Treated Douglas-fir forests will be more resilient to western spruce budworm, as susceptible dense, multi-storied canopies are thinned (Joy and Hutton, 1990).

While most of the treated dry forest stands are expected to have over-story canopies remaining with substantial amounts of large and medium sized trees, forest and woodland manipulations may also include methods designed to regenerate areas of new forest. Individual projects themselves may vary greatly in the percentage of area where silvicultural practices and treatment techniques that promote regeneration are utilized, as these depend on the scope of the individual projects, the treatment objectives, and forest conditions. Regeneration of new stands or groups of trees with early seral forest and woodland characteristics would likely occur on approximately 20 percent of dry forest lands treated for restoration. The remaining dry forest stands would have sufficient levels of healthy forest canopy to moderate natural regeneration, particularly for the pine conifer species.

Tree planting could also be used as a technique to increase the percentage of regeneration cutting treatments, by assuring adequate re-establishment of young forest on sites where natural regeneration would normally be very slow to return in these forest types.

Continued fire suppression would extinguish and/or prevent fires that would vary in intensity and severity. Suppression of fires in dry forest types could prevent less-intense fires that would reduce fuels and the density of seedling, saplings, and pole-sized trees. Stands that continue to miss fire cycles will become more susceptible to defoliation from western spruce budworm and infestation by the Douglas-fir beetle, increasing the likelihood of mortality (DeNitto, 2007).

## Cool Moist Forest

Cool moist forest treatments would reduce tree stem densities and create openings and early seral forest conditions, mimicking pre-fire suppression conditions. Lodgepole pine would be regenerated by removal of decadent overstory trees, allowing seedlings to become established.

Creation of a mosaic of lodgepole pine stands of differing sizes and densities will reduce the risk of an epidemic mountain pine beetle outbreak on BLM lands. Where treatments occur in lodgepole pine forest, infestation levels of mountain pine beetle may be reduced. Effectiveness of treatment will depend on the current level of infestation, but removing trees before the beetles are

able to reproduce and infest other trees can reduce the level of impact in adjacent lodgepole pine stands. Although treatments may affect localized stands or areas from mountain pine beetle, overall treatments will not have an impact on epidemic mountain pine beetle outbreak the DA is currently undergoing.

The Lynx Conservation Assessment and Strategy (LCAS) provide direction on the types of activities and the amount of habitat that can be modified in lynx habitat. Because lynx habitat is identified as cool, moist forests of lodgepole pine, spruce or Douglas-fir, treatments in these habitat types could be restricted. Thinning high density medium to large size trees would be the least restricted treatment in lynx habitat as long as suitable habitat is maintained. The thinning of small-diameter trees would be the most restricted type of activity. Small-diameter thinning treatments in lodgepole pine stands would be heavily restricted in order to retain forage habitat for lynx. This could slow growth and productivity, lengthening the amount of time needed to grow large diameter pine trees in these stands. The size and location of openings created through forest management could be restricted but openings may be considered beneficial if forage habitat for lynx is limited.

### ***Riparian Types***

Managing riparian areas with an emphasis on maintaining and restoring riparian function would allow forest vegetation to develop in response to disturbance regimes associated with fire and flooding, particularly riparian areas that are functioning at risk, because they would be high priority for restoration.

Implementing livestock grazing guidelines to meet Land Health Standards would treat and improve riparian areas by maintaining or improving vegetative cover and structure to trap and hold sediment to rebuild streambanks, restore/recharge aquifers, and dissipate flood energy. Deep rooted herbaceous and woody shrub species would be promoted to stabilize streambanks and reduce soil erosion.

Projects to restore riparian areas and wetlands would result in a dominance of broad-leaf trees and shrubs forming an overstory canopy in appropriate locations. With increased diversity and vigor of streamside plant communities, functional condition ratings for streams would improve. Forested riparian habitat would be managed to accelerate the development of mature forest in suitable types, while in other areas such as dry or lodgepole dominated forest types, management would emphasize the maturation of broad-leaved species.

Livestock grazing in riparian areas could reduce the extent of vegetative ground cover and vegetative species diversity. In locations of locally severe native vegetation loss, noxious weed infestations could occur. All of these effects could occur to variable extents across the Decision Area. Health and integrity of riparian vegetation would be protected and improved by livestock fencing,

development of upland water sources, and timing livestock use to avoid sensitive periods or to reduce the intensity of grazing and trampling.

Roads and trails occupying riparian areas would preclude development of riparian vegetation. (In the alternative-specific analysis at the end of this chapter, mileages of motorized routes within 300 feet of streams are used as an indirect indicator of the extent of this impact by alternative.)

Management to benefit sage grouse would protect the integrity and diversity of vegetation in riparian habitats.

Mineral exploration and development activities would continue to have localized impacts to riparian vegetation. Effects could be short, mid, or long-term and could vary in scale substantially based on the nature and size of the activity.

Locating incident bases, helibases, and other incident management activities outside of riparian zones would prevent damage to riparian vegetation and allow maintenance or improvement of functioning condition.

Any ground disturbing activities in riparian areas would promote noxious weed infestations. Pre- and post-project weed monitoring and treatments would minimize effects in riparian areas

Wild and Scenic River (WSR) designations would lead to managing a ¼-mile corridor on either side of these segments to protect the Outstandingly Remarkable Values (ORVs). Potential future land use disturbances such as utility corridors, timber harvest, or mining within the corridor would be managed in such a fashion as to maintain or enhance the ORVs. The risk of disturbance to riparian vegetation would be reduced.

### ***Noxious Weeds***

Management of noxious weeds and other invasive species would not reduce the total number of weed infested acres within the Decision Area because treatments would not exceed the rate of expansion under any alternative. Natural expansion without treatments would occur at approximately 14 percent/year (USDI-BLM 1996). Alternative prescriptions would affect the locations and quantity of weed treatments, and weed populations would decline in vigor and extent on treated sites.

Coordination of weed management with federal, state, county, and private landowners and organizations would result in more effective and cost efficient weed control because treatments would address the natural boundaries of the infestations and management resources could be shared between partners. This would result in protecting more acres from new infestations and controlling more acres of existing weed infestations. Using Integrated Weed Management would also assist with weed control by focusing the multiple methods of weed management on the conditions which affect weed population size and outbreak of new infestations.

Increases in weed acreage within the Decision Area would result primarily from expansion of existing weed infestations supplemented by new infestations and possibly by acquiring weed infested lands. However, acquisition criteria states that BLM would avoid considering acquisition proposals with an abundance of noxious weeds when those management problems outweigh the expected benefits of the acquisition. New weed species, such as the salt cedar on Canyon Ferry and St.-John's-wort in Jefferson County, may also enter the Decision Area from adjacent infested areas.

Weed population size is dependent on three conditions, the relative amount of weed seed or root sources for reproduction, the availability of safe sites for germination and/or propagation, and having access to the necessary resources for plant growth which are sunlight, water, and nutrients. Management actions which reduce these conditions would decrease or control weed population size while actions which produce these conditions would usually increase weed population size.

Promoting healthy desired vegetation is the most common and long-term reducer of weed populations because the desired plants continually compete with weeds in producing seeds, occupying germination sites, and acquiring resources for growth. Vegetation restoration and fire rehabilitation activities, including revegetation and protection of post-fire plantings, would be effective methods for improving desired vegetation populations though vegetation treatments may initially cause weeds to increase because of associated ground disturbance.

Vegetation treatments which restore grasslands, shrublands, and riparian areas would be particularly effective in reducing potential weed spread because most noxious weeds and invasive species occur in these habitats. Using weed seed free forage and cleaning vehicles and equipment would decrease weed seed and root sources; thereby reducing the number of new infestations. Education and outreach would reduce weed establishment and spread because people often act once they are informed about the effects weeds have on ecosystem health and economics if they are also taught methods for weed management.

Ground disturbing activities would be the biggest increase of both new and existing weed infestations because they often bring in seeds on equipment and vehicles, create bare spots for seed germination, and reduce competition for resources by removing desired vegetation. Wildfire would be the most uncontrollable disturbance and would create the greatest amount of new infestations as demonstrated by the Bucksnort and Boulder Complex fires of 2000. Additionally, fire retardant and burning of natural fuels release compounds useful for plant growth, thereby benefiting colonizing plants, particularly weeds and invasive species, by providing a surplus of nutrients. Therefore, forest management designed to reduce unnaturally large and severe

wildfires would reduce the potential for increased weed populations.

Motorized public travel and camping within 300 feet of existing roads, acquisition of easements and exchanges to improve access to public lands, and use of Special Recreation Management Areas could increase human use from hiking, camping, hunting, horseback riding, and driving for pleasure; thereby increasing both disturbance and the risk of igniting wildfires which could lead to expansions in weed populations.

Other management activities which cause surface disturbances would also increase the potential for new weed infestations though most activities incorporate methods to reduce introduction and expansion of noxious weed and invasive species infestations like minimizing new road construction in weed infested areas, reseeding disturbed and exposed soils where necessary, and locating new utility facilities in existing rights-of-way.

Surface disturbing activities include building fire lines, helitack sites, fire camps, and new roads, use of existing roads and transportation facility sites, vegetation treatments, mineral and energy development, continued development and maintenance of public access routes, and land use authorizations which increase traffic and disturbance such as right-of-ways. Of these, potential increases due to roads and vegetation treatments are the most quantifiable and account for the variation among alternatives for potential weed spread estimates. Road closures, road decommissioning, and restrictions on mechanized equipment in Wilderness Study Areas reduce disturbance, so they would reduce weed expansion. Road decommissioning also usually promotes healthy desired vegetation through revegetation. However, if road decommissioning removes ready access to weed populations, treatment costs would increase and fewer acres may be treated.

Restrictions on aerial weed treatments may have similar effects of protecting desired vegetation while increasing weed treatment costs which might result in a decrease of total treatment acres. This is because weed treatments within an aerial herbicide application buffer would have to be ground treatments which can often cost up to 5 times more than aerial treatments.

The degree to which weed and invasive species populations impact their environments depends on the cumulative effect of infestations on the resiliency and sustainability of the desired plant community. Infestations which are a non-dominant part of a diverse, otherwise healthy desired plant community which controls the size and density of the infestations would have a low impact. Infestations would have a high impact when they dominate the plant community and are substantially reducing its sustainability and resiliency by negatively affecting the water cycle, erosion potential, nutrient cycling, and forage availability for wildlife and livestock. Infestations which affect some or all of these things but do not yet

substantially reduce the community's sustainability or resiliency would have a medium, or moderate, impact.

## Effects of Alternative A

### *General Vegetation*

Conversions of non-native to native vegetation would be limited to noxious weed control efforts and native plant seedings on ground disturbance projects. Larger, self-perpetuating stands of non-native agronomic grasses (e.g., smooth brome, timothy, Kentucky bluegrass, orchard grass, and crested wheatgrass) would persist, usually in areas that have been cultivated. Persistent stands of agronomic grasses would be resistant to the colonization by native species.

Revegetation seed mixes would generally consist of native species of wheatgrass, fescue, bluegrass, and blue flax. These cool-season species would germinate and initiate growth in early spring and establish stands that stabilize and protect the soil, and compete with noxious weeds and other invasive species. These seeded native species are generally similar to the dominant native species occupying foothill and dryer sites. Occasionally, revegetation seedings may not establish appropriate native species for some microsites.

On burned areas and other sites with a high potential for erosion and noxious weed invasion, non-native species would sometimes be seeded to stabilize slopes and prevent proliferation of noxious weeds and other invasive species. Seeding of cereal crops such as triticale, barley, and rye would provide vegetation cover for one or two years, but these species would die out as seed production declines. These species would provide organic material and nutrients to the soil and can act as "nurse" crops to some native species.

On small areas with high potential for erosion or noxious weed invasion, seeding with perennial non-native species would occur. These seedings may produce persistent stands, which can inhibit colonization by native herbaceous species and conifers; however, vigorous stands of non-native grasses may inhibit colonization and expansion of noxious weeds, in addition to protecting soil resources.

Under Alternative A, most land in the Decision Area (258,200 acres, 85 percent) would be managed as Fire Management Unit designation C. The remainder of DA lands would be in FMU designation B (36,700 acres, 12 percent) and in FMU designation A (7,300 acres 3 percent). The effects of FMU A, B, and C designations are discussed under Effects Common to All Alternatives, General Vegetation.

Under Alternative A, no road density target would be set for areas in big game winter and calving ranges. Following the elk management guidelines in the Cooperative Elk-logging Study (Lyon, et al. 1982) in these areas would allow the existing road network to remain open

for public use. Conversely, each of the action alternatives specifies road density targets to be managed for in these areas. Alternative A would provide the greatest flexibility for permanent road use and construction, aiding in vegetation treatment feasibility.

No restrictions would be placed on vegetation treatments near caves and abandoned mines with bat populations. Having no related action here provides more flexibility than under Alternatives B and C where clearing would be prohibited within set distances from these population areas.

No restrictions related to activities near raptor nests would occur under Alternative A. This provides the greatest flexibility for treating vegetation in areas where these nests exist of all alternatives.

Acquisition of public access easements to construct new access routes would remove vegetation on approximately 1.5 to 3 acres per mile of road constructed. Vegetation removed could be native, introduced, weedy, or otherwise, but most easements are expected to result in a general improvement of management efficiency and feasibility of vegetative treatments.

Under Alternative A, the least amount of acres would be managed as VRM Classes I and II. This alternative provides the most flexibility to alter visual resources to accomplish vegetative treatments.

### *Grasslands and Shrublands*

Approximately 5,250 acres of grassland and shrubland (combined) in the Decision Area would be treated per decade with prescribed fire, mechanical treatments, and other methods to improve health and resiliency of these communities. No watersheds have been identified as priorities for treatment in Alternative A.

Currently, in the Decision Area there are approximately 86,065 acres of grasslands and shrublands as compared to approximately 135,722 acres historically. This decrease in grassland and shrubland is a result of conversion to conifer-dominated stands. Treatment of 5,250 acres per decade would reduce conifer encroachment on treated acres. Assuming conifer encroachment has occurred over the last century as a result of fire exclusion (and heavy historic grazing); the rate of conifer encroachment has been approximately 4,966 acres per decade in grasslands and 1,445 acres per decade in shrublands. The combined rate of conifer encroachment in grasslands and shrublands is approximately 6,411 acres per decade. Based on these assumptions and the proposed rate of treatment, there would be a net increase in encroachment in grassland and shrubland habitats of approximately 1,161 acres per decade under Alternative A.

Under Alternatives A and D, there would be no seasonal restriction on prescribed fire implementation, if the treatment area is in prescription. There could potentially be times where prescribed fire occurs in the summer

months, which may detrimentally affect desired vegetation. Ungerminated seeds that remain in the soil would usually not be affected by prescribed fire. However, most small trees and shrubs such as sagebrush, bitterbrush, and mountain mahogany would be killed or damaged by “hot” prescribed fire, while larger ponderosa pine and Douglas-fir would usually not be killed. With Alternatives B and C, prescribed burning would be restricted between May 1 and August 30. This restriction could reduce the potential for fires with high intensity and severity that would cause unacceptable levels of mortality to desired vegetation.

Overall, Alternatives A and D would have greater effects on grasslands and shrublands associated with livestock grazing (described under “Effects Common to All Alternatives” for Grasslands and Shrublands) than either Alternatives B or C. Livestock grazing would occur on approximately 273,000 acres of Decision Area lands in Alternatives A and D, 265,000 acres in Alternative B, and 262,000 acres in Alternative C. (A subset of these acreages are grasslands and shrublands). Managing livestock grazing in the McMasters Hills, Spokane Hills, and Indian Creek allotments as available for general grazing permits in Alternative A would impact grasslands and shrublands in these areas greater than in Alternatives B and C, but the same as in Alternative D. Alternatives A and D would allow for general grazing permits in eight allotments (Centennial Gulch, Free Coinage, Alder Creek, Charcoal Mountain Custodial, Dickie, Maiden Rock Custodial, Quinn Creek, and Wineglass Mountain) where grazing would not be allowed in either Alternatives B or C. Grasslands and shrublands in these areas would be impacted by livestock grazing under Alternatives A and D, but not under Alternatives B and C.

### ***Forests and Woodlands***

Firewood removal would take place near roads and reduce standing and fallen dead trees. Under Alternative A, no diameter limits would be prescribed, so more large-diameter snags may be removed under this alternative, possibly decreasing potential late forest structure in isolated areas.

Under Alternative A, salvage may proceed without prescriptive restrictions for the management of species dependant on dead and dying forests or species dependant on down woody materials. Salvage would continue to be subject to other restrictions, resource protections, or special management considerations, such as: Best Management Practices (BMPs), Streamside Management Zones (SMZs), Interim Management Policy for Wilderness Study Areas, and management guidance for ACECs, as required for forest management activities under Alternative A.

Prescriptions for big game security habitat would be the least restrictive to vegetation treatments under Alternative A than under all the other alternatives. The guide-

lines presented in the Montana Cooperative Elk-Logging Study (Lyon et al. 1982) would be considered on a case-by case basis. Following the Logging Study would provide more flexibility and therefore increased feasibility of vegetation treatments.

Alternative A would have no buffer requirements in forested areas surrounding unoccupied raptor nests. Lack of these restrictions would provide for the most flexibility in treatments of all alternatives in these areas.

### **Dry Forest**

Currently, there are 68,624 acres of high density, ponderosa pine and Douglas-fir dominated by medium to large-sized trees as compared to 19,042 acres historically. Approximately 3,600 acres (5 percent) of medium to large, high-density stands of ponderosa pine and dry Douglas-fir forest in the Decision Area would be treated per decade.

Treatments would reduce the density of small trees and allow larger trees to develop a more open structure with a larger component of understory grasses, forbs, and shrubs. Additional effects would be as described under “Effects Common to All Alternatives” for Forests and Woodlands

The proposed level of treatment under Alternative A may not be adequate to keep pace with the rate at which conifer density is increasing. Assuming conifer density has increased as a result of fire exclusion and past grazing practices over the past century on approximately 49,582 acres (the difference between historic and current acres of high stem density dry forest); the rate at which increased density has developed is approximately 4,958 acres per decade. Proposed treatments of 3,600 acres per decade would not keep pace with the rate of increased conifer density development in large and medium size class stands of ponderosa pine and Douglas-fir. **With Douglas-fir encroachment increasing, western spruce budworm will likely increase as more host trees become available.**

Prescribed burning and mechanical treatments in forest and woodland areas, taken together, could not exceed an average of 750 acres per year under Alternative A. This limitation may restrict the amount of forest and woodland treated per decade, so that areas having limited access or with lower priority for treatment may not be treated under this alternative.

Treatments on 500 acres of medium and large size class, low density, ponderosa pine and Douglas-fir would be implemented per decade to maintain the open character of the stands. Currently, medium and large size class, low density, ponderosa pine and Douglas-fir stands occupy 32,559 acres in the Decision Area as compared with 11,358 acres historically. As a result of fire suppression over the last century, tree densities have increased in these stands. Treating 500 acres per decade

would have a negligible effect on restoring these forest stands to historic conditions.

Additionally, 1,000 acres of dry forest would be thinned pre-commercially per decade, which would remove many smaller seedlings, saplings, and pole-sized trees, allowing larger trees to develop a dominant overstory. Up to 500 acres of treatments per decade would also be implemented to preserve the character and ecological functions of mature and old-growth stands. No watersheds have been identified as priorities for treatment. The 1,000 acres of pre-commercial thinning would have a negligible effect on restoring forests to historic conditions.

### **Cool, Moist Forest**

Approximately 2,350 acres (17 percent of Decision Area total acreage in this type) of high-density stands of moist Douglas-fir, lodgepole pine, subalpine fir, and Engelmann spruce forest with medium to large-sized trees would be treated in the Decision Area per decade. Regeneration harvesting techniques such as seed tree harvesting, shelterwood cuts, and clearcutting may be applied to regenerate approximately 1,440 acres of cool moist forest and lodgepole pine stands per decade. Additionally, 50 acres of cool, moist forest stands would be thinned pre-commercially, which would remove smaller seedlings, saplings, and pole-sized trees, reducing the risk of intense wildland fire and allowing larger trees to develop a dominant overstory. No watersheds have been identified as priorities for treatment.

Currently, there are 13,764 acres of cool, moist forests composed of medium and large size class, high density stands in the Decision Area as compared to 8,422 acres historically. Assuming high density stands developed over the past century in response to fire suppression and livestock grazing, the rate of increase would be 534 acres per decade. The proposed level of treatment (2,350 acres) would reduce the acres of high density stands to 11,948 acres during the first decade of treatment.

Alternative A would result in the restoration of 2,400 acres per decade of cool, moist, high-density forest communities with a net gain of approximately 1,816 acres restored per decade of areas dominated by medium to large-sized trees.

### ***Riparian Types***

The Streamside Management Zone Law provides the minimum regulatory standards for forest practices meeting the timber sale definition in Streamside Management Zones (SMZs). The SMZs provide protection to water quality, streambank stability, down woody material and shade by restricting certain forest activities such as clearcutting, operation of wheeled or tracked equipment except on established roads, construction of roads, deposition of slash, and broadcast burning. Streamside Management Zones, however, would provide limited protection to overall riparian function and habitat diversity for

terrestrial species. By focusing dead and live tree retention within the first 50 feet upslope of stream margins, and by allowing smaller diameter trees to be retained (down to 8 inches DBH), SMZs could limit: size and quantity of wood recruited to streams and floodplains; trees and snags that could serve as foraging, nesting, hiding, and brood rearing habitat for many wildlife species; and quality of wildlife movement corridors.

Streamside Management Zones are 50 feet on either side of a stream on slopes less than 35 percent hillslope gradient, and 100 feet on either side of a stream with sideslopes greater than 35 percent. Under Alternatives A and D approximately 3,528 acres of riparian habitat would have restrictions on management activities in SMZs ( ).

Up to 30 acres (1.3 percent) per decade of riparian vegetation would be treated by mechanical means or prescribed fire, with non-functional riparian areas or areas functioning-at-risk (approximately 55 percent of Decision Area total) receiving priority for treatment. Treatment of 30 acres of riparian vegetation per decade would tend to move lower functioning condition areas toward a higher functioning condition. At this rate of treatment, it would take many decades to bring all riparian areas into proper functioning condition; however, other factors such as grazing management and improved road management practices could also improve the functional status of riparian areas.

Maintaining livestock exclosures in riparian areas would protect vegetation from grazing and trampling damage.

Overall, Alternatives A and D would have slightly greater impacts to riparian vegetation associated with livestock grazing (described above under “Effects Common to All Alternatives” for Riparian Types) than either Alternatives B or C. Livestock grazing would occur on approximately 273,000 acres in Alternatives A and D, 265,000 acres in Alternative B, and 262,000 acres in Alternative C. Managing livestock grazing in the McMasters Hills, Spokane Hills, and Indian Creek allotments as available for general grazing permits in Alternative A would potentially impact riparian vegetation greater than in Alternatives B and C, but the same as in Alternative D. Alternative A allows for general grazing permits in eight allotments (Centennial Gulch, Free Coinage, Alder Creek, Charcoal Mountain Custodial, Dickie, Maiden Rock Custodial, Quinn Creek, and Wineglass Mountain) where grazing would not be allowed in either Alternatives B or C.

Roads and trails currently impact riparian areas in a number of ways. Roads and trails are usually devoid of vegetation which causes accelerated erosion and sediment delivery to riparian vegetation and streams. Additionally, trails in the riparian zone can compromise the riparian vegetation’s ability to act as a sediment filter. Also roads and trails are active conduits for noxious weeds and invasive species to infest riparian areas. Under Alternative A, Decision Area-wide, approximately

Watershed	Alternative		
	SMZ	RMZ	RMZ
	A & D	B	C
Big Hole – Forested	519	1,031	1,856
Big Hole – Nonforested	409	409	1,048
Blackfoot – Forested	11	34	66
Blackfoot – Nonforested	20	20	66
Boulder – Forested	235	475	917
Boulder – Nonforested	93	93	219
Jefferson – Forested	199	453	851
Jefferson – Nonforested	189	189	370
Madison – Forested	5	18	40
Madison – Nonforested	9	9	36
Upper Clark Fork – Forested	9	22	42
Upper Clark Fork – Nonforested	2	2	10
Upper Missouri – Forested	709	1,369	2,651
Upper Missouri – Nonforested	961	961	2,593
Upper Yellowstone – Forested	36	105	234
Upper Yellowstone – Nonforested	122	122	394
<b>Total – Forested</b>	<b>1,723</b>	<b>3,507</b>	<b>6,657</b>
<b>Total – Nonforested</b>	<b>1,805</b>	<b>1,805</b>	<b>4,736</b>
<b>Grand Total</b>	<b>3,528</b>	<b>5,312</b>	<b>11,393</b>

94.3 miles of routes within 300 feet of streams would remain open to motorized use. While this is not a direct indication of road and trail effects on riparian vegetation, it is a relative indication when compared to the other alternatives. Alternative A leaves the greatest mileage of routes within 300 feet of streams open to motorized use of all alternatives.

Under Alternative A, all four eligible Wild and Scenic Rivers would be managed to maintain their eligibility. This would reduce the risk of various land use disturbances of riparian vegetation along 12 miles of river/stream in the Decision Area. Under Alternative C these same stream/river miles would be protected as suitable for WSR designation, whereas Alternatives B would protect 5.7 miles and Alternative D would protect none as suitable for WSR designation.

In the context of oil and gas development, Alternative A stipulates No Surface Occupancy within 500 feet of reservoirs, lakes, ponds and intermittent streams, or within 1,000 feet of perennial streams and rivers. This would minimize effects to riparian vegetation to a similar degree as in Alternatives B, C, and D in reservoirs, lakes, ponds and intermittent streams, and to a greater degree than these alternatives on perennial streams and rivers.

### ***Noxious Weeds***

Under Alternative A, noxious weeds and invasive species have the lowest potential for expansion, resulting in up to 43,000 weed acres (a rate of 9 percent/year), from predictable factors in ten years. This analysis assumes that the low end of proposed weed treatment acreage ranges would be implemented under the action alternatives. Of these acres, approximately 13 acres/year are associated with open and limited roads, 66 acres/year with grassland treatments, 38 acres/year with forest treatments, and most of the remainder with natural expansion of established weed infestations on and near the Decision Area.

Wildfires could increase these total expansion acres more in Alternative A than Alternatives B or D and less than Alternative C because wildfire potential is greatest for Alternative C, least for Alternative D, and less for Alternative B than Alternative A as a result of different vegetation management, particularly forest treatments.

Effects on weed potential from oil and gas development are similar for Alternatives A and B, less in Alternative C, and greater in Alternative D. No Surface Occupancy and no lease restrictions remove similar acreages from surface disturbance (and therefore exacerbation of noxious weed spread) in Alternatives A and B, about twice that many acres in Alternative C, and about half that many in Alternative D.

An estimated 20,000 acres per decade would be treated to reduce noxious weeds with 85 to 90 percent of these acres being repeat treatments. Therefore, up to 3,000 acres (15 percent of current populations) per decade of weed infestations would be successfully controlled or eradicated using Integrated Weed Management methods under this alternative.

Vegetation restoration of approximately 5,250 acres of grasslands/shrublands per decade would eventually produce about 4,000 acres per decade of healthy desired vegetation resistant to weed infestations.

Continuing restrictions of a 200 foot aerial herbicide application buffer for riparian areas would result in greater riparian weed control costs associated by increasing ground treatments up to 25 acres/mile of riparian corridor more for Alternative A than Alternatives B and D, but lower costs than Alternative C (by up to 50 acres/mile more).

## Effects Common to Action Alternatives

### *General Vegetation*

Restoration of habitat using prescribed fire, silvicultural practices, and other methods would result in protecting and maintaining snags, creating large woody debris and vegetation in a variety of seral stages including mature forest with old forest structure and healthy shrublands and grasslands.

Prohibiting the introduction of biological noxious weed controls that have been documented to damage desirable plant species would reduce negative effects on non-target plants.

Timing restrictions on projects that cause disturbance on big game winter and spring range, big game calving areas, grizzly bear spring and summer range, and grizzly bear denning habitat could impose constraints on vegetation treatments that alter habitat, making it more difficult to meet desired objectives for vegetation change. For example, treatment of noxious weeds is often most effective in spring; however, in the habitats mentioned above, implementation of noxious weed control may not be possible during periods when it is most effective to prevent disturbance to grizzly bear or big game within big game winter/spring range. Similarly, prescribed fire is often most effective and manageable during the spring and early summer when moisture levels are high and temperatures are low. Timing restrictions could inhibit the use of prescribed fires to meet vegetation objectives.

Watershed restoration activities would alter vegetation composition and structure and improve upland, riparian, and aquatic health and functionality.

Rehabilitation of roads would revegetate currently unvegetated roadbeds, which would increase biomass productivity of the landscape through colonization of sites with grasses, forbs, shrubs, and trees on approximately 2½ to 3 acres per mile of rehabilitated road. Eventually, reha-

bilitated roads would support plant communities consistent with site potentials which would help resist weed invasions. However, road closures and removals could in some cases make vegetation management treatments more difficult and costly, inhibit potential vegetation treatments, reduce public access for product use and removal, and slow fire detection and suppression.

Reseeding disturbed areas would increase the composition of desirable species and reduce the potential for noxious weeds and other invasive species to become established.

Revegetation seed mixes would consist of site-appropriate low-impact, non-invasive species, and native species, generally composed of cool-season species, which initiate growth in early spring in response to winter moisture. These cool-season species would establish stands that are relatively competitive with noxious weeds and other invasive species. Seeded native species sometimes differ from dominant native species occupying foothill sites (rough fescue, Sandberg's blue grass and Idaho fescue) and dryer sites (needle-and-thread, blue grama, and June grass). As a result, some revegetation seedlings may not help establish native species that typically occupy a range of sites with different growing conditions. However, where site-appropriate species are used this would not be the case.

### *Grasslands and Shrublands*

Up to 850 acres of crested wheatgrass, agricultural fields, and weed infestations on the McMasters Hills and Ward Ranch acquisitions would be converted from non-native to native vegetation. Conversions would be labor intensive and could involve repeated cycles of cultivation and/or application of herbicides to kill non-native species followed by seeding with native species. Young stands of native species would be subject to invasion by noxious weeds and other invasive species, and would require management actions such as manual pulling or spot-spraying with herbicides to control unwanted vegetation. Conversely, Alternative A would convert none of these lands to native vegetation.

### *Forests and Woodlands*

Silvicultural treatments including harvest, thinning, other mechanical treatments, and prescribed fire would meet Land Health Standards and improve forest health conditions, by maintaining or mimicking natural disturbance regimes with treatments that reduce conifer stocking in many areas while retaining important mature stand components.

In the treated areas, densities of smaller trees and fuel loading would decrease, and forest canopy continuity would be more open, reducing the risk of severe, high intensity crown fires. Larger trees would be maintained resulting in a more-open forest with a dominant overstory of trees that are relatively resistant to frequent, low-intensity fires that would remove fine fuels and pass

through stands without killing a high percentage of larger trees

These management actions would emphasize old-forest structure characteristics, and would develop and maintain stand structures that are relatively complex with highly variable tree densities, healthy and diverse understory composition, and site-appropriate quantities of snags and down wood.

Protecting big game security cover by maintaining blocks of at least 250 acres that are unroaded or have roads closed during the hunting season could limit vegetation treatment options such as timber harvest, fuels reduction, and tree density reductions. The restriction would not preclude restoration from occurring, but could make treatments in some areas less feasible under the action alternatives.

### *Riparian Types*

Management of riparian areas would result in amounts and distribution of large, woody material, characteristic of healthy riparian and wetland ecosystems. Improved health of riparian vegetation would maintain proper functioning condition or move degraded areas toward proper functioning condition.

Assessing and monitoring riparian areas for proper functioning condition would help identify riparian areas that are functioning at risk or nonfunctioning. This in turn would indicate riparian areas for restorative work.

Reductions in conifer encroachment and fuels management involving removal of conifers to restore historically non-forested riparian areas would improve long-term riparian vegetative conditions. Treatments involving the sale of forest products could potentially be affected by leave tree requirements or equipment prohibitions within streamside management zones in cases where greater levels of conifer removal may be desired than that allowed by the SMZ law. In such cases, the BLM would apply for a variance to the law under "Alternative Practices" to the SMZ Law. The absence of this variance would require that treatments be modified to comply with the state law.

Riparian vegetative treatments would have variable effects on hardwood tree and shrub species. Prescribed fire treatments would likely adversely affect cottonwoods by causing direct mortality. Species such as willow and red osier dogwood would be more resilient and may benefit through stimulated growth from prescribed fire treatments.

The natural expansion and potential reintroduction of beaver could affect vegetation by creating higher water tables through dam construction, which would expand wetland and riparian vegetation. This benefit could be partially counterbalanced by beavers removing favored vegetation species (e.g., cottonwood, aspen, and willow) from areas adjacent to streams and beaver dams, reducing the density of riparian vegetation.

Management direction to minimize road and landing locations in riparian areas would benefit riparian vegetation equally in Alternatives B, C, and D and more than in Alternative A where no such direction is proposed.

Minerals exploration and development activities would remove riparian vegetation in some cases. Impacted areas would be maintained, protected, rehabilitated, and compensated to the extent practicable. This would contribute to re-establishing vegetation species diversity and productivity in the aftermath of potential riparian impacts associated with mineral development activities.

Under Alternatives B, C, and D there would be a No Surface Occupancy stipulation for oil and gas exploration in wetlands, floodplains, and riparian areas. Standard Lease Terms would also apply which would allow the relocation of proposed facilities up to 200 meters (approximately 656 feet) from any areas of concern. These measures would protect riparian vegetation identically in the action alternatives, but potentially less so than in Alternative A on perennial streams or rivers. Alternative A calls for a No Surface Occupancy stipulation within 1,000 feet of perennial streams and rivers. This stipulation would better protect riparian vegetation in rivers or streams with very wide riparian areas (wider than 656 feet) that may not be adequately protected by Standard Lease Terms. There are few, if any, such riparian areas in the Decision Area.

### *Noxious Weeds*

Forest treatments to reduce the risk of high intensity fires would reduce the potential for the increase in weed populations commonly occurring after wildfires. The substantial increase in riparian treatment acres with all action alternatives (compared to Alternative A) would improve these areas' resistance to weed invasion from populations within and on lands adjacent to the Decision Area.

Increasing cooperation with Weed Management Areas (WMAs) would reduce infestations in the Decision Area by comprehensively treating contiguous areas defined by a natural boundary rather than a political one. This would usually improve weed control, prevent or reduce weed expansion into weed-free areas, and decrease the costs of weed treatments. This is because a comprehensive plan would facilitate improved access for treatments, provide for shared treatment resources, allow for more effective coordination of treatment timing, and promote the use of watershed boundaries which are somewhat resistant to weed spread as WMA boundaries.

Discouraging cross-country motorized travel by placement of woody materials and placing gates and barriers on closed roads would decrease weed expansion potential by decreasing disturbance. Utilizing open roads for access requests where possible, not issuing new right-of-ways in exclusion areas, and restricting them in avoidance areas would also reduce weed expansion potential by decreasing disturbance.

Power washing heavy equipment would reduce the introduction of weed seed although heavy equipment use on vegetation treatments and other projects could increase weed spread through disturbance.

Building new roads, including temporary ones for mineral development and timber sales and salvage, using roads and travel routes otherwise closed for mineral development and timber, and building fire lines would cause disturbance, thereby increasing the potential for weed growth.

## Effects of Alternative B

### General Vegetation

Management to maintain and/or recruit adequate densities of snags and down woody material for wildlife could include prescribed fire, mechanical treatments, and inoculation.

No new, permanent roads would be allowed in big game winter range or calving habitat where road densities are 1 mi/mi<sup>2</sup> or less. Road restrictions could affect options for vegetation treatment (e.g., firewood and Christmas tree harvest, timber harvest, and thinning), but not as much as Alternative C, where permanent roads cannot be built in areas where road densities are 1.5 mi/mi<sup>2</sup> or less.

Restricting vegetation clearing within 250 feet of caves and abandoned mines with populations of bats would limit fuels reduction, tree density reductions, and other treatments that remove vegetation in these areas.

Alternative B restricts noise disturbance and most management activities within a 0.5-mile radius of occupied raptor nests, during the nesting and brooding period. Depending on the species of raptor, this could restrict approximately 500 acres per nest and make prescribed burning difficult in some treatment areas.

Livestock grazing could be permitted on 265,000 acres of public land. Grazing may reduce the density and production of palatable species in localized areas. However, proper grazing level requirements would maintain the density and integrity of most plant communities.

Species with low palatability, including most noxious weeds and many other invasive species would increase in density on some sites.

On burned areas and other sites with a high potential for erosion and noxious weed invasion, non-native species may be seeded to stabilize slopes and prevent proliferation of noxious weeds and other invasive species. Seeding of annual species such as triticale, barley, and rye provides vegetation cover for one or two years, but these species die out as seed production declines. Use of annual agronomic species provides organic material to the soil and can act as a nurse crop for native species. Additional seeding with perennial non-native species often initiates persistent stands, which can inhibit colonization by native herbaceous species and conifers.

Similar to Alternative A, most Decision Area land (approximately 255,000 acres, 83 percent) would be managed as Fire Management Unit designation C. The remainder of BLM lands in the Butte field office would be in FMU designation B (approximately 52,000 acres, 17 percent). The effects of FMUs B and C designations are discussed under Effects Common to All Alternatives, General Vegetation.

Alternative B manages for 75,100 acres in VRM Classes I and II where no visual changes would be allowed to be noticeable. This provides less flexibility for vegetation treatments than Alternatives A and D, but more than Alternative C.

### Grasslands and Shrublands

Up to 11,800 acres (9 percent of grasslands in Decision Area) of grassland and 3,650 acres (18 percent of shrublands in Decision Area) of shrubland would be treated per decade with prescribed fire, mechanical treatments, and other methods to improve the health and resiliency of these communities by reducing the density of conifers in these habitats. Effects of treatments can be seen by comparing acres treated versus rates at which encroachment is occurring in grasslands and shrublands (Table 4-2 and Table 4-3).

Watershed	Area Treated per Decade	Conifer Encroachment	Encroachment After Treatment	Rate of Encroachment per Decade	Net Effect on Encroachment
Big Hole	2,500	3,398	898	340	1,238
Blackfoot	50	0	0	0	0
Gallatin	200	0	0	0	0
Jefferson	3,000	16,472	13,472	1,647	15,119
Missouri	6,000	29,787	23,787	2,979	26,766
Yellowstone	50	NA	NA	NA	NA
<b>Total</b>	<b>11,800</b>	<b>49,657</b>	<b>38,157</b>	<b>4,966</b>	<b>43,123</b>

**Table 4-3**  
**Alternative B Comparison of Acres of Shrubland Treated Versus Rate of Conifer Encroachment**

Watershed	Area Treated per Decade	Conifer Encroachment	Encroachment After Treatment	Rate of Encroachment per Decade	Net Effect on Encroachment
Big Hole	2,000	9,017	7,017	902	7,919
Blackfoot	50	0	0	0	0
Gallatin	50	0	0	0	0
Jefferson	1,000	3,987	2,987	399	3,386
Missouri	500	1,341	841	134	975
Yellowstone	50	100	50	10	60
<b>Total</b>	<b>3,650</b>	<b>14,445</b>	<b>10,895</b>	<b>1,445</b>	<b>12,340</b>

Grassland treatments could result in a net increase in restored habitats of approximately 6,834 acres per decade (Table 4-2). Shrubland treatments could result in a net increase in restored habitats of approximately 2,205 acres per decade (Table 4-3). These potential increases under Alternative B would be a benefit to grasslands and shrublands compared to Alternative A in which there would be a net increase in conifer encroachment of approximately 1,161 acres per decade.

Alternative C would treat even fewer acres than Alternative A and would therefore have a net increase in conifer encroachment rather than an increase in restored habitat. Alternative D would treat even more acres than Alternative B and would therefore have a greater net increase in restored habitat than Alternative B.

Overall, Alternative B would reduce conifer encroachment on up to 15,450 acres per decade of grassland and shrubland communities compared to 5,250 acres for Alternative A, up to 2,700 acres for Alternative C, and up to 25,900 acres for Alternative D.

Under Alternative B proposed treatments of grasslands would gradually reduce conifer encroachment in all watersheds; however, restoration to historic levels would require decades of treatment. Proposed treatments of shrublands would gradually reduce conifer encroachment in all watersheds; however restoration to historic levels would require more than ten years.

Under Alternative B prescribed fire projects would be planned to consume above-ground biomass on no more than 80 percent (on average) of area burned on a per treatment unit basis. Prescribed fire would substantially reduce the density of conifer seedlings and saplings on 80 percent of the area treated; however, 20 percent of the treated area would not be burned and conifer encroachment would be present in a mosaic of unburned patches. Alternative C would provide for burning no more than 60 percent of each unit's surface area while Alternative D would provide for burning no more than 90 percent of each unit's surface area.

Alternative B has a timing restriction that would restrict prescribed burning from May-August. This would allow for protection to breeding birds and to protect soil,

grasses, and forbs from fire-related mortality that could occur with burns during the hotter, drier months. Alternative C would provide for this same protection while Alternatives A and D do not provide for it.

Under Alternative B, areas identified for prescribed burning would be rested for up to one year prior to treatment (if necessary) and for a minimum of two growing seasons following burning treatments, subject to alteration of these timeframes on a case-by-case basis. This rest from livestock grazing would promote grassland and shrubland vegetative recovery before reapplying livestock grazing. Alternative C calls for similar management but without the flexibility to reduce the post-treatment rest timeframe. The flexibility available under Alternative B may be more accommodating to permittee forage needs when objectives can be met with shorter rest periods. Alternative A calls for rest before and after burning as determined through site-specific planning. Alternative D calls for rest prior to burning if needed, and for rest through one growing season, subject to alteration of these timeframes on a case-by-case basis.

Under Alternatives B and D, BLM would proactively restore the distribution and vigor to mountain mahogany and bitterbrush stands through vegetative treatments designed to reduce competing plants (e.g., encroaching conifers and weeds) and create conditions to promote natural regeneration. Because restoration of stands of these species would be a priority, the vigor and health of communities of these species would likely improve more substantially under Alternatives B and D than under Alternatives A and C where no such proactive restoration is proposed.

Reduction of conifers from bitterbrush and mountain mahogany communities by mechanical means under Alternative B as opposed to prescribed fire would reduce mortality to these species and would benefit them by eliminating competing conifers. The use of prescribed fire would have variable effects on these species depending on a variety of conditions. Bitterbrush is susceptible to fire, often taking 15 to 30 years to recover following moderate to severe fires; however, the potential to sprout after fire is variable depending on fire severity and season, genetic composition, carbohydrate reserves, and

age. Bitterbrush growing in association with plant communities that have relatively frequent fire intervals tend to sprout more frequently than bitterbrush growing on sites where fire has been excluded for long periods. Low intensity, high frequency fires would favor regrowth from sprouting, whereas higher intensity, less frequency fires would favor regeneration by seed.

Like bitterbrush, mountain mahogany is usually killed by fire, even fires of low intensity, and does not resprout. Closed, mature stands may not have sufficient understory to carry fire, so fire-induced mortality may be confined to edges of stands. Regeneration by seed may occur after fire if the soil is not rapidly colonized by other competitive plants.

Overall, Alternative B (grazing on approximately 265,000 acres of all Decision Area lands) would have greater impacts to grasslands and shrublands associated with livestock grazing than Alternative C (approximately 262,000 acres), but less than Alternatives A and D (approximately 273,000 acres). Managing livestock grazing activities in the McMasters Hills, Spokane Hills, and Indian Creek allotments as forage reserve allotments in Alternative B would impact grasslands and shrublands less than in either Alternatives A or D where they would be managed as available for general grazing permits. Alternative B would pose a greater impact to grasslands and shrublands in the Indian Creek allotment than Alternative C in which the Indian Creek allotment would be unavailable for grazing but where McMasters and Spokane Hills allotments would be managed as forage reserve allotments as in Alternative B.

Fine fuel build-up and plant decadence may occur on some grasslands and shrublands in the Centennial Gulch, Free Coinage, Alder Creek, Charcoal Mountain Custodial, Dickie, Maiden Rock Custodial, Quinn Creek, and Wineglass Mountain allotments in Alternative B as these areas would be unavailable for grazing. Alternative C manages these areas the same as Alternative B and would therefore have similar livestock grazing-related impacts. Alternatives A and D would manage these areas as available for general grazing permits and would have impacts described above in "Effects Common to All Alternatives" to grasslands and shrublands associated with them in these areas.

### **Forests and Woodlands**

Harvesting of firewood and other public demand forest products would have effects similar to Alternative A. Firewood removal, however, is more restricted as trees greater than 24 inches diameter would be restricted from cutting under Alternative B, thus leaving more, larger diameter snags on the landscape.

Maintaining a 0.25-mile radius buffer around unoccupied raptor nests in forest habitats for a period of five years would not prevent restorative vegetative management in these areas but suitable habitat would have to be retained around the nest sites. This could restrict some

treatments in an area approximately 125 acres in size per nest site.

### **Dry Forest**

Approximately 10,750 acres of high-density stands of dry ponderosa pine and Douglas-fir forest with medium to large-sized trees in the Decision Area would be treated per decade. Additionally, up to 2,000 acres per decade of dry forest stands, currently in ecologically healthy condition, would be treated. These treatments would result in maintenance of large overstory trees and natural regeneration that would provide diverse age and size classes that would periodically burn with low intensity wildland fire. Some regeneration harvesting would occur; probably favoring shelterwood harvesting to convert stands to earlier seral conditions.

Approximately 1,000 acres of limber pine habitat would also be treated with prescribed fire per decade. Burning would reduce the density of limber pine trees and would remove fuels that have built up due to mortality of trees from blister rust.

Approximately 1,000 acres per decade of small diameter thinning of seedlings, saplings, and pole-size trees would reduce density of small trees and reduce fuel loading, resulting in less intense wildland fires.

These actions would also reduce the effects of spruce budworm in treated Douglas-fir stands. Alternative B would have more effect on spruce budworm than Alternatives A and C because more acreage would be treated.

The majority of treatments (7,000 acres, 47 percent) with Alternative B would be in the Upper Missouri River Watershed. Currently, there are 33,973 acres of medium and large size, high density, dry Douglas-fir and ponderosa pine in the Upper Missouri watershed as compared to 6,965 acres historically. Proposed treatments would reduce the acreage of high density trees to 24,073 acres over approximately the next two decades. If it is assumed that the current rate of increase in high density stands has taken place over the past century of fire suppression, the rate of increase would be about 2,700 acres per decade. Four decades of treatments could reduce the acreage of large and medium size class, high density trees, in the Upper Missouri watershed to historic levels.

Proposed treatment of 2,750 acres of high density dry forest with medium to large-sized trees in the Jefferson watershed would reduce current acreages from 19,187 acres to 13,687 acres over a 20-year time span as compared to 4,914 acres historically. Assuming a rate of increased acreage of large and medium size class, high density trees of 1,424 acres per decade (the difference between current acres and historic acres divided by 10 decades of fire exclusion), as a result of fire exclusion, proposed levels of treatment would require nearly 11 decades to approach historic levels in the Jefferson watershed.

Proposed treatments of 1,900 acres of high density dry forest with medium to large-sized trees in the Big Hole watershed would reduce current acreages from 13,733 acres to 10,033 acres over a 20-year time span as compared to 6,768 acres historically. Assuming a rate of increased acreage of large and medium size class, high density trees of 704 acres per decade, proposed levels of treatment would require nearly 6 decades to approach historic levels in the Big Hole watershed.

A total of 14,750 acres of dry forest would be treated per decade to help restore historic conditions compared with 5,100 acres with Alternative A, 4,800 acres with Alternative C, and 18,200 acres for Alternative D. For all dry forest types, deviation from historic conditions has occurred at a rate of 4,958 acres per decade. Only Alternatives A, B and D would restore vegetation at a rate that exceeds the rate of declining forest health.

### **Cool, Moist Forest**

Approximately 3,350 acres (24 percent) of high-density stands of moist Douglas-fir, lodgepole pine, subalpine fir, and Engelmann spruce forest with medium to large-sized trees in the Decision Area would be treated per decade. Additionally, 400 acres of cool, moist forest stands would be thinned pre-commercially, which would remove smaller seedlings, saplings, and pole-sized trees, reducing the risk of intense wildland fire and allowing larger trees to develop a dominant overstory.

Under Alternative B, more treatments are proposed in lodgepole pine stands, as compared to Alternatives A and C; treatments would result in fewer acres that are susceptible to endemic infestation by mountain pine beetle.

Treatments in cool, moist forest types would include even-aged stand management, such as seed tree harvesting, shelterwood cuts, and clearcutting treatment methods, that would regenerate approximately 2,010 acres of cool moist forest, primarily in lodgepole pine and Douglas-fir forest types.

Proposed treatments in the Big Hole watershed of 1,400 acres would reduce current acreages of medium and large size class, high density, trees from 5,533 acres to 4,133 acres, compared to 2,438 acres historically. Assuming a rate of increased acreage of large and medium size class, high density trees of 309 acres per decade, proposed levels of treatment would require 3 decades to approach historic levels in the Big Hole watershed.

Proposed treatments in the Upper Missouri watershed of 1,400 acres would reduce current acreages of stands with medium and large-sized trees with high stem densities from 6,187 acres to 4,787 acres as compared to 4,262 acres historically. Assuming a rate of increased acreage of large and medium size class, high density trees of 193 acres per decade, proposed levels of treatment would require two decades to approach historic levels in the Upper Missouri watershed.

Proposed treatments in the Jefferson watershed of 300 acres would decrease current acreages of medium and large size class, high density trees, from 1,493 acres to 1,193 acres compared to 1,518 acres historically, assuming a rate of increased acreage of large and medium size class, high density trees of 21 acres per decade. While this is 20 percent lower than the historical averages for medium and large size forest types, this action is expected to shift the treated stands toward earlier seral conditions and would start the process of developing earlier seral, seedling, saplings and pole sized stands, which are currently 610 acres or 11 percent of 5,401 acres that occurred historically.

Under Alternative B, a total of 3,750 acres of cool, moist forest per decade would be treated to help restore historic conditions, compared with 2,350 acres with Alternative A, 550 acres with Alternative C, and 5,050 acres for Alternative D. For all cool moist forest types, deviation from historic conditions has occurred at a rate of 1,100 acres per decade. Alternatives A, B and D would restore vegetation at a rate that exceeds the rate of declining forest health.

### ***Riparian Areas***

Alternatives B and C would establish Riparian Management Zones (RMZs) wider than Streamside Management Zones. Having RMZs wider than SMZs would create more benefits to riparian vegetation and stream conditions by providing for increased stream shading, increased down woody material recruitment, and wider vegetative “filters” to prevent eroded sediment from reaching streams. This differs from Alternatives A and D where no RMZs would be established and SMZs would perform these functions to a lesser degree.

With Alternative B, there would be approximately 5,312 acres in RMZs in the Decision Area as compared to approximately 11,393 acres in RMZs in Alternative C. Alternatives A and D would both have approximately 3,528 acres in Streamside Management Zones. Under Alternative B mechanical treatments and prescribed fire would maintain, restore, or enhance vegetative diversity and structure in up to 700 acres per decade of riparian communities. These acres would tend to move from a lower functional condition to a higher functional condition. An example would be moving a riparian area (in a historically non-forested area) that is functioning-at-risk to proper functioning condition by cutting or removing conifers that are closing the canopy and shading out the broadleaf tree or shrub species. Treatments to restore functioning condition would be 13 times greater than Alternative A (up to 30 acres per decade), 3.5 times greater than Alternative C (up to 200 acres per decade), but 2.5 times less than Alternative D (up to 1,700 acres per decade).

With Alternative B, timber harvest and removal of wood products would be allowed in RMZs when utilized to help meet riparian objectives. For example, recruitment

of aspen or cottonwood, reducing juniper competition, or enhancing broadleaf shrub communities would meet riparian objectives. Under Alternatives B and D fire-wood cutting would not be allowed within 100 feet of perennial streams or within 50 feet of intermittent streams. This measure would allow recruitment of woody material to streams and riparian areas to a greater extent than under Alternative A, but to a lesser extent than under Alternative C where limitations would apply within 200 feet of perennial streams and 100 feet of intermittent streams.

Overall, Alternative B (grazing on approximately 265,000 acres) would have slightly greater impacts to riparian vegetation associated with livestock grazing than Alternative C (approximately 262,000 acres), but less than Alternatives A and D (approximately 273,000 acres). Managing livestock grazing activities in the McMasters Hills, Spokane Hills, and Indian Creek allotments as forage reserve allotments in Alternative B could impact riparian vegetation less than in either Alternatives A or D where they would be managed as available for general grazing permits. Alternative B would pose a greater impact to riparian vegetation in the Indian Creek allotment than Alternative C in which the Indian Creek allotment would be unavailable for grazing but where McMasters and Spokane Hills allotments would be managed as forage reserve allotments as in Alternative B.

There would be no impacts to riparian vegetation specifically from livestock grazing in the Centennial Gulch, Free Coinage, Alder Creek, Charcoal Mountain Custodial, Dickie, Maiden Rock Custodial, Quinn Creek, and Wineglass Mountain allotments in Alternative B as these areas would be unavailable for grazing. Alternative C manages these areas the same as Alternative B and would therefore also have no specific livestock grazing-related impacts to riparian vegetation. Alternatives A and D would manage these areas as available for general grazing permits and would have slightly greater impacts to riparian vegetation associated specifically with livestock grazing.

Treating aspen stands to stimulate sprouting and then fencing treated sites to prevent cattle and wildlife browsing and trampling would regenerate aspen stands. Aspen stands would be more actively managed across the landscape in Alternatives B and D (more acres specifically targeted for aspen restoration) compared to the opportunistic management proposed under Alternative C (aspen treated through other higher priority projects) and no specific aspen management included in Alternative A. Because Alternatives B and D would actively restore aspen and propose more acres of restoration than Alternatives A and C, these alternatives would promote and sustain more aspen over the long-term.

Under Alternative B, aerial application of herbicides to treat noxious weeds would not occur within 100 feet of streams or wetlands. This measure increases the chance

of inadvertent mortality to non-target riparian vegetation more than either Alternative A (minimum buffer strip is 200 feet wide) or Alternative C which provides for no aerial application of herbicides at all.

Because ground treatments for noxious weeds are more expensive and less efficient than aerial applications, Alternatives B and D would cost more than Alternative A, which in turn would cost more than Alternative C. Because ground treatments take more time and money, the risk of not treating some noxious weed infestations on uplands adjacent to riparian areas is correspondingly higher under alternatives with greater aerial herbicide application restrictions. Under Alternative B, Decision Area-wide, approximately 77.4 miles of routes within 300 feet of streams would remain open to motorized use. This is less than Alternative A (94.3 miles) and Alternative D (81.2 miles), but more than Alternative C (73.7 miles) and suggests that Alternative B has the next to least amount of road-related impacts to riparian vegetation of the alternatives.

Under Alternative B, a total of 5.7 miles of river/stream segments would be recommended as suitable for WSR designation (Muskrat Creek and Missouri River). WSR designation would likely lead to managing a 0.25 mile corridor on either side of these segments to protect the Outstandingly Remarkable Values (ORVs). This would increase protection of riparian vegetation from various potential future land use disturbances, such as utility corridors, timber harvest, or mining along these 5.7 miles. In relation to WSRs, Alternative B would manage more miles of riparian vegetation under WSR designation than Alternative D in which no rivers would be recommended as suitable for designation, but fewer miles than Alternatives A and C where all 12 miles of eligible segments would be managed to protect ORVs.

Alternative B would allow construction of roads and facilities associated with mining activities only when no alternative to locating these facilities outside riparian areas exists. This would minimize impacts such as removal of riparian vegetation, sediment production, streambank disturbance, and invasive plant introductions more than either Alternative A or D where no such provisions would be in place, but less than in Alternative C where no mining-related roads or facilities would be permitted inside RMZs.

### ***Noxious Weeds***

Under Alternative B, noxious weeds and invasive species have a similar potential for expansion to Alternative D which is greater than Alternative A and less than Alternative C. This potential could result in up to 48,000 weed acres (a rate of 10 percent/year, assuming implementation of the low end of the proposed range of weed treatment acres), from predictable factors in ten years. Of these acres, approximately 9 acres/year are associated with open and limited roads, 193 acres/year with grassland and shrubland (combined) vegetation treatments, 93

acres/year with forest treatments, and most of the remainder with natural expansion of established weed infestations in the Planning Area.

Weed expansion from new permanent roads for forest vegetation projects would also be similar for Alternatives B and D which would be greater than under Alternative C where no new permanent roads would be permitted.

Up to 50,000 acres per decade would be treated with 85 to 90 percent of these acres being repeat treatments. Therefore, up to 7,500 acres (40 percent of current populations) per decade of weed infestations would be successfully controlled or eradicated using Integrated Weed Management methods under this alternative.

Vegetation restoration of up to 15,450 acres per decade of grasslands and shrublands (combined) could eventually produce up to 12,000 acres per decade of healthy desired vegetation resistant to weed infestations.

Restrictions of a 100-foot minimum aerial herbicide application buffer for riparian areas would result in similar riparian weed control costs as Alternative D, but lower than Alternatives A and C.

## Effects of Alternative C

### *General Vegetation*

Alternative C would emphasize the maintenance and protection of diverse habitats, but would restore fewer acres than Alternative B or D. With less acres treated under Alternative C, much treatment would occur in wildland urban interface, as this area is prioritized for treatment.

Areas of habitat enhancement, fire rehabilitation, plantings, seedings, and other restoration projects would be protected from effects of grazing by wildlife and livestock, which would facilitate development of stable, self-sustaining plant communities and stabilize soils.

Snags and down woody material would be protected rather than created (Alternative B), which may in some cases locally limit the use of prescribed fire to reduce fuel loading, thin dense forest stands, and remove conifer encroachment if high value snag/down wood patches need to be protected.

Restricting permanent, new road construction in areas of big game winter range and calving areas and reducing road densities where they currently exceed 0.5 mi/mi<sup>2</sup> could limit vegetation management options that are associated or dependent on roads (e.g., Christmas tree and fire wood gathering). Alternative C would be more restrictive than Alternative B, which limits permanent road density to 1 mi/mi<sup>2</sup>, and Alternative D, which would limit permanent road density where they are 0.5 mi/mi<sup>2</sup> or less.

Snags and down woody material would be protected rather than created (Alternative B), which may limit the

use of prescribed fire to reduce fuel loading, thin dense forest stands, and remove conifer encroachment.

The restriction on clearing vegetation within 250 feet of the entrance of caves and abandoned mines with populations of bats would have the same effects on vegetation as Alternative B.

Alternative C restricts noise disturbance and most management activities within 1-mile of occupied raptor nests, during the nesting and brooding period. This is the most restrictive of noise disturbance prescriptions of all alternatives and has the greatest potential to limit vegetative restoration because approximately 2,000 acres would be affected per nest.

Only using native species for landscaping, tree plantings, and ground cover at developed campgrounds would necessitate relatively intense management in terms of weed control and establishment of vigorous, self-sustaining communities; however, once native plant communities were established, there would be little or no maintenance such as watering and fertilization, measures often required for non-native vegetation. The effects under other alternatives of using introduced annual cereal crops or other introduced perennials to stabilize slopes, to provide quick ground cover, or to provide competition with invasive species would be foregone.

Visual Resource Management (VRM) and Recreation Opportunity Spectrum (ROS) classifications may affect the potential to manage vegetation with methods that affect visual quality of some areas and that require the availability of permanently open access roads. Management practices such as regeneration harvesting (e.g., clearcutting, seed tree harvests) may conflict with visual management objectives and access would be restricted to existing roads affecting treatment feasibility in many areas, particularly in the semi-primitive motorized ROS areas. Alternative C also places the greatest area, 93,800 acres, into VRM Classes I and II of all alternatives. Although VRM does not preclude vegetation health projects from occurring, meeting objectives could be more difficult due to fewer implementation methods available to meet VRM Classifications.

The FMU designations in this alternative would be: approximately 41,000 acres (13 percent) in Category A; 23,000 acres (8 percent) in Category B; and 243,000 acres (79 percent) in Category C. This alternative is similar to Alternative A, except the percentage of acres that are in FMU Category A is five percent greater. The effects of FMU A, B, and C designations are discussed under Effects Common to All Alternatives, General Vegetation.

Alternative C would provide for a timing restriction on prescribed burning and mechanical treatment projects from May through August. Effects would be greater than with Alternative B, as implementation of many vegetation treatments would have to occur outside this re-

stricted period (unless breeding bird surveys document low impacts of project proposals to migratory birds).

**Grasslands and Shrublands**

Up to 2,000 acres (1 percent of grasslands in Decision Area) of grassland and 750 acres (4 percent of shrublands in Decision Area) of shrubland would be treated per decade with prescribed fire, mechanical treatments, and other methods to improve health and resiliency of these communities by reducing the density of conifers in these habitats.

Effects of treatments can be seen by comparing acres treated versus rates at which encroachment is occurring in grasslands and shrublands (Table 4-4 and Table 4-5). Grassland treatments would result in a net increase in conifer encroachment into grasslands at a rate of approximately 2,966 acres per decade (Table 4-4). Alternative C shrubland treatments would result in a net increase of conifer encroachment at a rate of approximately 695 acres per decade (Table 4-5).

Alternative C would result in the greatest reduction of grassland and shrubland habitat quality due to conifer encroachment of all alternatives. Alternative A would result in a lesser reduction of grassland and shrubland habitat quality (approximately 1,161 acres per decade combined) than Alternative C while Alternatives B and D would result in net increases in restored grassland and shrubland habitats.

Under Alternative C prescribed fire projects would be planned to consume aboveground biomass on no more

than 60 percent (on average) of areas burned on a per treatment unit basis. This would eliminate most conifer seedlings and saplings on 60 of the area and would leave live conifers in patches on 40 percent of treatment units. This would provide fewer long-term benefits to grassland and shrubland habitats than either Alternative B (burning on no more than 80 percent of surface area) and Alternative D (burning on no more than 90 percent of surface area). Alternative A would have no analogous management guidance.

Under Alternative C, areas identified for prescribed burning would be rested for up to one year prior to treatment (if necessary to produce fuels to carry the prescribed fire) and for a minimum of two growing seasons following burning treatments. As described above for Alternative B, Alternative C would enhance grassland and shrubland vegetation the most of all alternatives in this regard. Rest from livestock grazing would promote grassland and shrubland vegetative recovery before re-applying livestock grazing impacts. Alternative A calls for rest before and after burning as determined through site-specific planning. Alternative B calls for rest for up to one year prior to treatment and for two growing seasons after treatment, subject to alteration of these timeframes on a case-by case basis.

Alternative C would provide for opportunistic restorative treatments of mountain mahogany and bitterbrush communities when associated with other projects. Though the effects of these treatments would be the same as described for Alternative B, beneficial effects to these species would occur on fewer acres than in either

**Table 4-4**  
**Alternative C Comparison of Acres of Grassland Treated Versus Rate of Conifer Encroachment**

Watershed	Area Treated per Decade	Conifer Encroachment	Encroachment After Treatment	Rate of Encroachment per Decade	Net Effect on Encroachment
Big Hole	250	3,398	3,148	340	3,488
Blackfoot	0	NA	0	0	0
Gallatin	0	NA	0	0	0
Jefferson	500	16,472	15,972	1,647	17,619
Missouri	1,250	29,787	28,537	2,979	31,516
Yellowstone	0	NA	NA	NA	NA
<b>Total</b>	<b>2,000</b>	<b>49,657</b>	<b>47,657</b>	<b>4,966</b>	<b>52,623</b>

**Table 4-5**  
**Alternative C Comparison of Acres of Shrubland Treated Versus Rate of Conifer Encroachment**

Watershed	Area Treated per Decade	Conifer Encroachment	Encroachment After Treatment	Rate of Encroachment per Decade	Net Effect on Encroachment
Big Hole	450	9,017	8,567	902	9,469
Blackfoot	0	0	0	0	0
Gallatin	0	0	0	0	0
Jefferson	200	3,987	3,588	399	3,987
Missouri	100	1,341	1,241	134	1,375
Yellowstone	0	100	100	10	110
<b>Total</b>	<b>750</b>	<b>14,445</b>	<b>13,496</b>	<b>1,445</b>	<b>14,940</b>

Alternative B or D where a more proactive approach would be taken to maintain and restore populations of these species.

Under Alternative C, livestock grazing would be permitted on 262,000 acres of Decision Area lands, the lowest acreage of any alternative. Impacts to grasslands and shrublands from livestock grazing would be slightly less in Alternative C than in Alternative B because three allotments (Indian Creek, Dog Paw, Sixmile Park County) available as either forage reserve allotments or for general grazing permits in Alternative B would not be available for grazing in Alternative C. All of these allotments would be available for general livestock grazing permits in Alternatives A and D and would therefore have grassland and shrubland impacts associated with them in these alternatives. Alternative C poses the least impacts to grasslands and shrublands due to livestock grazing of all the alternatives.

### **Forests and Woodlands**

Harvesting of Christmas trees and other forest products would have similar effects to the other alternatives with fewer products being harvested since there would be fewer open roads for public access to the forested areas.

No dead trees could be removed for firewood except in specifically designated areas, so the effects of firewood removal would be limited to those specific areas designated for firewood cutting. The current cooperative USFS-BLM permitting system for personal use firewood cutting would be dropped and would not match current public firewood cutting practices on nearby National Forest lands. Some confusion with the public is likely to occur and additional education and enforcement actions are anticipated. More dead fuel would remain, and the potential large snag and down woody material development would increase as the diameter limit for live tree firewood removal in Alternative C would be 20 inches, a firewood diameter restriction that is the smallest, and therefore most restrictive, of the alternatives.

Existing and developing old forests would be retained and protected from land use actions, stand-replacing wildland fire, and insects and disease through active treatments and restoration activities, where access to complete the treatment work is available. The amount of helicopter use in treatments is anticipated to be the highest under this alternative, however treatable stands would need to occur near accessible landing sites and have sufficient quantities of commercial materials to offset all or part of potential high costs of the equipment to remain feasible. These access factors could limit the amount of forest and woodland areas that could be effectively treated, compared to the other alternatives. Forest and woodland areas that currently do not have existing access or could not be feasibly treated by helicopter would not receive forest management or fuel reduction actions and would be left as is, subject to current stand conditions, vegetative trends, and natural events.

Alternative C requires 0.5 mile radius maintenance buffers around unoccupied raptor nests in forest habitats for a period of seven years. This is the most restrictive of the alternatives in this regard as it affects the largest acreage, 500 acres per site, for the longest period of time.

### **Dry Forest**

Approximately 4,000 acres of high-density stands of dry ponderosa pine and Douglas-fir forest with medium to large-sized trees in the Decision Area would be treated per decade.

Additionally, 500 acres per decade of dry forest stands, currently in ecologically healthy condition, would be treated. These treatments would result in maintenance of large overstory trees and natural regeneration that would provide diverse age and size classes that would periodically burn with low intensity wildland fire.

Although treatments in Douglas-fir stands may have a localized effect on western spruce budworm, Alternative C treats the least acreage of all the alternatives, and will have the least effect on spruce budworm overall.

Proposed treatments in the Upper Missouri watershed would affect 2,300 acres, reducing the acreage of medium and large size tree class, high density ponderosa pine and Douglas-fir from approximately 33,973 acres to 29,373 acres over a 20-year time span compared to 6,965 acres historically. Assuming that the acreage of high density trees has increased at a rate of 2,700 acres per decade, as a result of fire suppression over the last century, the proposed treatments would not keep pace with the rate at which high density stands of Douglas-fir and ponderosa pine are developing.

Proposed treatments in the Jefferson watershed would affect 1,300 acres of high density forest with medium to large-sized trees, reducing the acreage of stands dominated by medium and large size class Douglas-fir and ponderosa pine from 19,187 acres to 16,623 acres over a 20-year time span. Assuming that the acreage of high density trees has increased at a rate of 1,424 acres per decade, as a result of fire suppression over the last century, the proposed treatments would not keep pace with the rate at which high density stands of Douglas-fir and ponderosa pine are developing.

Proposed treatments in the Big Hole watershed would affect 500 acres, reducing the acreage of medium and large size class Douglas-fir and ponderosa pine from 13,733 acres to 12,733 acres over a 20-year time span, compared to 6,768 historically. Assuming that the acreage of high density trees has increased at a rate of 704 acres per decade, as a result of fire suppression over the last century, the proposed treatments would not keep pace with the rate at which high density stands of Douglas-fir and ponderosa pine are developing.

## Cool, Moist Forest

Approximately 550 acres (4 percent of Decision Area total) of high-density stands of moist Douglas-fir, lodgepole pine, subalpine fir, and Engelmann spruce forest with medium to large-sized trees in the Decision Area would be treated per decade.

Additionally, 50 acres of cool, moist forest stands would be thinned pre-commercially, which would remove smaller seedlings, saplings, and pole-sized trees, reducing the risk of intense wildland fire and allowing larger trees to develop a dominant overstory.

Alternative C treats the least amount of acres of cool, moist forest as compared to the other alternatives, and will have the least impact on endemic mountain pine beetle infestations, accordingly.

Treatments in cool, moist forest types would include even-aged stand management, such as seed tree harvesting, shelterwood cuts, and clearcutting treatment methods, that would regenerate approximately 330 acres of cool moist forest, primarily in lodgepole pine and Douglas-fir forest types.

Proposed treatments of medium and large tree size class, high density, stands in the Upper Missouri watershed would affect 250 acres per decade, reducing the acreage of high density stands from 6,187 acres to a total of 5,937 acres, compared to 4,262 acres historically. Assuming that the acreage of high density trees has increased at a rate of 193 acres per decade, the proposed treatments would reduce the amount of medium and large size class, high density stands by less than one percent per decade.

Proposed treatments of medium and large tree size class, high density, stands in the Big Hole watershed would affect 175 acres per decade, reducing the acreage of high density stands from 5,533 acres to a total of 5,358 acres, compared to 2,438 acres historically. Assuming that the acreage of high density trees has increased at a rate of 309 acres per decade, the proposed treatments would reduce the rate of increase by 57 percent, but would not keep pace with the rate at which high density stands of Douglas-fir and ponderosa pine are developing.

Proposed treatments in the Jefferson watershed of 50 acres per decade would decrease current acreages of medium and large size class, high density trees, from 1,493 acres to 1,464 acres assuming a rate of increased acreage of large and medium size class, high density trees of 21 acres per decade, compared to 1,518 acres historically. This is less than a two percent change in the amount of medium and large size class, high density cool, moist forest in the Jefferson watershed.

A total of 600 acres of cool, moist forest and woodland per decade would be treated per decade under Alternative C. It is the only alternative that continues the current approximate levels of cool moist forest, with a general

decline in forest health continuing in many areas with limited access.

## Riparian Types

Alternative C would establish wider Riparian Management Zones (RMZs) than Alternative B. Similar to Alternative B, riparian goals, and objectives would be the primary management emphasis in these areas. Alternative C would provide for approximately 11,393 acres in RMZs, compared to approximately 5,312 acres in Alternative B. Since Alternatives A and D provide only for narrower Streamside Management Zones (approximately 3,528 acres), Alternative C would reduce the risk of more adverse human-caused disturbances than the other alternatives.

Mechanical treatments and prescribed fire would maintain, restore, or enhance vegetative diversity and structure in up to 200 acres per decade of riparian communities under Alternative C. This is a lesser rate of restorative treatments than with Alternatives B and D, but more than with Alternative A.

Woody materials cut for riparian restoration activities under Alternative C would be retained on site, providing down wood for streams and riparian function, making available organic material for fungi and invertebrates, and increasing organic matter in soil. At the site level this would benefit riparian communities on the whole more than with any other alternative. All other alternatives allow for removal of commercial forest products from riparian communities.

Under Alternative C firewood cutting would not be allowed within 200 feet of perennial streams or within 100 feet of intermittent streams. This restriction would allow recruitment of more woody material to streams and riparian areas than with any other alternative.

Natural processes would determine the structure and composition of aspen stands under Alternative C. If consistent with other project objectives, aspen would also be treated opportunistically. This would reinvigorate aspen communities less than either Alternative B or Alternative D where aspen stands would be proactively restored, but more than Alternative A where particular aspen management would not occur.

Impacts to riparian vegetation from livestock grazing would be slightly less in Alternative C than in Alternative B because three allotments (Indian Creek, Dog Paw, Sixmile Park County) available as either forage reserve allotments or for general grazing permits in Alternative B would not be available for grazing in Alternative C. All of these allotments would be available for general livestock grazing permits in Alternatives A and D and would therefore have riparian vegetation impacts associated with them in these alternatives. Alternative C poses the least impacts to riparian vegetation associated with livestock grazing of all the alternatives.

Alternative C provides for no aerial application of herbicides to treat noxious weeds. This would provide the most protection to riparian vegetation from inadvertent herbicide-related mortality of desirable vegetation of all alternatives because aerial applications would be allowed under all other alternatives.

Under Alternative C, Decision Area-wide, approximately 73.7 miles of routes within 300 feet of streams would remain open to motorized use. This is the least of all alternatives and suggests that Alternative C would have the least road-related impacts to riparian vegetation of all alternatives.

Under Alternative C, all 12 miles of eligible river/stream segments would be recommended as suitable for WSR designation (Muskrat Creek, Missouri River, Moose Creek, and Upper Big Hole River). WSR designation would likely lead to managing a ¼-mile corridor on either side of these segments to protect the ORVs. This would increase protection of riparian vegetation from various land use disturbances along these 12 miles.

Under Alternative C the potential Spokane Creek ACEC (14 acres) would be designated. Proposed ACEC management would increase protection of riparian vegetation in this area by not allowing new road construction, closing the area to new rights-of-way and R&PP leases, and providing for No Surface Occupancy for oil and gas exploration. The activities listed above could potentially disrupt the stream channel, upset the spawning gravels, and remove the vegetation that provides shade and filters sediment. These measures would not be in place in Alternatives A, B and D because this potential ACEC is not proposed in those alternatives.

Under Alternatives C, the proposed withdrawal from mineral entry of 180 acres of riparian areas in the Muskrat Creek drainage would protect riparian vegetation in these areas from impacts associated with mining activities more than under Alternatives A, B and D that do not provide for this proposed mineral withdrawal. Muskrat Creek is a particularly sensitive area because the stream supports a healthy population of westslope cutthroat trout that is used to help repopulate other creeks and streams.

Prohibiting new mineral operation roads and facilities inside RMZs under Alternative C would provide additional protection to riparian vegetation beyond that provided in any other alternative. All other alternatives would allow for mining facility and road construction in riparian areas under certain conditions.

### ***Noxious Weeds***

Under Alternative C, noxious weeds and invasive species have the greatest potential for expansion, resulting in up to 51,000 weed acres (a rate of 11 percent/year assuming implementation of the low end of the proposed range of weed treatment acres), from predictable factors in ten years. Of these acres, approximately 8 acres/year

are associated with open and limited roads, 34 acres/year with grassland and shrubland (combined) vegetation treatments, 27 acres/year with forest treatments, and most of the remainder with natural expansion of established weed infestations on and near the Decision Area.

Wildfires could increase these total expansion acres more in Alternative C than any other alternative because it has the least reduction in fire potential from vegetation treatments. Alternative C restrictions where salable minerals may be sold only to state and county sales or from community pits and not permitting new roads for mineral development would reduce potential weed spread by decreasing disturbances associated with access to salable mineral sites.

Camping restrictions on Holter and Hauser Lakes would have the greatest reduction in potential weed expansion from introducing seed sources under Alternative C because camping could only occur in developed sites. This would be more restrictive than Alternative B where camping could occur in developed or designated undeveloped sites and Alternatives A and D which have no camping restrictions.

Up to 38,000 acres per decade would be treated to reduce noxious weeds with 85 to 90 percent of these acres being repeat treatments. Therefore, up to 5,700 acres (30 percent of current populations) per decade of weed infestations would be successfully controlled or eradicated using Integrated Weed Management methods under this alternative.

Vegetation restoration of up to 2,750 acres of grasslands and shrublands (combined) per decade could eventually produce up to 2000 acres per decade of healthy desired vegetation resistant to weed infestations.

Riparian weed treatments would be the most expensive under Alternative C because no aerial treatments would be permitted in riparian areas, so more expensive ground treatments would be required. Also, restrictions on using sheep grazing for weed control near bighorn sheep habitat exclude the most area under Alternative C which would also increase treatment costs; thereby decreasing the acres possible to treat in the Decision Area.

Impacts from the revegetation seed mix would be the same as with Alternative B.

No new, permanent roads would be allowed in big game winter range or calving habitat where road densities are mines with bat populations. Having no related action provides more flexibility in these areas than under Alternatives B and C.

## **Effects of Alternative D**

### ***General Vegetation***

Livestock grazing would be permitted on 273,000 acres of public land. Effects would be the same as those described under “Effects Common to All Alternatives” for

Grasslands and Shrublands, 0.5 mi/mi<sup>2</sup> or less. Road restrictions could affect options for vegetation treatment (e.g., firewood and Christmas tree harvest, timber harvest, and thinning), but less than with the other action alternatives.

Similar to Alternative A, no restrictions would be placed on vegetation treatments near caves and abandoned mines with populations of bats.

Alternative D restricts noise disturbance and most management activities within 0.25-mile, or 125 acres, of occupied raptor nests, during the nesting and brooding period. This is the least restrictive of noise disturbance prescriptions under the action alternatives and is less likely to impede vegetative treatments than Alternatives B and C.

Prescribed burning could take place at any time of the year, which could affect mortality of vegetation if burning were to occur during conditions that would lead to high burn intensity and severity. No timing restrictions on burning would also increase the feasibility of implementing burning treatments.

The FMU designation in this alternative would be approximately 42,000 acres (14 percent) in Category B; 82,000 acres (27 percent) in Category C; and 183,000 acres (59 percent) in Category D. In FMU Category D, fire is desired with no constraints. These areas offer the greatest opportunity to use the full range of options

available for managing wildland fire under the appropriate management response, including wildland fire use for resource benefit. The effects of FMUs B, C, and D designations are discussed under Effects Common to All Alternatives, General Vegetation.

Alternative D places the fewest acres, 32,800 in VRM Classes I and II. This alternative provides for the greatest flexibility in the VRM classes to accomplish vegetation health objectives without potentially conflicting with VRM objectives. With fewer visual restrictions, project planning and implementation could utilize a wider range of available tools.

**Grasslands and Shrublands**

Up to 19,050 acres (14 percent of grasslands in Decision Area) of grassland and 6,800 acres (34 percent of shrublands in Decision Area) of shrubland would be treated per decade with prescribed fire, mechanical treatments, and other methods to improve health and resiliency of these communities by reducing the density of conifers in these habitats. Effects of treatments can be seen by comparing acres treated versus rates at which encroachment is occurring in grasslands and shrublands (Table 4-6 and Table 4-7).

Grassland treatments could result in a net increase in restored habitats of approximately 13,373 acres per decade under Alternative D (Table 4-6). Shrubland treatments could result in a net increase in restored habi-

**Table 4-6**  
**Alternative D Comparison of Acres of Grassland Treated Versus Rate of Conifer Encroachment**

Watershed	Area Treated per Decade	Conifer Encroachment	Encroachment After Treatment	Rate of Encroachment per Decade	Net Effect on Encroachment
Big Hole	3,500	3,398	0	399	399
Blackfoot	100	NA	0	0	0
Gallatin	400	NA	0	0	0
Jefferson	6,000	16,472	10,472	1,647	12,119
Missouri	9,000	29,787	20,787	2,979	23,766
Yellowstone	50	NA	NA	NA	NA
<b>Total</b>	<b>19,050</b>	<b>49,657</b>	<b>31,259</b>	<b>5,025</b>	<b>36,284</b>

**Table 4-7**  
**Alternative D Comparison of Acres of Shrubland Treated Versus Rate of Conifer Encroachment**

Watershed	Area Treated per Decade	Conifer Encroachment	Encroachment After Treatment	Rate of Encroachment per Decade	Net Effect on Encroachment
Big Hole	4,000	9,017	5,017	902	5,919
Blackfoot	100	0	0	0	0
Gallatin	100	0	0	0	0
Jefferson	1,500	3,987	2,487	399	2,886
Missouri	1,000	1,341	341	134	475
Yellowstone	100	100	0	10	10
<b>Total</b>	<b>6,800</b>	<b>14,445</b>	<b>7,845</b>	<b>1,445</b>	<b>9,290</b>

tats of approximately 5,155 acres per decade (Table 4-7). These potential increases in restored grassland and shrubland habitats are greater than with any alternative and would represent the greatest potential long-term benefits of any alternative.

Proposed treatments would exceed the rate at which conifers are encroaching on grasslands; however, restoration of historic conditions would take approximately 3.5 decades if the upper end of proposed Alternative D treatment rates were applied. Restoration of historic conditions in shrublands would take nearly 3 decades if the upper end of proposed Alternative D treatment rates were applied.

Under Alternative D prescribed fire projects would be planned to consume aboveground biomass on no more than 90 percent (on average) of areas burned on a per treatment unit basis. This would eliminate most conifer seedlings and saplings on 90 of the area and would leave live conifers in patches on 10 percent of treatment units.

This would provide greater long-term benefits to grassland and shrubland habitats than either Alternative B or C. Alternative A would have no analogous management guidance.

Unlike Alternatives B and C, Alternative D (along with Alternative A) would not provide for a summer seasonal restriction on prescribed fire projects. Prescribed fires during the summer months could be more severe and intense than those in either spring or fall. Such burns under Alternative D could have more severe, longer term adverse effects to grasslands and shrublands associated with mortality of desired vegetation (as described for Alternative A) than in Alternatives B and C where prescribed fire would not be applied from May through August.

Alternative D calls for rest from livestock grazing prior to prescribed burning projects (if needed to produce fine fuels to carry prescribed fire), and for rest through one growing season after burning projects to allow vegetative recovery, subject to alteration of these timeframes on a case-by-case basis. Post-burn recovery of grassland and shrubland vegetation may be slower due to the plants' increased palatability to livestock after one growing season of recovery than under Alternatives B and C that both call for two growing seasons of rest from livestock grazing after prescribed burning projects.

Like Alternative B, Alternative D would provide for proactive restoration of mountain mahogany and bitterbrush communities. Effects would be the same as described for Alternative B.

Effects of livestock grazing on grasslands and shrublands in Alternative D would be the same as those described for Alternative A.

## ***Forests and Woodlands***

Impacts on late forest structure would be the same as Alternative B.

The effects of Christmas tree harvest would be similar to Alternative B, though removal of more trees in Alternative D would potentially remove more encroachment. Similarly, the effect of firewood removal would be the same as with Alternative B.

The 0.25-mile protection buffer (affecting 125 acres) surrounding unoccupied raptor nests for a period of 3 years would have the least effect on vegetative treatments of the action alternatives. The area affected would be the same as Alternative B but the maintenance period would be 2 years less.

### **Dry Forest**

Approximately 12,200 acres of high-density stands of dry ponderosa pine and Douglas-fir forest with medium to large-sized trees in the Decision Area would be treated per decade.

Additionally, 3,500 acres per decade of dry forest stands, currently in ecologically healthy condition, would be treated. These treatments would result in maintenance of large overstory trees and natural regeneration that would provide diverse age and size classes that would periodically burn with low intensity wildland fire.

About 1,000 acres of limber pine habitat would also be treated with prescribed fire per decade. Burning would reduce the density of limber pine trees and would remove fuels that have built up due to mortality of trees from blister rust.

Approximately 1,500 acres per decade of small diameter thinning of seedlings, saplings, and pole-size trees would reduce density of small trees and reduce fuel loading, resulting in less intense wildland fires.

Alternative D would have the greatest effect on reducing potential impacts by western spruce budworm since the greatest acreage of dry Douglas-fir forest is treated under this alternative. Thinning stands and removing encroachment will reduce defoliation and leave stands less vulnerable to insect infestation. Less spruce budworm defoliation will also make dry forests less susceptible to Douglas-fir beetle infestation as stands will be more vigorous after treatment.

Proposed treatments in the Upper Missouri watershed would affect 5,500 acres of medium and large tree size class, high density ponderosa pine and Douglas-fir, reducing the acreage from 33,973 acres to 22,973 acres over a 20-year time span, compared to 6,965 acres historically. Assuming that the acreage of high density trees has increased at a rate of 2,700 acres per decade as a result of fire suppression over the last century, the proposed treatments would result in a reduction in the acreage of high density stands to historic levels with nearly 10 decades of repeated treatments.

Proposed treatments in the Jefferson watershed would affect 3,000 acres of medium and large tree size class Douglas-fir and ponderosa pine, reducing the acreage from 19,187 acres to 13,187 acres over a 20-year time span, compared to 4,914 acres historically. Assuming that the acreage of high density trees has increased at a rate of 1,424 acres per decade as a result of fire suppression over the last century, the proposed treatments would result in a reduction in the acreage of high density stands to historic levels with approximately 9 decades of repeated treatments.

Proposed treatments in the Big Hole watershed would affect 2,300 acres of medium and large tree size class Douglas-fir, reducing the acreage from 13,733 acres to 9,133 acres over a 20-year time span, compared to 6,690 acres historically. Assuming that the acreage of high density trees has increased at a rate of 704 acres per decade as a result of fire suppression over the last century, the proposed treatments would result in a reduction of the acreage with high density stands to historic levels with over 4 decades of repeated treatments.

### **Cool Moist Forest**

Approximately 4,450 acres (32 percent) of high-density stands of moist Douglas-fir, lodgepole pine, subalpine fir, and Engelmann spruce forest dominated by medium to large-sized trees in the Decision Area would be treated per decade. Additionally, 600 acres of cool, moist forest stands would be thinned pre-commercially, which would remove smaller seedlings, saplings, and pole-sized trees, reducing the risk of intense wildland fire and allowing larger trees to develop a dominant overstory.

Treatments in cool, moist forest types would include even-aged stand management, such as seed tree harvesting, shelterwood cuts, and clearcutting treatment methods, that would regenerate approximately 2,670 acres of cool moist forest, primarily in lodgepole pine and Douglas-fir forest types.

Alternative D has the greatest potential to impact future and existing and endemic mountain pine beetle infestations within the DA. Treatments would result in the fewest acres susceptible to pine beetle infestation, as compared to all other alternatives.

Proposed treatments of medium and large tree size class, high density, stands in the Upper Missouri watershed would affect 2,050 acres per decade, reducing the acreage of high density stands from 6,187 acres to 4,137 acres, compared to 4,262 acres historically. Assuming that the acreage of high density trees has increased at a rate of 193 acres per decade as a result of fire suppression over the last century, the proposed treatments would result in a reduction of the acreage with high density stands to historic levels with about 1 decade of treatments.

Proposed treatments of medium and large tree size class, high density, stands in the Big Hole watershed would affect 1,500 acres per decade, reducing the acreage of high density stands from 5,533 acres to 4,033 acres, compared to 2,438 acres historically. Assuming that the acreage of high density trees has increased at a rate of 309 acres per decade as a result of fire suppression over the last century, the proposed treatments would result in a reduction of the acreage with high density stands to historic levels after 3 decades of treatments.

Proposed treatments of medium and large size class, high density, stands in the Jefferson watershed would affect 500 acres per decade, reducing the acreage of high density stands from 1,493 acres to 993 acres, compared to 1,518 acres historically, assuming the acreage of high density trees has increased at a rate of 21 acres per decade. While this is 32 percent lower than the historical averages for medium and large size forest types, this action is expected to shift the treated stands toward earlier seral conditions and would start the process of developing earlier seral, seedling, saplings and pole sized stands, which are currently 610 acres or 11 percent of 5,401 acres that occurred historically.

Alternatives D would restore cool moist forest vegetation at a rate higher than all the other alternatives.

### **Riparian Types**

Like Alternative A, Alternative D would provide for Streamside Management Zones. Approximately 3,528 acres within the Decision Area would be in SMZs. Effects of this would be the same as described for Alternative A.

Under Alternative D mechanical treatments and prescribed fire would maintain, restore, or enhance vegetative diversity and structure in up to 1,700 acres per decade of riparian communities. This is the greatest treatment rate of any alternative, so Alternative D would potentially restore riparian vegetative communities at a greater rate than any of the alternatives. However, if the minimum constraints of SMZs would be applied to these treatments, then site-level benefits would be less than under Alternatives B and C where RMZs and associated site-specific riparian objectives would be applied. Timber harvest within SMZs could occur in Alternative D with effects the same as in Alternative A.

Alternative D would provide for the same firewood cutting limitations in riparian areas as would Alternative B. Effects would be the same as in Alternative B.

Like Alternative B, maintaining and restoring aspen stands would be a priority under Alternative D. Alternative D would affect aspen stands similarly to Alternative B at the site scale and on more acres than any other alternative Decision Area-wide.

Aerial application of herbicides to treat noxious weeds would not occur within 100 feet of streams or wetlands in Alternative D. This would provide less protection to

riparian vegetation from inadvertent mortality than under Alternatives A or C.

Under Alternative D, approximately 81.2 miles of motorized routes within 300 feet of streams would remain open to motorized use Decision Area-wide. This is less than in Alternative A but more than in Alternatives B and C. This suggests that Alternative D would pose the next greatest amount of impact associated with roads to riparian vegetation of all alternatives.

Under Alternative D none of the four river segments eligible for Wild and Scenic River designation would be recommended as suitable for designation. The effects associated with WSR designations would be foregone.

Alternative D would allow for construction of mining-related roads and facilities in riparian areas using BMPs to minimize adverse effects. This would allow more disturbance of riparian vegetation than with either Alternative B or C and effects would be similar to Alternative A.

### ***Noxious Weeds***

Under Alternative D, noxious weeds and invasive species would have a similar potential for expansion as Alternative B which would be greater than Alternative A and less than Alternative C. This potential could result in up to 47,000 weed acres (a rate of 10 percent/year assuming implementation of the low end of the proposed range of weed treatment acres), from predictable factors in ten years. Of these acres, approximately 10 acres/year are associated with open and limited roads, 323 acres/year with grassland and shrubland (combined) vegetation treatments, 116 acres/year with forest treatments, 9 acres/year with riparian treatments, and the remainder with natural expansion of established weed infestations in the Planning Area.

Wildfires could increase these total expansion acres less under Alternative D than with any other alternative because that alternative proposed the most reduction in fire potential from vegetation treatments.

Up to 61,000 acres per decade would be treated to reduce noxious weeds with 85 to 90 percent of these acres being repeat treatments. Therefore, up to 9,200 acres (45 percent of current populations) per decade of weed infestations would be successfully controlled or eradicated using Integrated Weed Management methods under this alternative.

Vegetation restoration of up to 25,850 acres of grasslands and shrublands (combined) would eventually produce up to 19,000 acres of healthy desired vegetation resistant to weed infestations.

Restrictions of a 100 foot aerial herbicide application buffer for riparian areas would result in the lowest riparian weed control costs of all the alternatives.

## **WILDLIFE**

### **Effects Common to All Alternatives**

Because of the programmatic nature of the proposed alternatives, qualitative effects from management activities on wildlife are addressed under “Effects Common to All Alternatives.” Some effects may vary due to the degree of an activity such as the acres of vegetative treatments or road closures. These “quantitative” effects are addressed under each alternative. More specific analysis would be required to determine the extent of potential impacts from site specific management actions. This analysis would be completed when a management action is clearly defined.

Proposed management of the following resource programs would have no anticipated impacts to wildlife; Air Quality, Paleontology, Cultural Resources, Visual Resources, Economics, and Environmental Justice.

Habitat improvement projects would be implemented to restore or improve wildlife habitat for a wide variety of species.

The restorative treatments of uneven-age management in dry forest types using prescribed fire and mechanical treatments including thinning commercial and non-commercial trees, chipping, and grinding would mimic pre-fire suppression processes (Graham et al. 2004). This would improve the quantity and quality of habitat for wildlife dependent on a variety of size classes and densities but especially those that depend on mature open stands of ponderosa pine and Douglas-fir forests. Management towards large diameter trees would improve snag habitat for primary and secondary cavity users. Restoration and management of dry forests would increase habitat for a wide variety of resident and migratory birds as well as breeding, foraging, and hiding habitat for large and small mammals, amphibians, and reptiles.

Uneven-aged management within cool, moist forests would focus on reduction of stem density and creating small openings that would be beneficial to many of the wildlife species that occur in this vegetation community. Creation of small openings would increase vegetation diversity and available forage, especially for species such as the Canada lynx. Cool forests would also be thinned, when necessary, to promote old forest characteristics, provide habitat diversity, and reduce the risk for epidemic levels of insects and disease.

Reduction in tree densities and restoration of forest habitats would move vegetation towards the natural range of variation, especially in dry forest types, and increase the quality and quantity of big game winter range as well as breeding, denning, foraging, and hiding habitat for a variety of wildlife species. Moving vegetation towards the range of natural variability would increase vegetation diversity and habitat for large and small mammals, migratory and resident birds, and rep-

tiles. Short-term disturbance and displacement of wildlife could occur during project implementation and treated areas could be temporarily avoided. However, it is expected that the long-term benefits to a wide variety of species from restoring vegetative communities would outweigh the short-term negative effects.

A change in vegetation density could reduce the amount of habitat available for certain species while increasing habitat for others. For example, reducing dense forest to increase security habitat for bighorn sheep would decrease the amount of hiding and, possibly, thermal cover for elk. During project planning, the effects of treatments at the landscape scale would be addressed to determine the change in habitats, species affected, short and long-term effects to species and their habitats, the percent of habitat change across the landscape and which wildlife species would benefit or be negatively impacted by project implementation. The importance of big game security habitat and hiding and thermal cover would be considered during project planning.

Thinning forest stands that are subject to severe, uncharacteristic wildfire events, as well as those threatened by epidemic outbreaks of insects or disease would reduce the loss of large areas of habitat. Epidemics of insects and disease can have long-term negative impacts to some wildlife species while those species dependent on snag habitat and down woody material may benefit from increased foraging and nesting habitat.

Timber salvage would result in the loss of wildlife habitat for those species that depend on dead and dying forests. Maintaining patches of dead and dying forest would help to retain habitat features for these species but the affects to snag dependant species would vary greatly depending on the size of patches remaining after salvage. Timber salvage could have minor to major effects to those species that depend on dead and dying forest.

Treatment of grasslands and shrublands using prescribed fire and appropriate mechanical methods to reduce conifer encroachment would reduce the density of conifers and restore habitat for species dependent upon these vegetation communities. Maintenance and restoration of grassland and shrubland communities would ensure long-term quality habitat for big game winter range, calving habitat, and forage and nesting habitat for a variety of resident and migratory grassland and sagebrush bird species. Treatments could cause individuals to leave an area during project implementation but this is expected to be short-term. Since removing conifers from grasslands and shrublands would alter the amount and type of available habitat, wildlife species would be affected in different ways. For example, the removal of conifers may reduce hiding and thermal cover for big game but would increase the amount of forage available for these species. Reducing the density of conifers could also reduce nesting and foraging habitat for forest bird species but would increase nesting and foraging habitat for grassland and shrubland bird species. Overall, the

benefits of restoring grassland and shrubland habitat would outweigh the negative effects to those species currently using encroached grasslands and shrublands.

Riparian areas support a higher diversity of plants and animals than non-riparian land. This is a result of the wider range of habitats and available food as well as the proximity to water, microclimate, and refuge. Many native plants are found only, or primarily, in riparian areas, and these areas are essential to many animals for all or part of their lifecycle. Riparian areas also provide refuge for native plants and animals in times of stress, such as drought or fire, and provide critical corridors for wildlife movement.

Riparian and wetland restoration, including implementing Land Health Standards, and conducting all activities in a manner that would strive to maintain or restore riparian structure and function would improve habitat for resident and migratory birds, bats, reptiles and amphibians, and wildlife that use riparian areas for breeding, foraging, overwintering, or migration. Modifying grazing practices in riparian areas that retard or prevent attainment of riparian goals would benefit a multitude of species over the long-term. Riparian habitats would also be protected by not allowing incident bases, camps, helibases, or staging areas inside riparian areas during fire suppression activities.

Reducing conifer encroachment from riparian vegetation would increase the amount, health, and vigor of riparian vegetation preferred by resident and migratory birds as well as for a wide diversity of other species for breeding, brood rearing and foraging. The health and vigor of aspen, willows, cottonwoods, and riparian shrub species would improve with the removal of competing conifers. Within forest-dominated riparian areas, thinning dense conifer stands would allow for an increase in the size and diameter of remaining conifers to provide breeding and foraging habitat for many species of reptiles, amphibians, small and large mammals and numerous bird species.

The Streamside Management Zone Law provides the minimum regulatory standards for forest practices in Streamside Management Zones (SMZs) (**Appendix E**). The SMZs provide protection to water quality, stream-bank stability, down woody material and shade by restricting certain forest activities such as clearcutting, operation of wheeled or tracked vehicles except on established roads, construction of roads, deposition of slash, and broadcast burning. Streamside Management Zones, however, provide limited protection to overall riparian function and habitat diversity to terrestrial species. By focusing dead and live tree retention within the first 50 feet of stream and by allowing smaller diameter trees to be retained (down to 8 inches DBH), SMZs could limit wood recruitment to streams, reduce habitat for foraging and breeding (less vegetation and smaller diameter snags retained), reduce hiding and brood rear-

ing habitat as well as limit effective wildlife movement corridors.

Mechanical treatments could potentially cause disturbance and short-term displacement of wildlife species depending on the type of equipment used as well as the size and location of treatment areas. Hand cutting and the use of horses for logging could have minimal disturbance and allow wildlife to remain in or near the area. Mechanical ground equipment, the use of chainsaws and helicopters would have a greater degree of disturbance and result in more displacement of wildlife. It is expected that use of the area would resume after project implementation but some species could permanently leave the area. The timing of treatments would be considered during project planning and project implementation during critical seasons of use (such as within big game winter range during winter) would be minimized or prohibited.

Both prescribed fire and mechanical treatments would remove vegetation and could disturb and displace wildlife with the effects ranging from minor to major and short-term to long-term based on timing, extent, and duration of a project. Often, mechanical treatments must be done to pre-treat a site for prescribed burning. Effects could be either beneficial or detrimental depending on the wildlife species impacted, goals of the project, size of project and timing of implementation.

Prescribed fire would restore, create, and improve habitat for wildlife dependant on post-fire forest habitats and would rejuvenate and enhance understory vegetation. Down woody material and snag habitat would also be increased from the use of prescribed fire. Grassland and shrubland species would benefit from the use of prescribed fire by reducing conifer encroachment and restoring forage and breeding habitats for a wide range of wildlife species.

Although grasses and certain forbs are rejuvenated and often quickly reestablished after prescribed fire, it could take two growing seasons or longer before shrubs, desired tree species and other forb species re-colonize a burn area. Mechanical treatments retain more desired vegetation for short-term recovery of a site but can cause a longer duration of disturbance than prescribed fire.

Naturally ignited wildland fires in the Elkhorn Mountains could be allowed to burn without aggressive fire suppression activities to improve vegetative conditions. Allowing wildland fires in the Elkhorn Mountains would restore larger areas in more remote locations than would be practicable or feasible with prescribed fire. Wildland fires could create more diversity of habitats due to the variability in their intensity. Wildfire often retains a mosaic of habitats as well as diversity of vegetation that may or may not be possible using prescribed fire.

Fire suppression activities would include the clearing of firelines, the maintenance of roads and the use of retardants. These activities would remove vegetation and

habitat and would disturb and displace wildlife within these areas either temporarily or long-term depending on the type and extent of disturbance.

Permanent and temporary roads associated with management could increase public access and decrease the quantity and quality of wildlife habitat. Permanent and temporary roads could negatively impact wildlife habitat, particularly if roads are open during critical periods including winter and breeding seasons or during the hunting season in big game habitat. Roads can encourage the public to recreate in areas that had formerly been secluded. Roads can cause direct mortality through road kill, prevent wildlife movement, create disturbance, cause the spread of noxious weeds, and cause habitat fragmentation across the landscape.

Livestock grazing could reduce forage and cover available to wildlife. Managing grazing through the implementation of Standards for Rangeland Health and Guidelines would ensure that residual vegetation is maintained for foraging, breeding and cover habitat and reduce the risk of rangelands becoming degraded.

All alternatives would work to improve vegetation conditions and reduce the negative effects of livestock grazing on wildlife habitat for a variety of species. Maintaining sufficient forage and cover for wildlife on seasonal habitat would protect and benefit important wildlife habitat. Limiting water developments in areas where substantial conflicts for forage occurs between wildlife and livestock would ensure that the needs of wildlife are met.

Range improvement projects would improve range conditions over the long-term. Installing wildlife escape ramps in water tanks would prevent birds and small mammals from drowning in water tanks.

All new fences would be built to allow wildlife passage unless site-specific analysis identifies other objectives for a particular fence. Specifications for new or rebuilt fences would allow wildlife passage, especially for big game species.

Noxious weed management would have minimal negative impacts on wildlife but could provide substantial beneficial effects. Control of noxious weeds would improve wildlife habitat by protecting the diversity of native vegetation. Noxious weed infestations can reduce available forage to wildlife, degrade big game winter range, decrease the quality of riparian habitats, and reduce nesting, brood rearing, and hiding habitat for a variety of birds. Many noxious weeds are unpalatable to herbivores. While noxious weed control could temporarily disturb wildlife within treatment areas, the effects would be short-term. The long-term benefit of increasing the quality and quantity of wildlife habitat by reducing noxious weed infestations would outweigh any short-term disturbance.

Recreational activities could cause disturbance and displacement of wildlife species. However, the level of impacts would vary depending on the extent of activities and the wildlife species disturbed. Those recreational activities that occur during critical periods (i.e. nesting and brood rearing) and/or for long durations of time would have the greatest negative impacts on wildlife.

The management of Wilderness Study Areas (WSAs) would provide large blocks of undisturbed habitat, particularly for species that are sensitive to disturbance and have large home ranges. WSAs would also provide large blocks of habitat for connectivity and movement corridors for a wide range of species.

The Sleeping Giant ACEC provides important habitat for bighorn sheep, mountain goat, elk, bear, mule deer, mountain lion, as well as numerous migratory and resident bird species. One of the primary objectives of this ACEC is to preserve, protect and promote wildlife and habitat for "key" species including; elk, bighorn sheep, mountain goat, osprey, bald eagle, peregrine falcon, waterfowl, and cold water fish. Continued management of the Sleeping Giant ACEC would ensure that critical wildlife habitat for the above mentioned species would be maintained for the long-term.

Placing new communication sites at existing facilities would prevent loss of wildlife habitat as well as prevent additional disturbance to wildlife. In addition, the implementation of *Suggested Practices for Raptor Protection on Power Lines* (APLIC 1996) would ensure that impacts to birds and bats are being avoided. Implementation of wind energy guidelines as defined in the Wind Energy Development Programmatic EIS would minimize bird and bat mortality from turbines and associated infrastructure.

Under all alternatives, locatable minerals would be allowed to be explored and extracted. Exploration and extraction of minerals would result in disturbance and displacement of wildlife within the area of impact. During periods of active mining until restoration/reclamation is completed, the area being mined would be unavailable as habitat for wildlife. Mining creates disturbance that would cause individuals to remain away from an area. Mining also causes a loss of habitat and reclamation activities may not be able to restore habitat to its original condition. The impacts to wildlife could include loss or fragmentation of habitat, loss of movement corridors and displacement of wildlife from critical winter or breeding ranges. Where there are priority species or their habitats, there may be special measures to prevent undue degradation during mineral and geophysical exploration. The degree of disturbance and habitat alteration from mining activities would vary depending on the size and extent of mineral extraction and could have minimal to major effects to wildlife and wildlife habitat with effects ranging from short to long-term.

After placer mining operations, reclamation activities would be required to restore stream channels and riparian habitat to functioning condition as close to pre-mine conditions as possible. Mining activities, placer operations in particular, could lead to a loss of riparian-wetland vegetation. All vegetation within the active mining area could be removed before and during mine development and operation. Vegetation immediately adjacent may be affected by roads, water diversions or other development. Riparian-wetland vegetation has a significant influence on certain stream types. Changes in the composition, vigor, and density of riparian vegetation can result in a loss of foraging, breeding, and hiding habitat for a wide variety of species as well as a loss in movement and travel corridors. The effects to wildlife from placer mining and mining in riparian areas could be substantial with long-term negative effects.

The reclamation and restoration of abandoned mine sites would provide cover and forage for wildlife and would improve water quality. Reclaimed areas often use non-native vegetation that is easily and quickly established. Often this non-native vegetation provides forage and cover for wildlife but does not provide the diversity of vegetation or the species that may have originally been located on the site.

Oil and gas exploration and development of surface and subsurface lands would comply with appropriate stipulations and term and conditions at the time of leasing. This would ensure that impacts to wildlife and wildlife habitat are considered and avoided, when possible. Habitat would be lost from drilling activity, wells, ponds, access roads, and pipelines. Wildlife species would be disturbed and displaced. The effects to wildlife could be minimal to major and short to long-term depending on the wildlife species found in an area and the extent of drilling activities.

There are approximately 652,194 acres of federal mineral estate lands potentially available for oil and gas exploration and development in the Decision Area. Actual acreages available vary based on proposed stipulations by alternative. In the Decision Area, five areas have been identified with the most potential for oil and gas exploration and development (low to moderate potential overall) where there would most likely be reasonably foreseeable development and drilling activity (**Appendix M**). The five areas are located near the southern Deerlodge Valley, Sleeping Giant, Canyon Ferry, Bozeman, and Livingston. The total area within these five areas is roughly 116,295 acres. Each of the five areas ranges in size from 1,400 to 50,600 acres.

It is estimated that a total of 31 conventional oil and gas wells could be drilled, most likely within the five areas with the most potential over 15-20 years. Nineteen of these wells would be exploratory, with six of them being producers. The RFD assumes that there would be two additional step-out wells developed for each of the six producers, resulting in a total of 18 producing wells

overall. The RFD also assumes that seven of these producing wells would be on federal mineral estate with the remainder being non-federal. As many as 40 wells might be drilled for coal bed natural gas, most likely near Bozeman Pass. None of this activity is forecast to take place on federal mineral estate.

Under all alternatives, there would be five stipulations to lessen the effects of oil and gas development on wildlife (stipulations that effect special status species are described under “Special Status Species”). A No Surface Occupancy or No Lease stipulation would prevent the loss of breeding, foraging, security and migration habitats as well as prevent any type of disturbance associated with oil and gas development. The more acres within a NSO or NL stipulation, the more overall protection a wildlife species (as well as other species) would have from oil and gas development. When comparing alternatives, those with more acres in NSO or NL provide the least negative effects to wildlife.

Timing restrictions protect species during the crucial breeding season (such as bald eagles and sage grouse) and/or during the sensitive overwinter season (such as with sage grouse). As with NSO and NL stipulations, when comparing alternatives, the more acres within a timing restriction, the more a species would be protected from disturbance during crucial seasons of use. This should allow a species to reproduce and fledge young and/or increase the chance of surviving the winter season. This stipulation would only be applied during oil and gas exploration and habitat loss could still occur for those species with timing stipulations. Timing restrictions and surface use stipulations would vary by alternative.

## Effects of Alternative A

Vegetation types within the Decision Area are represented by grassland, shrubland, dry forest, cool, wet forest and riparian. Dry forest is the most dominant forest type and represents 38 percent (115,000 acres) of the total available habitat. Currently, there are approximately 101,200 acres of high density, mature dry forest in the Decision Area. The SIMPPLLE model (**Appendix D**) suggests that historic dry forests were maintained in a more open condition due to frequent fires and would be represented by approximately 30,400 acres (low density stands). Historically, these forests would have open canopies with an understory of grasses, shrubs, and forbs and would be surrounded by large blocks of areas dominated by grasslands and shrublands.

Under Alternative A, approximately three percent (3,600 acres) of the mature, high density, dry ponderosa pine and Douglas-fir habitat and up to four percent (5,100 acres) of all densities and size classes of dry forest habitats could be restored within the Decision Area per decade. Restoration would thin dense forests to create open stands with an understory of grasses, forbs, and shrubs. While this would benefit those wildlife species depen-

dent on mature dry forest, Alternative A would have the least impact on restoring this habitat type in comparison to Alternative B (14,750 acres per decade) and D (18,200 acres per decade) but would restore more acres than Alternative C (4,800 acres per decade).

Cool, moist forest comprises only about 7 percent (20,200 acres) of the total amount of available habitat in the Decision Area. This vegetation type is found primarily in the Big Hole and Upper Missouri watersheds. The SIMPPLLE model found this habitat type to be closer to the range of historic conditions than other habitat types in the Decision Area. This is most likely due to a longer interval between fire events in cool, moist forest types. Although the SIMPPLLE model suggested that this vegetation type was close to the historic range of natural variation, fewer acres of smaller diameter trees (seedling, sapling and pole size) were found during the modeling exercise than expected.

There are approximately 14,000 acres of mature, high density cool, moist forest compared to the estimated 8,000 acres suggested by the SIMPPLLE model as the historic average. Under Alternative A, approximately 2,400 acres of high density, cool, moist forest could be treated per decade (12 percent of total cool, moist forest). Treatments in cool, moist forests would create small openings and thin dense stands to increase the diversity of vegetation and habitat and increase available forage for small and large mammals (including big game) and migratory and resident birds. Alternative A would move cool, moist forest towards the range of natural variability but would treat fewer acres of this forest type in comparison to Alternatives B (3,750 acres per decade) and D (5,050 acres per decade) resulting in less diversity of habitat. However, there would be less short-term displacement of wildlife under this alternative compared to Alternatives B and D. Alternative A could treat up to 1,850 more acres per decade than Alternative C.

Alternative A provides no retention guidelines or recommendations for restoration of snag and down woody habitat. Alternative A allows dead or down trees of any size (with no restrictions within riparian habitats) to be gathered for firewood and would not have any restrictions on the size of timber salvage projects. Under Alternative A, snag habitat and down wood would decline more rapidly than under the action alternatives. Alternative A would reduce available nesting and foraging habitat for woodpeckers, raptors, owls and other migratory and resident birds, flying squirrels as well as reduce denning sites for bears and martens. Down wood is a crucial habitat component for amphibians and reptiles and would decline more under this alternative than under the action alternatives. This alternative could result in a decline of habitat for those species dependent upon dead and dying trees and could have major and long-term negative effects.

Grassland vegetation represents approximately 45 percent of the total habitat in the Decision Area. These areas provide critical big game winter range as well as important habitat for large and small mammals and a wide variety of migratory and resident birds. The loss of grassland habitat due to conifer encroachment is a serious concern in the Decision Area and approximately 37 percent of grasslands (50,000 acres) are experiencing a decline in quality and quantity due to encroachment. Using the SIMPPLLE model (**Appendix D**), it was estimated that the number of acres with conifer encroachment in both grasslands and shrublands would have historically been closer to 6,000 acres.

Under Alternative A, almost four percent (5,250 acres) of grasslands could be treated per decade to reduce conifer encroachment and improve winter range for big game and nesting habitat for resident and migratory birds. Alternative A could treat approximately 62 percent more grassland habitat than Alternative C, but would treat less habitat than Alternatives B or D (56 percent and 72 percent less, respectively).

Sagebrush shrublands represent roughly 7 percent of the total habitat within the Decision Area and provide crucial habitat for wintering and calving big game as well as habitat for sagebrush obligates. Alternative A would not provide management direction for treatment and restoration of shrublands, which would result in a decline in healthy sagebrush habitat and negatively impact sagebrush dependant species.

Under Alternative A, noxious weed infestations would continue to degrade range conditions and reduce available forage for big game and other large and small mammals. Within riparian areas, grasslands, and shrublands, weeds would continue to reduce the quality of nesting and brood rearing habitat for a variety of migratory and non-migratory birds. Assuming implementation of the high end of proposed weed treatment acreages by alternative, Alternative A would treat 30,000 fewer acres (per decade) than Alternative B, 18,000 fewer acres (per decade) than Alternative C and 41,000 fewer acres than Alternative D (per decade).

The implementation of the Streamside Management Zones would result in smaller areas of riparian habitat being protected for the benefit of riparian habitats than under Alternatives B and C but the same as under Alternative D. Smaller riparian management areas proposed under Alternatives A and D, along with the types and extent to management activities allowed in SMZs, could reduce forage, hiding cover, and breeding habitat for a wide range of species and reduce the size and quality of riparian movement corridors. The effects would be the same as described under “Effects Common to All Alternatives.”

Under Alternative A, approximately 3,500 acres would be protected with SMZs. Of the 3,500 acres, 1,700 acres would be forested and 1,800 acres would be non-

forested (same as Alternatives B and D). The Upper Missouri and Big Hole watersheds would have the most acreage in SMZs (1,700 and 900 acres, respectively).

Alternatives A and D would not utilize timing restrictions to protect breeding migratory and resident birds during prescribed burning or other vegetation treatments. Alternative B would prevent prescribed burns during the breeding season unless those projects have low potential to impact breeding birds. Alternative C would restrict prescribed burning and mechanical treatments during the breeding season unless those projects have low potential to impact breeding birds. Alternatives A and D could have more mortality to birds from project implementation compared to Alternatives B and C.

Timing restrictions on activities that may disrupt big game during critical periods, such as the breeding or winter seasons, would reduce displacement and disturbance of these species. These seasonal restrictions would generally protect and benefit: elk, mule deer, moose and bighorn sheep winter and spring range; elk, mule deer, and bighorn sheep calving range; and mountain goat winter and spring range. The timing restriction in big game winter and spring ranges would be one month less under Alternative A than under the action alternatives (see “Effects Common to Action Alternatives”). This would allow disturbance during critical times of year when animals have been weakened from the winter. Additional stress to these weakened animals could cause mortality.

Alternative A would actively target less than one percent (30 acres) per decade of riparian habitat for mechanical treatments of vegetation, the least amount of riparian habitat restoration in comparison to the action alternatives. Unlike the action alternatives, aspen would not be identified for restoration or protection under Alternative A. Although riparian restoration could occur through other projects or as a result of implementing Land Health Standards, only 30 additional acres of riparian restoration per decade would be expected under this alternative. This is 670 fewer acres than Alternative B, 170 fewer acres than Alternative C and 1,670 fewer acres than Alternative D. Although short-term impacts from disturbance would be lowest with Alternative A, the long-term benefits from restored habitat and vegetation diversity and composition would be less than under any of the action alternatives.

No routine maintenance or review of exclosures would be required under Alternative A which could lead to breach of exclosures by cattle and degradation of riparian habitat.

Approximately 5.5 miles of permanent roads per year could be constructed in association with forest management under Alternative A. This could substantially reduce habitat and increase the level of disturbance and displacement for many wildlife species. This would have the most negative impacts on species sensitive to distur-

bance. Although Alternatives B and D do not specify an upper limit on permanent roads that could be built, both alternatives would minimize permanent road construction and build fewer roads than Alternative A. Alternative C would not allow permanent road construction and would protect the greatest amount of habitat and the most species from the negative effects of roads.

Alternative A would have the greatest negative impacts to wildlife from permanent and temporary road construction and the effects would be the same as those described under “Effects Common to All Alternatives.”

Livestock grazing would continue to occur on 273,000 acres with approximately 25,680 AUMs. This would be 8,000 acres more than Alternative B and 11,000 acres more than Alternative C, but the same acreage as Alternative D. Livestock grazing under Alternatives A and D could have more negative effects due to competition between livestock and big game for forage, spread of noxious weeds, decrease in quality and quantity of grassland/shrubland habitat and loss of riparian habitat than Alternatives B and C.

The newly acquired Indian Creek, McMaster, and Spokane allotments would be grazed under the same grazing regulations as other BLM allotments. These areas are predominantly grassland and the lack of management flexibility under Alternative A could cause an increase in competition for resources between big game species, especially elk, and livestock.

Alternatives A and D would protect bighorn sheep and bighorn sheep habitat by reducing risks associated with the commingling of domestic and bighorn sheep. The implementation of buffers between domestic sheep and goat allotments and bighorn sheep habitat up to 9 miles in width would reduce the potential for disease epidemics within bighorn sheep populations. Although Alternatives A and D would allow for a buffer of up to 9 miles, these alternatives would not have a minimum buffer width. These alternatives would not guarantee adequate separation between wild and domestic sheep to prevent disease transmission. Alternatives B and C would provide minimum buffer widths between wild and domestic sheep. Unlike the action alternatives, Alternative A would not provide specific guidance when using domestic sheep for weed control in occupied bighorn sheep habitat. This could allow for disease transmission to wild sheep during weed control activities.

Roads can impact big game species, especially during critical phases of their life cycle. Disturbance and displacement of big game species can increase stress and energy demands on animals during critical periods such as the winter, breeding or calving seasons and reduce survival, especially during the winter and spring months. Motorized use of roads can produce disturbance that prevents full utilization of available habitat. The loss in potential use of habitat can exceed 50 percent when open road densities exceed 2 mi/mi<sup>2</sup> (Christensen et. al. 1993).

During the hunting season, the probability of bull elk survival in proximity to open roads is much lower than in areas away from roads. Road kill causes direct mortality of elk and major interstate freeways may act as movement barriers in some cases.

The implementation of the Montana Cooperative Elk Logging Study (Lyons et al. 1985) would assist in maintaining security habitat and limiting disturbance under Alternative A. However, the action alternatives would ensure specific direction for maintaining large blocks of security habitat.

Alternative A would continue management of the Sleeping Giant ACEC but would not propose any new ACECs. The effects from this ACEC would be the same as described under “Effects Common to All Alternatives.”

Unlike the action alternatives, Alternative A would not designate Humbug Spires as an ACEC. Although Humbug Spires is currently a WSA, if Congress does not designate this area as a Wilderness, there would be no management direction for this unique and important area. The proposed ACEC designation under the action alternatives would ensure this area is would be protected for numerous wildlife species.

With the action alternatives, the proposed ACEC that could have the most substantial beneficial effects to a wide variety of species is the Elkhorn ACEC. Currently, this area is managed under a Memorandum of Understanding (MOU) between the State and Forest Service for wildlife and recreation. If, at some time in the future, the MOU is withdrawn, an ACEC designation would ensure that BLM lands within the Elkhorn Mountain Range would be managed for wildlife goals and objectives. Alternative A would not guarantee that the emphasis of management in the Elkhorn Mountains would be for wildlife.

The negative effects to wildlife from mineral operations would be minimized by implementation of BMP’s, which mostly relate to water quality and soils. The effects from mineral operations and development would be the same as described under “Effects Common to All Alternatives.” All alternatives would have five stipulations to lessen the effects of oil and gas development on wildlife (stipulations that affect special status species are described under “Special Status Species”). Under Alternative A, these stipulations would include No Lease (NL) and No Surface Occupancy (NSO) of state wildlife management units and timing restrictions in big game habitat.

The five areas with the most potential for oil and gas exploration and development are located near the southern Deerlodge Valley, Sleeping Giant, Canyon Ferry, Bozeman, and Livingston. The total acreage within these five areas is roughly 116,295 acres. Each of the five areas range in size from 1,400 to 50,600 acres. The southern Deerlodge Valley area located north of Ana-

conda is approximately 8,700 acres of subsurface ownership with no BLM lands. There are no wildlife management areas within the subsurface ownership in this area. The majority of subsurface ownership is within big game winter and spring range that would be subject to a 12/1 to 5/15 timing restriction. There are no currently identified critical big game calving areas in this area. Approximately 2,000 acres in this area are identified as year-round habitat for bighorn sheep and would be protected by the same timing restriction as big game winter and spring range (12/1 to 5/15).

The Sleeping Giant area is located north of Helena and is approximately 47,000 total acres of subsurface and surface ownership with roughly 22,000 acres of BLM ownership. There are wildlife management areas on the subsurface ownership of this area and approximately 3,400 acres would be protected with a NSO restriction. The majority of subsurface ownership is within big game winter and spring range and would be protected with a 12/1 to 5/15 timing restriction. There are no currently identified critical big game calving areas in this area. Approximately 11,800 acres in this area are identified as year-round and core habitat for bighorn sheep and would be protected by the same timing restriction as big game winter and spring range (12/1 to 5/15).

The Canyon Ferry area is located in and around the town of Townsend and is the largest area of potential oil and gas development with approximately 51,000 acres of subsurface and surface ownership. Roughly, 35,000 acres of BLM lands (surface) have the potential for oil and gas development with the majority of the acres located in the National Guard Firing Range. There are wildlife management areas within this location and approximately 700 acres would be protected with a NSO restriction. The majority of subsurface ownership is within big game winter and spring range and would be protected with a 12/1 to 5/15 timing restriction. There are no currently identified critical big game calving areas in this area. Approximately 20,900 acres in the area are identified as year-round and core habitat for bighorn sheep and would be protected by the same timing restriction as big game winter and spring range (12/1 to 5/15).

The Bozeman area is located approximately 10 miles east of Bozeman and is approximately 1,400 acres of subsurface ownership. There are no BLM lands in this

area. There are no wildlife management areas within the subsurface ownership of this area. The majority of subsurface ownership is within big game winter and spring range and would be protected with a 12/1 to 5/15 timing restriction. There are no currently identified critical big game calving areas in this area. The area does not provide habitat for bighorn sheep.

The Livingston area is located immediately east of the town of Livingston and is approximately 8,450 acres of subsurface and surface ownership. There are approximately 1,600 acres of BLM lands in this area. There are no wildlife management areas located in this area. The majority of subsurface ownership is within big game winter and spring range and would be protected with a 12/1 to 5/15 timing restriction. Approximately 300 acres are identified as critical big game calving range in this area that would be protected with a 5/1 to 6/30 timing restriction. The area does not provide habitat for bighorn sheep.

In the Decision Area, there would be 66,000 acres of wildlife management areas that would be protected with a NSO stipulation under Alternative A (Table 4-8). However, only two of the five areas with the most potential for oil and gas development have wildlife management areas (4,100 acres) that would be protected with the NSO stipulation.

Decision Area-wide, there would be 498,973 acres of big game winter and spring range that would have a 12/1 to 5/15 timing restriction under Alternative A. Of these acres, approximately 236,443 acres would be even more protected with overlapping NSO stipulations or No Lease areas, leaving about 262,530 acres being protected by the Timing Limitation stipulation. Roughly 20,000 acres would have a 5/1-6/30 timing restriction in big game calving habitat. All of the five areas with the most potential for oil and gas development (total of 106,447 acres) overlap with big game winter and spring range and a total of 99,550 acres would be protected with the 12/1 to 5/15 timing restriction. Of these 99,550 acres, approximately 47,390 acres would be overlapped with more protective NSO stipulations or No Lease areas, leaving about 52,160 acres with just the Timing Limitation stipulation. Critical calving habitat is currently only found in one area (Livingston) and approximately 300 acres would be protected by a 5/1 to 6/30 timing restriction.

Resource Stipulation	Decision Area (Acres)	Five High Potential Oil and Gas Areas (Acres)
Wildlife Management Areas	66,000	4,100
Big Game Spring/Winter Range	500,000	99,550
Big Game Calving Habitat	20,000	300
Bighorn Sheep Year-round Range	131,000	37,000
Bighorn Sheep Core Habitat	71,000	28,000

Decision Area-wide, there would be 131,279 acres of bighorn sheep year-round habitat (including core habitat) that would have a 12/1 to 5/15 timing restriction under Alternative A. Of these acres, approximately 67,341 acres would be even more protected with overlapping NSO stipulations or No Lease areas, leaving about 63,938 acres being protected by the Timing Limitation stipulation. Three of the five areas with the most potential for oil and gas development are within occupied bighorn sheep habitat and a total of about 37,000 acres would be protected with a 12/1 to 5/15 timing restriction. Of these 37,000 acres, approximately 18,243 acres would be overlapped with more protective NSO stipulations or No Lease areas, leaving about 18,757 acres with just the Timing Limitation stipulation. Almost all of the acres in bighorn sheep habitat are also within big game winter and spring range so the timing restriction of 12/1 to 5/15 would benefit both bighorn sheep as well as all other big game species.

Timing restrictions for big game winter and spring range would be the same under Alternatives A, B and D. Although timing restrictions would protect big game during oil and gas exploration, there would be no guarantee that these species would be protected during development and production. Also, timing restrictions would not prevent the loss of habitat. Alternative C is the only alternative that would prevent loss of habitat as well as prevent disturbances to big game species. In big game calving habitat and bighorn sheep year-round range, timing restrictions would be less restrictive under Alternative A than Alternative B. Alternative A, however, would provide more protection to big game species compared to Alternative D.

### Effects Common to Action Alternatives

All federally listed and BLM sensitive species and their habitats would be considered “priority” species and “priority” habitats. Other priority species would include; big game, migratory birds and habitats such as caves, cliffs, snags and down wood, sagebrush, bitterbrush, and mountain mahogany. By designating these species and habitats as “priority”, they would be given additional protection and consideration during project planning and implementation. Protection and maintenance of habitat would ensure wildlife species maintain viable and diverse populations and ensure short-term and long-term protection of wildlife species within the Decision Area. Protection of special habitat components such as caves and cliffs would maintain habitat for species such as bats and peregrine falcons.

Seasonal closures during the winter and breeding seasons in occupied special status bat habitat would limit disturbance and allow these species to conserve energy during critical times of their lifecycle. Disturbance of bat hibernacula could cause bats to flee and expend valuable energy during the winter and, possibly, lead to mortality. Disturbance of maternity colonies could cause young bats to fall and be at risk of predation. Installation of bat

gates would protect bats from disturbance, displacement, and direct mortality.

Protection of wildlife linkage corridors would reduce isolation and improve gene flow and viability of many wildlife populations.

Disturbance associated with projects in big game habitat would be seasonally restricted under all action alternatives. Restrictions would protect big game winter and spring range from disturbance and conserve the animals’ energy during this critical time period. Restrictions within big game calving range would reduce disturbance and displacement and increase calving success.

All programs would be designed and implemented to meet or move towards meeting Land Health Standards. This would allow the restoration or protection of wildlife habitat from activities associated with all resource management programs including but not limited to; vegetation management, livestock grazing, forestry, rights-of-way, and energy development.

Vegetation treatments would move towards mimicking natural disturbances. Mimicking natural disturbance regimes would ensure that the structure, processes, and composition of these communities are healthy, functioning, and capable of renewal. This would maintain, protect, and restore habitat components necessary for forage, cover, and breeding habitat for wildlife. In addition, the emphasis on old forest structure, snag management, and large diameter trees would protect, enhance, and restore habitat for those wildlife species dependent on old forest structure and cavities for nesting and denning.

Existing old structure forests would be retained and protected from land use actions, stand-replacing wildland fire, and epidemic levels of insects and disease. Management actions would allow the development and maintenance of stand structures that are relatively complex with highly variable tree densities, healthy and diverse understory composition, and abundant snags and down logs that are well distributed across the landscape. Habitat for species that are dependent on and utilize late and old structure forests would benefit from the maintenance, protection, and development of this community.

Restoration to achieve desired ecological conditions in grasslands and shrublands would be conducted with all action alternatives through prescribed burning, mechanical treatments, and other appropriate treatments. This would enhance and rejuvenate wildlife habitat for many species. Regeneration of decadent vegetation, reduction of conifers and improving vegetation diversity and composition would improve winter range for big game, nesting, and brood rearing habitat for migratory and resident birds, as well as forage and cover for small and large mammals. During treatments in grasslands and shrublands, all trees with old forest structure would be left standing to provide nesting and perch sites for raptors and other migratory and resident birds.

Alternatives B, C, and D would emphasize restoration and protection of sagebrush habitat and would maintain, to the extent possible, large patches of high quality sagebrush. These alternatives would also emphasize maintaining connections between sagebrush communities and enlarging the size of sagebrush patches in occupied or historic sage grouse habitat. This would protect sagebrush obligate species and increase habitat for these species.

Riparian areas would be managed to maintain or improve the distribution of large woody material and to provide habitat for a variety of small and large mammals, birds, bats, reptiles, and amphibians. Protection and restoration of riparian and wetland habitats would ensure that breeding, foraging and overwintering habitat as well as snags and down wood would be available for the wide variety of wildlife species dependent on this important habitat within the Decision Area. Protection, enhancement, and restoration of these areas would also ensure habitat is available for migratory or transient animals.

During project planning, the effects of roads (permanent and temporary) on wildlife and habitats would be considered. This would ensure that impacts to wildlife and wildlife habitat are minimized, when possible. These evaluations may determine that some pre-existing routes be closed or decommissioned. Closure and rehabilitation of roads within the Decision Area would reduce disturbance to wildlife and increase functional habitat.

Implementation of grazing utilization levels (not to exceed 55 percent non-native grasses and 45 percent native herbaceous plants) in grazing allotments that lack specific management objectives would maintain forage for wildlife, especially big game species. This would also help to prevent competition for forage between livestock and big game. Maintaining quality range conditions would ensure that adequate forage, cover and nesting and brood rearing habitat would be available for wildlife.

Prohibiting the use of domestic sheep and/or goats for weed control within occupied bighorn sheep habitat would reduce the transmission of diseases to bighorn populations.

Closing rock climbing in areas with active raptor nests would prevent these species from abandoning nest sites.

When MFWP determines that big game hunting season extensions are necessary to efficiently and effectively manage for big game populations, BLM may modify seasonal use restrictions on roads to allow access.

Where minimum-size blocks of security habitat (250 acres) are located, they would be retained in a suitable condition during project implementation. Larger blocks of security habitat would be addressed and analyzed during project or watershed level planning to address the protection of security habitat. Where security habitat is

limited or fragmented across the landscape, the BLM would emphasize improving habitat through vegetation treatments and road closures (including seasonal closures) to increase security habitat for big game species.

High priority lands for retention and future acquisitions would include areas important to wildlife such as ACECs, Wild and Scenic River corridors, Wilderness, and habitat for priority and special status species. This would ensure long-term protection for numerous wildlife species.

All practical measures to maintain, protect, or minimize disturbances to natural resources would be taken during mining exploration. The effects on wildlife and wildlife habitats due to mining could be minor to substantial with long-term negative effects.

## Effects of Alternative B

Dry forest of Douglas fir and ponderosa pine represent the most common forested habitat in the Decision Area. Management of dry forest (including prescribed fire and commercial and non-commercial treatments) would focus on moving this habitat type towards the range of historic conditions. The SIMPPLLE model suggested that this habitat has been severely altered from historic conditions due to fire suppression. The historic fire frequency in these habitat types would have maintained more acres with open canopies and a diversity of understory plants.

Under Alternative B, treatments in dry forests would improve habitat for those wildlife species dependent on mature, open stands by increasing breeding and foraging habitat and by increasing the diversity of vegetation structure and species. Projects would mimic natural fire events to create large mature trees with an open understory of grasses, shrubs, and forbs. Over the long-term, habitat for resident and migratory birds, raptors, and large and small mammals would be increased. Large diameter snag habitat would be allowed to become established, creating crucial habitat for snag dependent species.

Treatments in dry forest would encourage increased diameters of trees with a diversity of overstory and understory age classes. However, the density of trees would be reduced, sometimes substantially, to promote the growth of grasses, shrubs, and forbs. Under Alternative B, up to 14,750 acres (13 percent) of dry forest habitat (all size classes and densities) could be treated per decade to improve forest structure, density, and composition.

Treatments within dry forest habitat would be emphasized within the Upper Missouri, Jefferson, and Big Hole watersheds. The majority (47 percent) of the treated areas would occur within the Upper Missouri River watershed. Currently, there are approximately 34,000 acres of medium and large tree size, high density, dry Douglas-fir and ponderosa pine habitat within the

Upper Missouri River watershed compared to 7,000 acres estimated to be historically present. Proposed treatments could reduce the acreage of high density trees to approximately 29,000 acres in the first decade. After two decades approximately 24,000 acres would remain in a high density condition.

Treatment of up to 2,750 acres per decade of medium and large tree, high density dry forest in the Jefferson watershed could reduce current acreages from 19,200 acres to 16,450 acres in the first decade as compared to 4,900 acres historically present (based on the SIMPLLE Model). After two decades, approximately 13,700 acres would remain in a high density condition. Proposed treatments of up to 1,850 acres per decade in the Big Hole watershed could reduce current acreages from 14,000 acres to 12,150 acres in the first decade compared to 7,000 acres historically present. After two decades, approximately 10,300 acres would remain in a high density condition.

The dry forest types are often used by big game species during winter months and reduction in tree densities would result in an increase of forage. However, reducing tree densities and creating open stands could increase the vulnerability of big game to hunting.

Management for mature, open, dry forests would increase habitat for a variety of resident and migratory birds, raptors, and owls. Although there would be long-term benefits to species that depend on open, dry forest stands such as flammulated owls, there could be a decline in the amount of habitat available for those species that prefer more dense forest types.

Additional impacts would occur from temporary road construction for forest treatments. Roads would reduce habitat and could potentially increase the level of disturbance and displacement of wildlife species in these areas. To reduce disturbance to wildlife, temporary roads would be closed within one year of project completion.

Over the long-term, management towards pre-fire suppression conditions would benefit the majority of species that utilize these vegetation communities.

Overall, Alternative B would move more acres towards the historic average and restore more habitats for wildlife dependant on dry forest types than Alternatives A and C, but less than Alternative D.

Cool, moist forest is the least available habitat type in the Decision Area and is predominately located in the Big Hole and Upper Missouri Watersheds. Under Alternative B, up to 3,350 acres of medium to large tree, high density, cool, moist forest could be treated per decade within the Decision Area. Up to 1,600 acres per decade could be treated in both the Big Hole and Upper Missouri watersheds in this habitat type. In the Upper Missouri, this could reduce mature, dense, cool forest stands from 6,000 acres to 4,400 acres in the first decade which would be close to the historic average (4,300 acres). In

the Big Hole, the reduction could be from 5,500 acres to 3,900 acres in the first decade and to 2,300 acres within two decades, taking the number of acres near the historic average of 2,400.

The Jefferson, Blackfoot, Gallatin, and Yellowstone watersheds could have a small number of acres of mature, high tree density cool forest treated per decade; 50 acres in the Gallatin, 100 acres in the Yellowstone and Blackfoot and 300 acres in the Jefferson. The effects to wildlife from treatments in these watersheds would be minimal.

There would also be a small number of acres (200 acres per decade) treated in the Upper Missouri and Big Hole watersheds to thin seedlings and pole size cool forest habitats. This would have minor effects to wildlife.

Reduction of stem density and creating additional small openings would be beneficial to wildlife that occur in this vegetation community. The creation of small openings would increase vegetation and habitat diversity and available forage for big game and other species. Increased vegetation diversity and understory development would improve habitat for many small and large mammals and migratory and resident birds. Improvement of habitat for prey species would benefit large predators within cool, moist forests.

Alternative B would treat up to 3,750 acres per decade of cool, moist forest over all size classes, which would be less than Alternative D, but more than Alternatives A and C. Treatments would result in temporary displacement of wildlife within project areas to adjacent forest areas. However, displacement would be short-term and habitat would ultimately be improved by creating a diversity of vegetation species, size classes, and age classes. Additional impacts would occur from temporary road construction for forest treatments. Roads would reduce habitat and could potentially increase the level of disturbance and displacement of wildlife species in these areas.

The BLM would use an existing protocol developed by the USFS to determine the range of natural conditions for snag habitat until additional studies are completed. This would provide criteria for determining how much snag habitat should be retained (or created) in different habitat types and would aid in assessing impacts associated with management actions during project planning. Throughout the Decision Area, there are snag deficient areas due to historic mining, firewood cutting, and timber harvest. In these areas, snags would be targeted for creation. Within other forested stands of the Decision Area, snags have been created naturally through forest insects, disease, and fire.

Improvement in snag habitat management would benefit those species dependent on snags for breeding, foraging, and denning. The proactive creation of snags would increase snag habitat for snag dependant species over the long-term and improve species viability. In snag defi-

cient areas, Alternative B would proactively create more snag habitat than all other alternatives.

When timber salvage is proposed in dead and dying forests, Alternative B would provide direction to maintain contiguous acres of undisturbed standing and down woody material in adequate amounts for those wildlife species that depend on this habitat type. This would protect snag habitat for a variety of snag dependent species including migratory and resident birds, raptors, bats, and mammals.

Where salvage is allowed to occur, forest openings would be appropriate to the site and would also include retention patches. Selective thinning could occur between openings. Alternative B would ensure more habitat for those species that depend on dead and dying forests is maintained compared to Alternatives A and D but less than Alternative C.

Under Alternative B, only dead and dying trees would be allowed to be removed for firewood and no trees over 24 inches in diameter could be cut. However, BLM would have the flexibility to designate specific areas of live trees for firewood cutting in order to meet specific resource goals such as removing conifer encroachment in grasslands and shrublands. Retention of larger, dead trees would ensure that the largest, higher quality snags would be retained for those species dependent on snags for breeding, foraging, and cover. Larger diameter snags typically remain standing longer than smaller diameter snags so retention of larger snags would increase the number snags and improve the quality of snag habitat over the long-term.

Most firewood cutting occurs within 300 feet of roads but can have a substantial effect on the number of snags in an area. By allowing firewood cutting of snags up to 24 inches in diameter, many smaller snags that would still provide nest sites, cover, and forage for birds and mammals would be lost. Alternative B would protect more snags and down wood from firewood cutting than Alternative A but substantially less than Alternative C (firewood cutting would only be allowed in designated areas). Because most firewood cutting takes place near roads and Alternative B would have more miles of closed and seasonally restricted roads than Alternatives A and D, this alternative would have fewer areas of the forest affected from firewood cutting than Alternatives A and D but more than Alternative C.

Grasslands make up the majority of habitat in the Decision Area (45 percent) and conifer encroachment is causing a substantial decline in the quality and quantity of this habitat type. Although sagebrush shrubland is only found on 7 percent of the Decision Area, this habitat type provides essential habitat for sagebrush obligate species.

Treatments in grasslands and shrublands would move towards pre-fire suppression conditions and away from the effects of historic grazing to improve habitat for

species that are dependent upon these vegetation communities. Conifer encroachment has reduced the amount and quality of breeding, brood rearing, foraging, and cover habitat for a wide range of wildlife species. Roughly 50,000 acres of grassland and 14,000 acres of shrublands are currently experiencing some level of conifer encroachment. The SIMPLLE model predicted that an average of 6,000 acres of grasslands and shrublands within the Decision Area would be encroached historically. Alternative B would treat up to 11,800 acres (9 percent) of grasslands and 3,650 acres (18 percent) of shrublands per decade in the Decision Area with prescribed fire, mechanical treatments, and other appropriate methods to reduce conifer encroachment and improve the health and resiliency of these communities. Alternative B would restore more acres of grasslands and shrublands than Alternatives A and C but fewer than Alternative D. Although Alternative B would have short-term adverse effects from disturbance to wildlife, the long-term benefits from increased breeding, brood rearing, foraging and cover habitat would outweigh the short-term impacts. The loss of conifers could have negative effects to nesting migratory and resident birds but habitat for these species is not considered to be limited across the Decision Area.

Alternative B would treat grasslands and shrublands within all major watersheds but the watersheds with the largest number of acres treated would be the Big Hole, Jefferson, and Upper Missouri.

Overall, Alternative B would treat more acres to reduce noxious weeds than Alternatives A and C, but approximately 11,000 acres less than Alternative D. The effects would be the same as described under "Effects Common to All Alternatives."

Alternatives B and D would be the most proactive alternatives regarding restoration and protection of bitterbrush and mountain mahogany habitat. These communities are often important within big game winter range and restoration and protection of these communities would ensure long-term availability of high quality habitat for big game. A variety of other wildlife species, such as resident and migratory birds, would also benefit from the protection and restoration of this habitat type.

Under Alternative B, prescribed burns would be planned to protect 20 percent of above ground vegetation within treatment areas, providing desirable vegetation for colonization into the burn. Alternative C would retain more (40 percent) unburned vegetation during prescribed fire and Alternative D would retain less (10 percent).

Alternative B would reduce mortality to nesting birds, including migratory and resident birds, in areas treated with prescribed fire by excluding the use of fire during the breeding season in areas that have substantial use by breeding birds. However, because other methods of treatments would not have timing restrictions, there could be impacts to breeding birds from mechanical

treatments during the breeding season. Alternative B would protect breeding birds and prevent more mortality than Alternatives A and D but less than Alternative C.

Riparian areas support a higher diversity of plants and animals than non-riparian land. This is a result of the wider range of habitats and foods available as well as the proximity to water, microclimate, and refuge. Many native plants are found only, or primarily found, in riparian areas and these areas are essential to many animals for all or part of their lifecycle. Riparian areas also provide refuge for native plants and animals in times of stress, such as drought or fire, and play a large role in providing corridors for wildlife movement.

The limited amount of riparian habitat in the Decision Area and the substantial use these areas receive by wildlife, makes this habitat type the most crucial to restore or protect.

Riparian Management Zones (RMZs) would be established for this alternative that are wider than SMZs under Alternatives A and D, but narrower than RMZs under Alternative C. Whereas SMZs under Alternatives A and D only protect streams and riparian habitats from timber harvest, RMZs would provide overall riparian management objectives. These zones would differ in width by forested and non-forested habitat, stream type (fish-bearing, perennial or intermittent) and range from 50 feet (intermittent streams) to approximately 160 feet for fish-bearing streams (based on the height of two site potential trees) on either side of the stream. A site potential tree in the Decision Area is considered to have an average height of 80 feet. Riparian Management Zones would provide more protection for terrestrial wildlife than SMZs alone by restricting all management activities in larger areas adjacent to streams and by requiring management activities to restore or maintain riparian and stream function. These wider RMZs would ensure that riparian habitat is maintained along streams not only for water quality and aquatic habitat but also for the numerous terrestrial wildlife species that use riparian areas for breeding, foraging and hiding habitat as well as for movement corridors.

Under Alternative B, approximately 5,300 acres would be managed with the emphasis on protecting, restoring, or maintaining riparian areas in RMZs. Of the 5,300 acres, 3,507 acres would be forested and 1,800 acres would be non-forested. The Upper Missouri and Big Hole watersheds would have the most acreage in Riparian Management Zones (2,330 and 1,440 acres, respectively).

Alternative B would allow management in RMZs to restore, enhance, or protect aquatic and riparian communities. There would be fewer negative effects from a loss of large woody material, desired vegetation or movement corridors under Alternative B than with Alternatives A and D. Since Alternative C extends RMZs further from streams, riparian habitat and movement

corridors would be the widest and most protected under this alternative.

Under Alternative B, up to 700 acres of riparian vegetation could be mechanically treated per decade with 200 acres in the Upper Missouri watershed, 200 acres in the Jefferson watershed, 200 acres in the Big Hole watershed, 50 acres in the Yellowstone watershed, 40 acres in the Blackfoot watershed and 10 acres in the Gallatin watershed. The 700 acres proposed with Alternative B would be treated as “stand alone” projects. Additional riparian areas could be improved through other vegetation treatment projects. The objectives, however, would be the same whenever projects occur in riparian areas. Unless a project is necessary for human safety or has unavoidable adverse affects as with mineral extraction, projects would be done to restore or protect riparian habitats.

Protection and active restoration of riparian areas would maintain and/or enhance breeding, brood rearing, foraging, travel, and hiding cover for migratory and resident birds (including raptors and owls) and small and large mammals as well as habitat for amphibians and reptiles. Restoration and protection of riparian areas would improve habitat for beavers that would in turn increase the width of riparian areas (by damming streams) and provide high quality foraging and breeding habitat for a variety of species. Habitat connectivity would be improved, fragmentation would be reduced, and travel corridors would be ensured for a multitude of species.

Unlike Alternative A, Alternatives B and D would actively restore aspen stands to improve and expand habitat for wildlife. Nesting habitat for birds, including migratory birds, would be increased and so would an important winter food source for elk, deer, and moose.

Timber harvest and removal of products would be allowed during riparian restoration under Alternative B but only if riparian objectives are met. When necessary, some temporary roads may be allowed to access riparian areas but would only be allowed if they do not damage riparian vegetation, soils, or streams or negatively impact riparian or aquatic functions. Restoration of riparian habitats would rejuvenate riparian vegetation, encourage multiple age classes, and expand the diversity of native vegetation.

Alternative B would actively restore more acres of riparian habitat than Alternatives A and C but less than Alternative D. Active restoration activities could have minor and short-term effects from disturbance and minor soil erosion but would have long-term beneficial effects from an increase in diversity and vigor of riparian vegetation as well as an increase in habitat structure. Since many riparian areas have existing open roads, some restoration activities could decrease the amount of hiding or security cover for big game. When possible, the loss of hiding and security cover would be minimized during project development.

Although RMZs would be identified to protect and improve riparian function, firewood cutting would still be allowed within some RMZs. Down wood and snags would be protected from firewood cutting within 100 feet for perennial and 50 feet for intermittent streams. This would ensure that a certain amount of riparian habitat is protected from firewood cutting. However, disturbance and removal of habitat from firewood cutting within the outer 60 feet of the RMZ boundaries (perennial streams) would be allowed. This would reduce the quantity of available snag and down wood habitat in these areas.

Alternatives B and D would provide more protection of snag habitat in riparian areas from firewood cutting compared to Alternative A but would provide less protection than Alternative C.

Under Alternative B, there would be a schedule for exclosure maintenance but there would be no guarantee that exclosures would be in a functioning condition before livestock turn-out. This could result in damage and degradation of riparian areas, springs, and unique habitats. There would be no substantial differences in acres grazed by livestock between all alternatives. Alternative B would decrease the acres of livestock grazing proposed under Alternatives A and D by 8,000 acres but would increase the number proposed under Alternative C by 3,000 acres. Designation of McMasters Hills, Indian Creek, and Spokane Hills as forage reserve areas would assist in improving range condition and meeting Land Health Standards by allowing other allotments to be rested during and after restoration activities (prescribed fire, etc.). The McMasters Hills and Spokane Hills allotments are primarily bluebunch wheatgrass (approximately 70 percent) and provide big game winter range. The Indian Creek allotment provides a diversity of habitats but also provides important big game winter range as well as crucial habitat for bighorn sheep.

Unlike Alternatives A and D, Alternative B would require a minimum buffer width of 5 miles between wild and domestic sheep populations to reduce the potential for diseases, such as pasteurella, scabies and parasites from being passed from domestic to bighorn sheep. New sheep or goat allotments would not be allowed in occupied bighorn sheep habitat to protect wild sheep from disease transmission.

Alternative B would ensure that interactions between bighorn sheep and domestic sheep being used for weed control are kept to a minimum. Seasonal restrictions and buffers would ensure that domestic sheep and wild sheep do not use the same areas within the same time period. Alternative B would protect bighorn sheep more than Alternatives A and D through the use of a mandatory minimum buffer width but less than Alternative C (mandatory buffer width would be larger under Alternative C).

Although Alternative B would keep new permanent road construction to a minimum, new roads could result in disturbance and loss of habitats for numerous wildlife species including a loss of big game security habitat. Alternative B would have more negative effects from new road construction than Alternative C (which doesn't allow any new road construction) but less than Alternatives A and D.

To minimize disturbance to wildlife and loss of habitat, temporary roads would be kept to a minimum and closed within 1 year of project implementation. This would be similar to the other action alternatives although temporary roads could remain open longer under Alternative D.

Alternative B would also provide protection to big game by allowing no net increase in permanent roads in areas where open road densities are 1 mi/mi<sup>2</sup> or less in big game winter and calving ranges. Christensen et al. (1993) found that open road densities greater than 1 mi/mi<sup>2</sup> substantially lowered the use of habitat by elk. Alternative B would ensure that high quality winter and calving areas remain available to big game. Under Alternative B, BLM would also focus on reducing open road densities in big game winter and calving ranges where they exceed 1 mi/mi<sup>2</sup>. Alternative B would ensure more functional habitat is available to elk and other big game species compared to Alternative A and D which would allow higher road densities in elk habitat. This alternative, however, would provide less function habitat for elk than Alternative C.

There would be two proposed ACECs common to all the action alternatives, Sleeping Giant and Humbug Spires. Alternative B would propose two additional ACECs (Elkhorn Mountains and Ringing Rocks). The Ringing Rocks ACEC would be small (160 acres) and would have minimal beneficial effects to wildlife. Humbug Spires is currently a Wilderness Study Area. If Congress does not designate the Humbug Spires WSA as Wilderness, the proposed ACEC designation would ensure a certain measure of continued protection of this area for those species that depend on dry forest, rocky outcrops, and riparian habitats.

The proposed ACEC that would have the most substantial beneficial effects to a wide variety of species is the Elkhorns ACEC. Currently, this area is managed under a Memorandum of Understanding (MOU) between MFWP, USFS, and BLM for wildlife and recreation. If, at some time in the future, the MOU is withdrawn, the ACEC designation would ensure that BLM lands within the Elkhorn Mountain Range would be managed to support populations of wildlife species associated with endemic vegetative communities and that management would focus on wildlife goals and objectives. The ACEC would also ensure that long-term management goals and objectives in the Elkhorn Mountains would be for wildlife and wildlife habitat.

The potential Elkhorns ACEC would consist of approximately 50,431 acres in and around the Elkhorn Mountains but would exclude the Limestone Hills National Guard Training Area, Radersburg motorized play area and several small isolated parcels along the western boundary. Management activities under the proposed ACEC would have long-term benefits to wildlife by focusing management specifically for wildlife. Substantially more acres would be proposed under this alternative than Alternative D which would only encompass the existing Tack-on WSA boundary (3,575 acres).

Unlike Alternatives A and D, Alternative B would guarantee long-term protection of wildlife habitat in the Elkhorn Mountain Range if the MOU is withdrawn. Under Alternative C, the Elkhorn ACEC would include all BLM lands in the Elkhorn Mountains (67,665 acres).

Alternatives B and C would implement food storage regulations at all recreation sites with high potential or known encounters between bears and people. This would protect bears from being destroyed or moved. Alternatives A and D would not provide for any food storage restrictions to protect bears.

During mining activity, road construction would be kept to a minimum and roads and facilities would be closed and rehabilitated after mining is finalized. Alternative B could protect wildlife habitat from the effects of mining to a greater degree than Alternatives A and D but less than Alternative C. However, the effects from mineral extraction could have minor to major and long-term effects to wildlife as described under “Effects Common to All Alternatives.”

All alternatives would have five stipulations to lessen the effects of oil and gas development on wildlife (stipulations that effect special status species are described under “Special Status Species”). Under Alternative B, these stipulations would include No Surface Occupancy (NSO) in state wildlife management units and bighorn sheep core areas and timing restrictions in big game habitat, including bighorn sheep year-round range.

The acres of available habitat would be the same for each alternative (**Table 4-8**) but the type of stipulations would vary between alternatives.

The stipulation for wildlife management areas would be similar under Alternatives A, B and D but under Alternative A, there would be “core” areas surrounding the wildlife management unit that would have the most restrictive stipulation of No Lease (NL). With a proposed NSO stipulation under Alternatives B and D and a NL stipulation under Alternative C, there would be minimal differences in effects between the action alternatives. All alternatives would protect habitat within wildlife management areas from oil and gas exploration and development.

Alternative B would have the same timing restriction on oil and gas exploration as Alternatives A and D for big

game winter and spring range (12/1-5/15). Under Alternative B, of the 498,973 acres of big game winter and spring range, approximately 248,213 of these acres would be even more protected with overlapping NSO stipulations or No Lease areas; approximately 11,770 more acres than under Alternative A. Of the 99,550 acres of big game winter/spring range within the five areas most likely to have oil and gas development, about 42,217 acres (5,173 fewer than under Alternative A) would be even more protected by overlapping NSO stipulations or No Lease areas under Alternative B. Although Alternatives A, B and D would protect overwintering big game from disturbance, Alternative C would provide the greatest amount of protection to big game from both disturbance and loss of habitat.

Alternative B would increase the timing restriction in big game calving habitat by one month in the spring over Alternatives A and D to 4/1-6/30. This would provide areas free of disturbance to individuals that may give birth early and would provide refuge to big game before they give birth. Alternative B would provide less protection than Alternative C which would prevent disturbance to big game as well as prevent loss of habitat from oil and gas development.

Alternatives B and D would increase the timing restriction for oil and gas exploration in year-round bighorn sheep habitat by two months to 11/1-6/30 compared to Alternative A. This would provide more refuge for sheep during lambing (most lambing occurs between April and June with some lambing occurring in early July) and going into the difficult winter season. Of the 131,279 acres of bighorn sheep year-round habitat, approximately 91,126 acres (23,695 more than under Alternative A) would be even more protected with overlapping NSO stipulations or No Lease areas, leaving about 40,153 acres being protected by the Timing Limitation stipulation. Of the approximately 37,000 acres of bighorn sheep habitat within the five areas most likely to have oil and gas exploration and development, 30,025 acres (11,782 more than under Alternative A) would be overlapped with more protective NSO stipulations or No Lease areas, leaving about 6,975 acres protected by the Timing Limitation stipulation. Alternative B would provide less protection than Alternative C which would prevent disturbance to bighorn sheep as well as prevent loss of habitat from oil and gas development.

Alternative B would restrict use in bighorn sheep core habitat over Alternatives A and D during oil and gas exploration and development by implementing a NSO. This would protect crucial habitat for bighorn sheep from disturbance as well as from loss of habitat. Alternative B would have similar beneficial effects as Alternative C (NL) on bighorn sheep in their core habitats.

Under Alternative B, the riparian habitat along Muskrat Creek would not be protected from mineral development. This could result in the fragmentation and loss of

crucial riparian habitat along Muskrat and Nursery Creeks.

## Effects of Alternative C

Alternative C would focus more on “passive” restoration of habitats and would treat the least amount of dry forest habitat in comparison to the other alternatives (up to 4,800 acres per decade of all size classes and densities).

Treatments would only be proposed in the three major watersheds, Big Hole, Jefferson, and Missouri but the majority of treatments would occur in the Missouri River watershed.

Currently, there are approximately 34,000 acres of medium and large tree size, high density, dry Douglas-fir and ponderosa pine habitat within the Missouri River watershed compared to 7,000 acres estimated to be historically present. Proposed treatments under this alternative could reduce the acreage of high density trees to approximately 32,000 acres in the first decade. After two decades approximately 29,000 acres would remain in a high density condition. This would be substantially fewer acres restored to historic conditions than with all other alternatives. Under Alternative C, mature, high density ponderosa pine would only be treated in the Missouri River watershed.

Approximately 1,250 acres of mature, high tree density dry forest in the Jefferson watershed would be treated per decade. Treatments would reduce the current acreages from 19,000 acres to 17,750 acres in the first decade and down to as low as 16,500 over two decades. This would be well above the historic average of 4,900 acres. Proposed treatments of 500 acres per decade in the Big Hole watershed would reduce current acreages from 14,000 acres to 13,500 acres over a decade and down to as low as 13,000 after two decades, which would also be well above the historic average of 7,000 acres.

Alternative C would restore the fewest acres of habitat for those wildlife species dependent on mature, open stands of Douglas fir and ponderosa pine of all alternatives. Alternative C would treat substantially fewer acres compared to Alternatives B and D with up to approximately 10,000 acres per decade less than Alternative B, and up to approximately 13,000 fewer acres per decade than Alternative D. Alternatives A and C would treat a similar amount of acres. Dry forest makes up roughly 38 percent of all vegetative communities in the Decision Area. This community was found to be severely altered and degraded due to fire suppression and Alternative C would move the fewest acres towards the natural range of conditions. Under Alternative C, more acres of dry forest types would be in an undesirable condition for the wildlife species dependant on this habitat type. However, Alternative C would have the fewest negative effects from disturbance to wildlife from treatments in dry forest habitat.

Alternative C would restore a relatively small amount of mature cool, moist forest and would treat the least amount of this habitat type compared to the other alternatives (approximately 550 acres per decade in four watersheds, Big Hole, Upper Missouri, Jefferson, and Yellowstone). Since cool, moist forest was not found to be substantially out of the range of historic conditions with the SIMPPLLE model and may not be out of the historic range due to longer periods between fires in this habitat type, restoration of cool, moist forest is less crucial. Treatments would increase habitat diversity but Alternative C would have a minor effect, either beneficial or detrimental, to this habitat type and the species dependant on cool, moist forest.

Determining the range of natural conditions for snag habitat would be the same as Alternative B. However, the creation of snags would only be done opportunistically through other projects, when possible. Snags would be protected but not necessarily created in areas where they are lacking like under Alternative B. Due to a lack of vegetation treatments and active snag management, Alternative C could create less snag habitat in snag deficient areas over the long-term than Alternative B, but would be similar in effects to snag deficient areas as Alternatives A and D. Alternative C, however, would protect more acres of existing snag habitat created by insect, disease or fire than all other alternatives.

Since Alternative C would not allow dead and down wood to be taken as firewood and live trees could only be removed for firewood in authorized areas to meet resource objectives (such as the removal of conifer encroachment), this alternative would protect more snag and down wood habitat compared to all other alternatives. This approach would benefit species dependent on snags for foraging and nesting and would protect down wood for microsites, amphibians, reptiles, birds and small mammals.

Whereas Alternative B would not specifically identify the acres of dead and dying forest that would be retained during timber salvage, Alternative C would require 50 percent of dead and dying forest be retained in stands that exceed 1,000 acres (unless human safety is an issue). Although both Alternatives B and C would protect dead and dying forests, Alternative C would better guarantee the protection of moderate to large blocks of dead and dying forests. Connectivity and diversity of habitat as well as species productivity could be greatest for those species dependent on snag habitat under Alternative C than with Alternative B. Alternative D would also require a minimum patch size be retained for dead and dying forest but would only require 30 percent of an area be retained when dead forest stands exceed 1,000 acres. Alternative C would provide substantially larger blocks of snag habitat compared to Alternatives A or D.

Grasslands make up the majority of the vegetative communities in the Decision Area (45 percent) and are experiencing a serious decline in quantity and quality due to

conifer encroachment. Although sagebrush shrublands are only found in 7 percent of the Decision Area, this habitat type provides essential habitat for sagebrush obligate species.

Alternative C would treat and restore 2,000 acres of grassland (1 percent of total) per decade and 750 (4 percent of total) acres of shrubland per decade within three watersheds, Missouri, Jefferson, and the Big Hole. There are approximately 50,000 acres of grassland and 14,000 acres of sagebrush currently experiencing some level of conifer encroachment compared to the historic average of 6,000 acres in both grassland and shrubland communities.

Alternative C would treat fewer acres of grasslands and shrublands of all alternatives. Alternative C would have a minor effect on restoring grasslands and shrublands in the Decision Area and would only reduce the amount of conifer encroachment to 48,000 acres in grasslands and up to approximately 13,500 acres in sagebrush in the first decade. Most of the conifer encroachment in grassland occurs in the Missouri watershed while most of the encroachment in sagebrush occurs in the Big Hole watershed. Alternative C would treat the least amount of grassland and sagebrush than any of the action alternatives and would have the most detrimental effects to wildlife by allowing a continued decline in nesting, breeding and foraging habitat for a wide variety of species. The short-term adverse effects from project implementation would be less under Alternative C compared to all other alternatives.

Alternative C would have the least aggressive weed management of the action alternatives. Because this alternative would treat fewer acres of weeds than the other action alternatives, there would be more loss of wildlife habitat, especial foraging, nesting, and breeding habitat due to weed infestations. However, habitat conditions would improve with this alternative over Alternative A.

Aerial spraying for herbicides would not occur under Alternative C and this would prevent the potential inadvertent loss of important habitat such as sagebrush and mountain mahogany as well as the loss of important forbs. The lack of aerial spraying could decrease the ability of the BLM to control large weed infestations or infestations in remote areas or in rough terrain that could be difficult to reach by vehicle or on foot. The restriction on aerial spraying could cause an increase in the size and extent of weed infestations in the Decision Area and, ultimately, cause a decline or loss of wildlife habitat.

Unlike Alternatives B and D, bitterbrush and mountain mahogany habitat would not be proactively restored under Alternative C. These habitat types could be treated opportunistically with other projects but it is expected that fewer acres of these vegetative communities would be restored or maintained with Alternative C than under the other action alternatives.

Alternative C would retain the greatest amount of unburned above ground vegetation during prescribed fire treatments (40 percent). This would allow recovery of foraging, nesting, and hiding cover more quickly than the other alternatives. However, Alternative C would restore fewer acres because each treatment area would be required to retain a higher percent of above ground vegetation than under the other action alternatives. This could include undesirable species such as conifers in grasslands and shrublands.

Compared to the other alternatives, Alternative C would provide the greatest amount of protection to nesting birds, including migratory birds, by restricting both mechanical methods and prescribed burning during the breeding season. This would prevent mortality to migratory and resident birds during the breeding season.

Riparian Management Zones established for this alternative would be wider than under all other alternatives. A 300-foot RMZ for fish bearing streams and a 150-foot zone for non-fish bearing streams would be implemented under Alternative C. As with the other alternatives, the RMZs could have management activities.

Unlike Alternatives A and D, Alternatives C and B would only allow management within riparian areas that protect, enhance or restore the riparian area and meet riparian objectives. Unlike Alternative B, under Alternative C trees could not be removed from the RMZ during restoration unless they would be used for other restoration activities (i.e. instream restoration or erosion control). This would ensure that not only would riparian goals and objectives be met with all projects (unless for human safety) but that any excess material generated from projects would be used for other restoration activities.

Alternative C would establish the most acres of all alternatives where the emphasis would be to restore, protect or enhance riparian habitat for aquatic species and terrestrial species that use the riparian zones adjacent to streams, wetlands and lakes for part or all of their lifecycle. Under Alternative C, approximately 11,393 acres would be managed for riparian objectives of which 6,657 acres would be forested and 4,736 acres would be non-forested. Alternative C would have approximately 8,000 more acres proposed for riparian management than Alternatives A and D and approximately 6,000 acres more than Alternative B.

Alternative C would provide the best protection to all species which use riparian zones and the increased RMZ width would ensure that critical movement corridors are maintained for numerous wildlife species. Whereas the other alternatives focus more on the direct effects of riparian management to streams, Alternative C best considers the overall need of riparian areas to wildlife and as travel corridors for a wide range of species.

Although riparian treatments could occur with other projects, Alternative C would only actively target up to

200 acres of riparian vegetation per decade with 100 acres in the Missouri watershed, 50 acres in the Jefferson watershed, and 50 acres in the Big Hole watershed. Alternative C would take a more “passive” approach to riparian restoration and would actively restore the fewest acres of any action alternative. However, this alternative would treat more riparian acres than Alternative A. Alternative C would also have less active restoration of aspen stands than Alternative B or D leading to a decline of this unique and valuable vegetative community.

Although RMZs would be identified to protect riparian areas, firewood cutting could be authorized within some RMZs under Alternative C if it meets other resource objectives. Because firewood cutting would only be allowed in authorized areas to meet resource objectives, habitat would be improved or maintained with this alternative and there would only be minimal negative effects to wildlife.

Unlike all other alternatives, Alternative C would ensure existing exclosures are maintained annually and maintained before livestock turn-out. This is the only alternative that provides adequate protection to aquatic and riparian habitats, springs, and other unique and fragile habitats from livestock use. Although a maintenance schedule would be provided under the other action alternatives, livestock turn-out could still occur before functional exclosures are in place. Unlike the other action alternatives, Alternative C would ensure that fragile and high value natural resources are protected. There would be no substantial differences in acres grazed by livestock between alternatives. However, with Alternative C, livestock grazing would be allowed on the fewest acres of all alternatives (3,000 acres less than Alternative B and 11,000 less than Alternatives A and D). This alternative would have the least detrimental effects on wildlife from livestock grazing, such as competition for forage, of all alternatives. Unlike Alternatives A and D, the Indian Creek allotment would be unavailable to grazing and unlike Alternative B, this allotment would be unavailable as a forage reserve.

Alternative C would require the largest mandatory buffer, 9 miles, between occupied bighorn sheep habitat and domestic sheep and goats. Alternative C would also provide the greatest protection to bighorn sheep when goats and sheep are used during weed control. This alternative would reduce the risk of disease transmission from domestic to wild sheep more than any other alternative.

Since forest treatments would only be allowed in areas that are already accessible by the current road system, Alternative C would have the fewest negative effects to wildlife from permanent road construction of all alternatives. As with Alternative B, temporary roads would be kept to a minimum and closed within 1 year of project implementation. With fewer proposed acres of treatment, Alternative C would require the fewest miles of temporary road for projects and would have the fewest

road-related impacts on wildlife from roads of all alternatives.

Alternative C would provide the greatest protection to big game winter/calving range from the effects of open roads (described under “Common to All Alternatives” and “Effects of Alternative A”) by allowing no net increase in permanent roads where open road densities are 1.5 mi/mi<sup>2</sup> or less in big game winter range. Alternative C would also improve the quality and quantity of big game winter range more than any other alternative by managing to reduce open road densities where they exceed 0.5 mi/mi<sup>2</sup>. Christensen et al. (1993) found that reducing open road miles to less than 0.5 mi/mi<sup>2</sup> increases the amount of functional elk habitat by over 70 percent.

There would be two proposed ACECs common to all the action alternatives, Sleeping Giant and Humbug Spires.

Alternative C would propose three additional ACECs (Elkhorns, Spokane Creek, and Ringing Rocks). Both Spokane Creek and Ringing Rocks would be small (14 and 160 acres, respectively) and would have minimal beneficial effects to wildlife. Humbug Spires is currently a Wilderness Study Area. If Congress does not designate the Humbug Spires WSA as Wilderness, the proposed ACEC designation would ensure a certain measure of continued protection of this area for those species that depend on dry forest, rocky outcrops, and riparian habitats.

The proposed ACEC that would have the most substantial beneficial effect to a wide variety of species is the Elkhorns ACEC. Currently, this area is managed under a Memorandum of Understanding (MOU) between MFWP, USFS, and BLM for wildlife and recreation. If, at some time in the future, the MOU is withdrawn, the ACEC designation would ensure that the management emphasis of BLM lands within the Elkhorn Mountain Range would be to support populations of wildlife species associated with endemic vegetative communities and that management would focus on wildlife goals and objectives.

The potential Elkhorns ACEC would consist of all BLM lands in and around the Elkhorn Mountains (approximately 67,665 acres). The ACEC would provide long-term benefits to wildlife by focusing management specifically for wildlife. Substantially more acres would be proposed under this alternative than Alternative D which would only encompass the existing Tack-on WSA boundary (3,575 acres). Alternative C would have approximately 17,200 more acres in the Elkhorn ACEC than Alternative B.

Alternatives C and B would implement food storage regulations at all recreation sites with high potential or known encounters between bears and people. This would protect bears from being destroyed or moved. Alternatives A and D would not provide for any food storage restrictions.

Under Alternative C, no new structures or roads would be allowed in riparian management zones during new or existing mineral operations. This would provide more protection from mining activities of all other alternatives.

All alternatives would have five stipulations to lessen the effects of oil and gas development on wildlife (stipulations that affect special status species are described under “Special Status Species”). Alternative C would have a NL stipulation for state wildlife management units, big game winter and spring range, and bighorn sheep habitat.

Unlike the other alternatives, Alternative C would prevent any type of disturbance or loss of habitat from oil and gas exploration and development in big game habitat. This alternative would be the most protective to big game species.

Unlike all other alternatives, Alternative C would have a 180-acre mineral withdrawal along Muskrat and Nursery Creeks. This would ensure crucial riparian habitat along Muskrat and Nursery Creeks is provided long-term protection for resident and migratory species.

## Effects of Alternative D

Alternative D would benefit a variety of wildlife species by actively restoring habitat that is vital to many species. Vegetation treatments would encourage growth and diversity of habitats and result in multi-age class communities.

Alternative D would take the most aggressive approach in actively restoring all habitat types in the Decision Area.

Dry forest of Douglas fir and ponderosa pine represent the most common forested habitat in the Decision Area. Management of dry forest would focus on moving this habitat type towards the range of historic conditions. The SIMPPLLE model suggested that this habitat type has been severely altered from historic conditions due to fire suppression.

Under Alternative D, projects would mimic natural fire events to create large, mature trees with open canopies and a diverse understory of grasses, shrubs, and forbs. Over the long-term, habitat for resident and migratory birds and large and small mammals would be increased. Large diameter snag habitat would be allowed to become established, creating crucial habitat for snag dependent species. Creation of open stands would ultimately result in increased breeding, foraging and hiding habitat for a wide range of species.

Treatments in dry forest would encourage increased diameters of trees with a diversity of understory age classes. However, the density of trees would be reduced, sometimes substantially, to promote the growth of grasses, shrubs, and forbs. This could have a negative effect on some species. For example, thinning dense

stands of dry forest could result in a loss of hiding habitat for big game, making them more vulnerable to hunting or predation. However, thinning would also result in an increase in forage for these species. Site specific analysis would identify the effects to wildlife impacted by forest treatments.

Under Alternative D, up to 18,200 acres of habitat could be treated per decade within dry forest types of all sizes and densities which would alter forest structure, density, and composition more than under any other alternative.

Dry forest treatments could occur in the six watersheds of the Decision Area but there would be an emphasis on restoration in the Upper Missouri, Jefferson, and Big Hole watersheds. The majority of the treated areas (5,500 acres per decade) would occur within the Upper Missouri River watershed. Treatments would focus on medium and large tree size, high density, dry Douglas-fir and ponderosa pine stands.

Currently, there are approximately 34,000 acres of medium and large tree size, high density, dry Douglas-fir and ponderosa pine habitat within the Upper Missouri River watershed compared to 7,000 acres estimated to be historically present. Proposed treatments could reduce the acreage of high density trees to approximately 28,500 acres in the first decade. After two decades approximately 23,000 acres would remain in a high density condition.

Treatment of 3,000 acres per decade of medium and large tree, high density dry forest in the Jefferson watershed would reduce current acreages from 19,000 acres to 16,000 acres per decade and down to as low as 13,000 acres after two decades compared to an average of 4,900 acres historically found in the watershed.

Treatments of 2,300 acres of medium and large tree, high density dry forest in the Big Hole watershed would reduce current acreages from 14,000 acres to 11,700 acres in the first decade and down to as low as 9,400 acres after two decades which would move the Big Hole close to the historic average of 7,000 acres.

The dry forest types are often used by big game species during winter months and a reduction in tree densities would result in an increase of forage for big game. However, reducing tree densities would create open stands that could increase the vulnerability of big game to hunting and predation.

Management for mature, open dry forests would increase or improve habitat for a variety of resident and migratory birds, large and small mammals, amphibians, and reptiles. Although there would be long-term benefits to species that depend on open, dry forest stands, such as flammulated owls, there could be a decline in the amount of habitat available for those species that prefer more dense forest types.

Additional impacts would occur from temporary road construction for forest treatments. Roads would reduce

habitat and could potentially increase the level of disturbance and displacement of wildlife species from project areas. To reduce disturbance to wildlife, temporary roads would be closed within one year of project completion. Because Alternative D would entail building more temporary roads for treatments (more acres treated) and would allow temporary roads to remain open longer, this alternative would have more negative effects to wildlife from temporary roads than Alternatives B and C.

Overall, Alternative D would move more acres towards the historic range and restore more habitats for wildlife dependant on dry forest than all other alternatives. This alternative, however, would also have the most short-term effects from disturbance of all alternatives. Over the long-term, management towards pre-fire suppression conditions would benefit the majority of species that utilize these vegetation communities.

Cool, moist forest is the least available habitat type in the Decision Area and is predominately located in the Big Hole and Upper Missouri Watersheds. Under Alternative D, up to 5,050 acres of medium to large size, high density, cool, moist forest could be treated per decade within the Decision Area. Treatments would occur in the same watersheds as Alternatives B and C. Three watersheds would have the majority of treatments, Upper Missouri, Jefferson, and Big Hole.

Up to 2,050 acres per decade could be treated in the Upper Missouri watershed in this habitat type. In the Upper Missouri, this could reduce mature, dense, cool forest stands from 6,000 acres to 3,950 acres in the first decade which would be close to the historic average of 4,300 acres.

In the Big Hole watershed, up to 1,500 acres could be treated per decade to reduce the current amount of mature, dense cool and moist forest from 5,500 acres to 4,000 acres in the first decade and down to as low as 2,500 acres within two decades, taking the number of acres to near the historic average of 2,400 acres.

Although there is very little known cool, moist forest in the Jefferson watershed (approximately 1,500 acres), Alternative D would propose to treat up to 500 acres per decade. This is more than under all other alternatives.

The Blackfoot, Gallatin, and Yellowstone watersheds could have a small number of acres of mature, high tree density cool forest treated (175 acres in the Yellowstone and Blackfoot and 75 acres in the Gallatin). The effects on wildlife, either beneficial or detrimental, from treatments in these watersheds would be minimal.

There could also be a small number of acres treated in the Missouri, Big Hole, Yellowstone, and Gallatin watersheds to thin seedlings and pole-sized trees in cool forest habitats. Up to 250 acres per decade could be thinned in the Missouri, 300 acres per decade in the Big Hole and only 25 acres per decade in the Gallatin and

Yellowstone watersheds. This would have minor effects to wildlife.

Reduction of stem density and creating small openings would be beneficial to wildlife that occurs in this vegetation community. Creation of small openings would increase vegetation and habitat diversity as well as increase available forage for big game and other species. Increased vegetation diversity and understory development would improve habitat for many small and large mammals and migratory and resident birds. Improvement of habitat for prey species would benefit large predators within cool, wet forests.

Alternative D would treat a total of 5,050 acres per decade of cool, moist forest, which would be more than under all other alternatives. Treatments would result in temporary displacement of wildlife within project areas to adjacent forest areas. However, displacement would be expected to be temporary and habitat would ultimately be improved by creating a diversity of habitats. Additional impacts would occur from temporary road construction for forest treatments. Roads would reduce habitat and could potentially increase the level of disturbance and displacement of wildlife species in these areas.

Like Alternative A, Alternative D would not have retention guidelines or recommendations for restoration of snag and down woody habitat. Snag improvement projects could occur in conjunction with timber management projects but snags would not be actively recruited in snag deficient areas. Alternatives D, A and C would create fewer snags in snag deficient areas than Alternative B.

Unlike Alternative A, snags that have been created naturally through insects, disease and fire would be retained, to some degree, under Alternative D. This would retain habitat for snag dependant species while allowing commodity removal.

For timber salvage, Alternative D differs from Alternatives B and C when contiguous areas of dead and dying forest exceed 1,000 acres. Under Alternative D, 30 percent of the affected area would be retained unless necessary for human safety. Alternative D would require fewer acres of dead and dying forest to be retained compared to Alternatives B and C. Although Alternatives B and D would protect dead and dying forests, Alternative C would guarantee the protection of moderate to large blocks of dead and dying forests. Connectivity and diversity of habitats as well as species productivity could be less for those species dependent on snag habitat under Alternative D than with Alternatives B and C but more than under Alternative A.

The effects of firewood cutting would be the same as Alternative B.

Grasslands make up the majority of habitat in the Decision Area (45 percent) and conifer encroachment is

currently causing a severe decline in the quality and quantity of this habitat type. Although sagebrush shrubland is only found on 7 percent of the Decision Area, this habitat type provides essential habitat for sagebrush obligate species.

Treatments in grasslands and shrublands would move towards pre-fire suppression and away from the effects of historic grazing. This would improve and protect habitat for species that are dependent upon this vegetation community. Conifer encroachment has reduced the amount and quality of breeding, brood rearing, foraging, and cover habitat for a wide range of wildlife species.

Alternative D would treat up to 19,100 acres (14 percent) of grasslands and 6,800 acres (35 percent) of shrublands per decade in the Decision Area to reduce conifer encroachment and improve the health and resiliency of these communities. Alternative D would restore more acres of grasslands and shrublands than all other alternatives. Although Alternative D would have more short-term adverse effects to wildlife from disturbance, the long-term benefits from increased habitat for breeding, forage and cover would outweigh the short-term impacts. The loss of conifers could have negative effects to nesting migratory and resident birds but habitat for these species has not been found to be limiting.

Under Alternative D, the quality and quantity of grassland and shrubland habitat would be restored on more acres than under all other alternatives. The majority of treatments would occur in the Upper Missouri, Jefferson, and Big Hole watersheds.

Alternative D would treat the most acres of noxious weeds of all alternatives (up to 61,000 acres). Assuming implementation of the high end of proposed treatment acreages, Alternative D would treat 41,000 acres more than Alternative A, 11,000 more acres than Alternative B and 23,000 more acres than Alternative C. This alternative would restore more acres of wildlife habitat by reducing noxious weeds than all other alternatives.

Alternative D would restore and protect bitterbrush and mountain mahogany habitat. Effects would be the same as Alternative B.

Alternative D would allow the greatest amount of over ground vegetation to be consumed during prescribed fire (90 percent). This would allow more removal of target vegetation such as conifers in grasslands or shrublands but could result in a greater time for re-colonization of target grasses, forbs, and shrubs.

Like Alternative A, there would be no timing restrictions for prescribed burning or mechanical treatments. This could result in more mortality of migratory and resident birds than under Alternatives B and C.

Fifty-foot Streamside Management Zones would be implemented under Alternative D, the same as Alternative A. The effects from SMZs would be the same as described under "Effects Common to All Alternatives"

and as described for Alternative A. Smaller riparian management areas proposed under Alternatives D and A, along with the types and extent to management activities allowed in SMZs, could reduce breeding, foraging, and hiding habitat and reduce the quality and quantity of movement corridors for a wide range of species.

Alternative D could actively restore (through mechanical treatments) up to 1,700 acres of riparian vegetation per decade, more than under any other alternative. Although the most riparian acres could be targeted for active restoration under Alternative D, Alternatives D and A would provide the least amount of direction for riparian management. Like Alternative A, Alternative D would allow management of the riparian areas strictly for commodity removal. Alternatives A and D could cause a reduction in breeding, brood rearing, foraging, denning, overwintering and travel habitat for a wide range of species.

Like Alternative B, Alternative D could actively restore aspen stands to improve and expand habitat for wildlife. Nesting habitat for birds, including migratory birds, could be increased and so could an important winter food source for elk, deer, and moose.

The effects of firewood cutting in riparian areas would be the same as under Alternative B.

Livestock exclosures would be checked and maintained every five years. Alternative D would protect more riparian areas from livestock grazing and trampling compared to Alternative A which does not require maintenance of exclosures. However, damaged and non-functional exclosures could allow access to riparian areas and streams between 5 year maintenance intervals. Due to this, Alternative D would provide less protection to riparian areas than Alternative C but, possibly, more protection compared to Alternative B (depending on the maintenance schedule developed under Alternative B.) The type of grazing, acres available for livestock grazing and effects to wildlife would be the same as under Alternative A.

Alternative D would have the same buffer prescriptions associated with bighorn sheep and domestic sheep as Alternative A. The implementation of buffers between domestic sheep and goat allotments and bighorn sheep habitat up to 9 miles in width could reduce the potential for disease epidemics within bighorn sheep populations. Although Alternatives D and A allow for a voluntary buffer of up to 9 miles, these alternatives would not have a minimum buffer width. These alternatives would not guarantee adequate separation between wild and domestic sheep to prevent disease transmission. Alternatives B and C would provide minimum buffer widths between wild and domestic sheep. Unlike Alternative A, Alternative D would provide specific guidance when using domestic sheep for weed control in occupied bighorn sheep habitat (same as Alternative B). This would help in preventing disease transmission to wild sheep during weed control activities.

Unlike the other action alternatives, Alternative D would allow some new, permanent roads to remain open to the public if travel plan objectives are met. Since Alternative D would treat the most vegetation acres of all alternatives, there would be more need for permanent road construction to facilitate multiple entries to meet objectives. Because Alternative D would allow more new, permanent roads and fewer roads would be closed during travel planning, this alternative could have substantially more negative effects to wildlife associated with roads than Alternatives B and C. Under Alternative D, there would be more loss of habitat due to road construction, an increase in disturbance and harassment to wildlife, an increase in the spread of noxious weeds and a greater change of direct mortality through road kill.

Like the other action alternatives, temporary roads would be kept to a minimum under Alternative D. However, temporary roads would not be required to be closed within a certain time after project implementation. Open temporary roads could be used by the public and would cause more displacement of wildlife than under Alternatives B and C.

Alternative D would protect and maintain fewer acres of functional big game winter/calving range by allowing new permanent road construction in areas where the road density exceeds 0.5 mi/mi<sup>2</sup>. Alternative D would allow new roads to be built in areas of low road density. This alternative could substantially reduce the quality of habitat for big game and other wildlife species as well as the amount of functional habitat by allowing new permanent roads in areas that currently provide high quality habitat. Christensen et al. (1993) found that open road miles less than 0.5 mi/mi<sup>2</sup> provide elk habitat that is roughly 70 percent functional. A sharp decline in habitat effectiveness was found when road densities reached 1 mi/mi<sup>2</sup> and above (Christensen et al. 1993).

There would be two proposed ACECs common to all the action alternatives, Sleeping Giant and Humbug Spires. Alternative D would propose one additional ACEC, Humbug Spires. The effects of the Sleeping Giant ACEC are described under “Effects Common to All Alternatives.”

Effects of the proposed Humbug Spires ACEC would be the same as under Alternatives B and C.

Under Alternative D, the Elkhorns ACEC would only include the existing Tack-on Wilderness Study Area boundary (3,575 acres). This is substantially different from Alternatives B and C where the size of the Elkhorns ACEC boundary would be 50,431 and 67,665 acres, respectively. Under Alternative D, the proposed Elkhorns ACEC would be managed for semi-primitive, non-motorized recreation which would benefit wildlife species by reducing the level of disturbance and maintaining habitat (same management direction as existing WSA).

Currently, the entire Elkhorn Mountain Range is managed under a Memorandum of Understanding (MOU) between the MFWP, USFS, and BLM for wildlife and recreation. If, at some time in the future, the MOU is withdrawn, BLM lands in the Elkhorn Mountains would revert back to multiple use management and wildlife and their associated habitat might not be adequately protected. Unlike Alternatives B and C, Alternative D would not ensure BLM lands within the Elkhorn Mountain Range are managed for wildlife objectives and goals. The Elkhorn Mountains would not necessarily be managed to support populations of wildlife species associated with endemic vegetative communities if the MOU is withdrawn.

Alternative D would not implement food storage regulations at recreation sites to prevent conflicts between bears and people. This would pose more risk of bears being moved or killed due to interactions with humans than under Alternatives B and C.

During new and existing mineral operations, Alternative D would allow facilities and roads to be constructed in riparian areas. This would cause more loss of wildlife habitat and disturbance than under Alternatives B and C. The loss of habitat could be long-term and major depending on the type and extent of activity.

All alternatives would have five stipulations to lessen the effects of oil and gas development on wildlife (stipulations that affect special status species are described under “Special Status Species”). Under Alternative D, these stipulations would include NSO in state wildlife management units and timing restrictions in big game habitat.

The acres of available habitat would be the same for each alternative (Table 4-8) but the stipulations would vary between alternatives.

Stipulations for wildlife management areas would be similar for Alternatives D, A, and B but under Alternative A, there would be “core” areas surrounding the wildlife management unit that would have the most restrictive stipulation of NL.

Alternative D would have the same timing restriction as Alternatives A and B for big game winter and spring range (12/1-5/15). Of the 498,973 acres of big game winter/spring range in the oil and gas leasing Decision Area, 97,454 acres would be overlapped with more protective NSO stipulations or No Lease areas, leaving about 401,519 acres protected with the Timing Limitation stipulation. Within the five areas with the most potential for oil and gas exploration and development, 15,589 acres (least of all alternatives) of the 99,550 acres of big game winter/spring range would be overlapped with more protective NSO stipulations or No Lease areas. Considering the overlap of more protective stipulations, Alternative D would provide the least protection to big game winter/spring range of all alternatives. Although Alternatives D, A, and B would provide varying protec-

tion to overwintering big game from disturbance, Alternative C would provide the greatest amount of protection to big game by preventing both disturbance and loss of habitat with a NL stipulation.

Alternative D would have the same timing restriction in big game calving habitat as Alternative A, 5/1-6/30. This would be less time available free of disturbance to individuals that may give birth early or as a refuge to big game before they give birth than under Alternatives B and C.

Alternatives D and B would also increase the timing restriction in year-round bighorn sheep habitat by two months (11/1-6/30) over Alternative A. Of the 131,279 acres of bighorn sheep year-round habitat, approximately 31,711 acres (least of all alternatives) would be even more protected with overlapping NSO stipulations or No Lease areas, leaving about 99,568 acres being protected by the Timing Limitation stipulation. Of the approximately 37,000 acres of bighorn sheep habitat within the five areas most likely to have oil and gas exploration and development, 6,880 acres (11,363 fewer acres than under Alternative A, 23,145 fewer acres than under Alternative B) would be overlapped with more protective NSO stipulations or No Lease areas, leaving about 30,120 acres protected by the Timing Limitation stipulation. This would provide more refuge for sheep during lambing (most lambing occurs between April and June with some lambing occurring in early July) and going into the difficult winter season. Alternatives D and B would provide less protection than Alternative C which would prevent disturbance to bighorn sheep as well as prevent loss of habitat from oil and gas exploration and development with a NL stipulation.

Alternative D would have the same timing limitation in bighorn sheep core habitat (12/1-5/15) as Alternative A. Alternatives D and A would be less protective of bighorn sheep and core habitat than Alternatives B and C which would protect crucial habitat for bighorn sheep from disturbance as well as from loss of habitat.

Alternative D would not withdraw 180 acres of riparian habitat in the Muskrat Creek watershed. There could be a loss of habitat for a variety of species in the Muskrat Creek watershed under Alternatives D and A.

## FISH

### Effects Common to All Alternatives

Because of the programmatic nature of the proposed alternatives, qualitative effects from management activities on fish and aquatic ecosystems are addressed under "Effects Common to All Alternatives." Some effects may vary due to the degree of an activity such as the amount of vegetative treatments or road closures. These "quantitative" effects are addressed under each alternative. More specific analysis would be required to determine the extent of potential impacts from site specific

management actions. This analysis would be completed when a management action is clearly defined.

Proposed management of the following resource programs would have no anticipated impacts to fisheries; Air Quality, Paleontology, Cultural Resources, Visual Resources, Economics, and Environmental Justice.

### Water Quality

In their natural environment, the survival of fish and other aquatic species depends upon many factors including; finding food, predator avoidance, immune system health and reproduction. Although sediment is a natural part of the aquatic ecosystem, an increase in fine sediment has the potential to affect all of these factors as well as cause stressful conditions that could increase aquatic species' susceptibility to disease.

An increase of sediment to aquatic systems can happen through ground disturbing activities such as vegetation treatments using mechanical methods and/or prescribed fire, livestock grazing, mining, energy development, road construction and use, recreational activities such as trail construction and use (especially motorized use) and campground development in riparian areas (Meehan 1991).

An increase above the natural sediment load in streams can prevent the successful capture of prey and limit the ability of fish to obtain food. Sediment in streams may also be deposited in spawning gravels where it can smother eggs and reduce the amount of interstitial spaces available for eggs, juvenile fish, and other organisms. This is especially critical in the winter months when interstitial spaces are used as refugia and allow fish and other aquatic species to survive under severe flows and temperature conditions.

Developing fish eggs and larvae need a constant supply of cold, oxygen rich water which flows through the interstitial spaces in stream gravels. Embedded sediments fill these interstitial spaces and also limit essential winter habitat used by juvenile fish for cover from predators, ice scour and high-velocity stream flows. The filling of pools with sediment further limits overwintering sites for juvenile and adult fish (Meehan 1991).

Significant increase in sediment deposition can also lead to alterations of stream morphology causing a widening of the stream, an increase in subsurface flow and stream channel instability.

Direct effects of sediment on aquatic invertebrates includes; loss of habitat due to scouring of streambeds, dislodgment of individuals, smothering of benthic communities, loss of interstitial spaces between substrate, abrasion of respiratory surfaces and interference of food uptake for filter feeders (Beschta et al. 1995). Many of the macroinvertebrates that are favored as food (e.g. mayflies, caddisflies and stoneflies) by stream dwelling fish prefer coarse streambed substrates and are harmed

by an increase of fine sediments, while others (e.g. midges) are considered to be more tolerant.

Accelerated runoff can trigger downcutting of the streambed, which lowers the streambed, alters the water table, dries out the riparian area, destabilizes streambanks, increases erosion, and further accelerates runoff. Unless stopped by some form of intervention or a hard geologic formation, downcutting may migrate upstream and further disrupt the hydrologic function of the stream system (Rosgen 1996).

Water quality can be affected not only from an increase in sediment but also from an increase in nutrients, pollutants, or heavy metals. Metals are naturally present in varying concentrations in all surface waters. Mining, however, may cause concentrations of dissolved metals to exceed background levels, particularly in situations involving acid mine discharge. The chief metals associated with mining released to streams include; arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, and zinc. These substances may produce toxic effects alone, in combination or synergistically that include direct mortality, behavioral changes or reproductive failure in aquatic organisms (Meehan 1991).

Nutrients can be elevated in streams from management activities such as timber harvest and associated road construction, prescribed fire and livestock grazing which can increase algal production. An increase in algal blooms can reduce interstitial spaces and dissolved oxygen in the stream (Meehan 1991).

### Riparian Vegetation

Riparian vegetation directly influences the condition, quality, and maintenance of aquatic habitats. Riparian plants filter sediments and nutrients, provide shade, stabilize streambanks, provide cover in the form of large and small woody debris, produce leaf litter energy inputs, and promote infiltration and recharge of groundwater (Forest Ecosystem Management Assessment Team 1993 and Takahi et al. 2002). As a result of these functions, spawning beds for fish and microhabitats for macroinvertebrates remain relatively free of damaging fine sediment deposits. Riparian vegetation reduces sedimentation of pools, thereby maintaining water depths and structural diversity of the channel. Base flow levels are augmented throughout the year by the slow release of groundwater. Complex off-channel habitats, such as side channels, and undercut banks are often formed by the interaction of stream flow and riparian features such as vegetation and large woody material. These areas of slower water provide critical refuge during floods and high flows for a variety of aquatic species and serve as rearing areas for juvenile fish (Brown et al. 1988).

The bank stabilizing function of streamside vegetation not only helps reduce erosion and influence channel morphology but also acts to supplement instream cover by the development of undercut streambanks and by

providing overhanging vegetation. Well-vegetated stream channels and stable streambanks help reduce turbidity and channel scouring resulting from high flows and can enhance primary production (Beschta et al. 1995).

Riparian trees provide streams with critical instream habitat components such as woody material that creates pools, slows high flows, provides refuge during the summer and winter for aquatic species, and provides shade, cover and a prey base for many species. Woody material also protects streambanks from erosion and provides microsites for riparian vegetation to be established.

### Effects of Management Actions

All programs would be managed and implemented to improve or maintain riparian conditions that are essential for quality fish and aquatic habitat. When this is not possible (as could occur with activities such as placer mining), measures would be taken to reduce risks to aquatic resources and to restore stream systems. However, those projects that remove habitat features or degrade aquatic habitats would have a negative impact to fish and other aquatic organisms.

By using mechanical methods and prescribed fire, sagebrush, grasslands and forests would be restored to improve species composition, distribution, and vigor. This could create short-term pulses of sediment, nutrients, and runoff to streams due to soil disturbance and compaction and vegetation removal (Meehan 1991). In the long-term, however, restoring vegetation structure, density, species composition, and pattern would reduce the risk of unnaturally large wildland fire events and reduce the risk of excessive runoff and sedimentation. By restoring these habitats to a more "healthy" state, the risk of excessive sedimentation and erosion would be reduced and, in forested riparian areas, large trees would be promoted to provide a source of large woody material along floodplains and within instream habitats. Water flows would be restored to more natural conditions, allowing for more water storage and slow release to streams. Understory vegetation would be promoted in currently dense stands of dry forest and there would be a reduction of noxious weeds.

Some vegetative projects would involve multiple treatments of the same area. This could involve using mechanical treatments to prepare an area for a prescribed burn. Prescribed fires conducted in the spring (when drainage-bottoms are still snow covered) help to protect riparian vegetation and soils whereas burns in the fall could potentially cause more loss of riparian vegetation as well as an increase of runoff, sediment, and nutrients to streams. The primary goal of these projects would be to restore vegetation and move towards the historic range of conditions that would allow aquatic species to withstand the effects of natural disturbances.

Mid-term (10 year) projections indicate noxious weed populations would increase even with implementation of weed management plans, statutes, and regulations due to expansion of existing populations and new infestations associated with roads and areas of disturbance. Weed management activities such as selective grazing, herbicide application, biological control agents or mechanical treatments could produce some short term minor effects on fisheries and aquatic resources that could include, but are not limited to, increases in sedimentation, changes in water chemistry due to the delivery of chemicals, reduction in shade or thermal cover or an increase in bank instability from the loss of vegetative cover. These short-term negative effects should be overshadowed by the long-term benefits on the aquatic resources as native or desirable species become re-established.

Restoring riparian vegetation would benefit streams and riparian areas by improving a large tree component as well as down woody material in the stream channels and along floodplains. Restoration treatments may have short-term adverse effects due to disturbance and may cause a short-term pulse of sediment to stream channels but would have long-term beneficial effects such as stabilizing streambanks, increasing shade, reducing fine sediment, reducing runoff, improving ground water storage and providing habitat features (down wood, undercut banks) to the stream and riparian habitat.

Aquatic habitat would be restored, when necessary, to improve unsatisfactory or declining habitat. This would include restoration of riparian vegetation to improve shade, increase down woody material, improve storage of ground water, and protect streambanks. Restoration of aquatic habitat would also include providing habitat features such as instream woody material for cover, overwinter habitat, refugia, shade, and forage. In pool deficient streams, pools could be created to provide both winter and summer habitat. In some cases where a stream has been severely altered or degraded, such as with placer mining, the stream may need to be reconstructed. Roads and road crossings could be removed to reduce fine sediment and runoff to streams, restore riparian vegetation, and remove migration barriers to fish.

All alternatives would be subject to management under Montana Streamside Management Zones (SMZs) which allow activities such as logging, prescribed fire, and road building in riparian areas (generally 50 feet on either side of a stream) but restricts how many trees can be removed and where road construction can occur. Restricting management activities associated with logging and road construction in riparian areas would maintain some of the functional capacity of wetlands and riparian areas and help to reduce and trap sediment generated from management activities. However, only 50 percent of trees >8 inches DBH on each side of stream or 10 trees per 100-foot stream segment would be required to be retained within SMZs. Although this would provide some protection to streams, the loss of riparian vegeta-

tion and soil disturbance may cause negative impacts to streams from increased runoff, loss of large woody material and sedimentation.

BMPs (Appendix E) would be used to avoid or minimize adverse effects to water quality from sedimentation and pollution and help to protect the quality of instream habitat.

The risk of pollutants entering streams would be reduced by requiring storage of chemicals outside of riparian areas, having a spill prevention and control plan and not allowing refueling within riparian areas (with the exception of mining activities, fire suppression and reclamation and chainsaw re-fueling).

Livestock grazing may have harmful effects on riparian habitat as well as on fish and aquatic resources depending on the intensity of grazing within riparian areas. Grazing that is too intensive, or occurs for too long duration within a riparian area, can cause increases in sedimentation and introduce nutrients to the aquatic environment. Grazing can cause bank trampling that can destabilize stream banks and cause the loss of undercut banks and channel erosion. Grazing can also lead to a loss of vegetation density, diversity, and vigor (Meehan 1991).

Implementation of Allotment Management Plans, Coordinated Resource Management Plans and Land Health Standards and Guidelines would move towards developing stable, deep-rooted vegetation which would stabilize streambanks, reduce soil erosion, and improve riparian condition. Implementation of Land Health Standards and Guidelines would prevent the degradation of riparian habitats and would also improve the health of all vegetative communities where grazing has caused degradation to riparian communities and stream systems.

The health and integrity of riparian vegetation would be protected and improved by fencing, development of upland water sources, timing livestock use to avoid sensitive periods in spring, and reductions in grazing intensity and trampling. These types of activities would protect and restore riparian vegetation, protect and restore streambeds and banks and reduce sedimentation and nutrient additions to streams. Suspension of grazing in riparian areas where livestock use has caused site degradation would help meet riparian goals and proper functioning condition.

Fuels projects would be designed and implemented in a manner that minimizes impacts to aquatic resources. Mechanical treatments and prescribed burning used to reduce fuel loading or for restoration of vegetation communities could cause short-term pulses of nutrients (especially in the case of prescribed fire) and fine sediment as well as increased runoff.

Although wildland fires could still occur in areas where hazardous fuel loads have been reduced, fires would be expected to be predominately understory burns exhibit-

ing less intensity and less severe burning conditions than crown fires. These understory burns are easier to control with lower-impact suppression methods (such as hand-built firelines) and would be less likely to adversely affect aquatic resources. In contrast, the crown fires associated with heavier fuel loads often require suppression techniques likely to have greater adverse impacts to aquatic habitats and species.

Wildland fire suppression may involve activities typically not desired within riparian areas to protect human safety or prevent major losses within riparian and up-slope habitats. These activities might include, but are not limited to, tree felling/fireline placement, operation of heavy equipment, crossing of streams, road construction, use of chemical retardants and removal of water. Incident bases, helibases, and staging areas would be located outside of riparian areas, if at all possible. These activities could increase fine sediment and runoff and decrease riparian vegetation and down woody material along streambanks and riparian areas. These activities could also decrease shade, degrade streambeds and banks, and allow contaminants to enter streams. Wildland fire suppression, particularly in riparian areas, could have varying degrees of effects (negligible to major, short term to long-term) depending on the size, location, and intensity of suppression activities.

Travel management could improve and benefit aquatic habitat by closing roads in riparian areas and removing road crossings.

Recreation activities, such as camping, OHV use, boat use and fishing and can have negative effects on fish and aquatic resources. Effects include displacement of species from their typical habitats due to human presence or recreation related facilities, species mortality (fishing), and habitat degradation (loss of riparian vegetation, increase in fine sediment and bank trampling).

Special designations, such as Wilderness Study Areas, Wild and Scenic Rivers and ACECs would have beneficial effects to fisheries and aquatic resources. These areas are typically designed to protect, restore, or enhance habitat (both aquatic and terrestrial). Additionally, these areas minimize or limit disturbance, allowing habitat conditions to exist in near natural conditions.

Mining activities, placer operations in particular, may lead to a loss of riparian and/or wetland vegetation. All vegetation within the active mining area is removed before and during mine development and operations. Vegetation immediately adjacent to mining activities could be lost or degraded by roads, water diversions and other related developments. Riparian and/or wetland vegetation has a significant influence on certain stream types. Changes in composition, vigor, and density of riparian vegetation can result in changes in sediment input, stream shade, instream erosional processes, terrestrial insect habitat, and the contribution of detritus and structural components to the stream channel. Water

quality is also related to the quality and quantity of riparian and wetland vegetation.

Much of the Decision Area is subject to mineral and energy exploration and development. The effects to fish and other aquatic species from minerals and energy exploration and development would range from minor to major and could have both short-term and long-term effects. Surface mining operations can disrupt surface and groundwater flow patterns. Mining operations also have the potential to release pollutants to surface and groundwater, contaminate soils and cause the eventual incorporation of pollutants into plant tissue. Both water and soil contamination may be harmful to riparian and wetland vegetation. Mineral exploration and extraction could cause increased sedimentation or loss of aquatic habitats from road construction, mining activities and the relocation or diversion of streams.

There are approximately 652,194 acres of federal mineral estate lands potentially available for oil and gas exploration and development in the Decision Area. Actual acreages available vary based on proposed stipulations by alternative. In the Decision Area, five areas have been identified with the most potential for oil and gas exploration and development (low to moderate potential overall) where there would most likely be reasonably foreseeable development and drilling activity (Appendix M). The five areas are located near the southern Deerlodge Valley, Sleeping Giant, Canyon Ferry, Bozeman, and Livingston. The total area within these five areas is roughly 116,295 acres. Each of the five areas range in size from 1,400 to 50,600 acres.

It is estimated that a total of 31 conventional oil and gas wells could be drilled, most likely within the five areas with the most potential over 15-20 years. Nineteen of these wells would be exploratory, with six of them being producers. The RFD assumes that there would be two additional step-out wells developed for each of the six producers, resulting in a total of 18 producing wells overall. The RFD also assumes that seven of these producing wells would be on federal mineral estate with the remainder being non-federal. As many as 40 wells might be drilled for coal bed natural gas, most likely near Bozeman Pass. None of this activity is forecast to take place on federal mineral estate.

Under all alternatives, there would be one stipulation to lessen the effects of oil and gas development on fish (stipulations that affect special status fish species are described under "Special Status Species"). This stipulation would protect Class 1 fisheries to different degrees based in the type of stipulation under each alternative. A No Surface Occupancy (NSO) or No Lease (NL) stipulation would have the greatest benefit to Class 1 fisheries by preventing loss of habitat. Controlled Surface Use (CSU) would allow exploration

and development in the areas adjacent to streams but would provide some degree of protection by limiting the amount and type of use.

The effects from reclamation activities associated with abandoned mines lands on fish and other aquatic species should be minimized with BMPs (**Appendix E**) and would be expected to be beneficial. Mining features that discharge water with elevated levels of contaminants to surface waters, or directly to streams could have negative effects on fish and other aquatic organisms, depending on volume and constituent concentrations. The effects from mine drainage could result in direct mortality, behavioral changes, or reproductive failure.

The effects from renewable energy programs (i.e., hydroelectric, solar, and wind power generation) in the Decision Area would generally be expected to be minor. Effects to aquatic organisms from renewable energy projects could include increased runoff from access roads and other structures.

Rights-of-way grants and easements may promote the construction of paved or unpaved access roads, gravel pads, and utility corridors which could adversely affect aquatic habitats through increased runoff and fine sediment and contaminants.

### Effects of Alternative A

Under Alternatives A and D, riparian areas would only be protected with Streamside Management Zones (SMZ) of generally 50 feet for fish bearing and non-fish bearing streams. The SMZ would provide some protection for fish and aquatic resources by restricting certain forest activities. Forest management would not be required to benefit riparian areas and management could be conducted strictly for product removal. Since management could occur in up to 50 percent of the SMZ, down woody material in riparian areas and large woody recruitment to streams could be negatively affected. There could also be a risk of sedimentation to streams from the use of SMZs.

**Table 4-9** and **Table 4-10** show acreages of SMZs and Riparian Management Zones (RMZs) of forested and non-forested land for each alternative by watershed in the Decision Area.

Alternatives A and D would provide the least amount of riparian habitat protected, approximately 3,528 acres (**Table 4-10**). Under Alternatives A and D, the Upper Missouri and Big Hole watersheds would have the most acres of riparian area covered by SMZs across all water body types (1,670 and 928 acres, respectively). Management of SMZs under Alternatives A and D would allow a large amount of the 3,528 acres to be accessed for commodity removal and would not necessarily provide for overall protection of riparian function.

Alternatives B and C would have larger areas identified for riparian management that would maintain, restore or preserve riparian functions and values including providing functional wildlife movement corridors (especially under Alternative C). Alternatives B and C would still allow RMZs to be actively “managed” to restore habitat and maintain the health and function of riparian areas and streams. The type and extent of projects that would be allowed in riparian areas under Alternatives A and D could cause more negative effects from increased sedimentation, runoff and reduction of riparian and instream habitat quality than Alternatives B and C. The effects to riparian and aquatic habitats from Alternatives A and D could be minor to major and could be short to long-term.

The limited amount of riparian habitat in the Decision Area makes this habitat type important to restore or protect.

Firewood cutting with no diameter size limit could occur within riparian areas and both down wood in riparian areas and large woody material recruitment to streams could be negatively affected by this alternative.

Unlike the action alternatives, aspen would not be identified for restoration or protection under Alternative A.

	Fish Bearing			Perennial Non-fish			Intermittent	Total Forest		
	A & D	B	C	A & D	B	C	A, B, C, D	A & D	B	C
<b>Riparian Management Width</b>	<b>50 feet</b>	<b>160 feet</b>	<b>300 feet</b>	<b>50 feet</b>	<b>80 feet</b>	<b>150 feet</b>	<b>50 feet</b>			
<b>Big Hole</b>	174	597	1,216	131	220	426	214	519	1,031	1,856
<b>Blackfoot</b>	9	30	58	2	4	8	0	11	34	66
<b>Boulder</b>	81	266	579	79	134	263	75	235	475	917
<b>Jefferson</b>	95	317	639	46	78	154	58	199	453	851
<b>Madison</b>	5	18	40	0	0	0	0	5	18	40
<b>Upper Clark Fork</b>	5	18	38	0	0	0	4	9	22	42
<b>Upper Missouri</b>	187	684	1,585	241	404	785	281	709	1,369	2,651
<b>Upper Yellowstone</b>	18	73	169	18	32	65	0	36	105	234
<b>Total</b>	<b>574</b>	<b>2,003</b>	<b>4,324</b>	<b>517</b>	<b>872</b>	<b>1,701</b>	<b>632</b>	<b>1,723</b>	<b>3,507</b>	<b>6,657</b>

	Perennial (including fish bearing)		Intermittent	Total Non-Forest		Total Riparian Management Acres (Forest and Non-Forest)		
	A, B, & D	C		A, B, C, D	A, B, & D	C	A & D	B
<b>Riparian Management Width</b>	50 feet	150 feet	50 feet					
<b>Big Hole</b>	291	930	118	409	1,048	928	1,440	2,904
<b>Blackfoot</b>	20	66	0	20	66	31	54	132
<b>Boulder</b>	71	197	22	93	219	328	568	1,136
<b>Jefferson</b>	77	258	112	189	370	388	642	1,221
<b>Madison</b>	9	36	0	9	36	14	27	76
<b>Upper Clark Fork</b>	2	10	0	2	10	11	24	52
<b>Upper Missouri</b>	826	2,458	135	961	2,593	1,670	2,330	5,244
<b>Upper Yellowstone</b>	121	393	1	122	394	158	227	628
<b>Decision Area Total</b>	<b>1,417</b>	<b>4,348</b>	<b>388</b>	<b>1,805</b>	<b>4,736</b>	<b>3,528</b>	<b>5,312</b>	<b>11,393</b>

Although riparian restoration could occur through other projects or as a result of Land Health Standards, only 30 additional acres of riparian restoration per decade would be expected under this alternative. This is up to 670 fewer acres than under Alternative B, up to 170 fewer acres than under Alternative C and up to 1,670 fewer acres than under Alternative D. Although short-term impacts from disturbance would be lowest with Alternative A, the long-term benefits from restored habitat and vegetation diversity and composition would be much less than under any of the action alternatives.

Alternative A would restore fewer acres of shrubland, grassland, and forest habitats than Alternatives B and D but more than Alternative C. Alternative A would be less effective at restoring overall watershed function and riparian and stream functions compared to Alternatives B and D but, potentially, more effective than Alternative C.

Assuming that the high end of the range of proposed weed treatments is implemented under any alternative, Alternative A would treat the fewest acres of noxious weeds and would have the greatest negative effects from loss of native riparian vegetation. Monotypic stands of annual weeds with poor soil retention/stabilization properties or invasion of streambanks or wetlands by unde-

sirable non-native species would continue at a greater level than under the action alternatives.

Since Alternative A would allow up to 5.5 miles of new permanent roads per year to access vegetation treatments and would close the fewest miles of roads through travel planning, the detrimental effects to riparian and aquatic habitats as described under “Effects Common to All Alternatives” would be greatest under this alternative and could be major and long-term.

Alternative A would allow the most acres of livestock grazing and would have the most potential for major and, possibly, long-term detrimental effects to riparian and stream habitats from bank trampling and loss of riparian vegetation as well as from other effects discussed under “Effects Common to All Alternatives.”

Riparian enclosures would not be routinely maintained under this alternative and damaged enclosures could allow access to riparian zones and streams by livestock. This would negatively affect aquatic habitats by causing increased inputs of nutrients and sediment to streams, and a reduction of riparian vegetation.

As **Table 4-11** indicates, there would be only one ACEC, Sleeping Giant, proposed under Alternative A that would provide habitat for fish. Approximately 11.4

ACEC	Stream Miles with Special Status Fish				Miles of Other Fish Bearing Streams				Total Miles of Fish Bearing Streams			
	A	B	C	D	A	B	C	D	A	B	C	D
<b>Elkhorns</b>	0	5	5	2.7	0	6.8	8.7	0	0	11.8	13.7	2.7
<b>Humbug Spires</b>	0	0	0	0	0	7.4	7.4	7.4	0	7.4	7.4	7.4
<b>Ringing Rocks</b>	0	0	0	0	0	0	0	0	0	0	0	0
<b>Sleeping Giant</b>	0	0	0	0	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4
<b>Spokane Creek</b>	0	0	0	0	0	0	0.4	0	0	0	0.4	0
<b>Total</b>	<b>0</b>	<b>5</b>	<b>5</b>	<b>2.7</b>	<b>11.4</b>	<b>25.6</b>	<b>27.9</b>	<b>18.8</b>	<b>11.4</b>	<b>30.6</b>	<b>32.9</b>	<b>21.5</b>

miles of fish bearing streams would be included in the Sleeping Giant ACEC under this alternative. Alternative A would provide the fewest miles of aquatic habitat protected under ACEC designations of all alternatives. Alternative A would follow the existing Sleeping Giant ACEC Management Plan. This plan would not allow active restoration of riparian areas or streams. The action alternatives, however, would modify the Sleeping Giant Management Plan to allow for aquatic habitat restoration, when necessary.

Four river segments, Upper Big Hole, Missouri River, Moose Creek, and Muskrat Creek were found to be eligible for Wild and Scenic Rivers but would not have a final determination under Alternative A. These rivers/streams would be managed to maintain Outstandingly Remarkable Values indefinitely under Alternative A.

All alternatives would have one stipulation to lessen the effects of oil and gas development on fish (stipulations that affect special status fish species are described under “Special Status Species”). Under Alternative A, this stipulation would be NSO within 1,000 feet on either side of streams with Class 1 fisheries.

With a NSO of 1,000 feet, approximately 10,000 acres adjacent to Class 1 fisheries streams would have some level of protection from loss of riparian habitat, sedimentation, and chemical spills in the Decision Area.

Class 1 fish streams are found in three of the five areas with the most potential for oil and gas exploration and development (Sleeping Giant, Canyon Ferry, and Livingston).

The Sleeping Giant area is located north of Helena and is approximately 47,000 total acres of subsurface and surface ownership with roughly 22,000 acres of BLM ownership. Approximately 330 acres in the Sleeping Giant area along the Missouri River would be protected with the 1,000 foot NSO for Class 1 fisheries.

The Canyon Ferry area is located in and around the town of Townsend and is the largest area with potential for oil and gas development. This area has approximately 51,000 acres of subsurface and surface ownership. Approximately 35,000 acres of BLM lands (surface) have some potential for oil and gas exploration and development with the majority of the acres located within the National Guard Firing Range. Approximately 113 acres in the Canyon Ferry area along the Missouri River would be protected with the 1,000 foot NSO for Class 1 fisheries.

The Livingston area is located immediately east of the town of Livingston and is approximately 8,450 acres of subsurface and surface ownership. There are approximately 1,600 acres of BLM lands (surface) in this area. Approximately 370 acres in the Livingston area along the Yellowstone River would be protected with the 1,000 foot NSO for Class 1 fisheries.

In the five areas with the most potential for oil and gas development, approximately 813 acres of Class 1 fisheries stream and riparian habitat would have some level of protection from loss of riparian habitat, sedimentation and chemical spills in the Decision Area. However, Alternative A would potentially provide less protection than Alternatives B and C (wider areas in NSO) but would be more protective than Alternative D (CSU).

## Effects Common to Action Alternatives

Under all action alternatives, there would be an emphasis on protecting and restoring riparian areas and wetlands. All action alternatives would emphasize maintaining diverse, healthy, productive, well-distributed aquatic habitats and communities to increase populations of native fish and other aquatic species.

All programs would move towards meeting Land Health Standards. Implementation of Land Health Standards would maintain or move towards well rooted vegetation to stabilize streambanks, reduce soil erosion, and provide shade and structure.

Vegetation restoration treatments would mimic natural disturbance regimes and create vegetative communities that would be resilient to unnatural occurrences of insects, disease, and fire. This would protect riparian and aquatic habitats from the effects of uncharacteristically large disturbances, restore habitat features, and create a diversity of habitat conditions.

Management of riparian areas would provide the amount and distribution of large woody material characteristic of natural aquatic and riparian habitats. Riparian and wetland areas would be assessed and monitored for proper functioning condition. When streams are not “properly functioning”, management activities would be changed or restoration conducted (when possible) to improve the long-term functioning condition of the stream and/or riparian habitat.

BLM would coordinate with FWP to reintroduce locally or regionally absent species, such as beaver. The reintroduction of beaver would provide a beneficial effect to fish and aquatic resources by creating deep pools, creating larger riparian areas behind dams, adding more water storage potential and providing greater flood protection (through an increase in the width of the riparian zone capable of storing water).

Maintaining existing water rights, monitoring water quality, and participating in the development of TMDL plans would protect and restore water quality for a wide variety of aquatic species.

Although exploration and mineral activities would take all practical measures to maintain, protect, or minimize disturbances to resources, aquatic habitat could be slightly to severely impacted by these types of activities. Effects would be the same as discussed under “Effects Common to All Alternatives.”

## Effects of Alternative B

Riparian Management Zones (RMZs) would be established for this alternative that would be wider than SMZs under Alternatives A and D, but narrower than RMZs under Alternative C (**Table 4-9**). These zones would differ in width by forested and non-forested habitat, stream type (fish-bearing, perennial or intermittent) and range from 50 feet (intermittent streams) to approximately 160 feet for fish-bearing streams (based on the height of two site potential trees) on either side of the stream. A site potential tree in the Butte Field Office is considered to have an average height of 80 feet. Riparian Management Zones would provide more protection to fish and aquatic resources than SMZs alone by restricting more management activities in larger areas adjacent to streams and by requiring management activities to restore or maintain riparian and stream function.

As **Table 4-10** indicates, Alternative B would have approximately 5,312 acres where the emphasis would be on riparian goals and objectives. The RMZs under this alternative would benefit riparian and stream communities more than SMZs under Alternatives A and D. Alternative B would have approximately 6,000 fewer acres in RMZs than Alternative C. The Upper Missouri and Big Hole watersheds would have the most acreage in RMZs under Alternative B (2,330 and 1,440 acres, respectively)(**Table 4-10**).

Riparian Management Zones under Alternative B would provide more riparian protection than under Alternatives A or D, but less than half the protection provided under Alternative C (**Table 4-9** and **Table 4-10**). Alternative B would allow management in RMZs to restore or enhance riparian communities and stream systems. There would be fewer negative effects from an increase in fine sediment and nutrients and a loss of large woody material with Alternative B than with Alternatives A and D. RMZs under Alternatives B and C would have similar effects in protecting streambank stability, shade, input of organic matter and woody material to streams for fish bearing streams. Since Alternative B has a narrow RMZ compared to Alternative C for perennial non-fish bearing streams (80 vs. 150 feet) there would be more potential for increases in fine sediment and loss of large woody material in these systems under Alternative B compared to Alternative C. Since Alternative C extends RMZs further from streams, more habitats for species that depend on both the aquatic and terrestrial ecosystems, such as amphibians, would be protected, enhanced, or restored.

Under Alternatives B and D, firewood cutting (of dead and down material less than 24 inches DBH) would be restricted adjacent to perennial and intermittent streams. This would maintain all snags and down trees within 100 feet of perennial and 50 feet of intermittent streams to protect large woody material. Alternatives B and D would provide more retention of woody material from

firewood cutting in riparian areas compared to Alternative A, but less than under Alternative C.

Under Alternative B, up to 700 acres per decade of riparian vegetation could be actively restored or enhanced using a variety of treatment methods to reduce conifer encroachment, reduce noxious weeds, and promote vegetation diversity and vigor. Unlike Alternatives A and C, Alternative B would emphasize restoration or maintenance of aspen and cottonwood stands. Improvements to riparian vegetation would benefit fish and other aquatic organisms by stabilizing stream banks, reducing sediment delivery, increasing woody material, and providing desired water temperatures. Short term, minor effects, such as an increase of fine sediment, could occur during or immediately following riparian restoration activities. However, the long-term benefits to riparian and stream communities should outweigh the short-term effects. Alternative B would restore more riparian vegetation, including aspen stands, than Alternatives A and C but less than Alternative D.

Under Alternative B, there would be a schedule for enclosure maintenance but there would be no guarantee that enclosures would be in a functioning condition before annual livestock turn-out. This could result in damage and degradation of instream habitats, riparian areas, springs, as well as unique habitat types from cattle or other livestock use. Damage to instream and riparian habitats could be expected when enclosures are not maintained. The effects to riparian and stream habitats from livestock grazing would be the same as described under "Effects Common to All Alternatives." Alternative B would restore more acres of grasslands, shrublands, and forests and would have greater beneficial effects on overall watershed function than Alternatives C and A. Alternative B would restore fewer acres of vegetation than Alternative D. Although the long-term beneficial effects on watershed function could be less with Alternative B compared to Alternative D, there could be a greater amount of short-term adverse effects with the implementation of Alternative D.

Alternative B would allow timber salvage to occur outside of riparian areas. This alternative would maintain contiguous acres of undisturbed standing and down woody material. The management of dead and dying forests under Alternative B would provide protection to watershed function by maintaining blocks of undisturbed areas with down woody material and by restricting road construction. This would minimize sediment delivery and run-off to streams.

Assuming that the high end of the range of proposed weed treatments is implemented under any alternative, this alternative would restore the vigor, diversity, and distribution of riparian vegetation by reducing more acres of noxious weeds than Alternatives A and C but less than Alternative D. Although some new permanent roads would be allowed to be built for long-term forest management and mineral entry, both permanent and

temporary road construction would be kept to a minimum. Temporary roads would be decommissioned within one year of use. Alternatives B and C would protect streams and aquatic organisms from the detrimental effects of roads by; minimizing road locations in riparian areas, minimizing sediment delivery from road surfaces, outcropping road surfaces and minimizing disruption of natural hydrologic flow paths.

Managing for low road densities (less than 1 mi/mi<sup>2</sup>) in big game winter range and grizzly bear distribution and managing for blocks of unroaded areas for elk security habitat would also improve overall watershed function as well as riparian and stream functions.

Since Alternative B would allow less livestock grazing than Alternatives A and D, this alternative could protect more riparian acres from the negative effects of livestock grazing (as described under “Effects Common to All Alternatives”) than with Alternatives A and D. Because livestock grazing would be allowed on more acres than Alternative C, there would be more risk of impacts to riparian areas under Alternative B compared to Alternative C.

Unlike Alternative A, delivery of chemical retardants to perennial or fish bearing streams would be avoided during wildland fire suppression under Alternative B. Fire retardants can be lethal to aquatic organisms or result in decreases in species richness and diversity. Fish screens would be required under Alternatives B and C when using hoses to remove water in fish bearing streams during fire suppression activities. This would prevent direct mortality to fish.

As **Table 4-11** indicates, ACEC designations under Alternative B would have 30.6 miles of fish bearing streams. Alternative B would have a similar number of miles as Alternative C but would provide 19.2 more miles of fish bearing stream than Alternative A and 9.1 miles more than Alternative D. The ACEC designations under Alternative B would guarantee continued or additional protection to fish and other aquatic species by maintaining or restoring riparian and instream habitats and by protecting or restoring habitat at the landscape scale (reducing road density or restoring upland vegetation).

Two river segments would be recommended for inclusion in the National Wild and Scenic Rivers System; Muskrat Creek and the Missouri River below Hauser Dam. The goal of the Wild and Scenic River System is to preserve the character of rivers, ensure that rivers remain free flowing, and protect outstandingly remarkable values (ORVs). The ORV identified for Muskrat Creek was its restored population of westslope cutthroat trout while the ORVs for the Missouri River were identified as recreation (including recreational fisheries), scenic, and wildlife values. Unlike Alternative A, Alternative B would not protect ORVs for Moose Creek and the Upper Big Hole River because these two segments

would not be recommended as suitable under this alternative.

All alternatives would have one stipulation to lessen the effects of oil and gas development on fish (stipulations that effect special status fish species are described under “Special Status Species”). Under Alternative B, this stipulation would be NSO within 0.5 mile of streams with Class 1 fisheries. With a NSO of 0.5 mile, approximately 30,500 acres adjacent to Class 1 streams would be protected from loss of riparian and stream habitat and chemical spills in the Decision Area.

Class 1 fish streams are found in three of the five areas with the most potential for oil and gas exploration and development (Sleeping Giant, Canyon Ferry, and Livingston).

Approximately 1,300 acres in the Sleeping Giant area along the Missouri River would be protected with the 0.5 mile NSO for Class 1 fisheries. This would be approximately 1,000 acres more than under Alternative A.

Approximately 750 acres in the Canyon Ferry area along the Missouri River would be protected with the 0.5 mile NSO for Class 1 fisheries. This would be approximately 600 acres more than under Alternative A.

Approximately 700 acres in the Livingston area along the Yellowstone River would be protected with the 0.5 mile NSO for Class 1 fisheries. This would be approximately 300 acres more than under Alternative A.

In the five areas with the most potential for oil and gas development, approximately 2,750 acres of Class 1 fisheries stream and riparian habitat would have some level of protection from loss of riparian and stream habitat and chemical spills. Since Alternative B would have more acres protected under a NSO, this alternative would provide more protection than Alternatives A and D, but less than Alternative C.

## Effects of Alternative C

Like Alternative B, Alternative C would also establish additional protection to streams through Riparian Management Zones (RMZs). However, these RMZs would be wider under Alternative C than under Alternative B. These zones would differ in width by forested and non-forested habitat, stream type (fish-bearing, perennial or intermittent) and range from 50 feet for intermittent streams to 300 feet for fish bearing streams on either side of the stream (**Table 4-9** and **Table 4-10**). Riparian Management Zones under Alternative C would provide the most acreage where the management goals and objectives would be maintenance, restoration, and/or protection of riparian and stream habitats and functions of all alternatives (11,393 acres) (**Table 4-10**). This would be 53 percent more acres than under Alternative B and 70 percent more acres than under Alternatives A and D. The Upper Missouri and Big Hole watersheds would have the most acreage in RMZs (5,244 and 2,904 acres, respectively) under Alternative C.

This alternative would provide the most protection of all alternatives for fish and other aquatic organisms by only allowing activities in riparian areas that would restore or maintain riparian and stream habitats and functions. The width of these RMZs would ensure that the introduction of fine sediment would be negligible and the delivery of large woody material and organic matter would be maximized.

Under this alternative, certain management activities would be limited and only allowed when maintaining or restoring riparian and stream functions. No commercial product removal would be allowed but material could be used for restoration of other riparian or upslope habitats. Unlike the other action alternatives, Alternative C would emphasize “passive” restoration of riparian habitat, including aspen clones. Up to 200 acres of riparian vegetation could actively be restored per decade with this alternative (more could be done through other projects). Because restoration activities could occur in riparian areas and in streams, there could be short-term adverse effects to aquatic organisms from fine sediment or runoff but these effects would be anticipated to be negligible to minor. Alternative C would not actively restore as many acres of riparian habitats or miles of stream compared to Alternatives B and D.

Under Alternative C, firewood cutting would only be allowed in designated areas and no trees >20 inches DBH would be removed. Alternative C would designate the removal of firewood in areas to meet other resource objectives, such as the removal of conifer encroachment in aspen stands. This alternative would ensure that the most down woody material would be available to streams and riparian areas of all alternatives.

Alternative C would also emphasize “passive” restoration in upland vegetation. Due to this, Alternative C would actively restore the fewest acres of grasslands, shrublands, and forest habitats of all alternatives. Although short-term adverse effects would be the lowest under this alternative, this alternative could be the least effective at restoring overall watershed and stream functions.

Fewer acres of riparian vegetation would be treated to remove noxious weeds under Alternative C than under Alternatives B and D, but more than under Alternative A. Unlike all other alternatives, this alternative would not allow aerial application of herbicides. This would protect untargeted riparian vegetation more than the other alternatives but could also impede minimizing noxious weeds in riparian and upslope habitats that could ultimately lead to a decline of riparian and stream health and function.

As with Alternative B, the extent of timber removal with timber salvage projects would be restricted, but Alternative C would require the largest blocks (acres) of dead and dying forest be retained of all alternatives. Alternative C would provide the greatest protection to overall

watershed function of all alternatives by maintaining the most down woody material and existing regenerating vegetation and by preventing soil disturbance and loss of microsites.

Under Alternative C, no new permanent roads would be constructed and temporary roads would be kept to a minimum and decommissioned after use. Road design criteria (same as Alternative B) would minimize disturbance in riparian areas, minimize sedimentation, and maintain natural flow regimes. Unlike all other alternatives, this alternative would require stream crossings to be able to withstand 100-year storm events, thus providing more protection to fish habitat in this context than the other alternatives.

Alternative C would reduce road densities in big game winter range and grizzly bear distribution more than all other alternatives. Managing for low road densities for wildlife would also contribute to Alternative C having the lowest overall road densities and greatest benefits to watershed function.

During wildland fire suppression, chemical retardants would only be used if there is a risk to human life and safety. This would protect aquatic organisms from direct mortality due to fire retardants and maintain species richness and diversity during wildland fires more than under the other alternatives.

As with Alternative B, fish screens would be used when removing water from streams during fire suppression to prevent direct mortality of fish.

Alternative C would potentially protect the most acres of riparian and stream habitats by allowing the fewest acres of livestock grazing. The effects to fish and aquatic resources from livestock grazing as described in “Effects Common to All Alternatives” would be less under Alternative C than all other alternatives.

Unlike Alternatives B and D, Alternative C would guarantee enclosures are maintained annually and before livestock turn-out. Although the other action alternatives would provide a maintenance schedule for enclosures, there would be no guarantee under Alternatives B and D that enclosures would be in a functioning condition before annual livestock use. Alternative C is the only alternative that would ensure protection of streams, riparian vegetation, and springs from livestock use. Damage to instream and riparian habitats could be expected when enclosures are not maintained. As **Table 4-11** indicates, ACECs under Alternative C would contain 32.9 miles of fish bearing stream. Although very similar to Alternative B, this alternative would protect the most mileage of fish bearing streams of all alternatives. Like Alternative B, the ACEC designations would guarantee continued or additional (in the case of the Elkhorn ACEC) protection to fish and other aquatic organisms by maintaining or restoring riparian and instream habitats and by protecting or restoring habitat at

the landscape scale (reducing road density or restoring upland vegetation).

Alternative C would have the most river segments recommended for inclusion under the National Wild and Scenic River System: Muskrat Creek, Moose Creek, Upper Big Hole, and Missouri River. Unlike the other alternatives, Moose Creek and the Upper Big Hole would also be protected from management activities that could change the outstanding and remarkable value of these river segments. Alternative C would provide protection to cutthroat trout in Moose Creek and Arctic grayling in the Upper Big Hole.

Alternative C would have the least negative impacts of all alternatives to fish and aquatic resources from mineral activities by not allowing new structures or roads within RMZs.

All alternatives would have one stipulation to lessen the effects of oil and gas exploration and development on fish (stipulations that effect special status species are described under “Special Status Fish Species”). Under Alternative C, this stipulation would be a NSO within 1 mile of streams with Class 1 fisheries. With a NSO of 1 mile, approximately 62,000 acres adjacent to Class 1 streams in the Decision Area would have a high level of protection from loss of riparian habitat, sedimentation to streams and from chemical spills.

Class 1 fish streams are found in three of the five areas with the most potential for oil and gas development (Sleeping Giant, Canyon Ferry, and Livingston).

Approximately 3,300 acres in the Sleeping Giant area along the Missouri River would be protected with the 1 mile NSO for Class 1 fisheries. This would be approximately 3,000 acres more than under Alternative A and 2,000 more acres than Alternative B.

Approximately 3,200 acres in the Canyon Ferry area along the Missouri River would be protected with the 1 mile NSO for Class 1 fisheries. This would be approximately 3,100 acres more than under Alternative A and 2,450 more acres than Alternative B.

Approximately 1,400 acres in the Livingston area along the Yellowstone River would be protected with the 1 mile NSO for Class 1 fisheries. This would be approximately 1,000 acres more than under Alternative A and 700 acres more than Alternative B.

In the five areas with the most potential for oil and gas development, there would be roughly 7,900 acres of Class 1 fisheries stream and riparian habitat with a high level of protection. Since Alternative C would have the most acres under a NSO (1 mile), this alternative would provide the most protection to riparian and stream habitat as well as to overall watershed function of all the alternatives.

## Effects of Alternative D

As with Alternative A, riparian areas would only be protected by Streamside Management Zones under Alternative D. The SMZ would be 50 feet on both sides of the centerline of the stream (**Table 4-9**). The SMZ would provide some protection to fish and aquatic organisms and would have the same effects as described under “Effects Common to All Alternatives” and “Effects of Alternative A.”

Alternative D would provide the fewest acres of riparian protection of the action alternatives but the same acreage (3,528 acres) as Alternative A (**Table 4-9** and **Table 4-10**). Since Alternatives D and A would have fewer acres adjacent to streams and wetlands with restrictions on the type and extent of management activities, there would be more negative effects to streams and aquatic species from fine sediment, increased runoff and nutrients, and loss of large woody material compared to Alternatives B and C.

Under Alternative D, up to 1,200 acres per decade of riparian vegetation could be actively restored through mechanical treatments. Alternative D could potentially restore the most acres of riparian habitat of all alternatives. However, since Alternative D would focus on a more narrow area adjacent to streams compared to Alternatives B and C, restoration of riparian areas would not be as effective under Alternative D compared to Alternatives B and C. The treatment of more riparian acres under Alternative D would result in more short-term effects from increased sedimentation and runoff than with the other alternatives.

The effects from firewood cutting in riparian areas would be the same as Alternative B.

Alternative D would restore the most acres of grasslands, shrublands, and forests. Although this would re-establish more historic vegetation conditions and move towards restoring overall watershed health and function, the number of roads and disturbance necessary to conduct vegetation treatments would have more short-term effects than under Alternatives B and C but less than under Alternative A.

Alternative D would maintain blocks of dead and dying forest from timber salvage operations but fewer acres would be maintained than under Alternatives B and C. Of the action alternatives, Alternative D could have the most detrimental effect on watershed, stream and riparian functions due activities associated with salvage harvest such as the loss of regeneration, loss of large woody recruitment and increased sedimentation and runoff to streams.

Alternative D would treat and reduce the most acres of noxious weeds of all the alternatives. This would restore the health and vigor of riparian vegetation on more acres than under all other alternatives. Of the action alternatives, the negative effects due to road construction and

use (as described under “Effects Common to All Alternatives”) would be greatest and the beneficial effects less under Alternative D due to larger acres of vegetation treatments, smaller SMZs, fewer acres with low road density to protect big game winter range and security habitat and fewer roads closed or decommissioned through travel planning. Alternative D, however, would have fewer negative effects and greater beneficial effects than Alternative A. This alternative would also provide road design criteria to minimize impacts in SMZs and to minimize sediment delivery to streams. The road design criteria under Alternative D would be less restrictive and allow more detrimental effects to fish and aquatic habitats than those proposed under Alternatives B and C.

As with Alternative B, wildland fire suppression activities would avoid delivery of retardant to streams but unlike Alternatives B and C, Alternative D would not require fish screens be used when removing water from fish bearing streams (same as Alternative A). This could cause direct mortality of fish, including special status species.

Alternative D would allow the same amount of livestock grazing as under Alternative A and the effects would be the same as those described under “Effects of Alternative A.” Enclosures would not be maintained annually and the potential of livestock damaging riparian and aquatic habitats from non-functioning enclosures would be greater under Alternatives D, B, and A than under Alternative C.

ACEC designations under Alternative D would contain 21.5 miles of fish bearing stream (**Table 4-11**). Alternative D would protect almost 10 miles of additional habitat compared to Alternative A, 9.1 fewer miles than Alternative B, and 11.4 fewer miles than Alternative C.

Unlike Alternatives B and C, this alternative would only protect 2.7 miles of fish bearing stream in the Elkhorn Mountains (11.8 miles under Alternative B and 13.7 miles under Alternative C). The ACEC designations under Alternative D would guarantee continued or additional protection to fish and other aquatic species over Alternative A by maintaining or restoring riparian and instream habitats and by protecting or restoring habitat at the landscape scale (reducing road density or restoring upland vegetation).

Under Alternative D no river segments would be recommended for inclusion in the National Wild and Scenic River System. There would be no benefits to fish and aquatic resources from this designation under Alternative D.

Like Alternative A, this alternative would allow new and existing mineral operations to have support facilities, including roads, in SMZs. Unlike Alternative A, this alternative would require facilities to be removed when no longer necessary. Alternative D would have similar detrimental effects due to mineral exploration and de-

velopment as Alternative A and greater impacts than Alternatives B and C.

All alternatives would have one stipulation to lessen the effects of oil and gas exploration and development on fish (stipulations that effect special status fish species are described under “Special Status Species”). Under Alternative D, this stipulation would be CSU within 0.5 mile of streams with Class 1 fisheries. With a CSU of 0.5 mile, approximately 30,500 acres adjacent to Class 1 streams would have some level of protection from loss of riparian habitat, sedimentation, and chemical spills in the Decision Area.

Class 1 fish streams are found in three of the five areas with the most potential for oil and gas development (Sleeping Giant, Canyon Ferry, and Livingston).

Approximately 1,300 acres in the Sleeping Giant area along the Missouri River would be protected with the 0.5 mile CSU for Class 1 fisheries. Alternative D would have the least amount of guaranteed protection to streams and riparian habitats from oil and gas exploration and development of all the alternatives. Under this alternative, some use and occupancy would be allowed but the type and extent of use would be limited.

Approximately 750 acres in the Canyon Ferry area along the Missouri River would be protected with the 0.5 mile CSU for Class 1 fisheries.

Approximately 700 acres in the Livingston area along the Yellowstone River would be protected with the 0.5 mile CSU for Class 1 fisheries.

In the five areas with the highest potential for oil and gas exploration and development, there would be roughly 2,750 acres adjacent to streams that would have some level of protection. The level of protection under Alternative D would be less than under the other action alternatives because under a CSU, oil and gas exploration and development could occur. Although the type and extent of exploration and development could be modified to protect Class 1 fisheries, under this alternative there could be detrimental effects to streams and riparian habitats from loss of habitat due to exploration, drilling, roads and other activities related to oil and gas development.

## SPECIAL STATUS SPECIES

Because of the programmatic nature of the proposed alternatives, qualitative effects from management activities on special status ecosystems are addressed under “Effects Common to All Alternatives.” Some effects may vary due to the degree of an activity such as the amount of vegetative treatments or road closures. These “quantitative” effects are addressed under each alternative. More specific analysis would be required to determine the extent of potential impacts from site specific management actions. This analysis would be completed when a management action is clearly defined.

Proposed management of the following resource programs would have no anticipated impacts to special status species; Air Quality, Paleontology, Cultural Resources, Visual Resources, Economics, and Environmental Justice.

Nearly all the effects identified in the Wildlife and Fish sections would be the same for special status species. For more analyses and discussion on how the proposed treatments would impact wildlife, fish, (including special status species) or plant species within the Decision Area, see their respective sections.

There are approximately 652,194 acres of federal mineral estate lands potentially available for oil and gas exploration and development in the Decision Area. Actual acreages available vary based on proposed stipulations by alternative. In the Decision Area, five areas have been identified with the most potential for oil and gas exploration and development (low to moderate potential overall) where there would most likely be reasonably foreseeable development and drilling activity (**Appendix M**). The five areas are located near the southern Deerlodge Valley, Sleeping Giant, Canyon Ferry, Bozeman, and Livingston. The total area within these five areas is roughly 116,295 acres. Each of the five areas ranges in size from 1,550 to 53,370 acres.

Planning Area-wide, it is estimated that a total of 19 oil and gas wells (not including “step-out” wells) could be drilled, most likely within the five areas with the most potential over 15-20 years, but that only six of the 19 wells would produce oil or gas. A total of seven producing wells (including step-out wells) are forecast to be located on BLM mineral estate lands.

## Effects Common to All Alternatives

### Wildlife

The effects described under the general “Wildlife” section would apply to special status wildlife in the Decision Area.

All management actions would promote conservation of special status and priority wildlife species and their habitats and emphasize maintaining and supporting healthy, productive, and diverse populations and communities of native wildlife.

The implementation of habitat improvement projects would address declining habitat conditions and aim to stabilize and improve sensitive species’ breeding, foraging and security habitats.

The Management Plan and Conservation Strategies for Sage Grouse in Montana (MSGWG 2005) states that human activities, including flushing birds during nesting and brood rearing by vehicles, could lead to mortality from predation, accidents, or other proximal causes. Disturbance near leks may disrupt breeding and cause birds to abandon traditional breeding sites, or reduce breeding success for that year. Disturbance within nest-

ing areas may cause destruction or abandonment of nests; resulting in no hatch. Management activities in sage grouse habitats would be designed and implemented to be consistent with the National and Montana conservation strategies and guidelines, when appropriate, which would ensure all management activities protect sage grouse as well as habitat for other sagebrush obligate species. Following the National and Montana conservation strategies and guidelines would ensure that all projects would retain sufficient sagebrush densities for sagebrush obligate species, including sage grouse. This, along with the use of timing restrictions, would protect sage grouse breeding, foraging and security habitats. Implementation of the National and Montana conservation strategies and guidelines would have a beneficial effect to sage grouse and other sagebrush dependant species.

Implementation of current and future recovery plans for listed threatened and endangered species would ensure that the BLM is managing these special status species in a manner that is consistent with the Endangered Species Act. The BLM would conserve special status species and the ecosystems that they depend upon and would provide habitat for healthy, productive populations of special status species.

The restorative treatments in dry forest types would mimic natural fire and improve habitat for those special status species dependent on mature, open stands of ponderosa pine and Douglas-fir forests (refer to “Effects Common to All Alternatives” in the general Wildlife section). Over the long-term, treatments would result in greater acres of large, mature trees with open canopies and a diversity of understory grasses, shrubs, forbs and trees. The management of mature dry forests would increase habitat for special status species such as the flammulated owl, northern goshawk, great gray owl, migratory birds, long-eared myotis, long-legged myotis, and fringed myotis by increasing tree size, reducing the density of trees and by providing a snag and down wood component.

Uneven-aged management within cool, moist forests would focus on reduction of stem density and creating small openings that would be beneficial to many of the special status species that occur in this vegetation community. Creation of small openings would increase vegetation diversity and available forage, especially for species such as the Canada lynx. Cool forests would also be thinned, when necessary, to promote old forest characteristics and provide habitat diversity. This would improve forage and breeding habitat for special status species such as the northern goshawk, lynx, grizzly bear, and wolverine.

Reduction in tree densities and restoration of forest habitats would move vegetation towards historic conditions and increase the quality and quantity of breeding, foraging and hiding cover for a variety of special status species. Short-term disturbance and displacement of

special status species could occur during project implementation and treated areas may be temporarily avoided. However, it is expected that the long-term benefits to a wide variety of species from restoring vegetative communities would outweigh the short-term negative effects.

A change in vegetation density could reduce the amount of habitat available for certain species while increasing habitat for others. During project planning, the effects of treatments at the landscape scale would be addressed to determine the change in habitats, special status species affected, short and long-term effects to species and their habitats, the percent of habitat change across the landscape and which special status wildlife species would benefit or be negatively impacted from treatments.

The use of commercial and non-commercial timber harvest to meet vegetation restoration goals and objectives would benefit special status species dependent on forest habitats by improving habitat and restoring diversity.

Reducing the amount of forest subject to severe, uncharacteristic wildfire events as well as epidemic outbreaks of insects and disease would reduce the loss of large areas of habitat. Epidemics of insects and disease can have long-term negative impacts to some species while those species dependent on dead and dying forests, such as black-backed and three-toed woodpeckers, would benefit from increased foraging and breeding habitat.

Timber salvage would result in the loss of habitat for special status species that depend on dead and dying forests. Maintaining patches of dead and dying forest would help to retain habitat features for these species but the effects to snag dependant species would vary greatly depending on the size of patches remaining after salvage. The negative effects to breeding and foraging habitats used by special status wildlife species from timber salvage could be minor to major and long-term.

Treatment of grasslands and shrublands to create pre-fire suppression conditions, with an emphasis on reducing conifer encroachment, would restore and maintain habitat for the golden eagle, Brewer's sparrow, Swainson's hawk, ferruginous hawk, sage grouse, pygmy rabbit, sage thrasher, sage sparrow, mountain plover, long-billed curlew and black-tailed prairie dog (see "Wildlife Effects Common to All Alternatives"). Short-term disturbance and displacement could occur during project implementation and treated areas may be temporarily avoided. However, it is expected that the long-term benefits to a wide variety of special status species from restoring grasslands and shrublands would outweigh the short-term negative effects.

The effects of riparian treatments and management would be the same as described in "Effects Common to All Alternatives" in the general Wildlife section. Because of the unique nature of riparian areas and the crucial habitat they provide, almost all special status wildlife species could be impacted by management of these

areas. By reestablishing native vegetation, reducing conifer encroachment (in non-forested areas) and reducing the effects of livestock grazing in riparian areas, breeding, foraging and hiding habitat along with movement corridors for all special status species would be improved.

Permanent and temporary roads associated with management could increase public access and decrease the quantity and quality of habitat for special status species. Permanent and temporary roads could negatively impact special status species, particularly if roads are open during critical periods such as during the winter in lynx habitat and during the summer within occupied grizzly bear habitat. Roads can encourage the public to recreate in areas that had formerly been secluded. Roads can cause direct mortality through road kill, prevent wildlife movement, create disturbance, cause the spread of noxious weeds, and cause habitat fragmentation across the landscape.

The effects of livestock grazing and noxious weed management on special status wildlife species would be the same as described under "Effects Common to All Alternatives" in the general Wildlife section.

Wilderness Study Areas (WSAs) provide undisturbed habitat that is important for special status species, particularly, species that are sensitive to disturbance and have large home ranges (i.e. grizzly bears, lynx, bald eagle, northern goshawk, and migratory birds). Wilderness Study Areas also provide large blocks of habitat for connectivity and movement corridors for many species.

The Sleeping Giant ACEC provides important habitat for numerous wildlife species. One of the primary objectives of this ACEC is to preserve, protect, and promote wildlife and habitats for "key" species including elk, bighorn sheep, mountain goat, osprey, bald eagle, peregrine falcon, waterfowl, and cold water fish. Continued management of the Sleeping Giant ACEC would ensure that crucial wildlife habitat for the above mentioned species, as well as for other special status species, would be maintained for the long-term.

The implementation of Suggested Practices for Raptor Protection on Power Lines (APLIC 1996) would ensure that impacts, including direct mortality to migratory and resident birds and bats would be avoided. Implementation of wind energy guidelines as defined in the Wind Energy Development Programmatic EIS would also help to protect special status species by minimizing the impacts (such as bird and bat strikes of turbines and associated infrastructure) of wind energy development.

The way bald eagles respond to human activities varies depending on the site, pair, and type of activity. The type, intensity, and proximity of disturbance to occupied habitat all determine how eagles respond.

Where there are priority species or their habitats, special measures may need to be applied to prevent impacts

associated with mineral and geophysical exploration. The effects to special status wildlife species from mineral exploration and development would be the same as described under “Effects Common to All Alternatives” in the general Wildlife section.

Breeding, foraging, security and migration habitats for special status species could be directly lost from oil, gas, and mineral extraction activities due to the construction of wells, well pads, roads, pipelines, powerlines, buildings, and mine sites. Construction and implementation activities could also cause special status species to be displaced, preventing use of previously occupied habitats. Access roads could disturb and displace special status species, especially during critical seasons such as breeding or overwintering. The effects from oil, gas, and mineral development to special status wildlife species could be long-term and major at the site specific scale. However, due to the projected number of wells at the Planning Area scale (31) along with the use of stipulations, the effects from oil and gas development is expected to be minor to moderate in the Planning Area. Effects from hard rock mineral extraction, however, could be long-term and major at the Planning Level Scale depending on the location, the size of development and the extent of time mining occurs.

Oil and gas exploration and development would comply with appropriate stipulations and terms and conditions at the time of leasing. This would help to ensure that impacts to special status species are considered and avoided when possible.

Under all alternatives, there would be 12 stipulations to lessen the effects of oil and gas development on special status species (stipulations that affect wildlife and fish are described under those sections) (Table 4-12). The stipulations would protect special status species to different degrees based on the type of stipulation. A No Surface Occupancy or No Lease stipulation would prevent the loss of breeding, foraging, security and migration habitats as well as prevent any type of disturbance associated with oil and gas development. The more acres within a NSO or NL stipulation, the more overall protection a wildlife species (as well as other species) would have from oil and gas development. When comparing alternatives, those with more acres in NSO or NL would provide the least negative effects to wildlife.

Timing restrictions protect species during the crucial breeding season (such as bald eagles and sage grouse) and/or during the sensitive overwinter season (such as with sage grouse). As with NSO and NL stipulations, when comparing alternatives, the more acres within a timing restriction, the more a species would be protected from disturbance during crucial seasons of use. This should allow a species to reproduce and fledge young and/or increase the chance of surviving the winter season. This stipulation would only be applied during oil and gas exploration and habitat loss could still occur for those species with timing stipulations.

Controlled Surface Use (CSU) could provide the least protection to special status species because facilities associated with oil and gas exploration and development could replace habitat. Timing restrictions and surface use would vary by alternative.

### ***Fish***

The effects described under the Fish section would apply to special status fish in the Decision Area.

All alternatives would emphasize maintaining diverse, healthy, productive, and well distributed aquatic habitats and communities to increase populations of special status fish species.

The BLM would implement recovery and conservation plans for special status fish species. This would ensure that habitat for these species is protected, maintained, or restored. Management or conservation plans are currently in place for westslope cutthroat trout, Arctic grayling, and bull trout.

### ***Plants***

Native species are variable in their sensitivity to herbicides based on the type of herbicide applied, stage of growth of the plants, and timing of application. Often noxious weeds are treated early in the year before many native plants are actively growing and most sensitive to herbicide application or in late fall when many native plants are dormant and relatively insensitive to herbicide effects. Treatments of noxious weeds with biological control agents could also affect some native species, usually those most closely related to the species targeted for biological control. There have been incidents where biological control agents have attacked non-target species reducing their vigor and viability. Effects on non-target plants may reduce the densities on treated sites; however, no non-target species would be eliminated from treated sites.

Generally, treatments would promote desirable native species because noxious weeds compete with and displace many native species in infested areas.

Use of prescribed fire, timber harvest, and mechanical methods to create a mosaic of multiple successional stages would open forest canopies thus increasing habitat diversity for special status species.

Field inspections and population monitoring of special-status plants would protect populations by refining grazing management, weed control and other activities that are potentially damaging to special-status species.

Development of habitat management plans and conservation strategies for special-status plants would help maintain population viability and reduce the probability that management actions would reduce the distribution of desirable populations.

**Table 4-12  
Oil and Gas Stipulations and Acres Protected for Special Status Wildlife Species Decision Area-wide and in the  
Five Areas of Most Potential for Oil and Gas Development**

Resource	Alternative A	Alternative B	Alternative C	Alternative D
<b>Bald Eagle Nest Site</b> (DA Acres) (5 Area Acres)	NSO ½ Mile 2,600 acres 1,110 acres	NSO ½ Mile 2,600 acres 1,110 acres	NL 1 Mile 9,540 acres 4,330 acres	NSO ½ Mile 2,600 acres 1,110 acres
<b>Bald Eagle Breeding Habitat</b> (DA Acres) (5 Area Acres)	TL 2/1-8/31 (1 Mile) 9,500 acres 3,150 acres	TL2/1-8/31 (1 Mile) 9,500 acres 3,150 acres	NL 1 Mile Same Area covered as Bald Eagle Nest Sites	TL 2/1-8/31 (1 Mile) 9,500 acres 3,150 acres
<b>Ferruginous Hawk Breeding Territories</b> (DA Acres) (5 Area Acres)	NSO ¼ Mile 0 0	NSO ½ Mile 0 0	NSO ½ Mile TL 3/1-8/31 (1 Mile) 0 0	TL 3/1-7/31 (1 Mile) 0 0
<b>Peregrine Falcon Nest Sites</b> (DA Acres) (5 Area Acres)	NSO ¼ Mile 240 acre 11 acres	NSO 1 Mile 3,820 acres 90 acres	NL 1 Mile 3,820 acres 90 acres	NSO 1 Mile 3,820 acres 90 acres
<b>Other Raptor Nest Sites</b> (DA Acres) (5 Area Acres)	NSO ¼ Mile 2,200 acres 460 acres	TL 3/1-7/31(1/2 Mi.) 7,400 acres 1,830 acres	NL ½ Mile 7,400 acres 1,830 acres	<b>SLT</b>
<b>Prairie Dog Towns</b> (DA Acres) (5 Area Acres)	NSO ¼ Mile 0 acres 0 acres	NSO 0 acres 0 acres	NSO 0 acres 0 acres	NSO 0 acres 0 acres
<b>Sage Grouse Leks</b> (DA Acres) (5 Area Acres)	NSO 500' 0 0	NSO ¼ Mile 0 0	NL ½ Mile 0 0	NSO ¼ Mile 0 0
<b>Sage Grouse Breeding Habitat</b> (DA Acres) (5 Area Acres)	TL 3/1-6/30(1/2 Mile) 0 0	TL 3/1-6/30 (3 Miles) 2,800 0	NSO 3 Miles 2,800 0	TL 3/1-6/30 (3 Miles) 2,800 0
<b>Sage Grouse Winter/Spring Range</b> (DA Acres) (5 Area Acres)	TL 12/1-5/15 67,000 acres 43 acres	TL 12/1-5/15 67,000 acres 43 acres	NL 67,000 acres 43 acres	TL 12/1-5/15 67,000 acres 43 acres
<b>Gray Wolf Den/Rendezvous Sites</b> (DA Acres) (5 Area Acres)	CSU 1 Mile 700 acres 0 acres	TL 4/15-6/30 (1 Mile) 700 acres 0 acres	NSO 1 Mile 700 acres 0 acres	CSU 1 Mile 700 acres 0 acres
<b>Grizzly Bear Recovery Zone</b> (DA Acres) (5 Area Acres)	CSU 7,400 acres 0 acres	NSO 7,400 acres 0 acres	NSO 7,400 acres 0 acres	CSU 7,400 acres 0 acres
<b>Grizzly Bear Distribution Zone</b> (DA Acres) (5 Area Acres)	CSU 54,000 acres 4,000 acres	TL 4/1-6/30 TL 9/15-10/15 54,000 acres 4,000 acres	NSO 54,000 acres 4,000 acres	CSU 54,000 acres 4,000 acres

Leasing solid and fluid minerals and geothermal resources, and mineral exploration and development could lead to disturbances and removal of special-status species during exploration and development.

Field inspections prior to authorized surface disturbing activities would reduce the possibility of special status plant habitat or population loss.

Oil and gas controlled surface use leasing restrictions would protect special status plant habitat in all alternatives.

## Effects of Alternative A

### Wildlife

Vegetation types within the Decision Area are represented by grassland, shrubland, dry forest, wet forest, and riparian. Dry forest is the most dominant forest type and represents 38 percent (115,000 acres) of all vegetation communities. Dry forests are currently well outside the historic average of natural variability due to fire suppression and heavy historic grazing. The effects on special status wildlife species from treatments under Alternative A in dry forest would be the same as described under “Effects of Alternative A” of the general Wildlife section. Alternative A would have fewer benefits from restoring dry forest habitats for migratory birds, northern goshawk, flammulated owl, long-legged myotis, long-eared myotis, and fringed myotis in comparison to Alternatives B and D, but would restore more acres than Alternative C.

Cool, moist forest comprises only about 7 percent (20,200 acres) of the total amount of vegetation in the Decision Area and is close to being within the range of natural variability. The effects on special status wildlife species from treatments under Alternative A in cool, moist forest habitats would be the same as described under “Effects of Alternative A” in the general Wildlife section. Alternative A would have fewer benefits from treatments in cool, moist forests for migratory birds, lynx, fisher, wolverine, and bats species in comparison to Alternatives B and D, but would restore more acres than Alternative C.

Alternative A provides no retention guidelines or recommendations for restoration of snag and down woody habitat (described under “Effects of Alternative A” in the general Wildlife section). This alternative could result in a decline of habitat for those special status species (black-backed and three toed woodpeckers, long-eared myotis and long-legged myotis) dependent upon dead and dying trees for breeding, foraging or denning habitat, and could have major and long-term negative effects. The lack of restrictions on maintaining or restoring snag and down woody habitats could have long-term detrimental effects on a variety of special status species that use these habitats.

Grassland vegetation represents approximately 45 percent of the total available habitat in the Decision Area. Sagebrush shrublands only represent roughly 7 percent of the total available habitat within the Decision Area but provide crucial habitat for sagebrush obligate species. The quality and quantity of grasslands and shrublands is declining due to fire suppression and heavy historic livestock grazing.

Under Alternative A, the effects on special status wildlife species from treatments in grasslands and shrublands would be the same as described under “Effects of Alternative A” in the general Wildlife section. Alternative A would have fewer beneficial effects from restoring grasslands and shrublands (Alternative A would not propose restoration of sagebrush shrublands) for migratory birds, golden eagle, ferruginous hawk, Swainson’s hawk, long-billed curlew, Brewer’s sparrow, mountain plover, sage grouse and pygmy rabbit in comparison to Alternatives B and D, but would restore more acres and have more benefits than Alternative C.

Noxious weed management would have minimal negative impacts on special status species but could provide substantial beneficial effects. The effects on special status wildlife species from noxious weeds would be the same as described under “Effects of Alternative A” in the general Wildlife section. Fewer acres of noxious weeds would be treated under Alternative A compared to Alternatives B and D but more than Alternative C. This could result in more loss of habitat for special status species under Alternative A than Alternatives B and D but less loss of habitat than under Alternative C.

Under Alternative A, the implementation of the Streamside Management Zones (SMZs) would result in smaller areas of riparian habitat being managed for the benefit of riparian habitats than under Alternatives B and C but the same as Alternative D. Smaller riparian management areas proposed under Alternatives A and D, along with the types and extent to management activities allowed in SMZs, could reduce breeding, brood rearing and foraging habitat as well as reduce the quality and quantity of movement corridors for the majority of special status species. The effects would be the same as described under “Effects Common to All Alternatives” and “Effects of Alternative A” in the general Wildlife section. Alternative A would also actively restore the least amount of riparian vegetation in comparison to the action alternatives. Riparian areas provide crucial habitat and critical travel corridors for special status species found in the Decision Area including but not limited to; grizzly bears, lynx, migratory and resident birds, raptors, bats and boreal toads.

Alternatives A and D would not utilize timing restrictions to protect breeding migratory and resident birds during prescribed burning or mechanical treatments. Because prescribed burning and mechanical treatments could occur during the breeding season, these alterna-

tives could have the greatest loss of migratory and special status resident.

There would be substantially more miles of open roads under Alternative A compared to the action alternatives. The effects of roads on special status species would be the same as described under “Effects Common to All Alternatives” and “Effects of Alternative A” in the general Wildlife section. High open road densities under Alternative A could result in the loss of year-round habitat and migration corridors, disturbance and displacement of wildlife, road kill and fragmentation of habitat. Special status species that are especially sensitive to roads include (but are not limited to) grizzly bear, lynx, wolverine and some raptors. The detrimental effects of open road densities to special status species under Alternative A could be minor to major and long-term.

High densities of open roads can impact the quality and quantity of grizzly bear habitat. Research has indicated that grizzly bears underutilize habitat near roads and other human activities (Mace et al. 1996; McLellan and Shackleton 1989). Restricting motorized access can aid in minimizing negative impacts on bears related to disturbance and interactions with humans. Under Alternative A, road densities within occupied grizzly bear habitat of the Lewis and Clark County NW TPA in both the Planning and Decision Areas would be higher than under the action alternatives. Alternative A would have the least amount of closed roads compared to the action alternatives and would have the most negative effects to occupied grizzly bear habitat of all the alternatives. See the Wildlife discussion in the Lewis and Clark County NW TPA section later in this chapter for more details.

The negative effects related to mineral development, including oil and gas, would be the same as described under “Effects Common to All Alternatives” and “Effects of Alternative A” in the general Wildlife section.

All alternatives would have 12 stipulations to lessen the effects of oil and gas development on special status species (stipulations that affect wildlife are described in the general “Wildlife” section) (Table 4-12).

Under Alternative A, these stipulations would include: NSO around bald eagle nests, peregrine falcon nests, other raptor nests, and sage grouse leks; timing restrictions in bald eagle breeding habitat and sage grouse winter, spring and breeding habitat; and controlled surface use in grizzly bear habitat and around gray wolf den sites. A No Surface Occupancy stipulation would prevent the loss of breeding, foraging, security and migration habitats as well as prevent any type of disturbance associated with oil and gas development. The more acres within a NSO stipulation, the more overall protection a wildlife species (as well as other species) would have from oil and gas development. When comparing alternatives, those with more acres in NSO provide the least negative effects to wildlife. Timing restrictions protect species during the crucial breeding season (such as bald

eagle and sage grouse) and/or during the sensitive over-winter season (such as with sage grouse). As with NSO stipulations, when comparing alternatives, the more acres within a timing restriction, the more a species is protected from disturbance during crucial seasons of use. This stipulation is only for oil and gas exploration and habitat loss could still occur for those species with timing stipulations.

There are approximately 652,194 acres of federal mineral estate lands in the Decision Area. In the Decision Area, five areas have been identified with the most potential for oil and gas exploration and development (low to moderate potential overall) where there would most likely be reasonably foreseeable development and drilling activity (Appendix M). The five areas are located near the southern Deerlodge Valley, Sleeping Giant, Canyon Ferry, Bozeman, and Livingston. The total area within these five areas is roughly 116,295 acres. Each of the five areas ranges in size from 1,400 to 50,600 acres.

The southern Deerlodge Valley area located north of Anaconda has approximately 8,700 acres of federal mineral estate with no BLM surface ownership within the area. There is currently one known bald eagle nest in this area but this nest is well outside of federal mineral estate lands. There are no known ferruginous hawk, peregrine falcon, or other raptor breeding territories in this area. There are no known sage grouse leks, sage grouse habitat, or prairie dog towns in this area. This area is not within the distribution or recovery zone of the grizzly bear and there are no known gray wolf den sites.

The Sleeping Giant area is located north of Helena and is approximately 47,000 total acres of federal mineral estate, of which approximately 22,000 acres are BLM surface lands. Currently, there are eight known bald eagle nests sites in this area and approximately 740 acres would be protected with a NSO stipulation. An additional 1,750 acres beyond the 0.5 mile bald eagle nest NSO would have a 2/1–8/31 timing restriction. There are no known ferruginous hawk breeding territories, sage grouse leks, sage grouse habitat, or prairie dog towns in this area. There is one known peregrine nest site in the vicinity but it is outside of federal mineral estate lands. Other raptor breeding territories (such as golden eagles) in the Sleeping Giant area would be protected with approximately 340 acres in a NSO stipulation with approximately one-half of these acres overlapping with the bald eagle stipulations. Approximately 2,600 acres are within the distribution of grizzly bear and would be protected with a CSU stipulation. Under a CSU, there could be exploration and development but with some restrictions. There are no known gray wolf den sites in this area.

The Canyon Ferry area is located in and around the town of Townsend and is the largest area with potential oil and gas development with approximately 51,000 acres of federal mineral estate. Approximately 35,000 acres of BLM lands (surface) have the potential for oil and gas development with the majority of the acres located in the

National Guard Firing Range. Currently, there are six known bald eagle nests in this area and approximately 330 acres would be protected with a NSO stipulation. An additional 1,100 acres beyond the 0.5 mile bald eagle nest NSO would be protected with a 2/1–8/31 timing restriction. There are no known ferruginous hawk nests, peregrine falcon breeding territories, sage grouse leks, sage grouse habitat, or prairie dog towns in this area. Other raptor breeding territories in the Canyon Ferry area would be protected with approximately 125 acres in a NSO stipulation. The area is not within the recovery zone or the distribution of the grizzly bear and there are currently no known gray wolf den sites.

The Bozeman area is located approximately 10 miles east of Bozeman and is approximately 1,400 acres of federal mineral estate. There are no BLM lands (surface) in this area. There are currently no known bald eagle nest sites, ferruginous hawk breeding territories, peregrine nests sites, sage grouse leks, sage grouse habitat, or prairie dog towns in this area. Approximately 1,300 acres are within the distribution of grizzly bear and would be protected with a CSU stipulation. Under a CSU, there could be exploration and development but with some restrictions. There are no known gray wolf den sites in this area.

The Livingston area is located immediately east of the town of Livingston and is approximately 8,450 acres of federal mineral estate. There are approximately 1,600 acres of BLM lands (surface) in this area. Currently, there are four known bald eagle nests in this area and approximately 40 acres would be protected with a NSO stipulation. An additional 300 acres beyond the 0.5 mile bald eagle nest NSO would have a 2/1–8/31 timing restriction. There are no known ferruginous hawk nests, other raptor nest sites, sage grouse leks, sage grouse breeding habitat, or prairie dog towns in this area. There are, however, approximately 43 acres within sage grouse winter and spring habitat that would be protected with a 12/1-5/15 timing restriction. There is one currently known peregrine breeding territory in the Livingston area that would be protected with approximately 11 acres in a NSO stipulation. Approximately 100 acres are within the distribution of grizzly bear and would be protected with a CSU stipulation. Under a CSU, there could be exploration and development but with some restrictions. There are no known gray wolf den sites in this area.

In the Decision Area, there would be 2,600 acres surrounding bald eagle nest sites that would be protected with a NSO stipulation under Alternatives A, B and D (0.5 mile from nest) (**Table 4-12**).

Three of the five areas with the most potential for oil and gas development have bald eagle nest sites (1,110 acres) that would be protected with the 0.5 mile NSO stipulation and an additional 3,150 acres beyond the NSO boundary would be protected with a timing restriction of 2/1-8/31 (Alternatives A, B and D).

Currently, there are no known ferruginous hawk nest sites within the Decision Area (including the five areas with the most potential). When located, Alternative A would protect the fewest acres from habitat loss with a ¼ mile NSO around nest sites compared to Alternatives B and C (1/2 mile NSO).

In the entire Decision Area, there would be 240 acres surrounding peregrine falcon nest sites protected with a NSO stipulation within 0.25 mile of nest sites. Alternative A would protect the fewest acres from habitat loss around peregrine falcon nest sites of all the alternatives. Only one of the five areas with the most potential for oil and gas development currently has a known nest site within surface or subsurface ownership and a total of 11 acres would be protected with a NSO of 0.25 mile surrounding the nest (**Table 4-12**).

In the entire Decision Area, there would be 2,200 acres of other known raptor breeding territories (such as golden eagles) protected with a NSO stipulation (0.25 mile from nest). Alternative A would protect more acres from habitat loss around raptor nest sites than Alternatives B and D. Only two of the five areas with the most potential for oil and gas development currently have other known raptor breeding territories that would be protected with the NSO (460 acres) (**Table 4-12**).

Currently, there are no known active prairie dog towns within the Decision Area (including the five areas with the most potential). When located, all alternatives would protect prairie dog towns with a NSO. When located, Alternative A would protect more habitat around prairie dog towns (for expansion of the town) with a NSO than the Action Alternatives.

Currently, there are no known sage grouse leks within the Decision Area (including the five areas with the most potential). When located, Alternative A would protect substantially fewer acres from habitat loss with a 500' NSO around leks compared to the Action Alternatives.

In the Decision Area there are approximately 67,000 acres within sage grouse winter and spring range that would be protected with a 12/1-5/15 timing restriction. Compared to Alternatives B and D, Alternative A would allow for more disturbance adjacent to sage grouse leks with a ½ mile timing restricting during the breeding season. Alternative A could have more negative effects on the reproductive capability of sage grouse than the Action Alternatives. One of the five areas with the most potential for oil and gas development has a small amount of known sage grouse winter or spring range (43 acres) that would be protected with the timing restriction under Alternative A (**Table 4-12**).

Currently in the Decision Area, there is only one known gray wolf den site. Approximately 700 acres would be protected around this den site with a CSU. Alternatives A and D would not fully protect the area surrounding dens because CSUs allow exploration and development with some limitations. However, none of the five areas

with the most potential for oil and gas development have known wolf den sites.

Decision Area-wide, there are approximately 7,400 acres in grizzly bear recovery areas and 54,000 acres within the range of distribution of grizzly bear that would be protected with a CSU stipulation. Alternatives A and D could protect fewer acres of grizzly bear habitat and could allow for more disturbance to this species than Alternatives B and C. Three of the five areas with the most potential for oil and gas development are within the distribution of grizzly bear (Sleeping Giant and Livingston) and approximately 4,000 acres would have limited protection with a CSU stipulation.

**Fish**

The effects described under “Effects Common to All Alternatives” and “Effects of Alternative A” in the general Fish section would be the same for special status fish species.

Under Alternatives A and D, riparian areas would only be protected with SMZs of 50 feet for fish bearing and non-fish bearing streams. Effects would be the same as described for Alternative A in the general Fish section. The type and extent of projects that would be allowed in riparian areas under Alternatives A and D would cause more negative effects to special status aquatic species from increased sedimentation, runoff and loss of riparian and instream habitats than under Alternatives B and C.

Of all alternatives, Alternative A would protect the fewest miles of habitat for special status fish (0 miles), associated with designation of ACECs.

All alternatives would have five stipulations to lessen the effects of oil and gas development on special status fish (other stipulations that generally affect fish are described in the general Fish section). Under Alternative A, these stipulations would include No Surface Occupancy (NSO) adjacent to Arctic grayling and westslope and Yellowstone cutthroat trout streams and Controlled Surface Use (CSU) adjacent to bull trout streams (Table 4-13).

In the Decision Area, five areas have been identified with the most potential for oil and gas exploration and development (low to moderate potential overall) where there would most likely be reasonably foreseeable development and drilling activity (Appendix M). The five areas are located near the southern Deerlodge Valley, Sleeping Giant, Canyon Ferry, Bozeman, and Livingston. The total acreage within these five areas is roughly 116,295 acres. Each of the five areas ranges in size from 1,400 to 50,600 acres.

There is no habitat for Yellowstone cutthroat trout and Arctic grayling in the southern Deerlodge Valley and no known habitat for 90-100 percent genetically pure westslope cutthroat trout. Lost Creek, a bull trout stream, flows outside of the southern Deerlodge Valley area but when a CSU stipulation (0.5 mile on either side of stream) is applied, approximately 32 acres adjacent to this stream in subsurface ownership would have some degree of protection in the Deerlodge valley.

There is no habitat for Yellowstone cutthroat trout, Arctic grayling, or bull trout in the Sleeping Giant area and there is no known habitat for 90-99 percent genetically pure westslope cutthroat trout. However, there are approximately 330 acres adjacent to 99-100 percent genet-

<b>Resource</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Arctic Grayling</b> (DA Acres) (5 Area Acres)	NSO ¼ Mile 13,000 acres 0 acres	NSO ½ Mile 27,400 acres 0 acres	NSO ½ Mile 27,400 acres 0 acres	CSU ½ Mile 27,400 acres 0 acres
<b>Westslope Cutthroat Trout (90-99 % genetically pure)</b> (DA Acres) (5 Area Acres)	NSO ¼ Mile 800 acres 0 acres	NSO ½ Mile 2,200 acres 0 acres	NSO ½ Mile 2,200 acres 0 acres	CSU ½ Mile 2,200 acres 0 acres
<b>Westslope Cutthroat Trout (99-100 % genetically pure)</b> (DA Acres) (5 Area Acres)	NSO ¼ Mile 4,900 acres 330 acres	NSO ½ Mile 11,000 acres 700 acres	NL ½ Mile 11,000 acres 700 acres	NSO ½ Mile 11,000 acres 700 acres
<b>Yellowstone Cutthroat Trout</b> (DA Acres) (5 Area Acres)	NSO ¼ Mile 2,600 acres 316 acres	NSO ½ Mile 7,100 acres 930 acres	NL ½ Mile 7,100 acres 930 acres	CSU ½ Mile 7,100 acres 930 acres
<b>Bull Trout</b> (DA Acres) (5 Area Acres)	CSU ½ Mile 4,000 acres 32 acres	NSO ½ Mile 4,000 acres 32 acres	NL 1 Mile 9,200 acres 420 acres	NSO ½ Mile 4,000 acres 32 acres

ically pure westslope cutthroat trout streams in this area that would be protected with a NSO stipulation (0.25 mile on either side of the stream) (**Table 4-13**).

There is no habitat for Yellowstone cutthroat trout, Arctic grayling, or bull trout in the Canyon Ferry area and there is no known habitat for 90-100 percent genetically pure westslope cutthroat trout.

There is no habitat for Arctic grayling, bull trout, or habitat for 90-100 percent genetically pure westslope cutthroat trout in the Bozeman area. There would be approximately 3 acres adjacent to streams with Yellowstone cutthroat trout that would be protected with a NSO stipulation (0.25 mile on either side of the stream).

There is no habitat for Arctic grayling, bull trout, or habitat for 90-100 percent genetically pure westslope cutthroat trout in the Livingston area. There would be approximately 313 acres adjacent to streams with Yellowstone cutthroat trout that would be protected with a 0.25 mile NSO stipulation.

None of the five areas with the most potential for oil and gas development have habitat for Arctic grayling (**Table 4-13**). Elsewhere in the Decision Area, there would be 13,000 acres adjacent to streams with Arctic grayling that would be protected with a NSO stipulation under Alternative A (0.25 mile on either side of stream). Alternative A would protect substantially fewer acres adjacent to Arctic grayling streams from development due to oil and gas than Alternatives B and C but more than Alternative D.

Across the Decision Area, there would be 4,900 acres adjacent to streams with 99-100 percent genetically pure westslope cutthroat trout that would be protected with a NSO stipulation under Alternative A (0.25 mile on either side of stream). Alternative A would protect substantially fewer acres adjacent to westslope cutthroat trout (99-100 percent pure) streams from development due to oil and gas than the Action Alternatives.

Across the Decision Area, there would be 2,600 acres adjacent to streams with Yellowstone cutthroat trout that would be protected with a NSO stipulation under Alternative A (0.25 mile on either side of stream). Alternative A would protect substantially fewer acres adjacent to Yellowstone trout streams from development due to oil and gas than Alternatives B and C. Two of the five areas with the most potential for oil and gas development (Bozeman and Livingston) have habitat for Yellowstone cutthroat trout and approximately 316 acres adjacent to these streams would be protected with a NSO stipulation (**Table 4-13**).

Across the Decision Area, there would be 4,000 acres adjacent to streams with bull trout that would have a CSU stipulation under Alternative A (0.5 mile from either side of stream). Alternative A would protect substantially fewer acres adjacent to bull trout streams from development due to oil and gas than Alternatives B and C. One of the five areas with the most potential for oil

and gas development (southern Deerlodge Valley) has habitat for bull trout and approximately 32 acres adjacent to these streams would be protected with a CSU stipulation.

Spills can be a major source of contamination in oil and gas producing areas. Oil partially consists of chemicals that can dissolve in water and exposure to these chemicals by fish and other aquatic species can result in death or disease. During oil and gas development, sediment can also be released into streams and rivers from road building, pipeline development, excavation, and site development. Sediments can increase the amount of stress that fish experience, disrupting feeding, growth, social behavior, and susceptibility to disease. Sediment can fill interstitial spaces and smother fish eggs and affect the survival of juvenile fish (Pembina 2006).

Seismic exploration uses a series of explosions to provide the shock waves necessary for companies to record the location of oil and gas. The detonation of explosives in or near water can damage fish swim bladders (the organ that keeps fish afloat), livers, kidneys, and spleens. The explosions can also change fish behavior and result in chemical and physical changes to aquatic habitat. Byproducts from the detonation of explosives can include ammonia or similar compounds that can be toxic to fish and other aquatic organisms.

The development of roads and other infrastructure to support the operation of oil and gas can also alter habitat, allow for an increase in runoff, and cause a spread in noxious weeds (that can reduce the quality and quantity of riparian vegetation).

Streams, rivers, and wetlands can be severely impacted by oil and gas development due to altered hydrology from changes in surface and subsurface drainage patterns. Soil compaction from construction can result in reduced infiltration rates of precipitation into the soil and groundwater, thereby increasing surface runoff as well as sediment load and potential contaminants to streams. Water removal during drilling or the disposal of produced water may alter the subsurface hydrology on which aquatic systems depend. Shallow groundwater can become contaminated from disposal or injection of produced water and could potentially negatively affect rivers, streams, wetlands, and those species dependent upon those habitats.

Although Alternative A does provide protection to streams with special status species from oil and gas development, there would still be a risk from contamination due to spills, water discharge, and sedimentation compared to the action alternatives. There would also be a much larger risk to fish and other aquatic species under Alternative A from a change in subsurface flow (due to directional drilling) that could reduce the quality or quantity of water within streams and rivers.

Under Alternatives A, B and D, Muskrat Creek would not have a mineral withdrawal on 180 acres of riparian

areas and would not be protected from direct effects of mining. The 180 acres proposed for the Muskrat/Nursery Creek withdrawal under Alternative C would provide the minimum amount of protection to water quality, stream morphology, and riparian function to protect the restored and unique population of westslope cutthroat trout. Alternatives A, B, and D would not necessarily protect the genetically pure westslope cutthroat trout population in Muskrat Creek. These alternatives could result in a loss of riparian vegetation, streambed and bank destabilization, erosion and sedimentation, loss of floodplain vegetation, alteration of floodplain morphology, and alteration of stream channel morphology that could occur in association with locatable mineral activity, particularly placer mining. Another key impact that placer mining (including casual use) could have on westslope cutthroat trout is excavation, crushing or disturbance of streambed gravels during the critical period when trout are spawning and eggs are incubating/hatching (approximately 6/1-8/31).

MFWP, BLM, USFS, and other entities are currently making efforts to restore westslope cutthroat trout (a sensitive species) populations in a portion of their historic, but currently unoccupied habitat in the Upper Missouri River basin. One goal of these efforts is to prevent a federal listing of this species under the Endangered Species Act. The Muskrat Creek westslope cutthroat trout population is used by MFWP as a donor source of fish to re-establish populations in other streams within and beyond the Planning Area boundaries. In this sense, the Muskrat Creek population is disproportionately important to westslope cutthroat trout restoration throughout the Upper Missouri River basin. If mining operations cause a decline in this population, the population may no longer be able to function as a donor source and efforts to restore other populations and prevent a federal listing of this species may be impeded.

### **Plants**

Assuming that the low end of the range of proposed weed treatments is implemented under any alternative, under Alternative A, the least amount of noxious weed spread (43,000 acres) would occur; therefore the threat of special status plant habitat loss would be least for this alternative. If the high end of the range of proposed weed treatments is implemented under the action alternatives, the greatest amount of weed spread would occur under Alternative A. The protections afforded by SMZs for the forested riparian species Idaho sedge and small yellow lady's slipper would be less than the buffers in Alternatives B and C. Dry forest, shrubland and grassland treatments (10,350 acres per decade) to maintain or restore habitat of Lemhi penstemon, sapphire rockcress and lesser rushy milkvetch would be higher than under Alternative C, but less than under Alternatives B or D.

Oil and gas leasing NSO restrictions within 0.25 mile of known populations would protect them by decreasing the potential for disturbance. The most acres of the field

office would be available for locatable mineral entry, causing this alternative along with Alternative D to have the highest possibility of habitat disturbance.

## **Effects Common to Action Alternatives**

### **Wildlife**

Effects described in "Effects Common to Action Alternatives" in the general Wildlife section would also apply to special status species.

All federally listed and BLM sensitive species and their habitats would be considered "priority" species and "priority" habitats. By designating these species and habitats as "priority", they would be given additional protection and consideration during project planning and implementation. Protection and maintenance of habitat would ensure special status species maintain viable and diverse populations and ensure short-term and long-term protection of wildlife species within the Decision Area. Protection of special habitat components such as caves and cliffs would maintain habitat for species such as bats and peregrine falcons.

Closing rock climbing in areas with active raptor nests would reduce disturbance and prevent nest abandonment to special status raptor species.

Virtually all bird species are susceptible to disturbance on nesting sites (Joslin et al. 1999). Raptors are susceptible to disturbance while nesting, and may abandon nests with eggs or chicks if the level of disturbance is unacceptable. Acceptable disturbance varies by species, but could cause the failure of nests, reducing the productivity of species already in decline. The use of timing restrictions for special status species during the breeding season would substantially increase the likelihood of nesting success.

Seasonal closures during winter and breeding seasons to protect special status bat species would limit disturbance and allow these species to conserve energy during critical times of their life cycle. Disturbance of bat hibernacula could cause bats to flee and expend valuable energy during the winter which could lead to mortality. Disturbance of maternity colonies could cause young bats to fall and be predated on. Installation of bat gates at abandoned mine sites with bat use would protect bats from disturbance, displacement and direct mortality.

Protection of wildlife linkage corridors would reduce isolation of individuals and improve gene flow and viability of many special status species populations. All projects would maintain connectivity and reduce fragmentation of habitat. This would allow special status species to maintain genetic flow across the Planning Area.

Complying with all standards and guidelines in the Canada Lynx Conservation Assessment and Strategy would protect Canada lynx habitat and ensure that the population of this species is maintained or increased over time.

Disturbance associated with projects in occupied grizzly bear habitat would be restricted. Bears that become habituated to human foods can pose a threat to humans in the area. Habituated bears often are moved to new locations or killed to prevent harm to humans. BLM would develop and implement food regulations and guidelines within occupied grizzly bear habitat, which would reduce grizzly bear/human interactions and protect bears from disturbance, displacement, or death.

All programs would be required to meet or move towards meeting Land Health Standards. This would minimize the negative impacts on special status species from all programs including but not limited to; vegetation management, range, mining, forestry, rights-of-way and energy development.

Dry forest treatments would be designed to mimic natural fire events and result in an increase of large mature trees with open canopies and a diversity of understory species. Uneven-aged management and retaining old forest structure within dry forest types would improve habitat for those special status wildlife species such as the northern goshawk and flammulated owl as well as other species that prefer mature forests of ponderosa pine and Douglas-fir forests.

Alternatives B, C, and D would emphasize restoration and protection of sagebrush habitat and maintain, to the extent possible, large patches of high quality sagebrush. The action alternatives would improve connectivity of habitat and would enlarge the size of sagebrush patches in occupied or historic sage grouse habitat. This would protect sage grouse, pygmy rabbits, other sagebrush obligates and all species that depend on or use sagebrush habitat. This would also allow for the potential expansion of sage grouse into currently unoccupied habitats.

Protection and restoration of riparian areas would maintain or improve breeding, foraging, hiding cover and migration corridors for bald eagles, Swainson's hawks, bats and lynx as well as the majority of other special status species.

High priority lands for retention and future acquisitions would include areas important to special status species including ACECs, Wild and Scenic River corridors, WSAs, and additional habitat for priority and special status species. This would ensure long-term protection and/or restoration of habitat important to special status species.

### ***Fish***

The BLM would work with MFWP to remove non-native fish species to restore special status fish populations and increase the distribution of these species.

Habitat for westslope cutthroat trout, Yellowstone cutthroat trout, Arctic grayling, bull trout, and other native fishes would be enhanced or restored. Watershed restoration projects would be designed and implemented in a manner that promotes the long-term ecological integrity

of ecosystems, conserves the genetic integrity of native species, and contributes to meeting riparian goals and objectives.

All action alternatives would reduce the negative effects of the transportation system on special status fish species by removing barriers (when desirable), reducing sedimentation and restoring or maintaining riparian vegetation.

### ***Plants***

Oil and gas leasing would be subject to controlled surface use stipulations on special status plant habitat.

## **Effects of Alternative B**

### ***Wildlife***

The effects of Alternative B on special status wildlife species would be the same as described under "Effects of Alternative B" in the general Wildlife section.

Vegetation types within the Decision Area are represented by grassland, shrubland, dry forest, wet forest, and riparian. Dry forest is the most dominant forest type and represents 38 percent (115,000 acres) all vegetation communities. Dry forest are currently well outside the historic average of natural variability due to fire suppression and heavy historic grazing. The effects on special status wildlife species from treatments under Alternative B in dry forests would be the same as described under "Effects of Alternative B" in the general Wildlife section. Alternative B would restore more dry forest habitat for migratory birds, northern goshawk, flammulated owl, long-legged myotis, long-eared myotis, and fringed myotis compared to Alternatives A and C but would restore fewer acres than Alternative D. The short-term impacts from disturbance would be more than with Alternatives A and C, but less than with Alternative D. It is expected that the long-term benefits of restoring habitat for dry forest species would outweigh any short-term impacts.

The effects on special status wildlife species from treatments under Alternative B in cool, moist forests would be the same as described under "Effects of Alternative B" in the general Wildlife section. Alternative B would restore more acres of cool, moist forest habitat for migratory birds, lynx, fisher, wolverine, and bat species compared to Alternatives A and C, but would restore fewer acres than Alternative D.

The BLM would use an existing protocol developed by the Forest Service to determine the range of natural conditions for snag habitat until additional studies are completed. This would provide criteria for determining how much snag habitat should be retained (or created) in different habitat types and would aid in assessing impacts to special status species associated with management actions.

Throughout the Decision Area, there are snag deficient areas due to past mining, firewood cutting and timber harvest. In these areas, snags would be targeted for creation. Within other forested stands in the Decision Area, snags have been created naturally through forest insects, disease, and fire. In these areas, blocks of dead and dying forests would be retained to provide habitat for snag dependant species while still allowing some commodity forest product removal.

The proactive creation of snags in snag deficient areas would improve habitat diversity, increase habitat for snag dependant species and improve species viability.

When timber salvage is proposed in dead and dying forests, Alternative B would maintain contiguous acres of undisturbed standing and down woody material in adequate amounts for those special status species that depend on this habitat type for breeding, foraging, and denning. This would protect snag habitat for a variety of snag dependent species including migratory and resident birds, raptors, bats, and three-toed and black-backed woodpeckers.

Where salvage would be allowed to occur, forest openings would be a size that is appropriate to the site and would include snag retention patches. Alternative B would protect more habitat for those special status species that depend on dead and dying forests than Alternatives A and D, but less than Alternative C.

Grassland vegetation represents approximately 45 percent of the total available habitat in the Decision Area and sagebrush shrublands represent roughly 7 percent. The quality and quantity of grasslands and shrublands is declining due to fire suppression, conifer encroachment, and noxious weed infestations.

Under Alternative B, the effects on special status wildlife species from restoration of grasslands and shrublands would be the same as described under “Effects of Alternative B” in the general Wildlife section. Alternative B would restore more grassland and sagebrush shrubland habitats for migratory birds, golden eagles, ferruginous hawks, Swainson’s hawks, long-billed curlews, Brewer’s sparrow, mountain plovers, sage grouse and pygmy rabbit compared to Alternatives A and C, but would restore fewer acres than Alternative D.

The effects on special status wildlife species from noxious weeds under Alternative B would be the same as described under “Effects of Alternative B” in the general Wildlife section. This alternative could result in an increase in the quality and quantity of habitat for special status species compared to Alternatives A and C.

Alternative B would reduce the risk of mortality to special status nesting birds, including migratory and resident birds, during prescribed fire by excluding the use of fire during the breeding season in areas that have substantial use by breeding birds. However, because other methods of vegetation treatments, such as mechanical,

would not have timing restrictions, there could still be detrimental impacts to breeding birds under this alternative. Alternative B would protect breeding birds more than Alternatives A and D, but less than C (which would have timing restrictions for prescribed fire and mechanical treatments).

The limited amount of riparian habitat in the Decision Area and the substantial use these areas receive by special status species, makes this habitat type the most crucial to restore or protect. Riparian Management Zones (RMZs) would be established for this alternative that are wider than Alternatives A and D but narrower than Alternative C. These zones would vary from 50 feet (intermittent streams) to approximately 160 feet for fish-bearing streams Riparian Management Zones under Alternative B would provide more protection for terrestrial special status wildlife than SMZs alone (Alternatives A and D) by requiring all management activities restore or maintain riparian and stream function. The width of the RMZs would ensure that riparian habitat is maintained along streams not only for water quality and aquatic habitat but also for the numerous terrestrial wildlife species that use riparian areas for breeding, foraging, hiding cover and for movement corridors.

There would be fewer negative effects from a loss of large woody material, desired vegetation or movement corridors under Alternative B than with Alternatives A and D.

There would be substantially fewer miles of open roads under Alternative B compared to Alternative A. Alternative B would also have fewer open roads than Alternative D but more open roads than Alternative C. The effects of roads on special status species would be the same as described under “Wildlife Effects Common to All Alternatives” and “Effects of Alternative B” in the general Wildlife section. Open road densities under Alternative B would result in more year-round habitat and migration corridors and less disturbance and displacement of wildlife, road kill, and fragmentation of habitat compared to Alternatives A and D. The beneficial effects to special status wildlife from closing roads would be slightly less under Alternative B than under Alternative C.

Alternative B would prevent loss of habitat or disturbance in occupied grizzly bear habitat by allowing no net increase in permanent roads where open road densities are 1 mi/mi<sup>2</sup> or less in the distribution of grizzly bear. The BLM would also emphasize closing roads in occupied grizzly bear habitat where open road densities exceed 1 mi/mi<sup>2</sup>.

Grizzly bears generally adjust to disturbance associated with roads by avoiding the area (Mace et al. 1996). This results in a reduction in the amount of habitat available to the bears. Roads also provide increased access into remote areas and encourage human settlement, recreational use, and other land uses. These activities can in-

crease the frequency of human/bear conflicts and ultimately reduce habitat availability and grizzly populations. By increasing and protecting low road density areas, Alternative B would provide more suitable habitat for grizzly bears than Alternatives A and D, but less suitable habitat compared to Alternative C.

Under Alternative B, there would be fewer acres open for cross-country snowmobile use (112,682 acres) than Alternatives A and D but more than Alternative C. The negative effects due to cross-country snowmobile use could include harassment of special status species during a season of high stress. This could cause individuals to leave an area (temporarily or permanently) and/or an increase in stress that could lead to mortality. Alternative B would have fewer detrimental effects to special status species from cross-country snowmobile use than Alternatives A and D, but substantially more than Alternative C.

Alternative B would improve habitat for special status bat species by retaining vegetation around caves and abandoned mines occupied by bats. This would assist in maintaining the desired temperature and humidity in the cave or mine. This would also reduce visibility of the cave or mine and lessen the risk of the feature being disturbed by humans.

Implementation of a 0.5 mile buffer around raptor nests from noise and disturbance during the breeding season would prevent raptors from abandoning the nest during the critical breeding and brood rearing seasons. Reduction in disturbance and stress to birds during this critical period would increase the potential for recruitment and would benefit the population within the Decision Area over the long-term. Alternative B would provide more protection from noise disturbance than Alternatives A or D, but less than Alternative C.

Protection of unoccupied raptor nests for five years and the retention of suitable forest habitats within 0.25 mile around unoccupied nests would protect nesting sites for raptors. Alternative B would provide more protection of these important areas than Alternatives A and D but less than Alternative C.

Alternatives B and C would actively restore vegetation around or near bald eagle nest trees (after the breeding season) to protect nest trees from fire and to promote development of nesting and perching habitat.

The effects related to mineral development, including oil and gas would be the same as described under “Effects Common to All Alternatives” and “Effects of Alternative B” in the general Wildlife section.

All alternatives would have 12 stipulations to lessen the effects of oil and gas development on special status species (stipulations that affect wildlife are described in the general Wildlife section) (**Table 4-12**).

Under Alternative B, these stipulations would include: NSO around bald eagle nests, peregrine falcon nests,

ferruginous hawk nests, prairie dog towns and sage grouse leks and timing restrictions in grizzly bear habitat, sage grouse winter, spring and breeding habitat, other raptor breeding habitat and bald eagle breeding habitat

The five areas with the most potential for oil and gas development in the Decision Area are located near the southern Deerlodge Valley, Sleeping Giant, Canyon Ferry, Bozeman, and Livingston. There is currently one known bald eagle nest in the southern Deerlodge Valley area but is outside of federal mineral estate lands. There are no known ferruginous hawk, peregrine falcon, or other raptor breeding territories in this area. There is no known sage grouse habitat or prairie dog towns in this area. This area is not within the distribution or recovery zone of grizzly bear and there are no known gray wolf den sites.

Currently, there are eight known bald eagle nest sites in the Sleeping Giant area and approximately 740 acres would be protected with a NSO stipulation (0.5 mile within nest sites). An additional 1,750 acres beyond the 0.5 mile NSO buffers around bald eagle nest sites would have a 2/1–8/31 timing restriction (same as Alternatives A and D). There are no known ferruginous hawk breeding territories, sage grouse habitat, or prairie dog towns in this area. There is one known peregrine falcon nest site outside of surface and subsurface ownership. Approximately 30 acres would be protected with a NSO (1 mile within nest site). Other raptor breeding territories in the Sleeping Giant area would be protected with approximately 1,330 acres with a timing restriction of 3/1-7/31. This would be less protective than Alternatives A, C and D which prohibit habitat loss and disturbance around the nest site. Approximately 2,600 acres are within occupied grizzly bear habitat and would be protected with spring (4/1-6/30) and fall (9/15-10/15) timing restrictions. This would ensure grizzly bears would be free from disturbance due to oil and gas exploration during important times in their life cycle. There are no known gray wolf den or rendezvous sites in this area.

Currently, there are six known bald eagle nest sites in the Canyon Ferry area and approximately 330 acres would be protected with the 0.5 mile NSO stipulation. An additional 1,100 acres beyond the 0.5 acre NSO buffer around bald eagle nests would have a 2/1–8/31 timing restriction (same as Alternatives A and D). There are no known ferruginous hawk nests, peregrine falcon breeding territories, sage grouse habitat, or prairie dog towns in this area. Other raptor breeding territories in the Canyon Ferry area would be protected with approximately 500 acres in a timing restriction of 3/1-7/31. The area is not within the recovery zone or occupied grizzly bear habitat and there are currently no known gray wolf den or rendezvous sites.

In the Bozeman area, there are currently no known bald eagle nest sites, ferruginous hawk breeding territories, peregrine falcon nest sites, sage grouse habitat, or prairie

rie dog towns. Approximately 1,300 acres are within occupied grizzly bear habitat and would be protected with spring (4/1-6/30) and fall (9/15-10/15) timing restrictions. This would ensure grizzly bears are free from disturbance due to oil and gas exploration during important time of their life cycle. There are no known gray wolf den or rendezvous sites in this area.

Currently, there are four known bald eagle nests in the Livingston area and approximately 40 acres would be protected with the NSO stipulation. An additional 300 acres beyond the 0.5 mile NSO buffer would have a 2/1-8/31 timing restriction. There are no known ferruginous hawk nests, other raptor nest sites, sage grouse leks/ breeding habitat, or prairie dog towns in this area. There are, however, approximately 43 acres within sage grouse winter and spring habitat that would be protected with a 12/1-5/15 timing restriction (same as Alternatives A and D). There is one known peregrine falcon breeding territory in the Livingston area that would be protected with approximately 60 acres in a NSO stipulation. Approximately 100 acres within occupied grizzly bear habitat would be protected with spring (4/1-6/30) and fall (9/15-10/15) timing restrictions. There are no known gray wolf den or rendezvous sites in this area.

Across the Decision Area, there would be 2,600 acres surrounding bald eagle nest sites that would be protected with a NSO stipulation under Alternatives A, B and D (Table 4-12). Three of the five areas with the most potential for oil and gas development have bald eagle nest sites (1,110 acres) that would be protected with the NSO stipulation. An additional 3,150 acres would be protected beyond the bald eagle nest NSO boundary with a timing restriction of 2/1-8/31 (Table 4-12). This would be the same amount of protection provided under Alternatives A and D but less protection than under Alternative C (NL 1 mile adjacent to nests).

Across the Decision Area including within the five areas with the most potential for oil and gas development, there would be 0 acres protected with a NSO stipulation for ferruginous hawks because there are no known breeding territories (Table 4-12). When located, ferruginous hawk breeding territories would be given more protection under Alternative B compared to Alternatives A and D but less than Alternative C.

Across the Decision Area, there would be 3,820 acres surrounding peregrine falcon nest sites protected with a 1 mile NSO stipulation. Two of the five areas with the most potential for oil and gas development currently have known nest sites (Sleeping Giant and Livingston) within federal mineral estate lands. A total of 90 acres would be protected with a 1 mile NSO surrounding peregrine falcon nest sites (Table 4-12).

Alternative B would provide substantially more protection to peregrine falcons by reducing disturbance and preventing loss of habitat than Alternative A. The other

action alternatives would provide the same amount of protection as Alternative B.

Across the Decision Area, there would be 7,400 acres of other known raptor breeding territories (such as golden eagles) protected with a 0.5 mile timing restriction. Only two of the five areas with the most potential for oil and gas development (Sleeping Giant and Canyon Ferry) currently have other known raptor breeding territories that would be protected with the timing restriction of 3/1-7/31 (1,830 acres). Unlike Alternatives A, C and D, this alternative would not protect habitat from alteration. Alternative B would protect more area from disturbance than Alternatives A and D, but would protect the same area as Alternative C.

Currently, there are no known active prairie dog towns within the Decision Area (including the five areas with the most potential). When located, all alternatives would protect the actual prairie dog town with a NSO but only Alternative A would protect habitat around prairie dog towns for expansion of the town. Alternative A would provide more protection to prairie dogs than all other alternatives.

Within the Decision Area and the five areas with the most potential for oil and gas development there are no known sage grouse lek sites. However, across the Decision Area there would be approximately 2,800 acres of sage grouse breeding habitat located within 3 miles of lek sites protected with a timing restriction of 3/1-6/30. In the five areas with the most potential for oil and gas development there is currently no known sage grouse breeding habitat. This alternative would provide the same amount of protection as under Alternative D, less protection than Alternative C but more than Alternative A. Decision Area-wide there are approximately 67,000 acres within sage grouse winter and spring range that would be protected with a 12/1-5/15 timing restriction (same as Alternatives A and D). One of the five areas with the most potential for oil and gas development has a small amount of known sage grouse winter or spring range (43 acres) that would be protected with the timing restriction.

Currently in the Decision Area, there is only one known gray wolf den site. Approximately 700 acres would be protected around this den site with a timing restriction of 4/15-6/30 (1 mile from den or rendezvous site). Unlike Alternatives A and D, this alternative would ensure that the den and rendezvous sites are not disturbed from oil and gas exploration.

Decision Area-wide, there are approximately 7,400 acres in grizzly bear recovery areas that would be protected with a NSO stipulation. None of the five areas with high potential for oil and gas development are within the recovery zone of the grizzly bear. Approximately, 54,000 acres within occupied grizzly bear would be protected with spring (4/1-6/30) and fall (9/15-10/15) timing restrictions. Three of the five areas with the most

potential for oil and gas development are within the distribution of grizzly bear (Sleeping Giant and Livingston) and approximately 4,000 acres would have the spring and fall timing restrictions under Alternative B. Unlike Alternatives A and D, Alternative B would ensure that grizzly bears are free from disturbance associated with oil and gas exploration during crucial times of the year.

### ***Fish***

The effects described under “Effects Common to All Alternatives” and “Effects of Alternative B” in the general Fish section would be the same for special status fish species.

Riparian Management Zones (RMZs) would be established for this alternative that would be wider than SMZs of Alternatives A and D but narrower than RMZs of Alternative C. Effects would be the same as described under “Effects of Alternative B” in the general Fish section.

Riparian Management Zones under Alternative B would offer more protection to special status species than Alternatives A or D but less than half the protection offered under Alternative C (Table 4-9 and Table 4-10). Effects would be the same as described under “Effects of Alternative B” in the general Fish section.

Restoration activities could have minor to moderate and short-term effects from a pulse of fine sediment and runoff to streams due to a reduction in riparian vegetation. However, the long-term benefits to aquatic and riparian resources from an increase in diversity and vigor of riparian vegetation would outweigh the short-term impacts.

Under Alternative B, there would be an emphasis on maintaining and restoring habitat for genetically pure and slightly hybridized (<20 percent) populations of westslope cutthroat trout. Alternative B would focus protection on more populations of westslope cutthroat trout than Alternatives A and D, but fewer than Alternative C.

Alternatives B and C would emphasize the removal (through various means) of non-native aquatic species that out-compete or breed with westslope cutthroat trout. This would increase the quantity of available habitat for native species and reduce hybridization between rainbow trout and westslope cutthroat trout.

Alternatives B and C would contain the greatest amount of habitat protected for special status fish species (5 miles) due to the designation of ACECs.

All alternatives would have five stipulations to lessen the effects of oil and gas development on special status fish (other stipulations that affect fish are described in the general Fish section) (Table 4-13). Under Alternative B, these stipulations would include NSO adjacent to

Arctic grayling, bull trout and westslope and Yellowstone cutthroat trout streams.

The five areas with the most potential for oil and gas development in the Decision Area are located near the southern Deerlodge Valley, Sleeping Giant, Canyon Ferry, Bozeman, and Livingston. In the southern Deerlodge Valley area, there is no habitat for Yellowstone cutthroat trout and Arctic grayling and no known habitat for 90-100 percent genetically pure westslope cutthroat trout. Lost Creek, a bull trout stream, flows outside of the southern Deerlodge Valley area but when a 0.5 mile NSO buffer is applied, approximately 32 acres adjacent to this stream on federal mineral estate lands would be protected from loss of habitat.

In the Sleeping Giant area, there is no habitat for Yellowstone cutthroat trout, Arctic grayling, or bull trout and there is no known habitat for 90-99 percent genetically pure westslope cutthroat trout. However, there are approximately 700 acres adjacent to streams with 99-100 percent genetically pure westslope cutthroat trout that would be protected with a 0.5 mile NSO stipulation on either side of the stream. This would provide greater protection to riparian habitat, aquatic habitat, water quality, and surface/subsurface flows than Alternative A.

In the Canyon Ferry area, there is no habitat for Yellowstone cutthroat trout, Arctic grayling, or bull trout and there is no known habitat for 90-100 percent genetically pure westslope cutthroat trout.

In the Bozeman area, there is no habitat for Arctic grayling, bull trout, or habitat for 90-100 percent genetically pure westslope cutthroat trout. There would be approximately 30 acres adjacent to streams with Yellowstone cutthroat trout that would be protected with a 0.5 mile NSO stipulation on either side of streams. Alternative B would protect more acres from loss of riparian habitat and upslope habitat that could affect riparian and aquatic functions for this species than Alternatives A and D.

In the Livingston area, there is no habitat for Arctic grayling, bull trout, or 90-100 percent genetically pure westslope cutthroat trout. There would be approximately 930 acres adjacent to streams with Yellowstone cutthroat trout that would be protected with a 0.5 mile NSO stipulation. Alternative B would protect more acres from loss of riparian habitat and upslope habitat that could affect riparian and aquatic functions than Alternatives A and D.

Decision Area-wide, there would be 27,400 acres adjacent to streams with Arctic grayling that would be protected with a NSO stipulation under Alternative B (0.5 mile from either side of streams). Alternatives B and C would protect substantially more acres adjacent to Arctic grayling streams from development due to oil and gas than Alternative A. None of the five areas with the most potential for oil and gas development have habitat for Arctic grayling (Table 4-13).

Decision Area-wide, there would be 2,200 acres adjacent to streams with 90-99 percent genetically pure westslope cutthroat trout that would have a NSO stipulation under Alternative B (0.5 mile from either side of stream). None of the five areas with the most potential for oil and gas development have known habitat for 90-99 percent genetically pure westslope cutthroat trout (**Table 4-13**).

Decision Area-wide, there would be 11,000 acres adjacent to streams with 99-100 percent genetically pure westslope cutthroat trout that would have a NSO stipulation under Alternative B (0.5 mile from either side of stream). One of the five areas with the most potential for oil and gas development (Sleeping Giant) has habitat for 99-100 percent genetically pure westslope cutthroat trout and approximately 700 acres adjacent to these streams would be protected with a NSO (**Table 4-13**). Alternatives B, C and D would protect substantially more acres adjacent to westslope cutthroat trout (99-100 percent pure) streams from development due to oil and gas than Alternative A.

In the Decision Area, there would be 7,100 acres adjacent to streams with Yellowstone cutthroat trout that would have a NSO stipulation under Alternative B (0.5 mile from either side of stream). Two of the five areas with the most potential for oil and gas development (Bozeman and Livingston) have habitat for Yellowstone cutthroat trout and approximately 930 acres adjacent to these streams would be protected with a NSO (**Table 4-13**). Alternatives B and C would protect substantially more acres adjacent to Yellowstone trout streams from development due to oil and gas than the Alternative A.

In the entire Decision Area, there would be 4,000 acres adjacent to streams with bull trout that would have a NSO stipulation under Alternative B (0.5 mile from either side of stream). One of the five areas with the most potential for oil and gas development (southern Deerlodge Valley) has habitat for bull trout and approximately 32 acres adjacent to these streams would be protected with a NSO (**Table 4-13**). Unlike Alternative A, Alternatives B, C, and D would ensure that bull trout habitat would not be lost due to oil and gas exploration and development.

Under Alternatives B, D and A, westslope cutthroat trout would not be protected in the Muskrat and Nursery Creek drainages with a 180-acre mineral withdrawal of the streams and riparian areas. Muskrat Creek has importance to westslope cutthroat trout restoration beyond the local level because after a ten year, \$50,000 restoration effort, its population is now used as a donor source to re-establish westslope cutthroat trout populations in a number of different locations in the state of Montana. Without the protection of a mineral withdrawal, this genetically pure population of westslope cutthroat trout could be impacted or lost due to a loss of riparian vegetation, streambed and bank destabilization, erosion and sedimentation, loss of floodplain vegetation, alteration of floodplain morphology, and alteration of stream

channel morphology that could occur in association with locatable minerals, particularly placer mining. Another significant key impact placer mining would have on westslope cutthroat trout is excavation, crushing, or disturbance of streambed gravels during the critical period of 6/1-8/31 when cutthroat trout are spawning and eggs are incubating/hatching in redds in the streambed. If extensive mining impacts occurred in Muskrat Creek, it may not be possible to reclaim the stream adequately to re-establish the current population level of westslope cutthroat trout.

MFWP, BLM, USFS, and other entities are currently making efforts to restore westslope cutthroat trout (a sensitive species) populations in a portion of their historic, but currently unoccupied habitat in the Upper Missouri River basin. One goal of these efforts is to prevent a federal listing of this species under the Endangered Species Act. The Muskrat Creek westslope cutthroat trout population is used by MFWP as a donor source of fish to re-establish populations in other streams within and beyond the Planning Area boundaries. In this sense, the Muskrat Creek population is disproportionately important to westslope cutthroat trout restoration throughout the Upper Missouri River basin. If mining operations cause a decline in this population, the population may no longer be able to function as a donor source and efforts to restore other populations and prevent a federal listing of this species may be impeded.

### *Plants*

Assuming that the low end of the range of proposed weed treatments is implemented under any alternative, under Alternative B, 48,000 acres of noxious weed spread is projected. This would be more weed spread than under Alternatives A or D, therefore the threat of special status plant habitat loss caused by noxious weed spread could be more for this alternative than Alternatives A or D. The reduced disturbances afforded by RMZs for the forested riparian species Idaho sedge and small yellow lady's slipper would be more than under Alternatives A or D, but less than under Alternative C. Additionally, the buffer on non-forested riparian areas would reduce the threat of habitat disturbance for species such as dwarf purple monkey-flower, mealy primrose or Ute ladies' tresses. Dry forest, shrub and grass treatments (30,200 acres per decade) to maintain or restore habitat of Lemhi penstemon, sapphire rockcress and lesser rushy milkvetch would be higher than under all alternatives except Alternative D.

Oil and gas leasing NSO restrictions within 0.25 mile of known populations would protect them by decreasing the potential for disturbance. Fewer acres of the field office would be available for locatable mineral entry, causing this alternative along with Alternative C to have the least possibility of habitat disturbance.

## Effects of Alternative C

### Wildlife

The effects from Alternative C to special status wildlife species would be the same as described under “Effects of Alternative C” in the general Wildlife section.

Alternative C would emphasize “passive” restoration and would treat the least amount of dry forest habitat for migratory birds, northern goshawks, flammulated owls, long-legged myotis, long-eared myotis, and fringed myotis compared to Alternatives A, B and D. The short-term impacts from disturbance would be much less than with the other alternatives but the long-term benefits of restoring habitat for dry forest species would be substantially less than under Alternatives B and D.

The effects on special status wildlife species from treatments under Alternative C in cool, moist forest habitat would be the same as described under “Effects of Alternative C” in the general Wildlife section. Alternative C would restore the fewest acres of cool, moist forest habitat for migratory birds, lynx, fisher, wolverine, and bat species compared to the other alternatives.

Determining the range of natural conditions for snag habitat would be the same as Alternative B. However, the creation of snags would only be done opportunistically through other projects. Snags would be protected but not necessarily created in snag deficient areas like under Alternative B. Due to lack of vegetation treatments and active snag management, Alternative C would create less snag habitat in snag deficient areas over the long-term than Alternative B but would be similar to Alternatives A and D.

Whereas Alternative B would not entail identifying the acres of dead and dying forest that would be retained during timber salvage, Alternative C would require 50 percent of dead and dying forest be retained in stands that exceed 1,000 acres (unless human safety is an issue). Although all action alternatives would provide some protection to dead and dying forests, Alternative C would guarantee the retention of moderate to large-sized blocks of dead and dying forests for special status species. Connectivity and diversity of habitats as well as species productivity would be greatest for those species dependent on snag habitat, such as three-toed and black-backed woodpeckers, under Alternative C than under any other alternative.

The effects on special status wildlife species from treatments under Alternative C in grasslands and shrublands would be the same as described under “Effects of Alternative C” in the general Wildlife section. Alternative C would restore the fewest acres of grassland and sagebrush shrubland of all the alternatives, especially Alternatives B and D, for migratory birds, golden eagles, ferruginous hawks, Swainson’s hawks, long-billed curlews, Brewer’s sparrows, mountain plovers, sage grouse, and pygmy rabbit. Alternative C would restore substan-

tially fewer acres compared to Alternatives B and D and slightly less grassland than Alternative A. Alternative C would restore more acres of sagebrush than Alternative A.

Noxious weed management would have minimal negative impacts on special status species but could provide substantial beneficial effects. The effects on special status wildlife species from noxious weeds under Alternative C would be the same as described under “Effects of Alternative C” in the general Wildlife section.

Alternative C would reduce the risk of mortality to special status nesting birds, including migratory and resident birds, during prescribed fire and mechanical treatments. Alternative C would exclude project implementation during the breeding season in areas that have substantial use by breeding birds. This would prevent the most mortality to migratory and resident birds during the breeding season of all alternatives.

Under Alternative C, Riparian Management Zones would be established that would be wider than under all other alternatives. A 300-foot RMZ for fish bearing streams and a 150-foot zone for non-fish bearing streams would be implemented under Alternative C. As with the other alternatives, the RMZs could have management activities. Unlike Alternatives A and D, Alternative C and B would only allow management within riparian areas that protect, enhance or restore the riparian goals and objectives. Unlike Alternative B, trees could not be removed from the RMZ during restoration unless they would be used for other restoration activities (i.e. in-stream restoration or erosion control) under this alternative.

Alternative C would establish the most acres of all alternatives where the emphasis would be to restore, protect, or enhance riparian habitats for aquatic and terrestrial species that use riparian zones for all or part of their lifecycle. Alternative C would provide the best protection to all special status species that use riparian areas of all alternatives. This alternative would also ensure that critical movement corridors are maintained for numerous special status species.

There would be substantially fewer miles of open roads under Alternative C compared to Alternative A. Alternative C would also have fewer open roads than Alternatives B and D. The effects of roads on special status species would be the same as described under “Effects Common to All” and “Effects of Alternative C” in the general Wildlife section.

Alternative C would prevent the greatest loss of habitat or disturbance to bears in occupied grizzly bear habitat of all alternatives by allowing no net increase in permanent roads where open road densities are 1.5 mi/mi<sup>2</sup> or less. The BLM would also emphasize closing roads in occupied grizzly bear habitat where open road densities exceed 0.5 mi/mi<sup>2</sup>. Alternative C would provide the most acres of suitable habitat for grizzly bears and re-

duce the potential for human-bear interactions more than all other alternatives.

Through travel management, Alternative C would provide the greatest benefit to grizzly bears and other special status species by reducing fragmentation of habitats, protecting larger blocks of habitat and reducing disturbance.

Alternative C would have the fewest acres open for cross-country snowmobile use (26,148 acres). The detrimental affects to special status species due to cross-country snowmobile use would be substantially less under Alternative C than under all other alternatives.

The retention of vegetation around caves and abandoned mines for special status bat species would be the same as under Alternative B.

Implementation of a 1-mile buffer around raptor nests from noise and disturbance during the breeding season would prevent raptors from abandoning the nest during the critical breeding and brood rearing seasons more than under all other alternatives. Reduction in disturbance and stress to birds during this critical period would increase the potential for recruitment and benefit the population within the Decision Area over the long-term. Alternative C would provide more protection from noise disturbance than all other alternatives.

Unoccupied raptor nests would also have greater protection under this alternative than under all other alternatives. Alternative C would require all unoccupied raptor nests that are in good condition to be maintained for 7 years. This alternative would also require that suitable forested habitat within 0.5 mile around the unoccupied nests be maintained.

Restoration of vegetation around bald eagle roost and nest trees would be the same as under Alternative B.

The effects related to mineral development, including oil and gas would be the same as described under "Effects Common to All Alternatives" and "Effects of Alternative C" in the general Wildlife section.

All alternatives would have 12 stipulations to lessen the effects of oil and gas development on special status species (stipulations that affect wildlife are described in the general Wildlife section). Under Alternative C, these stipulations would include No Surface Occupancy (NSO) in sage grouse breeding habitat, grizzly bear habitat; and No Lease (NL) in and around prairie dog towns, sage grouse winter, spring and strutting grounds (leks), bald eagle nests, peregrine falcon nests and ferruginous hawk nests. There would also be a timing restriction around ferruginous hawk nests under this alternative.

The five areas with the most potential for oil and gas development in the Decision Area are located near the southern Deerlodge Valley, Sleeping Giant, Canyon Ferry, Bozeman, and Livingston. There is currently one

known bald eagle nest site in the southern Deerlodge Valley area but it is well outside of any federal mineral estate lands. There are no known ferruginous hawk nests, peregrine falcon nests or other raptor breeding territories in this area. There is no known sage grouse habitat or prairie dog towns in this area. This area is not within the distribution or recovery zone of grizzly bear and there are no known gray wolf den or rendezvous sites.

Currently, there are eight known bald eagle nests sites in the Sleeping Giant area and approximately 2,530 acres would be protected with a NL stipulation. There are no known ferruginous hawk nests, sage grouse habitat, or prairie dog towns in this area. There is one known peregrine falcon nest site just outside of federal mineral estate lands. After applying the 1 mile buffer to this nest, approximately 30 acres of federal mineral estate lands would be protected with NL. Other raptor breeding territories in the Sleeping Giant area would be protected with approximately 1,330 acres in NL. This would be the most restrictive alternative and would provide the most protection to raptors from disturbance and loss of habitat. Approximately 2,600 acres are within occupied grizzly bear habitat and would be protected with a NSO. This would ensure grizzly bears are free from disturbance due to oil and gas exploration and that there would be no loss of habitat. There are no known gray wolf den or rendezvous sites in this area.

Currently, there are six known bald eagle nests sites in the Canyon Ferry area and approximately 1,500 acres would be protected with NL. There are no known ferruginous hawk nests, peregrine falcon nest, sage grouse habitat, or prairie dog towns in this area. Other raptor breeding territories in the Canyon Ferry area would be protected with approximately 500 acres in NL. The area is not within the recovery zone or the distribution of grizzly bear and there are currently no known gray wolf den or rendezvous sites.

There are currently no known bald eagle nest sites, ferruginous hawk nests, peregrine falcon nests, sage grouse habitat, or prairie dog towns in the Bozeman area. Approximately 1,300 acres are within occupied grizzly bear habitat and would be protected with a NSO stipulation. This would ensure grizzly bears are free from disturbance due to oil and gas exploration and development and that there would be no loss of habitat. There are no known gray wolf den or rendezvous sites in this area.

Currently, there are four known bald eagle nest sites in the Livingston area and approximately 300 acres would be protected with NL. There are no known ferruginous hawk nests, other raptor nest sites, sage grouse leks/breeding habitat, or prairie dog towns in this area. There are however, approximately 43 acres within sage grouse winter and spring habitat that would be protected with NL. There is one known peregrine falcon nest site in the Livingston area that would be protected with approximately 60 acres in a NL area. Approximately 100

acres are within occupied grizzly bear habitat and would be protected with a NSO stipulation. There are no known gray wolf den or rendezvous sites in this area.

Decision Area-wide, there would be 9,450 acres surrounding bald eagle nest sites and breeding habitats that would have a NL stipulation under Alternative C (1 mile from nest). Three of the five areas with the most potential for oil and gas development (Sleeping Giant, Canyon Ferry and Livingston) have bald eagle nest sites (4,330 acres) that would be protected with the 1 mile NL stipulation (**Table 4-12**).

This alternative would protect breeding bald eagles from disturbance or loss of habitat associated with oil and gas exploration and development more than any other alternative.

Decision Area-wide and within the five areas with the most potential for oil and gas development, there would be 0 acres protected for ferruginous hawks (there are no known breeding territories). When located, ferruginous hawk breeding territories would be given more protection under Alternative C compared to all other alternatives.

Across the Decision Area, there would be 3,820 acres surrounding peregrine falcon nest sites with a NSO (1 mile) stipulation. Two of the five areas with the most potential for oil and gas development currently have known nest sites (Sleeping Giant and Livingston) within surface or subsurface ownership and a total of 90 acres would be protected with NL (**Table 4-12**).

Alternatives B, C and D would provide substantially more protection to peregrine falcons by reducing disturbance and preventing loss of habitat than Alternative A. Alternative C would provide additional protection to peregrine falcons over Alternatives B and D by preventing directional drilling under the 3,800 acres surrounding the nest site. Prohibiting directional drilling could prevent negative impacts on water quality and/or quantity in peregrine falcon habitat.

Decision Area-wide, there would be 7,400 acres of other known raptor breeding territories (such as golden eagles) protected with NL (0.5 mile). Only two of the five areas with the most potential for oil and gas development (Sleeping Giant and Canyon Ferry) currently have other known raptor breeding territories that would be protected with the NL stipulation (1,830 acres). Alternative C would provide the most protection from disturbance and habitat loss compared to the other alternatives from oil and gas exploration and development.

Currently, there are no known active prairie dog towns within the Decision Area (including the five areas with the most potential) (**Table 4-12**). When located, all alternatives would protect the actual prairie dog town with a NSO but only Alternative A would protect habitat around prairie dog towns for expansion of the town.

Alternative A would provide more protection to prairie dogs than all other alternatives.

Within the Decision Area and the five areas with the most potential for oil and gas development there are no known sage grouse lek sites. However, across the Decision Area there would be approximately 2,800 acres of sage grouse breeding habitat located within 3 miles of lek sites protected with a NSO. In the five areas with the most potential for oil and gas development there is currently no known sage grouse breeding habitat. Across the Decision Area, there are approximately 67,000 acres within sage grouse winter and spring range that would be protected with NL. One of the five areas with the most potential for oil and gas development has a small amount of known sage grouse winter or spring range (43 acres) that would be protected with the NL stipulation (**Table 4-12**).

Overall, this alternative would provide the greatest amount of protection to breeding and overwintering sage grouse compared to all other alternatives. Alternative C would not only prevent disturbance to nesting sage grouse, thereby ensuring successful reproduction, but would also prevent any habitat loss or degradation due to oil and gas development. Prohibiting directional drilling could prevent negative impacts on water quality and/or quantity in sage grouse habitat.

Currently in the Decision Area, there is only one known gray wolf den site. Approximately 700 acres would be protected around this den site with a NSO (1 mile from den or rendezvous site) stipulation. Unlike Alternatives A, B and D, this alternative would ensure that den and rendezvous sites are not disturbed from oil and gas exploration and development. There are no known den or rendezvous sites in the five areas with the most potential for oil and gas development.

In the Decision Area, there are approximately 7,400 acres in grizzly bear recovery areas would be protected with a NSO stipulation. None of the five areas with high potential for oil and gas development are within the grizzly bear recovery zone. Approximately 54,000 acres within occupied grizzly bear habitat would be protected with a NSO stipulation. Three of the five areas with the most potential for oil and gas development are within occupied grizzly bear habitat (Sleeping Giant and Livingston) and approximately 4,000 acres would have the NSO stipulation. Unlike Alternatives A, B and D, Alternative C would ensure that grizzly bears are not only free from disturbance but also from loss of habitat due to oil and gas exploration and development.

All stipulations under Alternative C would be either NSO or NL for special status species. In addition, the buffer around bald eagle nest sites and sage grouse breeding habitat would be larger than the other alternatives. Under Alternative C, essential habitat for special status species would not be altered or lost due to oil and gas exploration or development. Alternative C would

protect more habitat for these species compared to all other alternatives. For those special species with a NL stipulation (bald eagle, peregrine falcon and other raptors, and sage grouse), additional protection is given by preventing directional (subsurface) drilling that could degrade water quality or reduce water in streams, rivers and wetlands within crucial habitat for these species.

### **Fish**

The effects described under “Effects Common to All Alternatives” and “Effects of Alternative C” in the general Fish section would be the same for special status fish species.

Like Alternative B, Alternative C would also establish additional protection to streams through Riparian Management Zones (RMZs). However, these RMZs would be wider under Alternative C than Alternative B. Riparian Management Zones under Alternative C would provide the most acreage adjacent to streams where emphasis would be placed on maintenance, restoration, and/or protection of riparian and stream functions of all alternatives.

This alternative would provide exceptional and nearly complete protection for special status fish and other aquatic organisms by only allowing activities in riparian areas that would restore or maintain riparian and stream habitats and functions. The width of these RMZs would ensure that the introduction of fine sediment would be negligible and the delivery of large woody material and organic matter would be maximized. Effects would be the same as described under “Effects of Alternative C” in the general Fish section.

Unlike the other alternatives, Alternative C would emphasize maintaining or restoring habitat for all populations of westslope cutthroat trout, regardless of hybridization. As with Alternative B, Alternative C would emphasize removing brook trout and other non-native species that out-compete or breed with westslope cutthroat trout.

Alternatives B and C would contain the greatest amount of habitat protected for special status fish species (5 miles) due to the designation of ACECs.

All alternatives would have five stipulations to lessen the effects of oil and gas development on special status fish (other stipulations that affect fish are described in the general Fish section) (**Table 4-13**). Under Alternative C, these stipulations would include NSO adjacent to Arctic grayling and westslope cutthroat trout (90-99 percent genetically pure); and NL for bull trout streams, westslope cutthroat trout (99-100 percent genetically pure) and Yellowstone cutthroat trout.

The five areas with the most potential for oil and gas development in the Decision Area are located near the southern Deerlodge Valley, Sleeping Giant, Canyon Ferry, Bozeman, and Livingston. In the southern Deerlodge Valley area, there is no habitat for Yellowstone

cutthroat trout and Arctic grayling and no known habitat for 90-100 percent genetically pure westslope cutthroat trout. Lost Creek, a bull trout stream, flows outside of the southern Deerlodge Valley area but when a 1-mile NL buffer is applied, approximately 420 acres of federal mineral estate lands adjacent to this stream would be protected from loss of habitat, water quality or water quantity.

In the Sleeping Giant area, there is no habitat for Yellowstone cutthroat trout, Arctic grayling, or bull trout and there is no known habitat for 90-99 percent genetically pure westslope cutthroat trout. However, there are approximately 700 acres adjacent to 99-100 percent genetically pure westslope cutthroat trout streams in this area that would be protected with a 0.5 mile NL on either side of streams. This would provide greater protection to riparian habitat, aquatic habitat, water quality and surface/subsurface flows than Alternatives A, B or D.

In the Canyon Ferry area, there is no habitat for Yellowstone cutthroat trout, Arctic grayling, or bull trout and there is no known habitat for 90-100 percent genetically pure westslope cutthroat trout.

In the Bozeman area, there is no habitat for Arctic grayling, bull trout, or habitat for 90-100 percent genetically pure westslope cutthroat trout. There would be approximately 30 acres adjacent to streams with Yellowstone cutthroat trout that would be protected with a 0.5 mile NL. This would provide greater protection to riparian habitat, aquatic habitat, water quality and surface/subsurface flows than Alternatives A, B or D.

In the Livingston area, there is no habitat for Arctic grayling, bull trout, or habitat for 90-100 percent genetically pure westslope cutthroat trout. There would be approximately 900 acres adjacent to streams with Yellowstone cutthroat trout that would be protected with a 0.5 mile NL.

Decision Area-wide, there would be 27,400 acres adjacent to streams with Arctic grayling that would have a NSO stipulation under Alternative C (0.5 mile from either side of stream) (**Table 4-13**). This would be the same as Alternative B and more protective than Alternatives A and D. None of the five areas with the most potential for oil and gas development have habitat for Arctic grayling.

Across the Decision Area, there would be 2,200 acres adjacent to streams with 90-99 percent genetically pure westslope cutthroat trout that would have a NSO stipulation under Alternative C (0.5 mile from either side of stream). None of the five areas with the most potential for oil and gas development have habitat for 90-99 percent genetically pure westslope cutthroat trout. Alternatives C and B would provide the same amount of protection to 90-99 percent genetically pure westslope cutthroat trout populations, but more protection than Alternatives A and D.

Decision Area-wide, there would be 11,000 acres adjacent to streams with 99-100 percent genetically pure westslope cutthroat trout that would have a NL stipulation under Alternative C (0.5 mile from either side of stream). Alternatives B, C and D would protect substantially more acres adjacent to westslope cutthroat trout (99-100 percent pure) streams from development due to oil and gas than Alternative A. Alternative C would provide additional protection to westslope cutthroat trout over Alternatives B and D by preventing directional drilling beneath 11,000 acres adjacent to streams. Prohibiting directional drilling could prevent negative impacts on water quality and/or quantity in cutthroat trout habitat. One of the five areas with the most potential for oil and gas development (Sleeping Giant) has habitat for 99-100 percent genetically pure westslope cutthroat trout and approximately 700 acres adjacent to these streams would be protected with a NL (Table 4-13).

Across the Decision Area, there would be 7,000 acres adjacent to streams with Yellowstone cutthroat trout that would have a NL stipulation under Alternative C. Alternative C would protect substantially more acres adjacent to bull trout streams from development due to oil and gas than all other alternatives. Alternative C would provide additional protection to bull trout by preventing directional drilling beneath 9,200 acres adjacent to streams. Prohibiting directional drilling could prevent negative impacts on water quality and/or quantity in bull trout habitat. Two of the five areas with the most potential for oil and gas development (Bozeman and Livingston) have habitat for Yellowstone cutthroat trout and approximately 930 acres adjacent to these streams would be protected with NL (Table 4-13).

Decision Area-wide, there would be 9,200 acres adjacent to streams with bull trout that would have a NL stipulation under Alternative C (1 mile from either side of stream). One of the five areas with the most potential for oil and gas development (southern Deerlodge Valley) has habitat for bull trout and approximately 420 acres adjacent to these streams would be protected with a NL (Table 4-13). Alternative C would protect substantially more acres adjacent to bull trout streams from development due to oil and gas than all other alternatives. Alternative C would provide additional protection to bull trout by preventing directional drilling beneath 9,200 acres adjacent to streams. Prohibiting directional drilling could prevent negative impacts on water quality and/or quantity in bull trout habitat.

Unlike all other alternatives, genetically pure westslope cutthroat would be protected from mineral activity in the Muskrat Creek drainage under Alternative C with a 180-acre mineral withdrawal. This would ensure the long-term viability of the new restored population of westslope cutthroat trout in Muskrat Creek. Muskrat Creek has importance to westslope cutthroat trout restoration beyond the local level because after a ten year, \$50,000 restoration effort, its population is now used as

a donor source to re-establish westslope cutthroat trout populations in a number of different locations in the state of Montana. This withdrawal would benefit the genetically pure westslope cutthroat trout population in Muskrat Creek by preventing loss of riparian vegetation, streambed and bank destabilization, erosion and sedimentation, loss of floodplain vegetation, alteration of floodplain morphology, and alteration of stream channel morphology that could occur in association with locatable minerals activities, particularly placer mining. Another key impact that placer mining could have on westslope cutthroat trout is excavation, crushing, or disturbance of streambed gravels during the critical period of 6/1-8/31 when westslope cutthroat trout are spawning and eggs are incubating/hatching in redds in the streambed.

### **Plants**

Assuming that the low end of the range of proposed weed treatments is implemented under any alternative, under Alternative C the highest rate of noxious weed spread is projected, therefore the threat of special status plant habitat loss could be greatest for this alternative. The protections afforded by RMZs for special status species dependent on riparian areas would be highest under this alternative. Dry forest, shrub, and grass treatments (7,550 acres per decade) to maintain or restore habitat of Lemhi penstemon, sapphire rockcress and lesser rushy milkvetch would be the least under this alternative: on the other hand the possibility of disturbing unknown populations would be reduced. Treatments of cool, moist forest types would be least under this alternative, which would cause the least amount of road construction thus reducing threats to species such as muskroot and Sitka columbine.

Oil and gas leasing NSO restrictions within 0.5 mile of known populations would provide the greatest amount of protection to them with the largest disturbance-free buffer.

### **Effects of Alternative D**

#### **Wildlife**

The effects from Alternative D to special status wildlife species would be the same as described under "Effects of Alternative D" in the general Wildlife section.

Dry forests are currently well outside the historic average of natural variability due to fire suppression and heavy historic grazing. The effects on special status wildlife species from treatments under Alternative D in dry forest would be the same as described under "Effects of Alternative D" in the general Wildlife section. Alternative D would restore the most acres of dry forest habitats for migratory birds, northern goshawks, flammulated owls, long-legged myotis, long-eared myotis, and fringed myotis compared to the other alternatives. The short-term impacts from disturbance would be greatest with this alternative but Alternative D would also pro-

vide the most long-term benefits of restoring habitat for dry forest species.

The effects on special status wildlife species from treatments under Alternative D in cool, moist forest habitats would be the same as described under “Effects of Alternative D” in the general Wildlife section. Alternative D would restore the most acres of cool, moist forest habitat for migratory birds, lynx, fisher, wolverine and bat species compared to all other Alternatives.

Like Alternative A, Alternative D would not have retention guidelines for snag and down woody habitat. Snag creation could occur in conjunction with vegetation management projects but snags would not be actively recruited in snag deficient areas.

Unlike Alternative A, snags that have been naturally created being through forest insects, disease, and fire would be retained, to some degree, under Alternative D. This would provide habitat for snag dependant species while still allowing some commodity forest product removal. Alternative D would retain substantially smaller patches of dead and dying forest than Alternatives B and C. Populations of special status species that depend on dead and dying forest would be at greater risk from the loss of nesting and foraging habitat with the implementation of Alternatives A and D than with Alternatives B and C.

Under Alternative D, the effects on special status wildlife species from treatments in grasslands and shrublands would be the same as described under “Effects of Alternative D” in the general Wildlife section. Alternative D would restore more acres of grassland and sagebrush shrubland habitat for migratory birds, golden eagles, ferruginous hawks, Swainson’s hawks, long-billed curlews, Brewer’s sparrows, mountain plovers, sage grouse, and pygmy rabbit compared to all other alternatives. The short-term effects from disturbance would be greatest under Alternative D.

Noxious weed management would have minimal negative impacts on special status species but could provide substantial beneficial effects. The effects on special status wildlife species from noxious weeds treatments under Alternative D would be the same as described under “Effects of Alternative D” in the general Wildlife section.

Fifty-foot SMZs would be implemented under Alternative D, the same as Alternative A. The effects from SMZs would be the same as described under “Effects Common to All Alternatives” and “Effects of Alternative D” in the general Wildlife section. Smaller riparian management areas proposed under Alternatives D and A, along with the types and extent to management activities allowed in SMZs, would reduce breeding, brood rearing, foraging, hiding cover and movement corridors for a wide range of special status species compared to Alternatives B and C.

Alternative D would actively restore the most acres of forest, riparian, grassland and shrubland habitats for special status species of all alternatives. The trade-off to habitat restoration would be an increase in short-term disturbance and the creation of new and temporary roads to access the Decision Area for vegetative treatments. An increase in temporary and, especially, permanent roads could cause detrimental effects to special status species but the effects would be less than under Alternative A.

Since Alternatives D and A would not have timing restrictions on prescribed burning (Alternatives B and C) or on mechanical treatments (Alternative C), these alternatives would have more mortality of migratory and resident birds during the breeding season through project implementation.

There would be fewer miles of open roads under Alternative D compared to Alternative A. Alternative D, however, would have more open roads than Alternatives B and C. The effects of roads on special status species would be the same as described under “Effects Common to All” and “Effects of Alternative D” in the general Wildlife section. Open road densities under Alternative D could result in fewer acres of year-round habitat and migration corridors, and more disturbance and displacement of wildlife, road kill, and fragmentation of habitat compared to Alternatives B and C.

Alternative D would provide less suitable habitat due to new road construction in occupied grizzly bear habitat than Alternatives B and C by allowing new permanent roads in areas where open road densities are greater than 0.5 mi/mi<sup>2</sup>. Grizzly bears under utilize habitat adjacent to roads and the addition of permanent roads in grizzly bear habitat could result in bears avoiding areas. Under this alternative, the BLM would emphasize reducing open road densities in areas where they exceed 1.5 mi/mi<sup>2</sup>. This would provide lower quality and less suitable grizzly bear habitat compared to Alternatives B and C but it would provide more habitat than Alternative A.

Alternative D would provide more acres of suitable habitat for grizzly bears and reduce the potential for human-bear interactions than Alternative A, but less than Alternatives B and C.

Through travel management, Alternative D would provide greater benefits to grizzly bears and other special status species by reducing fragmentation of habitats, protecting larger blocks of habitat, and reducing disturbance than Alternative A, but fewer benefits than Alternatives B and C.

Under Alternative D, there would be more acres open for cross-country snowmobile use (139,138 acres) than under Alternatives B and C but less than under Alternative A (no restricted areas). The negative affects due to cross-country snowmobile use to special status species would be greater under Alternative D than under Alternatives B and C but less than under Alternative A.

Like Alternative A, this alternative would not restrict clearing vegetation near special status bat habitat (caves and abandoned mines) and could lead to disturbance and detrimental alteration of these habitats.

Protection of breeding raptors from noise and other disturbances would be less restrictive with Alternative D than the other action alternatives with the implementation of a 0.25 mile buffer around active nests. Alternative D would provide greater protection from disturbance than Alternative A but would protect breeding raptors less than Alternatives B and C.

The protection of unoccupied raptor nests for 3 years and retention of suitable forested habitat within a 0.25 mile buffer around unoccupied nests would protect less habitat for raptors than under the other action alternatives but more than under Alternative A.

Like Alternative A, this alternative would not emphasize restoration of vegetation around bald eagle nest sites. This could have greater negative impacts than under Alternatives B and C.

The effects related to mineral development, including oil and gas would be the same as described under “Effects Common to All Alternatives” and “Effects of Alternative D” in the general Wildlife section.

All alternatives would have 12 stipulations to lessen the effects of oil and gas development on special status species (other stipulations that affect wildlife are described in the general Wildlife section) (Table 4-12).

Under Alternative D, these stipulations would include CSU for grizzly bear habitat and gray wolf den sites; NSO in and around prairie dog towns, sage grouse leks, bald eagle nest sites, other raptor breeding territories, peregrine falcon nest sites; and timing restrictions for sage grouse winter and spring range, sage grouse breeding habitat, bald eagle breeding habitat and ferruginous hawk nest sites.

The five areas with the most potential for oil and gas development in the Decision Area are located near the southern Deerlodge Valley, Sleeping Giant, Canyon Ferry, Bozeman, and Livingston. There is currently one known bald eagle nest site in the southern Deerlodge Valley area but it is well outside of any federal mineral estate lands. There are no known ferruginous hawk nests, peregrine falcon nests or other raptor breeding territories in this area. There is no known sage grouse habitat or prairie dog towns in this area. This area is not within the distribution or recovery zone of the grizzly bear and there are no known gray wolf den or rendezvous sites.

Currently, there are eight known bald eagle nests sites in the Sleeping Giant area and approximately 740 acres would be protected with a NSO stipulation. An additional 1,750 acres beyond the 0.5 mile bald eagle NSO would have a 2/1–8/31 timing restriction (same as Alternatives A and B). There are no known ferruginous hawk

nests, sage grouse habitat, or prairie dog towns in this area. There is one known peregrine falcon nest site outside of federal mineral estate lands but after buffering this nest site with a 1 mile buffer, approximately 30 acres would be protected with a NSO stipulation (same as Alternative B). Other raptor breeding territories in the Sleeping Giant area would be given minimal protection under Alternative D with Standard Lease Terms. This would be the same as Alternative A. Like Alternative A, approximately 2,600 acres are within occupied grizzly bear habitat and would have minimal protection with CSU. Under a CSU, there could be exploration and development but with some restrictions. There are no known gray wolf den or rendezvous sites in this area.

Currently, there are six known bald eagle nests sites in the Canyon Ferry area and approximately 330 acres would be protected with a NSO stipulation. An additional 1,100 acres beyond the 0.5 mile bald eagle NSO would have a 2/1–8/31 timing restriction (same as Alternatives A and B). There are no known ferruginous hawk nests, peregrine falcon breeding territories, sage grouse habitat, or prairie dog towns in this area. Other raptor breeding territories in the Canyon Ferry area would be given minimal protection under Alternative D with a Standard Lease Terms. This would be the same as Alternative A. The area is not within the recovery zone or occupied grizzly bear habitat and there are currently no known gray wolf den or rendezvous sites.

There are currently no known bald eagle nest sites, ferruginous hawk nests, peregrine falcon nests, sage grouse habitat, or prairie dog towns in the Bozeman area. Approximately 1,300 acres are within occupied grizzly bear habitat and would be minimally protected with a CSU stipulation. Under a CSU, there could be exploration and development but with some restrictions. There are no known gray wolf den or rendezvous sites in this area.

Currently, there are four known bald eagle nests sites in the Livingston area and approximately 40 acres would be protected with the NSO stipulation. An additional 300 acres beyond the 0.5 mile bald eagle NSO would have a 2/1–8/31 timing restriction. There are no known ferruginous hawk nests, other raptor nest sites, sage grouse leks/breeding habitat, or prairie dog towns in this area. There are, however, approximately 43 acres within sage grouse winter and spring habitat that would be protected with a 12/1-5/15 timing restriction (same as Alternatives A and B). There is one known peregrine falcon breeding territory in the Livingston area that would be protected with approximately 60 acres in a NSO stipulation. Approximately 100 acres are within occupied grizzly bear habitat and would be minimally protected with the CSU stipulation. There are no known gray wolf den or rendezvous sites in this area.

Decision Area-wide, there would be 2,600 acres surrounding bald eagle nest sites that would be protected with a NSO stipulation under Alternatives A, B and D (0.5 mile from nest). Three of the five areas with the

most potential for oil and gas development have bald eagle nest sites (1,110 acres) that would be protected with the 0.5 mile NSO stipulation (**Table 4-12**).

An additional 7,000 acres beyond the NSO boundary would be protected with a timing restriction of 2/1-8/31. This would provide the same protection as Alternatives A and B, but less protection than Alternative C which would have a 1 mile NL stipulation.

Currently in the Decision Area including the five areas with the most potential for oil and gas development, there would be 0 acres protected for ferruginous hawks (there are no known breeding territories). When located, ferruginous hawk breeding territories would be given more protection under Alternative D compared to Alternative A, but less than with Alternatives B and C.

Decision Area-wide, there would be 3,820 acres surrounding peregrine falcon nest sites with the NSO stipulation (1 mile). This would be the same as under Alternative B but more restrictive than under Alternative A. Two of the five areas with the most potential for oil and gas development currently have known nest sites (Sleeping Giant and Livingston) and a total of 90 acres would be protected with a NSO of 1 mile surrounding nest sites. Alternative D would provide more protection to peregrine falcons by reducing disturbance and preventing loss of habitat than Alternative A.

Currently, there are no known active prairie dog towns within the Decision Area (including the five areas with the most potential). When located, all alternatives would protect the actual prairie dog town with a NSO but only Alternative A would protect habitat around prairie dog towns for expansion of the town. Alternative A would provide more protection to prairie dogs than all other alternatives.

Within the Decision Area and the five areas with the most potential for oil and gas development there are no known sage grouse lek sites. However, across the Decision Area there would be approximately 2,800 acres of sage grouse breeding habitat located within 3 miles of lek sites protected with a timing restriction of 3/1-6/30. In the five areas with the most potential for oil and gas development, however, there is currently no known sage grouse breeding habitat. This alternative would provide the same amount of protection as under Alternative B, less protection than Alternative C but more than Alternative A. Decision Area-wide, there are approximately 67,000 acres within sage grouse winter and spring range that would be protected with a 12/1-5/15 timing restriction (same as Alternatives A and B). One of the five areas with the most potential for oil and gas development has a small amount of known sage grouse winter or spring range (43 acres) that would be protected with the timing restriction.

Currently in the Decision Area, there is only one known gray wolf den site. Approximately 700 acres would be minimally protected around this den site with a CSU

stipulation (1 mile from den or rendezvous site). Unlike Alternatives B and C, Alternatives A and D would not ensure that den and rendezvous sites are not disturbed from oil and gas exploration because some activity would be allowed near them.

Across the Decision Area, there are approximately 7,400 acres in grizzly bear recovery areas that would be protected with CSU (same as Alternative A). None of the five areas with high potential for oil and gas development are within the recovery zone of the grizzly bear. Approximately 54,000 acres are within occupied grizzly bear habitat and would be minimally protected with a CSU stipulation. Three of the five areas with the most potential for oil and gas development are within occupied grizzly bear habitat (Sleeping Giant and Livingston) and approximately 4,000 acres would have the CSU stipulation. Unlike Alternatives B and C, Alternatives D and A would not fully ensure that grizzly bears are free from disturbance or habitat loss from oil and gas exploration and development.

### ***Fish***

The effects described under “Effects Common to All Alternatives” and “Effects of Alternative D” in the general Fish section would be the same for special status fish species.

As with Alternative A, riparian areas would only be protected by SMZs under Alternative D. The SMZ would generally be 50 feet on both sides of the centerline of the stream. This SMZ would provide some protection to special status fish and would have the same effects as described under “Effects Common to All Alternatives” and “Effects of Alternative A” in the general Fish section. Since the width of the SMZs would be smaller than under Alternatives B and C and the management emphasis would not explicitly be to meet riparian goals and objectives, Alternatives A and D could detrimentally affect special status fish by allowing riparian and aquatic habitats to become degraded.

Under Alternative D, there would be an emphasis on maintain and restoring habitat for genetically pure and slightly hybridized (up to 10 percent) populations of westslope cutthroat trout. Alternative D would emphasize less protection and restoration of westslope cutthroat populations compared to Alternatives B and C but more than Alternative A.

Like Alternative A, this alternative would not emphasize the removal of brook trout and other non-native species that out-compete or breed with westslope cutthroat trout. Alternatives A and D would potentially allow more populations of westslope cutthroat trout to be lost from competition or hybridization compared to Alternatives B and C.

Alternative D would contain 2.7 miles of habitat for special status fish species in ACECs. This would be 46 percent less than under Alternatives B and C.

All alternatives would have five stipulations to lessen the effects of oil and gas development on special status fish (stipulations that effect fish are described under “Fish”) (**Table 4-13**). Under Alternative D, these stipulations would include: NSO adjacent to 99-100 percent genetically pure westslope cutthroat trout streams and bull trout streams; and CSU adjacent to Arctic grayling and westslope (90-99 percent pure) and Yellowstone cutthroat trout streams.

The five areas with the most potential for oil and gas development in the Decision Area are located near the southern Deerlodge Valley, Sleeping Giant, Canyon Ferry, Bozeman, and Livingston. In the southern Deerlodge Valley area, there is no habitat for Yellowstone cutthroat trout and Arctic grayling and no known habitat for 90-100 percent genetically pure westslope cutthroat trout. Lost Creek, a bull trout stream, flows outside of the southern Deerlodge Valley area but when a 0.5 mile NSO buffer is applied, approximately 32 acres adjacent to this stream in subsurface ownership would be protected from loss of habitat. This would be the same level of protection as under Alternative B, less protection than Alternative C and more than Alternative A.

In the Sleeping Giant area, there is no habitat for Yellowstone cutthroat trout, Arctic grayling, or bull trout and there is no known habitat for 90-99 percent genetically pure westslope cutthroat trout. However, there are approximately 700 acres adjacent to 99-100 percent genetically pure westslope cutthroat trout streams in this area that would be protected with a 0.5 mile NSO on either side of the stream (same as Alternative B). This would provide greater protection from loss of habitat compared to Alternative A.

In the Canyon Ferry area, there is no habitat for Yellowstone cutthroat trout, Arctic grayling, or bull trout and there is no known habitat for 90-100 percent genetically pure westslope cutthroat trout.

In the Bozeman area, there is no habitat for Arctic grayling, bull trout, or habitat for 90-100 percent genetically pure westslope cutthroat trout. There would be approximately 30 acres adjacent to streams with Yellowstone cutthroat trout that would be protected with a 0.5 mile CSU on either side of the streams. Alternative D would not ensure complete protection of Yellowstone cutthroat trout streams from loss of riparian habitat. Alternative D could also negatively impact upslope habitat that could affect riparian and aquatic functions to Yellowstone cutthroat streams. This alternative would provide the least amount of protection to Yellowstone cutthroat trout than the other alternatives because exploration and development would be allowed under a CSU stipulation. However, under a CSU stipulation, activity associated with oil and gas development could be relocated, require special design, or require on or off site mitigation measures to prevent impacts to Yellowstone cutthroat trout. This could provide some amount of protection to riparian and aquatic habitats as well as to water quality.

In the Livingston area, there is no habitat for Arctic grayling, bull trout, or habitat for 90-100 percent genetically pure westslope cutthroat trout. There would be approximately 900 acres adjacent to streams with Yellowstone cutthroat trout that would be protected with a 0.5 mile CSU stipulation. Alternative D would not ensure complete protection of Yellowstone cutthroat trout streams from loss of riparian habitat. Alternative D could also negatively impact upslope habitat that could affect riparian and aquatic functions to Yellowstone cutthroat streams. This alternative would provide the least amount of protection to Yellowstone cutthroat trout compared to the other alternatives because exploration and development would be allowed under a CSU stipulation.

Decision Area-wide, there would be 27,400 acres adjacent to streams with Arctic grayling that would have limited protection with a CSU stipulation under Alternative D (0.5 mile from either side of stream). None of the five areas with the most potential for oil and gas development have habitat for Arctic grayling. Habitat for Arctic grayling would have the least amount of protection under Alternative D because some exploration and development would be allowed within 0.5 mile of grayling streams. The effects from a CSU stipulation under Alternative D to fish and other aquatic species could range from minor to major and could have both short-term and long-term effects. Oil and gas operations can disrupt surface and groundwater flow patterns and have the potential to release pollutants to surface and groundwater, contaminating aquatic habitats. Both water and soil contamination may be harmful to riparian and wetland vegetation. Oil and gas development and associated activities could also lead to increased sedimentation and loss of riparian vegetation which could result in a loss of aquatic habitat for the Arctic grayling.

Across the Decision Area, there would be 2,200 acres adjacent to streams with 90-99 percent genetically pure westslope cutthroat trout that would have limited protection with a CSU stipulation under Alternative D (0.5 mile from either side of stream). None of the five areas with the most potential for oil and gas development have habitat for 90-99 percent genetically pure westslope cutthroat trout. Habitat for 90-99 percent genetically pure westslope cutthroat trout would have the least amount of protection under Alternative D because some exploration and development would be allowed within 0.5 mile of cutthroat trout streams. The effects from a CSU stipulation under Alternative D to fish and other aquatic species could range from minor to major and could have both short-term and long-term effects. Oil and gas operations can disrupt surface and groundwater flow patterns and have the potential to release pollutants to surface and groundwater, contaminating aquatic habitats. Oil and gas development and associated activities could also lead to increased sedimentation and loss of riparian vegetation which could result in a loss of aquatic habitat for the westslope cutthroat trout.

Decision Area-wide, there would be 11,000 acres adjacent to streams with 99-100 percent genetically pure westslope cutthroat trout that would have a NSO stipulation under Alternative D (0.5 mile from either side of stream). This would be the same as under Alternative B, less protection than Alternative C, but more protection than Alternative A. One of the five areas with the most potential for oil and gas development (Sleeping Giant) has habitat for 99-100 percent genetically pure westslope cutthroat trout and approximately 700 acres adjacent to these streams would be protected with a NSO stipulation (**Table 4-13**).

Across the Decision Area, there would be 7,100 acres adjacent to streams with Yellowstone cutthroat trout that would have limited protection with a CSU stipulation under Alternative D (0.5 mile from either side of stream). Two of the five areas with the most potential for oil and gas development (Bozeman and Livingston) have habitat for Yellowstone cutthroat trout and approximately 930 acres adjacent to these streams would be protected with the CSU stipulation. Habitat for Yellowstone cutthroat trout would have the least amount of protection under Alternative D because some exploration and development would be allowed within 0.5 mile of cutthroat trout streams.

Across the Decision Area, there would be 4,000 acres adjacent to streams with bull trout that would be protected with a NSO stipulation under Alternative D (0.5 mile from either side of stream). One of the five areas with the most potential for oil and gas development (southern Deerlodge Valley) has habitat for bull trout and approximately 32 acres adjacent to these streams would be protected with the NSO stipulation. Alternative D would provide more protection to bull trout than Alternative A, the same protection as Alternative B, and less protection than Alternative C.

Alternative D would provide the least amount of protection to Arctic grayling, westslope cutthroat trout, and Yellowstone cutthroat trout through the implementation of a CSU stipulation. Under a CSU stipulation, exploration and development could occur adjacent to streams although restrictions could be placed on the type and extent of development. Some protection would be provided under a CSU by restricting exploration and development along streams with special status fish species. Alternative D would have the greatest risks of increased sedimentation to streams, loss of riparian vegetation as well as a greater risk to an alteration of surface and subsurface flows compared to all other alternatives. The effects to bull trout would be the same as under Alternative B.

Under Alternatives A, B and D, westslope cutthroat trout would not be protected in the Muskrat and Nursery Creek drainages by a 180 acre mineral withdrawal in riparian areas. Muskrat Creek has importance to westslope cutthroat trout restoration beyond the local level because after a ten year, \$50,000 restoration effort,

its population is now used as a donor source to re-establish westslope cutthroat trout populations in a number of different locations throughout Montana. Without the withdrawal, the genetically pure westslope cutthroat trout population in Muskrat Creek could be threatened by the loss of riparian vegetation, streambed and bank destabilization, erosion and sedimentation, loss of floodplain vegetation, alteration of floodplain morphology, and alteration of stream channel morphology that could occur in association with locatable minerals activities, particularly placer mining. Another key impact that placer mining could have on westslope cutthroat trout is excavation, crushing, or disturbance of streambed gravels during the critical period of 6/1 to 8/31 when westslope cutthroat trout are spawning and eggs are incubating/hatching in redds in the streambed. If extensive mining impacts occurred in Muskrat Creek, it would likely not be possible to reclaim the stream adequately to re-establish the current population level of westslope cutthroat trout.

MFWP, BLM, USFS, and other entities are currently making efforts to restore westslope cutthroat trout (a sensitive species) populations in a portion of their historic, but currently unoccupied habitat in the Upper Missouri River basin. One goal of these efforts is to prevent a federal listing of this species under the Endangered Species Act. The Muskrat Creek westslope cutthroat trout population is used by MFWP as a donor source of fish to re-establish populations in other streams within and beyond the Planning Area boundaries. In this sense, the Muskrat Creek population is disproportionately important to westslope cutthroat trout restoration throughout the Upper Missouri River basin. If mining operations cause a decline in this population, the population may no longer be able to function as a donor source and efforts to restore other populations and prevent a federal listing of this species may be impeded.

### **Plants**

Assuming that the low end of the range of proposed weed treatments is implemented under any alternative, under Alternative D the second lowest amount of noxious weed spread is forecast of all alternatives (47,000 acres), therefore the threat of special status plant habitat loss to noxious weed invasion could be less than the other action alternatives. The protections afforded by SMZs for the forested riparian species Idaho sedge and small yellow lady's slipper would be less than the buffers proposed by Alternatives B and C. Dry forest, shrub and grass treatments (44,050 acres per decade) to maintain or restore habitat of Lemhi penstemon, sapphire rockcress and lesser rushy milkvetch would be the highest under this alternative.

Oil and gas leasing NSO restrictions of known plant populations would protect the population but would provide limited protection of habitat with no set disturbance buffer.

## WILDLAND FIRE MANAGEMENT

### Effects Common to All Alternatives

Proposed management of the following resources, resource uses, and programs would have no or negligible anticipated impacts on fire management: Recreation (except Travel Management), Wilderness Study Areas, Energy and Minerals, Social and Economics, Farmlands, Environmental Justice, and Tribal Treaty Rights.

Treating forests and woodlands to reduce pest and disease risk would generally lead to a reduction in fuels and possibly a change in fire regime condition class (FRCC) by moving condition class toward Class 1 or 2. Reducing fuels would improve suppression effectiveness and firefighter safety. These treatments would be particularly important in the wildland urban interface (WUI). Removing forest products following wildland fire would have the same effect.

Treatments that mimic pre-fire suppression conditions would change FRCC at the stand level, by moving conditions class toward Class 1 or 2 in dry forest types, and consequently reduce fire intensity and improve wildland firefighter safety. All treatments specified (timber harvesting, small-diameter thinning, prescribed burning) would reduce understory fuels and reduce the incidence of stand-replacing fires. Treatments in the WUI would have the same effect, improving wildland fire suppression effectiveness and making it safer for firefighters to suppress wildland fires.

Treatments to reduce stem densities would change FRCC at the stand level, by moving condition class toward Class 1 or 2 and would reduce fuels in the cool moist forest types.

Conifer encroachment would be reduced through treatments, which would move toward changing the condition class in grasslands and shrublands to historic conditions.

Promoting the development of late successional riparian vegetation and reducing conifer encroachment would improve FRCC because conditions would become more like historic conditions in these areas.

Prescribed burning and livestock grazing (including Land Health Standards) would reduce fine fuels, which increase fire spread; and reduce ladder fuels, which facilitate stand replacing fires. Leasing currently unleased allotments or vacant available lands could reduce fine fuels, but could contribute to an increase in FRCC if conifer encroachment also occurs.

Noxious weed treatments would reduce noxious weed infestations, which could change FRCC in areas where cheatgrass or knapweed are contributing to the departure from historic fire regimes.

Reducing the invasion and establishment of undesirable or invasive vegetation species would change FRCC or

maintain it at current levels. In some instances, such as with cheatgrass, extreme fire behavior would be reduced, which would reduce fuels and the risk to firefighters.

Fuels management treatments would reduce fuel loadings which would reduce the intensity and severity of wildland and prescribed fires. Reductions in severity of wildland fire would help prevent adverse affects on soil integrity and stability, root systems, and recovery of post-fire vegetation.

Maintaining or moving toward historic fire regimes and Condition Classes would reduce or maintain FRCC. In the dry conifer type, this would improve firefighter safety and reduce the hazard associated with wildland fire risk in the WUI. Prescribed fire, timber harvest and other mechanical methods, used to create a mosaic of successional stages for the benefit of special status species, would change Condition Class and reduce fuels and fire behavior which would improve firefighter safety. Where these treatments occur in the WUI, the risk to the WUI would benefit from the change in FRCC in grassland and dry conifer sites. Treatments in the WUI would be designed to reduce risks and hazards of wildland fire, and would not necessarily be designed to reduce FRCC (particularly in shrubland and cool, moist conifer types), or provide other resource benefits, although changes in FRCC and resource benefits could be a by-product.

Mitigations to protect some species could reduce the extent of treatment or result in methods used that are not as effective in fuel reduction or restoration. For example, even-aged management might be the most effective way to restore FRCC, but the presence of a special status species could require the size of the treatment to be reduced, patches to be left undisturbed or require more cover, which would reduce the effectiveness of the treatment.

Managing areas as Wilderness Areas or Wilderness Study Areas limits activities which would modify FRCC or fuels, however, access would be limited which could reduce the number of human-caused fires, as well as the spread of noxious weeds, which could increase FRCC. Fire suppression would be minimal in these areas.

Mitigating short-term impacts on visual resources could reduce the extent or effectiveness of treatments to reduce FRCC or fuels by limiting areas treated and types of treatment in order to meet visual goals.

Use of prescribed natural fire in ACECs could change FRCC and fuel loadings, as would controlling noxious weeds.

Restrictions applied to wildland fire management actions or wildland fire suppression for air quality protection or to minimize air quality degradation could reduce the effectiveness of treatments or suppression by eliminating some types of treatments (prescribed burning, logging).

For soil resources, mitigation or seasonal restrictions applied to wildland fire management actions or wildland fire suppression in areas already compacted or eroding could reduce the effectiveness of treatments or suppression by eliminating some types of treatments (prescribed burning, logging).

Using Land Health Standards to ensure water quality could also promote changes in FRCC and fuels. However, mitigation to avoid impacts on water quality could influence the location and extent of some fuel reduction treatments or wildland fire suppression, which could result in less effective treatments or direct suppression by reducing the acres treated or switching to a less effective suppression tactic.

Designing wildland fire management projects, including suppression and fuel reduction to avoid disturbance of historic properties could reduce their effectiveness in some instances.

Granting right-of-way, road use agreements, permits, and leases on public lands could increase access or use by the public, which could result in more human-caused fire ignitions.

Disposal of lands which are difficult or uneconomical to manage would promote efficiency in BLM's fire management program, including reduction of FRCC and fire suppression. Overall fire suppression access would be improved if these lands were disposed of. These tracts are often within the WUI, so disposal would reduce the BLM's responsibility for WUI lands.

Access management for lands and realty would promote gaining additional access, including acquiring additional lands. Additional access would provide better access for fire suppression, but also may improve public access, which could lead to additional human caused fires. Acquiring additional acres could increase the acres of WUI, or lead to additional acres with a higher FRCC.

## Effects of Alternative A

Vegetation management actions (including salvage, timber harvesting, prescribed burning, small-diameter thinning, and thinning) would reduce densities of seedlings, saplings, and pole-sized trees and remove ladder fuels and other fuels to reduce the intensity of fires and to prevent wildland fires from spreading to the crowns of larger trees.

Fire suppression strategies under this alternative would allow for some flexibility to manage wildland fires, but a large percentage of fires could be controlled while still small in size.

Most BLM land in the Butte Field Office (258,200 acres, 85 percent) would be managed as Fire Management Category C. Fire and non-fire fuels treatments may be utilized to ensure constraints are met and to reduce undesirable effects of unplanned fires. Fuels reduction actions, including mechanical treatments and prescribed

fire, would result in reduced wildland fire intensity and less potential for unwanted fires.

Alternative A would treat up to 12,780 acres per decade to reduce fire intensity and behavior, improve wildland fire fighter safety, and change FRCC. Compared to the rest of the alternatives, only Alternative C treats fewer acres.

In Alternative A Recreation Opportunity Spectrum (ROS) would be determined on a case by case basis. This would provide for the most flexibility for designing and planning fuels projects.

Alternative A has the second fewest acres designated in VRM Class I and II. This would provide for more flexibility for designing, planning, and implementation of fuels projects as compared to Alternatives B and C.

Sleeping Giant ACEC (11,679) management to protect naturalness and primitive recreation, along with no fire-wood removal of down dead and down material would affect fire management, particularly mechanical fuel reduction. Prescribed burning however could be used to reduce fuels and FRCC.

There are no seasonal timing restrictions for prescribed fire or mechanical treatments in this alternative. This would provide for the most flexibility for implementation of fuels treatments.

## Effects Common to Action Alternatives

Wildland urban interface would be the top priority for hazardous fuels treatments. Those areas outside of WUI would be prioritized for treatment based on the historical fire regime and current condition classes. Funding for treatments within WUI and other fire dependent ecosystems would remain constant, and project level collaboration and coordination would continue with other agencies.

Fuels reduction in the WUI would result in removal of trees and shrubs to reduce the hazards associated with high intensity and severity wildland fires. Fuels reduction would decrease the density of trees and ground fuels and would result in reduced fire intensity and resistance to control.

Management to maintain fire-dependent ecosystems with fire regimes consistent with pre-suppression conditions would help maintain lower fuel levels and a reduced potential for high-severity fires.

Prescribed burning, mechanical treatments, and other appropriate methods would move toward restoring FRCC in grassland communities to historic conditions.

Meeting Land Health Standards equates to reducing or maintaining FRCC levels.

Emphasizing old forest structure (snag/down wood components and large diameter trees) could reduce the effectiveness of fire management actions, particularly in

the WUI where goals to retain old forest structure and fuel reduction goals may be in conflict.

Using FRCC to determine levels of fuel treatment outside the WUI would ensure that treatments maintain or move toward changing FRCC levels. In dry conifer and grassland types this would result in less intensive fire behavior. In cool, moist forest and riparian types, they could reduce fire behavior, but not necessarily.

Seasonal timing restrictions for big game winter and spring range, big game calving and grizzly spring and summer range could complicate the spring and early summer prescribed burning season and require additional mitigation.

## Effects of Alternative B

Effects of fire management activities in Alternative B would be the similar to those described under Alternative A. However, no Fire Management Units (FMUs) would have any Category A designated lands, so prescribed fire could be used throughout the Decision Area (given other resource constraints).

Fire suppression under this alternative would be similar to Alternative A except it would allow for more flexibility to manage fires with no FMU Category A designations.

Relative to the rest of the alternatives, Alternative B would treat the second most acres (up to 34,650 acres per decade) to reduce fire intensity and behavior, improve wildland fire fighter safety, and maintain or move toward historic FRCC levels.

In Alternative B Recreation Opportunity Spectrum (ROS) would place 36,800 acres in Semi-primitive non-motorized. This could limit the flexibility for designing and planning fuels projects and implementing fire suppression. This may limit the opportunities and effectiveness of to reduce fire intensity and behavior, improve wildland firefighter safety, and change FRCC.

Alternative B would have the 75,100 designated in VRM Class I and II. This could limit the effectiveness and flexibility for designing, planning, and implementation fuels projects on those acres. This may limit the opportunities and effectiveness to reduce fire intensity and behavior, improve wildland fire fighter safety, and change FRCC, especially in areas of wildland urban interface.

There are seasonal timing restrictions for prescribed fire in this alternative. This may cause delays, increase costs, and possibly decrease effectiveness in reducing fire intensity and behavior, improving wildland fire fighter safety, and changing FRCC.

## Effects of Alternative C

Alternative C would treat the fewest acres (up to 8,200 acres per decade) relative to the rest of the alternatives and therefore would do the least to reduce fire intensity

and behavior, improve wildland fire fighter safety, and change FRCC.

Based on the acres of anticipated treatment and the percentage of the FMUs in Category A, it is estimated that a maximum of 100 acres per decade of treatments using fire could be eliminated in the Central Missouri FMU. The majority of these treatments would have occurred in dry forest and grassland types. The Missouri FMU includes approximately 37,000 acres of the 147,000-acre Missouri watershed. In Alternative C a maximum of 4,425 acres of treatment would occur in this watershed, indicating there would be no impact on the overall treatment planned because all fire treatments could occur in the remainder of the watershed designated as Category B or C. The Blackfoot (1,000 acres) and Gallatin (2,000 acres) FMUs are also designated as Category A, but in Alternative C, no treatments would occur in these watersheds.

Most BLM land in the Butte Field Office (approximately 243,000 acres, 79 percent) would be managed as Fire Management Category C. These areas would receive lower suppression priority in multiple wildland fire situations. Fire and non-fire fuels treatments may be utilized to ensure constraints are met and to reduce hazardous effects of unplanned fires. Fuels reduction actions, including mechanical treatments and prescribed fire, would result in more open forests, dominated by larger trees, with less potential for unwanted ignitions of intense wildland fires.

In Category A and B areas, fire suppression is a high priority to prevent unacceptable resource damage or to prevent losses of life or property.

Fire suppression strategies under this alternative would allow for the least amount of flexibility to manage fires, but more fires could be controlled at smaller sizes.

The flexibility of fire management strategies in Wilderness Study Areas under Alternative C would allow opportunities to manage larger fires for resource benefits.

In Alternative C Recreation Opportunity Spectrum (ROS) would place 63,700 acres in Semi-primitive non-motorized; the most acres of all the alternatives. This could limit the flexibility for designing and planning fuels projects and implementing fire suppression. This may limit the opportunities and effectiveness to reduce fire intensity and behavior, improve wildland fire fighter safety, and change FRCC.

Alternative C has the most VRM Class II lands (62,300 acres) of any alternative, which may affect the extent of some fire management actions and fuel treatments.

This may limit the opportunities and effectiveness to reduce fire intensity and behavior, improve wildland fire fighter safety, and change FRCC especially in areas of wildland urban interface.

This alternative has the greatest level of seasonal timing restrictions for prescribed fire and mechanical treatments. This may cause delays, increase costs, and possibly decrease effectiveness in reducing fire intensity and behavior, improving wildland fire fighter safety, and changing FRCC.

## Effects of Alternative D

Alternative D would treat the most acres (up to 50,850 acres per decade) relative to the rest of the alternatives and therefore would do the most to reduce fire intensity and behavior, improve wildland fire fighter safety, and move toward historic FRCC levels.

Most BLM land in the Butte Field Office (approximately 265,000 acres, 86 percent) would be managed as Fire Management Category C or D, which are areas where fire is desired to manage ecosystems. These areas would receive lower suppression priority in multiple wildland fire situations. Fire and non-fire fuels treatments may be utilized to ensure constraints are met and to reduce hazardous effects of unplanned fires.

Fire suppression strategies under this alternative would allow for the most flexibility to manage fires with a smaller percentage of fires controlled at smaller sizes.

Flexibility in fire management strategies in Wilderness Study Areas would allow opportunities to manage larger fires for resource benefits.

Alternative D has the least VRM Class II lands (13,000 acres) of any alternative, which may affect the extent of some fire management actions and fuel treatments.

In Alternative D Recreation Opportunity Spectrum (ROS) would place 30,000 acres in Semi-primitive non-motorized. This could limit the flexibility for designing and planning fuels projects and implementing fire suppression. This may limit the opportunities and effectiveness of efforts to reduce fire intensity and behavior, improve wildland fire fighter safety, and change FRCC.

There are no seasonal timing restrictions for prescribed fire or mechanical treatments in this alternative. This would provide the most flexibility for implementation of fuels treatments.

## CULTURAL AND PALEONTOLOGICAL RESOURCES

### Effects Common to All Alternatives

Since most resource uses/programs are discretionary, management measures under all alternatives include inventories to identify cultural and paleontological resources to allow for avoidance or mitigation of impacts. The greatest risk of damage or destruction of cultural resources across all alternatives results from non-discretionary development, casual, unauthorized activities (such as dispersed recreational activity, OHV use, and vandalism) and natural processes (natural decay,

deterioration, or erosion). Under all alternatives, unquantified indirect impacts would occur. Cultural resources would continue to deteriorate through natural agents, unauthorized public use, and vandalism.

Achieving the Desired Future Condition for vegetation in riparian/wetland areas would be positive for cultural resources. Protection of cultural resources that occur in these fragile environments increases proportionately with the increase in the percent improvement towards DFC of riparian/wetland habitats.

Archeological sites in the same locations as livestock congregation areas are vulnerable to trampling. Historic buildings and sometimes rock art sites are vulnerable to livestock entry and rubbing. Grazing management which meets established Standards for Rangeland Health and Guidelines for Livestock Grazing should reduce the amount and extent of impacts or damage to cultural resources resulting from grazing on public lands.

All classes of cultural resources are vulnerable to impacts from timber harvest activity due to ground disturbance. The Butte Field Office has more sites recorded in the dry forest class than any other vegetation type. Sites located in cool forest types, grasslands and riparian areas are less vulnerable because of fewer proposed management actions. Activity in sagebrush areas fall in between the dry forest regimes and other vegetation classes. Inventories performed at the activity planning level would insure avoidance of known sites and localities from timber harvest and fuel management activities.

Threats to all classes of cultural resources from prescribed fires can be reduced with the proper use of protective measures. Sites vulnerable to fire damage will receive an evaluation prior to lighting, and if determined eligible, will receive protective measures as described in the burn plan for each project. In order to maximize the potential for locating vulnerable sites, BLM will focus on-the-ground inventory in both low and high-potential areas and also in areas where cabins and campsites are more frequently found. Survey will additionally be directed toward areas that contain historic mining properties. Based on the information recovered from these inventories, appropriate protective measures will be employed to reduce the potential risk from prescribed fire to vulnerable sites.

In some instances, cultural or historic sites would be damaged or destroyed by wildfire suppression efforts critical to protect human life or property. Under standard protocols, impacts to known cultural resources would be considered and mitigated. Rehabilitation efforts would generally increase the protection of cultural deposits that may have remained unaffected from wildland fire by preventing or reducing erosion and encouraging rapid revegetation of denuded surfaces. Potential impacts from rehabilitation activities (such as mechanical reseeding) would be mitigated under standard procedures.

The issuance of rights-of-way, leases and permits that result in ground disturbing activities have the potential to directly or indirectly impact cultural resources but impacts would be mitigated under standard avoidance or recovery procedures.

Acquisition of new land parcels would have a mixed effect on cultural and paleontological resources. On the one hand, more sites under the protection of federal preservation laws may be acquired. However, increasing access to public lands could have an indirect effect of exposing cultural resources to increased damage from illegal collection of artifacts and vandalism.

Impacts from dispersed recreational activity (camping, hiking, horseback riding, mountain biking, OHV use, rock climbing, etc.) are difficult to assess, particularly as such activities may impact cultural resources that have yet to be identified and recorded. Increased visitation and recreational use can lead to the illegal collection of artifacts and vandalism. Providing recreational or public interpretation of cultural and historic resources, such as those on the Lewis and Clark National Historic Trail, may enhance appreciation and understanding of the fragile and finite nature of cultural resources. Similarly, promoting the adaptive reuse of historic buildings and structures for recreational purposes would help preserve and protect significant historic properties, helping fulfill the requirements of Section 110 of the NHPA.

Under all alternatives, wheeled, motorized travel would be restricted to designated roads and trails throughout the majority of the Decision Area, thus reducing the potential for impacts caused by unregulated off-road travel. The potential for impacts to cultural resources is proportional to the number of miles open for travel in the Decision Area. Unimproved two-track roads and trails designated for use cut through sites, scattering and breaking artifacts and causing erosion problems. The noise level and presence of people can impact the use of traditional cultural properties by Native Americans in some instances.

Cultural resources would benefit directly from BMPs for visual resource management. Limiting visual intrusions preserves the setting of sites, which is especially important for cultural properties of religious importance to Indian tribes. SRMAs also provide intangible protection for sites with religious importance by providing enhanced visibility and solitude, as well as quieter environments.

Developing new, or upgrading existing, transportation facilities could result in the permanent mitigated loss of cultural resources. Again, increased accessibility to resources could lead to vandalism and unauthorized collection of artifacts, but conversely, could also facilitate the use of traditional locations by Native Americans.

The number of roads open or closed presents a mixed impact to cultural or paleontological resources. The maintenance and upgrades of those roads do present the

potential for adverse effects to the sites and localities located in the area of disturbance; however less use on closed roads would halt current damage, and reduce the threat of future damage to sites.

Construction of new travel routes, or diking/ripping of decommissioned routes, threaten buried cultural deposits. However, regardless of the alternative, the first priority of planning is to preserve known sites by avoidance; therefore all proposed new travel routes, or routes that need to be diked or ripped for any reason, would be inspected first. This would enable travel plans to incorporate design alternatives and avoid disturbance to cultural resources.

Abandoned Mine Lands (AML) reclamation and remediation would have a direct impact to historic mining features and properties that may be mitigated by a number of methods. Remediation of open mines for safety purposes could have less impact using light construction that leaves most of the feature intact. In more comprehensive project areas, construction may be more intensive and require additional, more intensive data recovery.

Permitting for locatable minerals is non-discretionary and can result in total loss of cultural resources in the Area of Potential Effect. Inventory and planning can help save some properties, but remaining eligible properties would require some form of data recovery, depending on the use category assigned to the site.

Surface disturbing activities associated with leasable mineral sales and energy exploration and development could result in mitigated impacts to cultural resources. In addition, the potential for indirect and inadvertent impacts would increase proportionally to the amount of land available for mineral leasing and development.

No Surface Occupancy stipulations for oil and gas leasing and field development would help protect eligible cultural resources, traditional cultural properties and paleontological localities in the area.

Land use authorizations and land exchanges place resources at risk from development and also from loss of federal protections when those properties leave federal ownership.

### ***Paleontological Resources***

Management measures common to all alternatives would preserve and protect paleontological resources for present and future generations. The protective measures outlined for cultural resources would also be applied to any paleontological localities located during planning inventories, as per BLM Manual (8720). Unavoidable adverse effects would be mitigated through specimen recovery and analysis by permitted paleontologists in keeping with the significance of the locality.

## Effects of Alternative A

Vegetation treatments under Alternative A would have a moderate impact on cultural resources, because this alternative would not reflect the high-end acreages proposed for vegetation treatments. Sites known to be in project areas, and those recorded in project areas during inventories, would be avoided during implementation.

The number of acres under VRM Class I would remain the same throughout all alternatives, but the number of acres in Class II in Alternative A would be much lower than Alternatives B and C. Since Classes III and IV would be managed on a case-by-case basis, it is not possible to determine if this alternative is more protective of visual resources than the others. Many more traditional cultural properties may or may not be adversely affected by this alternative, since the restrictions cannot be anticipated.

Alternative A would have the highest number of open roads and the lowest number of closed roads. More resources, both cultural and paleontological, would be impacted from increased access by motorized vehicles than with the other alternatives.

## Effects Common to Action Alternatives

Increasing the number of acres of forest treatments would place more cultural resource sites and paleontological localities at risk.

The effects of designating varying fire use polygons cannot be directly measured, since suppression efforts can both help and harm cultural resources. Variable fire use polygons would have mixed effects on cultural resources. For example, traditional fire suppression efforts may damage buried cultural deposits in the process of protecting historic buildings with dozer lines. Since suppression efforts would be eliminated in Category D polygons, proactive inventories would help limit the potential for adverse effects on historic properties during wildfire events by altering suppression plans. Buried sites are less vulnerable than sites exposed on the ground surface, but high fire temperatures may still cause various physical alterations to artifacts and natural remains.

Development of recreation sites may have an adverse effect on cultural and paleontological resources. Those adverse effects would be mitigated by avoidance through redesigning the project, or data recovery if the site or locality could not be avoided.

Road closures would have a beneficial effect on cultural and paleontological resources from reduced compaction, reducing exposure of resource deposits from the unrestricted development of two-track roads, and reduced chances of vandalism from access to remote areas with vehicles.

Designating the Humbug Spires, Sleeping Giant, Sheep Creek, and Elkhorns Tack-on WSAs as ACECs under all action alternatives would protect cultural and paleonto-

logical resources in these areas, due to greater restrictions placed on ground-disturbing activity.

Since the value of many traditional cultural properties is based on a high level of air quality and a natural appearance to the landscape, dropping the Black Sage and Yellowstone Island VRM Classes from I to II (in the event Congress eliminates them from wilderness consideration) would present an adverse effect to traditional cultural properties in the viewsheds of these two areas. Increasing the amount of Class IV acreages would be detrimental to traditional cultural properties in those viewsheds.

Public education is enhanced from interpretive efforts planning for the Elkhorns ACEC.

Disposal of the approximately 8,901 acres identified for disposal under all action alternatives could place approximately 24 cultural resources at risk, as per the site dispersal average for the Decision Area. Inventory and evaluation on a case-by-case basis would alleviate that risk.

The two energy corridors that would be designated under all action alternatives received considerable mitigation measures prior to construction. Adding utilities to these corridors would not impact cultural or paleontological resources.

Oil and gas leasing and resource development does not differ significantly enough between alternatives. This activity would put both cultural and paleontological resources at risk and would require site-specific mitigation. This would be done through project redesign and avoidance where possible, and if the resources cannot be avoided, data recovery would be used. Stipulations attached at the time of leasing, and again prior to development as part of the overall NEPA process, would protect prehistoric sites, traditional cultural properties, and paleontological localities.

## Effects of Alternative B

Increasing the amount of decadal vegetation treatments in both the dry forest and shrubland types may affect a proportional number of sites. However, inventories performed ahead of project implementation would mitigate the impacts to cultural resources. Increasing the number of acres managed at VRM Class II would improve the visual quality of traditional cultural properties in those viewsheds.

Protecting soils would protect valuable deposits of both paleontological and cultural resources. More cultural and paleontological resources would be threatened under Alternative B than under Alternative C from higher levels of ground disturbing activities. This would also be the case for travel management under Alternative B where decommissioned roads that may require ripping or additional blade work.

## Effects of Alternative C

Under Alternative C, upper-end acreages of proposed dry forest treatment acres would put fewer cultural and paleontological resources at risk than in any other alternative due to the significantly lower amount of ground disturbance from treatment activity. Visual resource management in this alternative would be the most beneficial to traditional cultural properties where the viewshed is an integral component of the value of the site. While Alternative C would not increase the acreage managed under VRM Class I, it would provide for the greatest increase in acres managed under Class II and Class III, and the fewest acres managed under Class IV; and as such, would allow the fewest intrusions into the natural viewsheds remaining in the Decision Area.

Traditional cultural properties would benefit most from the lowered development/disturbance scenario in Alternative C. Less activity would result in less noise and visual impacts, as well as disturbance from other public land users. Alternative C would also result in the fewest consultations with Native American tribal governments. Alternative C would create the least risk overall to cultural and paleontological resources due to its lowest proposed amount of development and soil disturbance.

## Effects of Alternative D

Under Alternative D, upper-end increases in proposed forest treatment acres would put more cultural and paleontological resources at risk than under the other three alternatives.

Visual resources managed under Alternative D would undergo more impacts than under either Alternative B or C, especially from a substantial drop in VRM Class II lands. The acres managed as VRM Class IV under Alternative D would be much higher than this acreage under Alternative C, but not much higher than under Alternative B. The Alternative D pattern of visual resource classes would have a more negative impact on traditional cultural properties that depend on the quality of the viewshed compared to Alternatives B and C.

Cultural and paleontological resources would be most vulnerable under Alternative D because of the increased risk of disturbing subsurface deposits. However, since avoidance of known sites is BLM policy, it does not necessarily follow that development would result in an increased amount of damage to cultural resources, paleontological localities, and traditional cultural properties. Because both resources are at greatest risk under alternative D than any other alternatives, more project-level planning and/or mitigation would be required with this alternative than with any of the other alternatives.

## VISUAL RESOURCES

### Effects Common to All Alternatives

Timber cutting and thinning could reduce the visual quality temporarily with regard to apparent modifications in color, line, and texture especially in sensitive viewing areas; however, projects would be designed to meet VRM classification objectives. Management in dry forest types would present the most potential for impacts on VRM objectives, as treatment acres would be the most extensive for this type.

Management in cool moist forests would generally be aimed at maintaining a diversity of age-classes (uneven-aged management). Generally, visual resource values could be maintained while selective cutting treatments are accomplished. An exception is lodgepole pine stands, which would require more even-aged management or clearcuts and therefore a higher potential for noticeability. Treatments that have long-term impacts on visual quality would be designed or mitigated to meet VRM objectives. Some treatments may be precluded if they are proposed in VRM Class I and II areas.

There may be some short or mid-term reductions in overall visual quality due to vegetation management actions in VRM III and IV areas. Because VRM would be considered during project planning, the overall VRM would be met over the long-term, but some activities (cutting or burning) may be visible during the short-term.

Protection and enhancement of riparian conditions would generally improve visual resources over the mid to long-term due to greater color and texture diversities and overall healthier appearances.

Limiting the spread of noxious weeds would be beneficial as the natural appearance of landscapes would be enhanced.

Wildland fire suppression and management actions for fire (wildland fire use, prescribed fire, and fuel reduction) may result in a short-term reduction in visual quality, however, these actions would promote long-term benefits as fewer acres would burn in an uncharacteristically large or severe manner. In addition to reducing the potential for severe wildland fires, these actions could also benefit visual resources by creating open vistas and more diverse landscapes with park openings and interspersed shrubs and trees. Due to fire suppression priorities and vegetative treatments, areas outside of the Wildland Urban Interface (WUI) would see more visual effects from wildland fire than those within the WUI.

Protection of Wilderness Study Areas, eligible Wild and Scenic River segments, ACECs, and National Trails would maintain visual resources and meet VRM objectives barring large-scale wildland fire events, substantial outbreaks of insect/disease occurrences to trees, or other natural alterations.

Following BLM Handbook H-8341-1 and mitigating short- and long-term visual impacts would help protect visual quality.

VRM I and II classifications would do the most to protect visual quality in the Decision Area and reduce the risk of visual quality impacts compared to other VRM classes. Alternatives with the most acres in VRM I and II would be the most protective of visual quality. VRM III and IV classifications would have the most potential to put visual resources at risk.

Minimizing or preventing air quality degradation would benefit visual quality by reducing the risk of degraded air quality (smoke obstructing viewpoints, etc.).

Depending on where land exchanges, ownership adjustment, or disposal occur, visual quality could be improved or negatively impacted. Negative impacts could occur where open, undeveloped tracts of land are disposed of and later developed.

Although VRM would be considered in land use authorization and access decisions, there is the potential for rights-of-way allocations to impact visual quality due to related disturbances with road building, vegetative removal, and new improvements.

Project proposals for mineral and energy exploration and development would be managed to prevent unnecessary and undue degradation; however, these activities could affect visual resources within the Planning Area. Mineral development outside special management areas could result in undesirable visual effects. These effects may be long-term. However, reclamation plans would consider visual restoration, so effects may not be permanent.

Restoring abandoned mines would improve visual quality in the areas where these disturbed sites are reclaimed and vegetated.

## Effects of Alternative A

Approximately 5,250 acres per decade of vegetation treatment activities in grasslands and shrublands would continue to pose potential impacts to visual resources due to modifications in color, texture, and form. Some vegetation management actions could cause short-term negative impacts while long-term effects would be enhanced due to improved vegetation conditions and reduced wildfire risks.

Timber harvesting and salvage would be designed to meet established VRM objectives, so there would be minimal effects on visual resources except in limited situations where such actions were noticeable.

Although prescribed fire would be designed to meet VRM objectives, there would be potential for short to mid-term impacts on visual quality. These actions would ultimately lower the long-term risk for large-scale wildland fires. Wildland fire is considered a natural event (not human-caused fires) but it also changes the current

condition of the visible landscape; therefore, wildland fire in VRM Class I and II areas could adversely impact visual resources to the greatest extent.

Discouraging timber cutting immediately adjacent to clearcuts, as required in elk management guidelines, would discourage the softening of edges that could be used to mitigate visual impacts created by clearcuts in noticeable areas. Conversely, this stipulation would benefit visuals in that additional adjoining clearcuts with large-scale modifications to the landscape would be prevented.

Continued management of six WSAs under Interim Management Guidelines would result in approximately 31,500 acres managed as VRM Class I.

Protective management on the Missouri River and Moose Creek eligible Wild and Scenic River segments would provide long-term visual resource protection and is important given that one of their outstanding remarkable values is Scenic. Current management of the major river corridors including the four eligible WSR segments would result in about 25,400 acres protected as VRM Class II. This classification would ensure that these sensitive viewsheds and their visual values would be retained. Since the Headwaters RMP did not distinguish between VRM Class III and IV areas, project-specific distinction would create increased workloads for visual management during project level planning.

Because Recreation Opportunity Spectrum (ROS) class has a component of VRM, not classifying ROS under Alternative A puts maintaining VRM to meet public preferences at a higher risk in the undesignated Class III and IV areas.

Management classes assigned to specific areas determine the amount of mitigation necessary to protect visual resources, which would allow at least partial modification of the landscape in nearly 81 percent of the BLM surface acres (VRM Class III and IV areas).

Areas withdrawn from mineral entry (6,300 acres) would continue to protect visual resources from locatable mineral actions. Impacts from salable mineral actions could potentially impact visual resources over the short and mid-term until reclaimed due to vegetative removal and excavation contrasts. The Controlled Surface Use oil and gas leasing stipulation for mapped VRM Class II, III, and IV areas would minimize visual impacts on 248,849 acres under Alternative B. However, of these 248,849 acres, approximately 66,962 acres would be even more protected from visual impacts due to being overlapped by other NSO stipulations or No Lease areas.

## Effects Common to Action Alternatives

There may be some short or mid-term reductions in overall visual quality due to grassland and shrubland treatments in VRM Class II and III areas. Because VRM objectives would be considered during project planning,

the overall VRM class objectives would be met, but some activities may be visible.

Maintaining residual stands that survive large-scale disturbance events would maintain visual quality.

Prevention of noxious weed invasion would maintain visual quality along roads, trails, urban interface areas, and recreation sites.

Thinning adjacent to clearcuts would not be discouraged, leaving open the opportunity to mitigate existing and future “hard edges” created by clearcuts if needed to improve visual quality and meet VRM objectives.

Meeting Land Health Standards on existing or future developed recreation sites would improve visual quality.

Continuing to manage the Sleeping Giant area as an ACEC would result in 11,679 acres of VRM Class II protection.

WSAs removed from wilderness consideration by Congress and not designated as ACECs (Black Sage and Yellowstone River Island) would see a reduced level of protection for visual quality. These lands are currently in VRM Class I, and in the future would be managed as VRM Class II.

Reseeding disturbed areas would maintain or improve visual quality.

## Effects of Alternative B

Effects from the management of dry forests described above under “Effects Common to All Alternatives” would occur on up to 14,750 acres per decade in this alternative.

Treatment of up to 15,450 acres per decade of grassland and shrubland habitat could create short to mid-term impacts to visual quality due to changes in color and texture. Short to mid-term impacts would promote long-term visual benefits due to the reduced potential for large-scale wildland fires resulting from these treatments.

Designating approximately one third of the Decision Area lands as ROS semi-primitive non-motorized, and semi-primitive motorized would provide additional management direction for protection of visual resources since new developments would not be compatible with these settings and a management emphasis would be made to retain the natural character of these areas.

Effects from potential mining activity on visual resources would be similar to those described for Alternative A. Actions lowering potential impacts under Alternative B compared to Alternative A, are that open road mileage would be reduced, 198 additional acres would be recommended for withdrawal from locatable mineral entry, and 13,968 fewer acres would be open to oil and gas leasing subject only to standard lease terms. However, Alternative B would still have 18,404 more acres

open to oil and gas leasing than Alternative A. The Controlled Surface Use oil and gas leasing stipulation for mapped VRM Class II, III, and IV areas would minimize visual impacts on 248,849 acres under Alternative B. However, of these 248,849 acres, approximately 87,765 acres (20,803 more acres than under Alternative A) would be even more protected from visual impacts due to being overlapped by other NSO stipulations or No Lease areas. This would be more protective than Alternatives A and D (where standard lease terms would apply), but less protective than Alternative C.

An additional 23,500 acres would be classified as VRM Class II (compared to Alternative A) due to adjustments made for sensitive visual areas primarily along major rivers. This classification would prevent basic element changes to the landscapes that are evident. Acres by VRM Class are displayed in **Table 4-14**.

VRM Class	Alternative A	Alternative B
I	31,500	31,500
II	25,400	48,900
III	250,400*	125,200
IV	N/A	101,700

\* VRM III and IV are combined in Alternative A

## Effects of Alternative C

Effects from management of dry forests would be the same as described under “Effects Common to All Alternatives” on up to 4,800 acres per decade, the least of any alternative.

Effects from management of cool, moist forests would be the same as described under “Effects Common to All Alternatives” on up to 550 acres per decade, the least of the alternatives.

Up to approximately 2,750 acres of grassland and shrubland vegetation treatment would be proposed in Alternative C. Effects on visual quality would be the same as described under Alternatives A and B although to a lesser extent. Alternative C would provide for the lowest number of grassland and shrubland treatment acres of any alternative.

The quantity of forest products removed and new roads constructed to support management for forest products would be the lowest of any alternative and therefore visual resources would be least impacted by these activities of any alternative.

Alternative C would provide for the highest acreages (125,300) to be managed as semi-primitive non-motorized and motorized ROS classes and therefore would provide greater protection for visual resources than any other alternative.

Effects from WSA and ACEC management would be similar to those of Alternative B. However the recommendation that all four eligible Wild and Scenic River segments be found suitable in Alternative C would potentially provide the greatest protection of visual resources of all alternatives in these areas since visual disturbances would be minimized.

Under Alternative C, adverse effects of energy and mineral exploration and development on visual resources would be the least of all alternatives. Supporting roads could not be constructed within riparian areas. Approximately 580,382 acres (approximately 89 percent of Decision Area total) would not be open to oil and gas leasing. The Controlled Surface Use oil and gas leasing stipulation for mapped VRM Class II, III, and IV areas would apply to 246,118 acres. However, of these acres, approximately 224,294 acres would be even more protected from visual impacts due to being overlapped by other NSO stipulations or No Lease areas. This would be the most protective of all alternatives. Salable mineral uses would be limited to existing community pits unless needed by the state or counties. Approximately 378 acres would be recommended for locatable mineral withdrawal.

Overall Alternative C provides the most protection to visual quality (Table 4-15) of all the alternatives.

VRM Class	Alternative A	Alternative C
I	31,500	31,500
II	25,400	67,600
III	250,400*	151,800
IV	N/A	56,500

\* VRM III and IV are combined in Alternative A

### Effects of Alternative D

This alternative would entail the greatest amount of vegetative treatments and therefore would have the greatest potential impacts to visual resources due to short and mid-term changes in colorations and texture. Effects of dry forest management would be the same as described under “Effects Common to All Alternatives” on up to 18,200 acres per decade, the most of any alternative.

Effects of cool, moist forest management would be the same as described under “Effects Common to All Alternatives” on up to 5,050 acres per decade, also the most of any alternative.

Alternative D would provide for up to 25,900 acres of vegetative treatment in grasslands and shrublands that could impact visual quality, the most of any alternative. Types of effects would be the same as described under Alternative A.

Potential effects from forest products removal, including timber salvage would be the highest under this alternative given the increases in projected potential timber harvest.

Black Sage and Yellowstone River Island WSAs would be subject to increased visual impacts from mineral activities if Congress releases these areas from wilderness consideration.

This alternative would have the fewest acres designated in the relatively protective VRM Class II lands than the other alternatives and therefore visual resources would be subject to more impacts than in the other alternatives.

No Wild and Scenic River segments would be recommended as suitable and no interim protective measures would be imposed for Wild and Scenic Rivers. As a result, visual resources within these segments would be prone to more impacts than with any alternative.

Alternative D would open the highest acreage (54,079 acres) to oil and gas leasing subject to standard lease terms and would not include the Controlled Surface Use stipulation on VRM Class II, III, and IV lands. Therefore Alternative D would present the highest potential for impacts to visual resources due to oil and gas development of any alternative. Effects from other energy and minerals activities would be similar to those described for Alternative A.

Alternative D would provide the least protection for preserving visual quality (Table 4-16). Alternative D has the fewest acres in ROS classes of semi-primitive non-motorized and semi-primitive motorized of any action alternative and therefore would have the highest risk that visual quality would not be protected. However, because Alternative A does not establish ROS, this alternative would have more protection for visual quality than Alternative A.

VRM Class	Alternative A	Alternative D
I	31,500	31,500
II	25,400	6,600
III	250,400*	142,900
IV	N/A	126,300

\* VRM III and IV are combined in Alternative A.

## EFFECTS ON RESOURCE USES

### FORESTRY AND WOODLAND PRODUCTS

#### Effects Common to All Alternatives

There would be no effects to forestry and woodland products from proposed management associated with livestock grazing, noxious weeds, cultural resources,

paleontological resources, energy and minerals, abandoned mine lands, hazardous materials management, farm lands, environmental justice, or tribal treaty rights.

Under all alternatives, management of any forest type that involves forest product removal would result in a contribution to the achievement of the PSQ. Types of products, size, and acres treated vary across the alternatives. Management actions would partially meet the public demand for wood products by providing sawtimber, posts and poles, and biomass, while improving forest health.

Vegetation treatments in grasslands, shrublands and riparian areas to remove conifer encroachment would provide some forest products, including posts, poles, biomass, and a limited amount of sawtimber. There are approximately 147,715 acres of land in the Decision Area (over 10 percent canopy closure and not in VRM Class I or WSA) from which commercial forest products and biomass could be produced through mechanical treatments. Prescribed burning could possibly remove some potential forest products, although effects would be limited as most of the material burned would be non-merchantable. In the long-term, prescribed burning and mechanical treatments could increase the value of forest products by increasing their quality (better growth form) and size (due to increased availability of nutrients and water).

Treating areas to reduce the risk of developing epidemic levels of forest insect or disease would provide forest products as a by-product of the treatment. However, preventing mortality from these sources could reduce the amount of salvage volume available in the future. In many cases however, treatments would reduce the severity of wildland fire, which could, in the long-term lead to increased quantities of forest products being available in the future.

Maintaining adequate access for forest/woodland management programs would help to maintain the economic feasibility of some treatments. The necessity to build roads (even temporary roads) can be cost-prohibitive particularly with smaller projects.

Management actions are expected to include design and BMP provisions for the protection of forest health, natural resources, water quality, and soils, which can limit the size and location of treatments and the removal of forest products. Streamside management zones would affect the methods used and outcome of forest products in those portions of riparian areas that are regulated under state law.

Providing small sale opportunities would help to meet local public demand for vegetative resources, including house logs, posts and poles, vegetative cuttings, conifer boughs, wildlings and ornamentals, grape stakes and juniper products, specialty cuttings, and wildflowers.

Limiting tractor logging to slopes averaging less than 40 percent would require that alternative methods of logging would be used. These alternative methods are generally more expensive than traditional ground based logging however; this is a common practice that the market is adapting to.

Slash disposal, site preparation and natural or artificial revegetation would promote re-establishment of the forest following treatment, which would lead to additional forest products in the future.

Enhancing riparian and wetland resources could result in some removal of forest products, because of the conifer removal component present in many prescriptions for these areas.

In the short term, fire suppression under all alternatives would maintain the availability of live forest products, and reduce the amount of salvage products. In the long-term however, fire suppression is likely to result in more uncharacteristically large and severe wildland fires that exceed suppression capabilities and result in an overall loss of forest products through fire consumption. An additional long-term effect could be future timber salvage opportunities if wildland fire size increases, along with vegetative type conversion from forest to grass or shrublands in severely affected areas that eliminate local sources of conifer seed.

Wildland fire use (allowing wildland fires to burn) and restoration of historic fire regimes would improve forest health in the long-term. Wildland fire use could produce salvage opportunities in the short term.

Fuels treatments to reduce wildland fire hazards would produce forest products in cases where by-products can be removed and used.

Management measures to protect special status species and priority species would affect the timing, location, or extent of most forest products removal projects. These effects would vary from minor to prohibitive. Management measures could also affect the economic viability of projects by limiting the intensity of management, the amount and type of products removed, the tools used, and the timing of activities. Timber removal may also be used as a tool to improve/restore special status species habitat, so activities to improve habitat for these species could, in some cases, produce forest products.

Forest product removal would be allowed under any of the Recreation Opportunity Spectrum classes established in the Planning Area. However, the more restrictive classes make management for overall forest products more difficult or expensive by restricting the level of disturbance or access to the management areas. Economically, this combination can be prohibitive, particularly where treatment prescriptions restrict removal of high value materials, specialized equipment is required, access is in need of considerable development, or the landing sites are inaccessible from the treatment site. In

particular, areas classified as Semi-primitive non-motorized would require inconspicuous treatments. Semi-primitive motorized areas could also be considered restrictive on a case-by-case basis.

Wilderness Study Areas would not have any forest product removal.

For all alternatives, the effects of Wild and Scenic River designations would be related to the subsequent river management plans and associated VRM and ROS classes.

VRM Class I areas are already set aside as Wilderness Study Areas, so there would be no additional effect beyond those described for WSAs. For VRM Class II areas, large-scale removal of sawtimber would be prohibited in most cases, which would restrict silvicultural management of those areas for forest products. Many activities that produce forest products could occur. However, economic efficiency would often be reduced due to less intensive activities, the need to leave more trees, and the need for non-intrusive road access. Most activities that produce forest products would be compatible with VRM Class III. VRM Class IV areas would have no effect on forest product activities.

Management of the Sleeping Giant ACEC (11,679 acres) to protect naturalness and primitive recreation, along with not allowing firewood removal of dead and down material, would minimize forest product removal from this area, although it would remain in the commercial forest category.

Requirements to comply with local, state, and federal requirements and mitigations for air quality may restrict slash disposal using prescribed burning related to some forest products removal actions, but this would not be expected to affect the overall achievement of PSQ, economic value, or meeting demand.

Implementing BMPs and mitigations for soil may affect logging and slash disposal related to the practices and timing used for some forest products removal actions,

but would not be expected to affect the overall achievement of PSQ or meeting public demand. Measures to protect steep slopes, water quality or limit soil erosion could increase the cost of forest products removal by limiting operating periods, access, equipment types, or requiring aerial logging methods.

Implementing BMPs and mitigations for water quality may affect logging and slash disposal related to some forest products removal actions, but would not be expected to affect the overall achievement of PSQ or meeting public demand. Measures to comply with the Montana Streamside Management Zone (SMZ) Law and state water quality rules could reduce the amount of timber that could be removed and increase the cost of forest products removal by limiting operating periods and access or requiring aerial logging methods. Forest management costs may also increase as state consultation and approval is required if alternate practices are needed to complete a timber removal project within an SMZ.

Providing rights-of-way, road use agreements, permits and leases could improve access for forest products management activities, which could increase economic viability.

Land tenure adjustments would result in more efficient management of forest products, which would improve economic viability and could improve BLM's ability to meet forest product demand.

Acquiring permanent access easements where needed would improve forest product removal efficiency and help meet public demand for forest products. Improved efficiency would result in better economic viability by providing assured access for later treatments and smaller scale activities and sales.

## Effects of Alternative A

**Table 4-17** displays the predicted output of forest products for Alternative A, given the resource protections detailed in the alternative description.

<b>Product</b>	<b>Amount</b>
Dry Forest	3,600 acres of timber and 1,000 acres of small-diameter thin
Cool Moist Forest	2,350 acres of timber and 50 acres of small-diameter thin
New Permanent Road Construction	55 miles
PSQ	12 to 27 MMBF
	40,000 to 97,000 CCF
Estimated Number of Permits Issued for Forest Products	350 Permits
Christmas Trees	4,500 Trees
Cords of Firewood	750 Cords
Small Timber Sales (Included in with PSQ)	1,650 MBF Sawtimber
Post, poles, Biomass, other woody materials	55 CCF
Timber Salvage	No Limit

Under Alternative A, mechanical treatment of vegetation in riparian areas could produce a few forest products from 30 acres per decade.

Compliance with SMZ Law would allow for forest product removal in SMZ areas solely for the economic purposes without meeting any riparian or other resource management objectives discussed in Alternatives B and C. Alternatives A and D also allow for a more aggressive approach to forest product removal in the riparian areas outside of the SMZs than the other alternatives.

Fire suppression within the first burning period of wildland fires would limit the loss of forest products to fire. Wildland fire use and prescribed burning could cause a loss of forest products, but could also create salvage opportunities in the short run while increasing the amount of products available in the future through improvement of forest health.

Alternative A has 240,000 acres in fire management Category C, which creates the potential for salvage opportunities on most of the DA.

In addition to the effects from special status and priority species management described under “Management Common to All Alternatives”, guidelines in the Montana Cooperative Elk Logging Study would limit the extent and timing of some forest products removal projects.

Under Alternative A, the recreational (ROS) and visual values (VRM) and opportunities could be considered on a case by case basis and may affect product removal dependant on individual analysis of impacts for each project. This is not expected to affect overall product removal levels nor support of the PSQ under Alternative A.

In addition to the effects described under “Effects Common to All Alternatives” for the Sleeping Giant ACEC, vegetation management in the Humbug Spires ACEC could result in limited forest products, although

trying to meet primitive recreation goals would preclude removal of sawtimber or construction of roads for access, adversely affecting the economic viability of forest products projects.

## Effects of Alternative B

**Table 4-18** displays the predicted output of forest products for Alternative B, given the resource protections detailed in the alternative description.

Timber salvage would produce sawlogs and other timber products, although Alternative B limits salvage compared to Alternative A.

Riparian treatments could produce a limited number of forest products, as riparian management objectives would dictate treatment type and level of forest change needed to meet objectives in the Riparian Management Zones (RMZs). Assuming a site-potential tree height of 80 feet, RMZs would limit the location and access to forest product removal projects in corridors defined as 160 feet on either side of fish-bearing streams and amounting to 38 acres per mile of stream, 80 feet on either side of non-fish bearing streams and amounting to 19 acres per mile of stream, and 50 feet on either side of intermittent streams which amounts to 12 acres per mile of stream. In these areas under Alternative B, treatment method, heavy equipment use, and vehicular access would be restricted to meet riparian objectives or prevent riparian impacts, thus reducing product removal efficiency and increasing cost. Under Alternative B, product removal would be allowed, while it would be prohibited under Alternative C. Alternatives A and D would allow for greater flexibility of product removal, because SMZ widths would be narrower than the RMZ widths.

Fire suppression within the first burning period (first day of a wildland fire) would limit the loss of forest products to fire. Wildland fire use and prescribed burning could

**Table 4-18**  
**Alternative B – Decadal Forest Products Output**

Product	Amount
Dry Forest	4,150 to 14,750 acres of timber and 300 to 1,000 acres of small-diameter thin
Cool Moist Forest	450 to 3,750 acres of timber and 100 to 400 acres of small-diameter thin
New Permanent Road Construction	Kept to a minimum, closed to public
PSQ	9 to 25 MMBF
	33,000 to 91,000 CCF
Estimated Number of Permits Issued for Forest Products	450 Permits
Christmas Trees	5,500 Trees
Cords of Firewood	1,000 Cords
Small Timber Sales (Included in with PSQ)	2,100 MBF
Post, Poles, Biomass, other woody materials	77 CCF
Timber Salvage	Variable, selective prescriptions considering the event size and associated wildlife values.

cause a loss of forest products, but could also create salvage opportunities. Alternative B is similar to Alternative A with 262,000 acres in fire management Category C, slightly higher than Alternative A at 258,200 acres. Management actions to reduce fuels in the Wildland Urban Interface and restore historic fire regimes in forested types could also produce forest products.

Timing restrictions for migratory birds prohibiting management-ignited prescribed fire from May 1<sup>st</sup> through August 30<sup>th</sup> would not reduce the availability of forest products for consumption. Disposal of slash and site preparation activities by burning may be restricted in higher elevation and north slope timber sale sites in the spring after May 1<sup>st</sup>, thereby increasing the cost and reducing the effectiveness of such activities.

Allowing no net increase in permanent roads in big game winter/calving range and grizzly bear distribution zone areas with low road density (defined as 1 mi/mi<sup>2</sup> or less in Alternative B) would reduce product removal efficiency in active forest management areas. Construction of more temporary roads would be necessary with most projects implemented. This also would limit the public's ability to use forest product permits in those areas.

Forest and woodland stands designated as ROS Semi-primitive non-motorized (18,554 acres), and Semi-primitive motorized (26,283 acres) under Alternative B amount to 41 percent of the forest and woodland available for product removal in the Decision Area. Forest product removal treatments and access development in these areas would be required to have relatively inconspicuous impacts on landscape character. This requirement could lead to increased costs due to a need for: more careful project design, more restrictions to protect recreation settings, and specialized equipment for implementation. Quantities of forest products removed may also decrease. Some commercial projects that would be feasible under Alternative A would not be feasible under Alternative B in these areas. Public use of the non-motorized designated areas for forest products, such as firewood and Christmas trees, would fall to very low

levels, as the harvested materials would have to be hand carried to vehicles and would probably only occur on the periphery of these non-motorized areas.

Forest and woodland stands designated as VRM Class II under Alternative B (16,902 acres) amount to 15 percent of the forest and woodland available for product removal in the Decision Area and are stands mainly found in areas designated as ROS Semi-primitive non-motorized. Forest product removal treatments would be restricted because treatments could not attract the attention of the casual observer in these areas. This would substantially reduce the level of product removal compared to Alternative A in VRM Class II areas.

In addition to the effects described under "Effects Common to All Alternatives" for the Sleeping Giant ACEC, vegetation management in the Humbug Spires ACEC could result in limited forest products removal, although trying to meet primitive recreation goals would preclude removal of sawtimber or construction of roads for access, adversely affecting the economic viability of forest products projects.

The Ringing Rock ACEC (160 acres) could produce forest products as long as VRM II could be met. Vegetation management in the Elkhorns ACEC (50,431 acres) would produce forest products and contribute to meeting public demand, except for the 3,575 acres of the Elkhorn Tack-on Wilderness Study Area, where forest products removal would be prohibited.

Timber salvage would be unlikely in any ACEC and would be prohibited in the Elkhorns ACEC, except when needed to provide for public safety.

### Effects of Alternative C

**Table 4-19** displays the predicted output of forest products for Alternative C, given the resource protections detailed in the alternative description.

Maintaining and promoting old forest structure and condition may produce a limited amount of small forest products.

<b>Product</b>	<b>Amount</b>
Dry Forest	2,050 to 4,800 acres of timber and 55 to 250 acres of small-diameter thin
Cool Moist Forest	50 to 550 of timber and up to 50 acres of small-diameter thin
New Permanent Road Construction	No new permanent roads
PSQ	5 to 12 MMBF 19,000 to 41,000 CCF
Estimated Number of Permits Issued for Forest Products	150 Permits
Christmas Trees	4,500
Cords of Firewood	50 Cords
Small Timber Sales (Included in with PSQ)	500 MBF
Post, Poles, Biomass, other woody materials	55 CCF
Timber Salvage	50 percent of affected area must be retained.

Timber salvage would produce sawlogs and other timber products; however Alternative C limits salvage more than the other alternatives. Salvage projects under Alternative C would be smaller and occur less often than the other alternatives due to higher large tree retention requirements and the areas where timber salvage would be prohibited (50 percent of contiguous areas of 1,000 acres or larger).

Requiring firewood to be live trees would eliminate the current agreement with the Forest Service for firewood permits and increase administration and enforcement cost. Green tree removal could result in fewer firewood permits overall because green trees are not desirable for firewood. Alternative C would not contribute to meeting public demand as well as the other alternatives would. No commercial forest products would be removed from RMZs under Alternative C, making Alternative C the most impactful alternative to commercial forest products from a riparian management standpoint. Under Alternative C Riparian Management Zones would be defined as 300 feet on either side of fish bearing streams and amounting to 73 acres per mile of stream; 150 feet on either side of non-fish bearing streams and amounting to 36 acres per mile of stream; and 50 feet on either side of intermittent streams which amounts to 12 acres per mile of stream.

Fire suppression within the first burning period (first day of a wildland fire) would limit the loss of forest products to fire. Wildland fire use and prescribed burning could cause a loss of forest products, but could also create salvage opportunities. The potential opportunity for timber salvage after fire events under Alternative C is similar to Alternative A, with 240,000 acres in fire management Category C compared to 258,200 acres in Alternative A. Management actions to reduce fuels in the Wildland Urban Interface and restore historic fire regimes in forested types could also produce forest products.

Under Alternative C, timing restrictions to protect migratory birds would prohibit vegetation treatments from May 1<sup>st</sup> through August 30<sup>th</sup> (unless breeding bird surveys document low potential for impact). This restriction would tend to push mechanical vegetation treatment, product removal, slash disposal and site preparation activities into the fall and winter under Alternative C. As this restriction is geared toward widespread disturbance of vegetation and potential nesting sites, it is not expected to affect the timing of more focused treatment support activities such as road maintenance or temporary construction which could be conducted during the restriction period. This should not reduce the availability of forest products for consumption, but this may increase the cost due to work being conducted during adverse winter conditions and when snow plowing may be required for anticipated heavy truck traffic to landings.

Under Alternative C, effects from special status and priority species management would generally be similar to Alternative B. However, allowing no net increase in permanent roads in big game winter/calving range and grizzly bear distribution zone areas with low road density (defined as 1.5 mi/mi<sup>2</sup> or less in Alternative C) would affect more areas, the most of any alternative. Additionally, maintaining blocks of at least 500 acres as unroaded or having closed roads during the hunting season may limit public access for forest products permits and access for management actions.

Forest and woodland stands designated as ROS Semi-primitive non-motorized (23,895 acres), and Semi-primitive motorized (31,583 acres) under Alternative C amount to 50 percent of the forest and woodland available for product removal in the Decision Area. Effects from area designations of ROS Semi-primitive classes would be similar to those described for Alternative B.

Forest and woodland stands designated as VRM Class II under Alternative C (27,259 acres) amount to 25 percent of the forest and woodland available for product removal in the decision area. Effects from area designations of VRM Class II would be similar to those described for Alternative B.

Effects from ACEC management would be the same as under Alternative B.

## Effects of Alternative D

**Table 4-20** (page 446) displays the predicted output of forest products for Alternative D, given the resource protections detailed in the alternative description.

Maintaining and promoting old forest structure and condition may produce a limited amount of small forest products.

Timber salvage would produce sawlogs and other timber products, although Alternative D limits salvage compared to Alternative A. Salvage projects under Alternative D would probably be larger and occur more often than under Alternatives B and C.

Alternative D would be most effective at meeting public demand for small sale products of all alternatives.

Fire suppression within the first burning period (first day of a wildland fire) would limit the loss of forest products to fire. Wildland fire use and prescribed burning could cause a loss of forest products, but could also create salvage opportunities. Because Alternative D has the most acres in Category D (180,000 acres compared to none in the other alternatives), it has the greatest potential to result in salvage opportunities, although it is only slightly higher than the 262,000 acres in Category C in Alternative B. Management actions to reduce fuels in the Wildland urban interface and restore historic fire regimes in forested types could also produce forest products.

Product	Amount
Dry Forest	7,300 to 18,200 acres of timber and 1,000 to 3,000 acres of small-diameter thin.
Cool Moist Forest	1,000 to 5,000 acres of timber and 400 to 1,200 acres of small-diameter thin.
New Permanent Road Construction	Kept to a minimum, some left open to public.
PSQ	10 to 30 MMBF 36,000 to 107,000 CCF
Estimated Number of Permits Issued for Forest Products	600 Permits
Christmas Trees	9,000 Trees
Cords of Firewood	1,500 Cords
Small Timber Sales (Included with PSQ)	5,200 MBF
Post, Poles, Biomass, other woody materials	105 CCF
Timber Salvage	30 percent of affected area must be retained.

Effects from special status and priority species would generally be similar to Alternative B, except allowing no net increase in permanent roads in big game winter/calving range areas with low road density (defined as 0.5 mi/mi<sup>2</sup> or less in Alternative D) would affect fewer areas. Effects associated with limiting net increases in permanent roads in the grizzly bear distribution zone would be the same as under Alternative B.

Forest and woodland stands designated as ROS Semi-primitive non-motorized (18,029 acres) and Semi-primitive motorized (13,823 acres) under Alternative D amounts to 29 percent of the forest and woodland available for product removal in the Decision Area. Effects from area designations of ROS Semi-primitive classes would be similar to those described for Alternative B.

Very few forest and woodland stands were designated as VRM Class II under Alternative D (173 acres). This amounts to one tenth of one percent of the forest and woodland available for product removal in the Decision Area. There would be little, if any, effect on forest products and support of PSQ from area designations of VRM Class II, similar to effects under Alternative A.

In addition to the effects described under “Effects Common to All Alternatives” for the Sleeping Giant ACEC, vegetation management in the Humbug Spires ACEC (8,374 acres) could result in limited forest products although trying to meet primitive recreation goals would preclude removal of sawtimber or construction or roads for access, adversely affecting the economic viability of forest products projects. Vegetation management in the Elkhorns ACEC (3,575 acres) would not produce forest products due to the Wilderness Study Area designation.

Effects from ACEC management would be the same as under Alternative B.

## LIVESTOCK GRAZING

### Effects Common to All Alternatives

There would be no effect from management of Lands and Realty-Land Use Authorizations, Energy and Minerals, Abandoned Mine Lands, Hazardous Materials Management, Environmental Justice or Tribal Treaty Rights.

Management actions to restore and improve riparian areas may require adjustments in grazing management such as adjusting numbers, rest, deferment, or maintaining existing livestock enclosures along streams, wetlands, and riparian areas in order to meet Proper Functioning Condition goals and the Western Montana Standards for Rangeland Health.

Maintaining or restoring the health and integrity of grasslands, sagebrush and shrublands, could change the amount of livestock grazing, or alter timing and utilization.

Wildland fire management activities (including prescribed fire and chemical and mechanical vegetation treatments) aimed at meeting or moving toward Land Health Standards would provide long-term benefits for vegetation and livestock by improving the forage base and availability.

Management actions to maintain cultural and paleontological resources may require adjustments in grazing management such as adjusting numbers, rest, deferment, or exclusion.

### Effects of Alternative A

Treatment of grasslands to remove conifer encroachment would improve long-term forage quality and quantity. Some short-term but negligible effects would occur where deferment and temporary removal of livestock is required before and after vegetation treatments. Alterna-

tive A differs from the action alternatives in that the action alternatives would result in improved forage quantity and quality on shrublands in addition to grasslands.

Livestock grazing would be allowed on three percent more acres than Alternatives B and C and the same as Alternative D. (See **Table 4-21** for a summary of acres and AUMs by alternative.)

Alternative A would limit the tools available for improving land health in the Medicine Rock (Northeast Helena) riparian area by excluding prescription livestock grazing from availability in that area. Specifically, grazing of sheep or goats could not be used as a tool to treat weeds.

Management of noxious weeds would control and contain the proliferation of invasive weed species and would reduce established populations to acceptable levels, thereby maintaining long-term forage production, diversity, and vigor in the treatment areas. Livestock management flexibility would be reduced over the long-term in untreated areas because of the presence of invasive weeds and the reduction of usable forage. Alternative A would impact the amount of forage available the least, because noxious weed spread would be the least—43,000 acres (assuming implementation of the low end of the range of proposed weed treatment acres under the action alternatives).

Management actions such as designating open access to vehicles would increase recreational use, public awareness of livestock grazing, and access (that is, roads and gates). These travel management actions often result in conflicts with the livestock grazing program. Alternative A would leave more acres open to wheeled vehicles (4,367 acres or one percent of the Decision Area) and snowmobiles (144,750 acres or 49 percent of the Decision Area) than the action alternatives, which would designate 283 acres (0.1 percent of the Decision Area) open to wheeled vehicles and 140,033 acres (48 percent of the Decision Area) as open to snowmobiles. Therefore, compared to the other alternatives, management actions for travel management and actions under Alternative A would have the greatest potential for conflicts with livestock grazing.

### Effects Common to Action Alternatives

In contrast to Alternative A, resource objectives on allotments without site-specific management objectives

would be met, in part, by imposing grazing utilization level limits. On such allotments, the utilization level as measured at the end of the grazing season would not exceed 55 percent on non-native seedlings and 45 percent on native herbaceous forage plants, on a pasture average basis, except where lower use levels may be necessary to prevent detrimental effects on vegetation and other resources. Higher utilization objectives may be acceptable when set through an interdisciplinary planning or NEPA process to achieve resource objectives.

Compared to Alternative A, forage conditions on small allotments would be improved or maintained by prohibiting livestock conversions from sheep or cattle to horses on existing allotments smaller than 160 acres and horse permits or leases on available vacant parcels on all areas less than 160 acres. These restrictions would minimize overgrazing by horses on small allotments.

Prescription livestock grazing would be allowed as a management technique to maintain or improve habitat conditions for special status plant species and animal species.

Management of crucial and important wildlife habitat, especially on winter range, may require adjustments to livestock grazing.

Under the action alternatives, fewer acres of open access for vehicles would be designated than under Alternative A and conflicts with livestock grazing from these actions would be reduced. Alternative A would leave more acres open to wheeled vehicles (4,367 acres or 1 percent of the Decision Area) and snowmobiles (144,750 acres or 49 percent of the Decision Area) than the action alternatives, which would designate 283 acres (0.1 percent of the Decision Area) open to wheeled vehicles and 140,033 acres (48 percent of the Decision Area) as open to snowmobiles.

### Effects of Alternative B

Treatment of grasslands and shrublands to improve desired ecological conditions would improve long-term livestock forage quality and quantity. Areas identified for prescribed burning would be rested from livestock grazing up to one year prior to treatment and treatment areas would be rested at a minimum of two full years following treatment resulting in short-term impacts on livestock grazing. Alternative B would treat three percent more acres of grasslands and shrublands (of Decision Area total) than Alternative C, one percent more

**Table 4-21**  
**Summary of Acres Available for Grazing by Alternative**

	Alternatives			
	A	B	C	D
Acres available for grazing	278,000	270,000	262,000	278,000
Acres not available for grazing	29,000	37,000	45,000	29,000
Permitted AUMs	25,677	24,710	24,710	25,677
Forage reserve, temporary non-renewable AUMs	0	1,312	936	0

than Alternative A and two percent fewer than Alternative D.

Livestock grazing would be allowed on three percent fewer public land acres than Alternatives A and D, and one percent more than Alternative C. (See **Table 4-21** for a summary of acres and AUMS by alternative.)

More acres would be managed as forage reserve than under any of the other alternatives. Forage reserve allotments (1,312 AUMs) would be managed to meet, or move toward meeting, Land Health Standards. Forage reserve allotments would provide opportunities for qualified applicants to rest allotments when required and would facilitate management actions or relieve resource problems. Management as forage reserve, as opposed to normally permitted allotments, is more costly to administer. Thus, the cost of administering forage reserves would increase the most when compared to the other alternatives. However, the number of AUMs managed as forage reserve is small (five percent) relative to the total number of AUMs under Alternative B, so the impact would be minor.

Alternative B would allow for greater flexibility, compared to Alternatives A and C, in the tools available for improving land health in the Centennial Gulch (Ward Ranch) allotment and the Medicine Rock (Northeast Helena) riparian area by allowing prescription livestock grazing in those areas.

The impacts from management of noxious weeds would be similar to those discussed under Alternative A; however the amount of noxious weed spread could be higher under this alternative—48,000 acres—than under Alternative A, thus reducing the amount of forage available (assuming implementation of the low end of the range of proposed weed treatment acres for Alternative B).

Fence modification costs to remove or reconstruct fences identified as wildlife barriers would be less than Alternative C, but more than D because the alternative B prescription has some flexibility.

### Effects of Alternative C

Compared to the other alternatives, management action in grasslands and shrublands in Alternative C would improve long-term livestock forage quality and quantity the least. Alternative C would treat two percent fewer acres than Alternative A (at Decision Area scale), three percent fewer than Alternative B and five percent fewer than Alternative D.

Six percent fewer public land acres would be available for livestock grazing than Alternatives A and D and three percent fewer than Alternative B (See **Table 4-21** for a summary of acres and AUMS by alternative.) Managing the McMaster Hills and Spokane Hills allotments as forage reserve allotments, as described under Alternative B, would increase the costs to administer those lands.

Alternative C would limit the tools available for improving land health in the Centennial Gulch (Ward Ranch) allotment and Medicine Rock (Northeast Helena) riparian area by excluding prescription livestock grazing from availability in those areas.

The impacts from management of noxious weeds would be similar to those previously discussed except the impacts to the livestock forage base could be highest because the amount of noxious weed spread would be highest under this alternative (assuming implementation of the low end of the range of proposed weed treatment acres for Alternative C).

Fence reconstruction costs to remove and replace fences identified as barriers to wildlife movement would be highest under this alternative because of the stringent management mandate.

### Effects of Alternative D

Compared to the other alternatives, management of grasslands and shrublands in Alternative D would result in the greatest improvement in long-term livestock forage quality and quantity from vegetation treatments on grasslands and shrublands. Alternative D would treat two percent more acres than Alternative B (at the Decision Area scale), three percent more than Alternative A, and five percent more than Alternative C.

Livestock grazing on public land would be allowed on the same amount of acres as Alternative A, two percent more than Alternative B, and three percent greater than Alternative C. (See **Table 4-21** for a summary of acres and AUMS by alternative.)

Compared to the other alternatives, noxious weed management in Alternative D could result in 47,000 acres of spread (assuming implementation of the low end of the range of proposed weed treatment acres for the action alternatives). Consequently more livestock forage could be maintained than under Alternatives B and C, but less than under Alternative A.

As with Alternative A, under Alternative D, the existing Instruction Memorandum 98-140 (1998) would be followed which would impose restrictions on new goat and sheep allotments as well as those allotments with conversions from cattle to sheep and goats in order to minimize physical contact between domestic and wild sheep.

Fences identified as barriers to wildlife movement would be considered for removal or reconstruction on a case by case basis, to follow BLM fence specifications for wildlife.

Designation of two new ACECs totaling 11,949 acres would require management activities to protect or enhance ACEC values. Management activities may include restrictions on livestock grazing, requirements to maintain/build boundary fences and cattle guards, and closely monitor livestock trailing.

## ENERGY AND MINERALS

### Effects Common to All Alternatives

#### *Energy and Minerals*

Approximately 6,300 acres would remain withdrawn or not available for mineral entry (leasable, locatable, and salable). Approximately 6,000 acres along the Missouri River Chain of Lakes would continue to be withdrawn in Power Site Reserve and Power Project withdrawals. The effect on mineral leasing would be negligible as the area represented is small and in scattered small parcels when compared with the overall area available to leasing in the Planning Area.

#### *Leasable Solid Minerals*

There are no known potentially economic deposits of leasable solid minerals such as sodium, potash, sulphur, oil shale, native asphalt, and solid and semi-solid bituminous rock in the Planning Area. If any were discovered on lands administered by the federal government, the decision to lease them would be made by the BLM on a case-by-case basis.

#### *Leasable Geothermal Resources*

Geothermal resource leasing activity is not anticipated, so there would be no effects.

#### *Leasable Fluid Minerals*

Stipulations applied to various areas with respect to occupancy, timing limitation, and control of surface use would have the greatest effects on oil and gas exploration and development. Some areas would be deemed unavailable for oil and gas leasing as a result of existing non-discretionary closures for Wilderness Study Areas. Others may be determined unavailable as a result of the discretionary decisions of this RMP. These lease stipulations and the availability of the federal mineral estate for fluid mineral leasing varies by alternative.

No Surface Occupancy stipulations may decrease some lease values, increase operating costs, and to a lesser extent (given the RFD) require relocation of well sites and modification of field development. Leases issued with moderate constraints (Timing Limitation and Controlled Surface Use stipulations) may result in similar impacts, and delays in operations and uncertainty on the part of operators regarding restrictions.

#### *Locatable Minerals*

Because the Planning Area is considered to be highly prospective for base and precious metal deposits, it is likely that there would be multiple applicants for exploration and that one or more mining companies would submit a proposed Plan of Operations to develop a new large scale metal mine at some point in the next 20 years.

Mineral exploration activities would include construction of exploration drill roads, drilling pads, and equipment staging areas. Activities would be conducted under a notice or an approved Plan of Operations and require bonding for reclamation and closure.

Large-scale mines, mine expansions, and small-scale mining operations are likely to result in disturbances from access road construction, increased traffic, surface disturbance (i.e. underground portals; mine pits; waste rock dumps; ore processing, tailing facilities, administration and maintenance facilities; and storm water run-off control ponds and diversions structures). Virtually all mineral activity also requires state permits.

Placer operations would affect streambeds or terrace deposits adjacent to streams, by excavating and processing sand and gravel deposits for the recovery of gold. These operations would have mitigation measures in place to protect riparian areas and other natural resources. Site reclamation work would be bonded by the BLM and the state to insure completion of reclamation following mining.

BLM anticipates that there would be four to ten placer mining operations per year on Decision Area lands, with the actual number depending on the price of gold.

BLM would develop and implement measures to prevent unnecessary or undue degradation from exploration, mining, and reclamation activities. In some areas, such as ACECs, these requirements could result in additional expenditures to protect resources and prevent unnecessary or undue degradation.

BLM or other agency authorization of rights-of-way for facilities such as roads, highways, and power lines could provide access and infrastructure for exploration of locatable minerals and mining operations. Alternatively, denial of rights-of-way could result in negative impacts on operations.

Land ownership changes could result in acquisition or disposal of lands with mineral value, and either increase or decrease opportunities for mineral development. Acquisition of legal access across private or other lands could result in increased opportunities to explore and develop areas not accessible by another route.

The following 31,349 acres of land in the Decision Area are currently WSAs:

- Sleeping Giant (6,666 acres),
- Sheep Creek (3,801 acres),
- Elkhorn's Tack-on (3,575 acres),
- Black Sage (5,917 acres),
- Humbug Spires (11,320 acres), and
- Yellowstone Island (69 acres)

These lands are managed under the Interim Management Policy (H-8550-1) and mineral development activities

are thus restricted. Once a final Congressional determination is made on wilderness consideration, these lands would either become wilderness areas or be released and managed according to this plan.

An approved Plan of Operations is required in designated ACECs for all surface disturbing activities exceeding the casual use level. Activities which could normally proceed after the filing of a Notice would require an approved Plan of Operations in an ACEC. The increased environmental review, mandatory public comment period, and application of management prescriptions needed to protect ACEC-values, would result in timing delays or increased costs for mineral operators.

Fire management activities could temporarily result in restricted access to a mining project during implementation of prescribed burning, or during wildland fire suppression.

Rehabilitation and closure of abandoned mine land sites and associated features would result in the removal or obscuring of information contained in waste dumps, excavations, adits, and shafts used by exploration companies to sample and map mineral deposits.

**Salable Minerals**

Extraction of salable material by excavation or mining would result in a mine or quarried pit. Effects from access roads and pit construction would be minor or moderate depending on the scale of the quarrying operations (size and ability to reclaim the ultimate pit). Existing requirements for topsoil salvage and reclamation would minimize impacts from mining.

Stipulated requirements and BMPs designed to avoid or minimize adverse effects on riparian zones from structures, support facilities, and roads could result in additional expenditures and a longer approval time for the developer. BLM’s discretionary sale approval policy could avoid sale of materials from riparian areas.

Mitigation measures to eliminate or reduce impacts resulting from exploration or mining operations could also result in additional expenditures and a longer permitting timeframe for the developer.

BLM or other agency authorization of rights-of-way for facilities such as roads, highways, and power lines could provide access and infrastructure. Alternatively, denial of rights-of-way could negatively affect operations.

**Effects of Alternative A**

**Energy and Minerals**

Approximately 287,457 acres of BLM lands would be available for locatable mineral entry and consideration for other mineral disposals. Energy and minerals permits would allow for development of the mineral resources to provide for the resource needs of society.

**Leasable Fluid Minerals**

Continuation of current management would result in the availability of approximately 597,384 acres for fluid mineral leasing across the entire Planning Area. Approximately eight percent (54,810 acres) of BLM subsurface ownership would be unavailable (Table 4-22), including Sleeping Giant, Sheep Creek, Elkhorn’s Tack-on, Black Sage, Humbug Spires, and Yellowstone Island WSAs.

Other areas unavailable for oil and gas leasing would include core areas of state wildlife management areas and lands recently acquired with LWCF funds. The remainder of federal mineral estate lands would be available for leasing, subject to the stipulations specified in Chapter 2 or under Standard Lease Terms.

Table 4-23 displays areas affected by no surface occupancy, timing limitations, and controlled surface use oil and gas stipulations.

The RFD scenario prepared for this RMP identified five areas in the Planning Area where it was the most reasonable to forecast conventional oil and gas or coal bed methane exploration and development based on existing information. These areas are described and defined in both Chapter 3 and Appendix M. The total Federal mineral estate in these five areas is approximately 116,295 acres.

<b>Classification</b>	<b>Acres</b>
No Surface Occupancy <sup>1</sup>	251,779
Timing Limitations <sup>1</sup>	285,993
Controlled Surface Use <sup>1</sup>	27,701
Standard Lease Terms <sup>1</sup>	31,911
<b>Acres Available for Oil and Gas Leasing</b>	<b>597,384</b>
Non-discretionary (unavailable)	28,774
Discretionary (unavailable)	26,036
<b>Acres Unavailable for Oil and Gas Leasing</b>	<b>54,810</b>

<sup>1</sup>Acres by stipulation subcategory were calculated such that the subcategories add up to the total available acres for leasing based on the following general concepts where multiple stipulations overlapped: No Surface Occupancy stipulations override and are more restrictive than Timing Limitations, Controlled Surface Use, and Standard Lease Terms. Timing Limitation stipulations override and are more restrictive than Controlled Surface Use and Standard Lease Terms. Controlled Surface Use stipulations override and are more restrictive than Standard Lease Terms. Non-overlapping individual stipulation-specific acreages are displayed by alternative in Tables 4-23, 4-27, 4-30, and 4-33.

<b>Table 4-23 Alternative A Acres Affected by Oil and Gas Stipulations</b>					
Type of Stipulation	Stipulation	Development Potential			Total Acres Stipulated <sup>1</sup>
		Moderate	Low	Very Low	
<b>No Surface Occupancy</b>					
Arctic Grayling Habitat	NSO ¼	202	10,459	2,694	13,355
Bald Eagle Nest Sites	NSO ½	1,089	1,068	419	2,576
Class 1 Fisheries	NSO 1000	1,012	6,876	2,139	10,027
Continental Divide Trail	NSO 300	0	0	180	180
Developed Recreation Sites	NSO 300	12	61	134	208
Ferruginous Hawk Breeding Territories <sup>2</sup>	NSO ¼	0	0	0	0
Known Special Status Plant Populations	NSO ¼	783	2,705	4,183	7,671
National Register of Historic Places Eligible	NSO 300	74	143	1,438	1,654
Peregrine Falcon Nest Sites/Breeding Habitat	NSO ¼	39	88	117	244
Prairie Dog Towns <sup>2</sup>	NSO ¼	0	0	0	0
Raptor Breeding Territories	NSO ¼	639	749	856	2,245
Rivers Suitable for WSR Designation	NSO 1000	276	522	1,584	2,382
Sage Grouse Strutting Grounds (leks) <sup>2</sup>	NSO 500	0	0	0	0
Westslope Cutthroat Habitat (90-99%)	NSO ¼	0	62	765	827
Westslope Cutthroat Habitat (99-100%)	NSO ¼	27	2,087	2,741	4,855
Wetlands, Floodplains and Riparian Areas	NSO 500, 1000	39,395	88,753	101,151	229,299
Wildlife Management Areas	NSO	2,971	34,971	28,050	65,992
Yellowstone Cutthroat Trout Habitat	NSO ¼	256	1,668	683	2,607
<b>Timing Limitations</b>					
Bald Eagle Breeding Habitat	TL 12/1 - 8/31	4,179	4,129	1,230	9,538
Big Game Winter/Spring Range	TL 12/1 - 5/15	102,198	187,180	209,595	498,973
Bighorn Sheep Core Areas	TL 12/1 - 5/15	24,012	13,781	32,822	70,615
Bighorn Sheep Yearlong Range	TL 12/1 - 5/15	30,109	26,067	75,103	131,279
Elk Calving/Big Game Birthing Areas	TL 5/1 - 6/30	1,150	8,033	11,124	20,307
Sage Grouse Breeding Habitat	TL 3/1 - 6/30 ½	0	0	0	0
Sage Grouse Winter/Spring Range	TL 12/1 - 5/15	538	46,768	19,517	66,824
<b>Controlled Surface Use</b>					
Controlled Surface Use stipulations for TES Species, Cultural and Paleontological Resource Inventory, and Special Status Plant Habitats would apply across the entire Decision Area so acreages were not calculated separately.					
Bull Trout Habitat	CSU ½	26	1,210	2,758	3,994
Gray Wolf Dens – Former Recovery Area	CSU	14,142	8,487	72,071	94,700
Grizzly Bear – Distribution Zone	CSU	34	29,008	24,905	53,947
Grizzly Bear – Recovery Zone	CSU	0	1,651	5,731	7,382
Restricted Soils	CSU	40,927	78,990	129,220	249,137
VRM Class II, III and IV Areas	CSU	65,962	77,938	104,949	248,849

<sup>1</sup>Total acres affected by each stipulation are based on individual, independent, stipulation-specific GIS mapping and have not been overlapped with any other stipulations. Figures are provided here to display which stipulations for which resources are relatively dominant in the Decision Area.

<sup>2</sup>Total values of “0” indicate that there are currently no known sites or acres associated with this particular resource. Stipulation would apply to any newly detected sites or acres in the future.

An analysis was completed for each alternative to review the impact of constraints in the form of oil and gas lease stipulations imposed on oil and gas exploration and development within the boundaries of these five areas based on the belief that this would further quantify the effects of management under the various alternatives as these are the areas that the BLM believes have the most potential (low to moderate potential overall) for exploration and development (see **Table 4-24**).

<b>Classification</b>	<b>Acres</b>
No Lease	<b>9,849</b>
No Surface Occupancy	43,136
Timing Limitation	53,649
Controlled Surface Use	1,638
Standard Lease Terms	8,024
<b>Total Available for Oil and Gas Leasing</b>	<b>106,447</b>

Under Alternative A the analysis shows that approximately 8.5 percent of these five areas would not be available for oil and gas leasing. Approximately 37 percent of the areas would be subject to leasing subject to major constraints (no surface occupancy). Approximately 48 percent would be leased subject to moderate constraints. Approximately seven percent would be leased subject to standard terms and conditions. Alternative A is similar in its level of constraints to Alternative B. Both subject approximately 35 to 37 percent of the federal minerals to major constraints and approximately 48 to 55 percent to moderate constraints. Due to the level of major constraints, Alternatives A and B are somewhat more restrictive than Alternative D but much less restrictive than Alternative C.

**Locatable Minerals**

Locatable minerals activities would be regulated to prevent unnecessary or undue degradation as required by regulations (43 CFR 3809). Under Alternative A, 239,138 acres would remain open to mineral entry and consideration for salable mineral disposals without restrictions, 48,319 would be open to mineral entry with restrictions and 17,522 acres would be closed (**Table 4-25**).

**Salable Minerals**

Access roads and mine development for salable minerals would usually be located near municipalities or small rural communities. Impacts on natural resources and local residents would be avoided where possible or mitigated.

<b>Mineral Potential</b>	<b>Restricted Acres</b>	<b>Closed Acres</b>	<b>Open Acres</b>	<b>Totals</b>
<b>Alternative A</b>				
High	11,344	3,675	103,541	118,560
Medium	6,495	3,952	24,505	34,952
Low-None	30,479	9,894	111,092	151,466
<b>Totals</b>	<b>48,319</b>	<b>17,522</b>	<b>239,138</b>	<b>304,978</b>
<b>Alternative B</b>				
High	37,495	3,675	77,390	118,560
Medium	9,586	3,952	21,414	34,952
Low-None	41,647	9,919	99,899	151,466
<b>Totals</b>	<b>88,728</b>	<b>17,547</b>	<b>198,704</b>	<b>304,978</b>
<b>Alternative C</b>				
High	43,456	3,746	71,359	118,560
Medium	13,527	3,952	17,473	34,952
Low-None	54,248	10,022	87,196	151,466
<b>Totals</b>	<b>111,230</b>	<b>17,720</b>	<b>176,028</b>	<b>304,978</b>
<b>Alternative D</b>				
High	11,344	3,675	103,541	118,560
Medium	6,495	3,952	24,505	34,952
Low-None	29,768	9,849	111,804	151,466
<b>Totals</b>	<b>47,607</b>	<b>17,522</b>	<b>239,850</b>	<b>304,978</b>

Acres analyzed excludes approximately 2,300 acres not covered by the MBMG Mineral Potential reviews and about 347,000 acres of federal subsurface minerals.

Restricted Areas include WSAs, ACECs, WSRs, and T&E habitat (grizzly bear, bald eagle, and bull trout).

Closed areas include Withdrawals, proposed withdrawals, and LWCF Lands (11,246 acres), Lands in Public Water Reserves, Power site Reserves, Protective withdrawals and WCF lands are static and do not change from one alternative to another).

Open areas are all other areas.

Travel Plan road designations not included in analysis.

**Effects of Alternative B**

**Energy and Minerals**

Approximately 287,456 acres of BLM lands would be available for locatable mineral entry and consideration or other mineral disposals. Energy and minerals permits would allow for development of the mineral resources to provide for the resource needs of society. Additional lands would be available from core areas of state wildlife management areas for oil and gas leasing compared to Alternative A.

Approximately 623,420 acres would be available for fluid mineral leasing under Alternative B. Four percent (approximately 28,774 acres) of BLM-administered federal mineral estate lands would not be available for oil and gas leasing (Table 4-26) including WSAs. The remainder of federal mineral estate lands in the Planning Area would be available for leasing, subject to the stipulations specified in Chapter 2 or to Standard Lease Terms.

Table 4-27 displays acres affected by no surface occupancy, timing limitations, and controlled surface use oil and gas stipulations. Additional lands would be available from core areas of state wildlife management areas (about 20,200 acres) for oil and gas leasing compared to Alternative A. The effects would be similar to Alternative A with respect to overall percent of acres available for leasing, 92 percent for Alternative A, and 94 percent for Alternative B.

Classification	Acres
No Surface Occupancy <sup>1</sup>	280,312
Timing Limitations <sup>1</sup>	286,800
Controlled Surface Use <sup>1</sup>	38,365
Standard Lease Terms <sup>1</sup>	17,943
<b>Acres Available for Oil and Gas Leasing</b>	<b>623,420</b>
Non-discretionary (unavailable)	28,774
Discretionary (unavailable)	0
<b>Acres Unavailable for Oil and Gas Leasing</b>	<b>28,774</b>

<sup>1</sup> Acres by stipulation subcategory were calculated such that the subcategories add up to the total available acres for leasing based on the following general concepts where multiple stipulations overlapped: No Surface Occupancy stipulations override and are more restrictive than Timing Limitations, Controlled Surface Use, and Standard Lease Terms. Timing Limitation stipulations override and are more restrictive than Controlled Surface Use and Standard Lease Terms. Controlled Surface Use stipulations override and are more restrictive than Standard Lease Terms. Non-overlapping individual stipulation-specific acreages are displayed by alternative in Tables 4-23, 4-27, 4-30, and 4-33.

Type of Stipulation	Stipulation	Development Potential			Total Acres Stipulated <sup>1</sup>
		Moderate	Low	Very Low	
<b>No Surface Occupancy</b>					
Bald Eagle Nest Sites	NSO ½	1,089	1,068	419	2,576
Bighorn Sheep Core Areas	NSO	24,012	13,781	32,822	70,615
Bull Trout Habitat	NSO ½	26	1,210	2,758	3,994
Class 1 Fisheries (Blue Ribbon)	NSO ½	3,300	20,297	6,874	30,470
Continental Divide Nat'l Scenic Trail (Marysville)	NSO ½	0	0	1,574	1,574
Developed Recreation Sites	NSO ¼	207	981	1,877	3,064
Ferruginous Hawk Breeding Territories	NSO ½	0	0	0	0
Fluvial/Adfluvial Arctic Grayling Habitat	NSO ½	390	20,944	6,068	27,401
Grizzly Bear – Recovery Zone	NSO	0	1,651	5,731	7,382
Known or Discovered Special Status Plants or Populations	NSO ¼	784	2,705	4,183	7,671
Lewis & Clark National Historic Trail	NSO ½	4,671	4,547	2,610	11,828
Municipal Watersheds	NSO	13,083	86,169	47,224	146,477
National Register of Historic Places Eligible Properties/Districts and Paleontological Localities	NSO 300	74	143	1,438	1,654
Peregrine Falcon Nest Sites/Breeding Habitat	NSO 1	579	1,744	1,485	3,808

**Table 4-27**  
**Alternative B Acres Affected by Oil and Gas Stipulations**

Type of Stipulation	Stipulation	Development Potential			Total Acres Stipulated <sup>1</sup>
		Moderate	Low	Very Low	
Prairie Dog Towns <sup>2</sup>	NSO	0	0	0	0
R&PPs and 2920 Authorizations	NSO	0	0	816	816
Rivers Suitable for WSR Designation	NSO ½	928	62	1,525	2,515
Sage Grouse Strutting Grounds (leks) <sup>2</sup>	NSO ¼	0	0	0	0
Traditional Cultural Properties <sup>2</sup>	NSO ½	0	0	0	0
Westslope Cutthroat Trout Habitat (90-99% pure)	NSO ½	0	255	1,939	2,194
Westslope Cutthroat Trout Habitat (99-100% pure)	NSO ½	84	4,775	6,099	10,958
Streams with High Restoration Potential – Native Fish <sup>2</sup>	NSO ½	0	0	0	0
Wetlands, Floodplains and Riparian Areas	NSO	1,965	4,522	4,959	11,445
Wildlife Management Areas	NSO	2,971	34,971	28,050	65,992
Yellowstone Cutthroat Trout Habitat	NSO ½	599	5,050	1,462	7,111
Lands Acquired with LWCF funds	NSO	2,718	3,652	1,308	7,677
<b>Timing Limitations</b>					
Bald Eagle Breeding Habitat	TL 2/1-8/31 1	4,179	4,129	1,230	9,538
Big Game Winter/Spring Range	TL 12/1-5/15	102,198	187,180	209,595	498,973
Bighorn Sheep Yearlong Range	TL 11/1-6/30	30,109	26,067	75,103	131,279
Elk Calving/Big Game Birthing Areas	TL 4/1-6/30	1,150	8,033	11,124	20,307
Gray Wolf Dens – Former NW MT Recovery Area	TL 4/15-6/30 1	0	0	698	698
Grizzly Bear – Denning Habitat (Distribution Zone)	TL 4/1-6/30, 9/15-10/15	34	29,008	24,905	53,947
Raptor Breeding Territories (Golden eagle, Prairie falcon, Swainson’s Hawk)	TL 3/1-7/31 ½	2,108	2,528	2,782	7,419
Sage Grouse Breeding Habitat	TL 3/1-6/30 3	0	2,751	0	2,751
Sage Grouse Winter/Spring Range	TL 12/1-5/15	538	46,768	19,517	66,824
<b>Controlled Surface Use</b>					
<i>Controlled Surface Use stipulations for TES Species, Cultural and Paleontological Resource Inventory, and Special Status Plant Habitats would apply across the entire Decision Area so acreages were not calculated separately.</i>					
Soils are either areas of mass wasting, unstable land areas; Non-Boulder Batholith with Slopes >30%; or Boulder Batholith with slopes >20%	CSU	40,927	78,990	129,220	249,137
Special Recreation Management Areas	CSU	15,965	47,439	34,657	98,061
VRM Class II, III & IV Areas	CSU	65,962	77,938	104,949	248,849

<sup>1</sup>Total acres affected by each stipulation are based on individual, independent, stipulation-specific GIS mapping and have not been overlapped with any other stipulations. Figures are provided here to display which stipulations for which resources are relatively dominant in the Decision Area.

<sup>2</sup>Total values of “0” indicate that there are currently no known sites or acres associated with this particular resource. Stipulation would apply to any newly detected sites or acres in the future.

### ***Leasable Minerals***

The timing limitation stipulation for sage grouse breeding habitats would be applied to 2,751 acres of the Decision Area, with limitations on surface access restricted seasonally for geophysical, drilling, and field develop-

ment activities from March 1 to June 30 added to the total acres affected by Alternative B compared to Alternative A.

An analysis of the five areas in the Planning Area considered to be the most prospective for oil and gas explora-

tion and development was completed for Alternative B. Under this alternative, approximately six percent of these areas would not be available for oil and gas leasing. Approximately 35 percent of the areas would be subject to leasing, subject to major constraints (no surface occupancy). Approximately 55 percent could be leased, subject to moderate constraints. Approximately 1.4 percent could be leased, subject to standard terms and conditions. Alternative B is similar in its level of constraints to Alternative A (Table 4-28).

Classification	Acres
No Lease	9,821
No Surface Occupancy	41,115
Timing Limitation	59,498
Controlled Surface Use	4,182
Standard Lease Terms	1,678
<b>Total Available for Oil and Gas Leasing</b>	<b>106,474</b>

**Locatable Minerals**

Approximately 198 acres would be recommended for withdrawal from mineral entry in developed recreation sites. These acres would not be open to future mineral entry.

Under Alternative B, 287,431 acres of federal surface/minerals would remain open to mineral entry and consideration for salable mineral disposals. A total of 47,081 acres of moderate and high potential would be restricted (Table 4-25). Alternative B would have more impact on access to mineralized areas than Alternatives A and D, but less than Alternative C. Impacts to areas with low mineral potential would not be substantial to mineral production.

**Effects of Alternative C**

**Energy and Minerals**

Like in Alternative B, approximately 287,258 acres of BLM lands would be available for locatable mineral entry and consideration for other mineral disposals under Alternative C. Approximately 56,982 acres of high and medium potential would be restricted under this alternative (Table 4-25).

Alternative C could result in additional expenditures for the mineral developer and, in some cases, could affect the ability to proceed with a project should access to water or the streambed be a critical part of the proposed operations. Existing roads and facilities would be closed and the landscape and rehabilitated when no longer required for mineral or land management activities.

**Leasable Minerals**

Under Alternative C, 89 percent (580,382 acres) of the Decision Area would not be available for oil and gas leasing (Table 4-29).

Classification	Acres
No Surface Occupancy <sup>1</sup>	23,903
Timing Limitations <sup>1</sup>	0
Controlled Surface Use <sup>1</sup>	30,893
Standard Lease Terms <sup>1</sup>	17,016
<b>Acres Available for Oil and Gas Leasing</b>	<b>71,812</b>
Non-discretionary (unavailable)	28,774
Discretionary (unavailable)	551,608
<b>Acres Unavailable for Oil and Gas Leasing</b>	<b>580,382</b>

<sup>1</sup>Acres by stipulation subcategory were calculated such that the subcategories add up to the total available acres for leasing based on the following general concepts where multiple stipulations overlapped: No Surface Occupancy stipulations override and are more restrictive than Timing Limitations, Controlled Surface Use, and Standard Lease Terms. Timing Limitation stipulations override and are more restrictive than Controlled Surface Use and Standard Lease Terms. Controlled Surface Use stipulations override and are more restrictive than Standard Lease Terms. Non-overlapping individual stipulation-specific acreages are displayed by alternative in Tables 4-23, 4-27, 4-30, and 4-33.

This includes the Wilderness Study Areas identified in Alternative B, plus lands in these additional locations:

- Prairie Dog Towns
- Sage Grouse Winter/Spring Range
- Lands within 0.5 miles of Sage Grouse Strutting Grounds (leks)
- State Wildlife Management Areas
- Big Game Winter/Spring Range Elk Calving/Big Game Birthing Areas
- Bighorn Sheep Yearlong habitat
- Lands within 1 mile of Bald Eagle Nesting/Breeding areas
- Lands within 0.5 mile of Raptor Breeding Areas
- Lands within 1 mile of peregrine falcon breeding territories
- Lands within 0.5 mile of Raptor Breeding Areas
- Lands within 1 mile of peregrine falcon breeding territories
- Lands within 0.5 mile of ferruginous hawk breeding territories

- Lands within 1 mile of 99 to 100 percent pure west-slope cutthroat trout habitats
- Yellowstone Cutthroat Habitat
- Municipal Watersheds
- Lands recently acquired with LWCF funds.

The remainder of mineral estate in the Planning Area (71,812 acres) would be available for leasing, subject to the stipulations specified in Chapter 2 or to Standard Lease Terms.

**Table 4-30** displays acres affected by no surface occupancy, timing limitations, and controlled surface use oil and gas stipulations. Alternative C would eliminate most of the Decision Area for oil and gas leasing activity, deny access for oil and gas exploration on most Decision Area lands, and greatly reduce the area available for the potential discovery and development of new oil and gas resources.

Type of Stipulation	Stipulation	Development Potential			Total Acres Stipulated <sup>1</sup>
		Moderate	Low	Very Low	
<b>No Surface Occupancy</b>					
Bull Trout Habitat	NSO 1	414	3,641	5,121	9,175
Class 1 Fisheries (Blue Ribbon)	NSO 1	8,287	40,242	13,362	61,892
Continental Divide National Scenic Trail (Marysville)	NSO ½	0	0	1,574	1,574
Developed Recreation Sites	NSO ½	975	3,740	6,081	10,796
Fluvial/Adfluvial Arctic Grayling Habitat	NSO ½	390	20,944	6,068	27,401
Gray Wolf Dens – Former NW MT Recovery Area	NSO 1	0	0	698	698
Grizzly Bear – Denning Habitat (Distribution Zone)	NSO	34	29,008	24,905	53,947
Grizzly Bear – Recovery Zone	NSO	0	1,651	5,731	7,382
Known or Discovered Special Status Plants or Populations	NSO ½	1,953	5,856	9,092	16,902
Lewis & Clark National Historic Trail	NSO 1	10,336	10,223	4,510	25,070
National Register of Historic Places Eligible Properties/ Districts and Paleontological Localities	NSO 300	74	143	1,438	1,654
R&PPs and 2920 Authorizations	NSO	0	0	816	816
Rivers Suitable for WSR Designation	NSO 1	2,175	3,721	8,530	14,426
Sage Grouse Breeding Habitat	NSO 3	0	2,751	0	2,751
Special Recreation Management Areas	NSO	15,965	47,439	34,657	98,061
Traditional Cultural Properties <sup>2</sup>	NSO ½	0	0	0	0
Westslope Cutthroat Trout Habitat (90-99% pure)	NSO ½	0	255	1,939	2,194
Wetlands, Floodplains and Riparian Areas	NSO	1,965	4,522	4,959	11,445
<b>Timing Limitations</b>					
Ferruginous Hawk Breeding Territories <sup>2</sup>	NL ½ + TL 3/1-8/31 1	0	0	0	0
<b>Controlled Surface Use</b>					
<i>Controlled Surface Use stipulations for TES Species, Cultural and Paleontological Resource Inventory, and Special Status Plant Habitats would apply across the entire Decision Area so acreages were not calculated separately.</i>					
Soils are either areas of mass wasting, unstable land areas; Non-Boulder Batholith with Slopes >30%; or Boulder Batholith with slopes >20%	CSU	40,927	78,990	129,220	249,137
VRM Class II, III & IV Areas	CSU	63,231	77,938	104,949	246,118

<sup>1</sup>Total acres affected by each stipulation are based on individual, independent, stipulation-specific GIS mapping and have not been overlapped with any other stipulations. Figures are provided here to display which stipulations for which resources are relatively dominant in the Decision Area.

<sup>2</sup>Total values of “0” indicate that there are currently no known sites or acres associated with this particular resource. Stipulation would apply to any newly detected sites or acres.

An analysis of the five areas in the Planning Area considered to be the most prospective for oil and gas exploration and development was completed for Alternative C. Under this alternative approximately 93 percent of these areas would not be available oil and gas leasing (**Table 4-31**).

<b>Classification</b>	<b>Acres</b>
No Lease	<b>108,784</b>
No Surface Occupancy	<b>2,185</b>
Timing Limitation	<b>0</b>
Controlled Surface Use	<b>3,898</b>
Standard Lease Terms	<b>1,428</b>
<b>Total Available for Oil and Gas Leasing</b>	<b>7,511</b>

Approximately two percent of the areas would be leasable, subject to major constraints (no surface occupancy). Approximately three percent would be leased subject to moderate constraints. Approximately two percent would be leased subject to standard terms and conditions. Based on this level of constraints it can be assumed that it is not reasonable to foresee any federal oil and gas development under this alternative.

### ***Locatable Minerals***

Effects to area availability for locatable mineral operations would be slightly greater than under Alternative B, with an additional 9,901 acres of high and medium potential lands being restricted. Impacts to areas with low mineral potential would not be substantial to mineral production.

### ***Salable Minerals***

The BLM would not allow the purchase of salable minerals (common varieties of sand, stone, gravel, pumice, cinders, clay and petrified wood), unless desired by the state or counties, or within existing community pits.

Alternative C would have the same effects on mining as Alternative A; however, Alternative C would eliminate private citizens and municipal applications for new sites because county and state governments would be the agencies that have to initiate the request. Private citizens and municipalities would have to purchase their mineral materials from commercial sources and pay higher costs for transportation.

## **Effects of Alternative D**

### ***Energy and Minerals***

Like in Alternative A, approximately 287,456 acres of BLM lands would be available for locatable mineral entry and consideration for other mineral disposals (**Table 4-25**).

Roads could be built in riparian areas, however, avoidance, mitigations, and BMPs would result in effects being the same as Alternatives A and B. Roads and facilities no longer required for mineral, or land management activities would be reclaimed to the extent possible.

### ***Leasable Minerals***

Under Alternative D approximately 615,788 acres would be available for fluid mineral leasing. Six percent (36,406 acres) of federal mineral estate lands would not be available for oil and gas leasing, including the Wilderness Study Areas and lands recently acquired with LWCF funds (**Table 4-32**).

<b>Classification</b>	<b>Acres</b>
No Surface Occupancy <sup>1</sup>	93,288
Timing Limitations <sup>1</sup>	436,410
Controlled Surface Use <sup>1</sup>	32,011
Standard Lease Terms <sup>1</sup>	54,079
Acres Available for Oil and Gas Leasing	615,788
Non-discretionary (unavailable)	28,774
Discretionary (unavailable)	7,632
<b>Acres Unavailable for Oil and Gas Leasing</b>	<b>36,406</b>

<sup>1</sup>Acres by stipulation subcategory were calculated such that the subcategories add up to the total available acres for leasing based on the following general concepts where multiple stipulations overlapped: No Surface Occupancy stipulations override and are more restrictive than Timing Limitations, Controlled Surface Use, and Standard Lease Terms. Timing Limitation stipulations override and are more restrictive than Controlled Surface Use and Standard Lease Terms. Controlled Surface Use stipulations override and are more restrictive than Standard Lease Terms. Non-overlapping individual stipulation-specific acreages are displayed by alternative in Tables 4-23, 4-27, 4-30, and 4-33.

The remainder of mineral estate in the Decision Area would be available for leasing, subject to the stipulations specified in Chapter 2 or to Standard Lease Terms.

Effects would be similar to Alternative B with respect to overall acres of BLM administered land available for leasing and not available for leasing (compare **Table 4-26** and **Table 4-33**). However, Alternative D would apply the same stipulations to different acres. For example, there are fewer acres of land under No Surface Occupancy and Controlled Surface Use stipulations and a much larger number of acres under Timing Limitations and Standard Lease Terms stipulations under Alternative D, than Alternative A (**Table 4-22** and **Table 4-33**). As a result Alternative D would be less stringent in the application of stipulations for leasing of essentially the same amount of land as Alternative A. The amount of

actual land disturbance from these less stringent leasing stipulations should be relatively minor because the amount of drilling would be driven by exploration potential, which is generally low throughout federal mineral estate lands.

**Table 4-33** displays acres affected by no surface occupancy, timing limitations, and controlled surface use oil and gas stipulations under Alternative D.

Type of Stipulation	Stipulation	Development Potential			Total Acres Stipulated <sup>1</sup>
		Moderate	Low	Very Low	
<b>No Surface Occupancy</b>					
Bald Eagle Nest Sites	NSO ½	1,089	1,068	419	2,576
Bull Trout Habitat	NSO ½	26	1,210	2,758	3,994
Known or Discovered Special Status Plants or Populations	NSO	54	672	299	1,025
National Register of Historic Places Eligible Properties/ Districts and Paleontological Localities	NSO 300	74	143	1,438	1,654
Peregrine Falcon Nest Sites/Breeding Habitat	NSO 1	579	1,744	1,485	3,808
Prairie Dog Towns <sup>2</sup>	NSO	0	0	0	0
R&PPs and 2920 Authorizations	NSO	0	0	816	816
Sage Grouse Strutting Grounds (leks) <sup>2</sup>	NSO ¼	0	0	0	0
Traditional Cultural Properties <sup>2</sup>	NSO ½	0	0	0	0
Westslope Cutthroat Trout Habitat (99-100% pure)	NSO ½	84	4,775	6,099	10,958
Wetlands, Floodplains and Riparian Areas	NSO	1,965	4,522	4,959	11,445
Wildlife Management Areas	NSO	2,971	34,971	28,050	65,992
<b>Timing Limitations</b>					
Bald Eagle Breeding Habitat	TL 2/1-8/31 1	4,179	4,129	1,230	9,538
Big Game Winter/Spring Range	TL 12/1-5/15	102,198	187,180	209,595	498,973
Bighorn Sheep Yearlong Range	TL 11/1-6/30	30,109	26,067	75,103	131,279
Ferruginous Hawk Breeding Territories <sup>2</sup>	TL 3/1-7/31 ½	0	0	0	0
Sage Grouse Breeding Habitat	TL 3/1-6/30 3	0	2,751	0	2,751
Sage Grouse Winter/Spring Range	TL 12/1-5/15	538	46,768	19,517	66,824
<b>Controlled Surface Use</b>					
Controlled Surface Use stipulations for TES Species, Cultural and Paleontological Resource Inventory, and Special Status Plant Habitats would apply across the entire Decision Area so acreages were not calculated separately.					
Class 1 Fisheries (Blue Ribbon)	CSU ½	3,300	20,297	6,874	30,470
Developed Recreation Sites	CSU ¼	207	981	1,877	3,064
Gray Wolf Dens – Former Recovery Area	CSU	14,142	8,487	72,071	94,700
Grizzly Bear – Denning Habitat (Distribution Zone)	CSU	34	29,008	24,905	53,947
Grizzly Bear – Recovery Zone	CSU	0	1,651	5,731	7,382
Fluvial/Adfluvial Arctic Grayling Habitat	CSU ½	390	20,944	6,068	27,401
Municipal Watersheds	CSU	13,083	86,169	47,224	146,477
Westslope Cutthroat Trout Habitat (90-99% pure)	CSU ½	0	255	1,939	2,194
Yellowstone Cutthroat Trout Habitat	CSU ½	599	5,050	1,462	7,111

<sup>1</sup>Total acres affected by each stipulation are based on individual, independent, stipulation-specific GIS mapping and have not been overlapped with any other stipulations. Figures are provided here to display which stipulations for which resources are relatively dominant in the Decision Area.

<sup>2</sup>Total values of “0” indicate that there are currently no known sites or acres associated with this particular resource. Stipulation would apply to any newly detected sites or acres.

An analysis of the five areas in the Planning Area considered to be the most prospective for oil and gas exploration and development was completed for Alternative D. Under this alternative approximately eight percent of federal mineral estate in these areas would not be available for oil and gas leasing. Approximately seven percent of the areas would be subject to leasing subject to major constraints (no surface occupancy). Approximately 87 percent would be leased subject to moderate constraints. Approximately five percent would be leased subject to standard terms and conditions. Based on this analysis Alternative D would be the least restrictive of the four alternatives for oil and gas development (Table 4-34).

<b>Classification</b>	<b>Acres</b>
No Lease	9,821
No Surface Occupancy	7,981
Timing Limitation	86,286
Controlled Surface Use	6,235
Standard Lease Terms	5,972
<b>Total Available for Oil and Gas Leasing</b>	<b>106,474</b>

### ***Locatable Minerals***

Effects on lands available for locatable mineral entry would be largely the same as Alternatives B and C. Alternative D has less of an impact than Alternatives B and C and more of an impact on access to mineralized areas than Alternative A (Table 4-25).

### ***Salable Minerals***

Effects from mining would be the same as Alternative A. Although mitigations for natural resources are not specifically stated in Alternative D, the BLM would apply mitigations, BMPs, and other restrictions on quarrying operations and plans for ultimate reclamation and closure to minimize the impacts on natural resources.

## **RECREATION**

### **Effects Common to All Alternatives**

Vegetative treatments would potentially affect Recreation Opportunity Spectrum (ROS) classes, natural settings, and user experience levels due to changes in apparent naturalness, screening quality and user distribution patterns, and social conflicts.

Prescribed burning could occur more frequently in the Special Recreation Management Areas (SRMAs) outside of the urban interface, which could negatively alter the recreation experiences due to smoke and poor air quality. These impacts would be temporary and could be

mitigated or minimized with respect to timing, location, and methods used. Reducing the potential for future large-scale wildland fires would benefit recreation opportunities and experience levels over the long-term.

Managing riparian areas to restore and improve natural functioning conditions would benefit recreation users seeking opportunities for scenic viewing, fishing, bird-watching, hunting, and hiking. Development of new recreation sites and expansion of existing recreation facilities would need to minimize adverse impacts to riparian areas, which could limit site development opportunities and access concentration points to dispersed recreation use areas.

Allowing no new grazing permits on river islands would result in an improvement in water-based recreation experiences for boaters, anglers, nature observers, picnickers, and tent campers in these areas. Managing livestock numbers and practices in a manner that is responsive to all resource needs, combined with interdisciplinary reviews will maintain or enhance recreation experiences over the long-term.

Habitat improvement projects for special status and priority species would have an impact on recreation uses, especially those seeking opportunities for wildlife viewing and hunting. Creating blocks of hiding and security for elk could improve the number of elk and other big game for viewing and hunting.

Minimizing human activities that disrupt habitat during sensitive seasons (breeding periods or during winter) would limit the time and type of recreation uses and travel within these sensitive areas.

Recreation restrictions for aquatic habitat protection may impact water-based recreation and shoreline uses during months of breeding or migrating. Management to enhance or rehabilitate aquatic and riparian habitat would positively impact the angling recreation use in areas where there are nationally recognized sport fishing opportunities, such as the Madison, Big Hole, Jefferson, Missouri, and Yellowstone Rivers.

Developing comprehensive and collaborative travel management plans throughout the Decision Area that are responsive to environmental values and social needs would have varying effects on motorized and non-motorized recreation users. Although the limited travel designation restricts all motorized public travel to designated routes, variances for appropriate uses would be considered and the 300-foot rule exception for dispersed camping, firewood gathering, and game retrieval varies among the 13 Travel Planning Areas in the Decision Area. The 300-foot rule allows dispersed camping in the nine areas where travel plans have not been completed and as per indicated in previously completed site-specific travel plans. Although this rule limits opportunities for recreational firewood gathering and impacts game retrieval, it would enhance ROS classes, travel management, and non-motorized experiences. The 300-

foot rule exception for dispersed camping would allow greater opportunities for motorized camping in primarily rural or motorized semi-primitive recreation settings. The transportation system would continue to provide access to a variety of recreation opportunities and experiences. Conducting scheduled recreation site and route condition assessments and maintaining these facilities in accordance with BLM standards would promote public safety, and enhance recreation opportunities and visitor expectations.

All existing recreation sites would continue to be managed for public use and enjoyment. The more developed fee sites where visitation is highest would be given priority for funding to ensure that user expectations are met.

Limiting camping stays to 7 days at recreation sites in areas regularly exceeding capacities during fee-use seasons would allow more equitable opportunities for visitors to obtain and enjoy a camping site.

Management of special recreation use permits for commercial, competitive, and special events would continue to be considered on a case-by-case basis with priority given to existing permittees as new permits would not be issued that conflict with existing permit uses.

The recreational management emphases would be prioritized within designated Special Recreation Management Areas to ensure quality recreation opportunities and experiences are provided. Intensive management in these priority areas would be dedicated to providing quality settings and experiences for recreation opportunities in response to identified market demands.

Management of the six WSAs would continue to provide primitive and unconfined recreation opportunities and solitude experiences in a natural setting. If Congress releases a WSA from further consideration, then the resource protection under the IMP guidelines would not continue and these areas would be managed as specified under each alternative. The Sleeping Giant WSA and the Sheep Creek WSA would be protected as ACECs under each alternative.

BLM would continue to manage recreational resources in a cooperative manner with other agencies, which would promote comprehensive management for a wide diversity of both water and land based opportunities in the Decision Area.

Proposed VRM management would continue to provide for mitigating visual disturbances. This would have a positive impact on recreation resources and experiences by creating a landscape compatible with the recreation settings and SRMA management.

The Sleeping Giant ACEC is the only area that would be managed as an ACEC under all alternatives. Management actions would continue to preserve a natural setting for recreation uses within Sleeping Giant. This management would benefit solitude experiences and opportuni-

ties for non-motorized and unconfined forms of recreation.

Motorized recreation uses could be temporarily, seasonally, or permanently restricted in areas with significant soil erosion or soil compaction. This could reduce motorized recreation opportunities to a minor degree on a case-by-case basis.

Management actions to enhance access to BLM lands would positively affect recreation users, because the public would have additional opportunities to enjoy recreation activities on public land.

Solid and fluid mineral actions (road building, exploration, excavation/extraction, and removal) could impact recreation uses due to associated noise, smoke and visible human disturbances. Project-level environmental analyses would consider and mitigate these impacts on recreation use before authorizations are granted.

## Effects of Alternative A

Vegetative treatments for grasslands (up to 5,250 acres/decade), forest types (up 7,500 acres/decade) and forest product sales (up to 27 MMBF/decade) would create the second lowest potential of all alternatives for impacts on recreation settings and dispersed recreation uses due to associated disturbances.

Riparian actions would impact dispersed recreation experiences the most and developed site management the least, given that riparian management measures would be less restrictive than with Alternatives B and C.

Assuming implementation of the high end of the proposed ranges of noxious weed treatment acres under the action alternatives, proposed noxious weed treatments under Alternative A (up to 20,000 acres/decade) would be the lowest of all alternatives and therefore impacts on recreationists seeking natural settings could be affected by this alternative the most.

Road management would generally allow existing roads to remain open for public use. This would benefit motorized vehicle users and potentially impact non-motorized recreationists to the greatest degree.

Recreationists seeking organized, motorized events would be affected the least under this alternative since 10 of the 13 Travel Planning Areas would remain available for consideration. Snowmobilers would continue to have the greatest opportunities under this alternative since fewer restrictions would be imposed as 143,206 acres would remain open to cross-country use, and 137,038 acres would be available but limited to established routes.

Motorized opportunities for wheeled vehicle travel would also be the greatest under this alternative as 4,367 acres would be open to cross-country travel and approximately 684 miles of routes (roads and trails) would be available (yearlong or seasonally). Conversely, oppor-

tunities for non-motorized recreationists to enjoy areas free of the sights and sounds of motorized activities would be affected the most.

No outfitter and guide fees would be charged for the commercial fishing and floating use of BLM river and lake access sites. Extensions to the 14-day camping limit would continue to be considered for hunters and other users subject to stipulations. Outfitter and guide permit issuance would continue to be considered for both day-use and overnight camping.

This alternative does not allocate ROS classifications. As a result, no ROS allocation system would be established to help recreation managers communicate and provide appropriate settings for a diverse range of opportunities and experiences. Recreation use could be negatively affected as recreation opportunities would continue to be managed in a manner that is reactive rather than proactive. Planning efforts, recreation opportunities, and management would continue to be prioritized primarily within the five SRMAs. The SRMAs represent over 66,000 acres with recreation management focus, which is more than in Alternative D, but less than in Alternatives B and C (Table 4-35).

Motorized and non-motorized recreational uses would continue to be allowed 24 hours a day in the Scratchgravel Hills area. With no change in management, the impacts of this action would be continued violations of

travel management restrictions, social conflicts, human caused fires, and illegal activities.

All six WSAs would continue to be managed as WSAs, which would result in no change to the availability of primitive recreation opportunities and experiences provided in WSAs.

Although the Wild and Scenic River suitability study for the four eligible rivers would not be completed, the recreation values associated with these segments would be protected under WSR interim management.

Approximately 56,900 acres would be managed as VRM Class I and II areas and therefore recreation settings governed by these classes would remain primarily natural in character. This alternative would protect the second lowest acreage under these classes compared to other alternatives and includes WSAs and major river frontage lands.

Recreation sites would not be recommended for withdrawal from mineral entry and therefore these sites and the visitor experiences associated with them could be affected by mineral related activities.

This alternative imposes the second lowest amount of restrictive stipulations on solid and fluid mineral activities and therefore related impacts would have a relatively high probability for affecting recreation settings and visitor experiences.

Name	SRMAs Included in the Alternative = X			
	A	B	C	D
Hauser Lake		X	X	X
Lower Holter Lake/Missouri River		X	X	X
Holter Lake/Sleeping Giant <sup>1</sup>	X			
Humbug Spires	X	X	X	
Lewis & Clark National Trail	X			
Pipestone		X	X	X
Scratchgravel Hills	X	X	X	
Sheep Mountain		X	X	X
Sleeping Giant/Missouri River		X	X	
Uppermost Missouri River		X	X	X
Upper Big Hole River	X	X	X	X

Source: BLM Butte Field Office, RMP Alternatives Description, 2005.

<sup>1</sup> The action alternatives split this SRMA into Holter Lake/ Missouri River and Sleeping Giant SRMA.

## Effects Common to Action Alternatives

All action alternatives would establish ROS classifications (**Appendix H, Table 4-36**) which would facilitate management of desired recreation opportunities, experience levels, facility developments, and other resource uses.

The majority of the potential SRMAs would target the Community Recreation Tourism Market (RTM). This emphasis would impact recreation management in that a marketing focus would be adopted. This emphasis would be to attract and provide opportunities/services for visitors from nearby communities or from communities dependant on recreation-based tourism.

Upper Big Hole River SRMA would be managed as a Destination RTM and would attract national or regional recreation-tourism visitors and others who value public lands as recreation-tourism destinations.

SRMAs managed for Undeveloped RTM would be Sleeping Giant/Missouri River and Humbug Spires. This management emphasis would attract national, regional, or local visitors who value public lands for the distinctive kinds of dispersed recreation produced by the vast size and largely open, undeveloped character of the recreation setting.

Providing forested, security cover (250-acre, minimum blocks) for big-game would benefit non-motorized recreation uses compared to Alternative A.

Monitoring roads during hunting season could reduce the number of violations and misdeeds, and therefore provide a more enjoyable recreation experience for visitors.

Semi-primitive non-motorized would be the primary ROS classification on BLM lands in the Sleeping Giant/Missouri River (ACEC and eligible WSR portions), Humbug Spires, and Sheep Mountain (northern portion) potential SRMAs. The semi-primitive motorized ROS class would be emphasized in the Sleeping Giant (outside the ACEC). The remaining potential SRMAs would emphasize either the roaded natural or rural ROS class, where human influences are noticeable and interaction with others is typical.

Establishing specific guidance for managing designated boat-in camp sites along the shoreline of Holter Lake and Hauser Lake shoreline (if needed) would address the relationship between resource impact concerns and boat-in dispersed camping opportunities.

Issuing fees through recreation permits to commercial fishing and floating outfitters using developed sites to access state waterways could increase client fees and possibly deter some outfitters from providing fishing and floating experiences to visitors on some water segments.

Additional mitigations on new special recreation permits would potentially affect new permittees more than in Alternative A.

Extending commercial outfitting permits from 5 to 10 years for permittees that demonstrate satisfactory performance standards would improve management efficiency and potentially act as an incentive that could improve outfitter performance standards.

BLM would coordinate with MFWP to manage appropriate uses at BLM launch sites as necessary to ensure quality recreation opportunities and reduce social conflicts on streams and lakes.

Given budgetary constraints, new sites that have partnership support would be given first priority for development. This policy would minimize funding shortfalls at existing sites where investments and traditional uses are established.

Subjecting recreation sites to Land Health Standards could increase mitigation costs at existing sites and potentially limit opportunities for new sites. Conversely, this stipulation would enhance the natural setting of recreation sites as well as associated visitor experiences.

Implementing management guidance for SRMAs and Recreation Management Zones would enhance targeted opportunities, visitor experiences, appropriate facility levels, and settings. Implementing land management consistent with surrounding lands and prescriptions would protect WSA values if released from further consideration as wilderness.

Sleeping Giant, Sheep Creek, Humbug Spires, and Elkhorns Tack-on WSAs would be managed as ACECs

ROS Class	Alt A	Alt B		Alt C		Alt D	
		Acres	% of DA	Acres	% of DA	Acres	% of DA
Semi-primitive Non-motorized	NA	36,800	12%	63,700	21%	30,000	10%
Semi-primitive Motorized	NA	71,800	23%	66,900	22%	37,600	12%
Roaded Natural	NA	171,100	56%	158,100	51%	186,100	61%
Roaded Modified	NA	16,600	5%	15,900	5%	19,600	6%
Rural	NA	11,000	4%	2,700	1%	34,000	11%

Source: BLM Butte Field Office, GIS data, 2005.

which would promote administrative protection of the existing recreation values and opportunities. These areas would continue to offer natural settings and user experiences subject to fewer restrictions governing mineral activities if Congress should remove them from further wilderness consideration.

The action alternatives would require that the two National Trails be managed to consider the adopted ROS classification, VRM classes, travel plans, and oil and gas stipulations. Re-routing the Continental Divide Trail would increase the recreation opportunities for the non-motorized user because the trail segment would traverse through more natural settings and less privately owned property. Recreation experiences for the non-motorized users would improve because the re-route would be closed to motorized uses, which would reduce user conflicts.

ACEC designations for Sleeping Giant (11,679 acres), Humbug Spires (8,400 acres), and the Elkhorns Tack-on (3,575 acres) would continue to be managed for semi-primitive, non-motorized recreation opportunities.

Retaining 298,408 acres in BLM ownership and establishing a high priority for land acquisitions to enhance special management designations and recreation sites would benefit long-term recreation opportunities especially, for non-motorized users.

Managing mineral activities to meet Land Health Standards would benefit natural settings and associated recreation experiences. Providing accessibility to mineralized areas for exploration and development would impact the naturalness of ROS classes and the recreation experiences associated with them. The restoration of abandoned mine lands and hazardous material areas would enhance public safety, ROS classes, and the quality of opportunities across BLM lands.

## Effects of Alternative B

Proposed vegetative treatments for grasslands (up to 11,800 acres/decade), shrublands (up to 3,650 acres/decade), forest types (up 18,500 acres/decade) and forest product sales (up to 25 MMBF/decade), although mitigated, would create the second highest potential for impacts on dispersed recreation uses due to associated disturbances. The construction of new permanent roads, although minimized due to resource and travel planning constraints, could impact ROS classes while enhancing motorized travel and access opportunities.

Actions to restore riparian areas would improve dispersed recreation experiences and could affect developed site management the second most of all alternatives, given that Riparian Management Zones would be larger than in either Alternative A or D.

Proposed noxious weed treatments (up to 50,000 acres/decade) would be the second highest and therefore recreationists seeking natural setting experiences could

be benefited to the second greatest extent of all alternatives.

Restrictions on prescribed burning would coincide with the peak recreation use season. Although these actions would create some short and mid-term impacts on ROS, long-term benefits should be realized due to a lower likelihood for large scale fire events.

Under Alternative B, where road densities exceed 1 mi/mi<sup>2</sup> in big game winter range and calving areas, there would be no net increase in permanent roads. This prescription would affect motorized users the second most of the action alternatives (more than Alternative D but less than Alternative C), primarily in the four pending travel plan areas for which site-specific travel planning would be done after finalization of this RMP (Missouri Foothills, Broadwater, Jefferson and Park/Gallatin).

Recreationists seeking organized, motorized events would be affected the second most under this alternative as only the Pipestone area would be considered for competitive as well as non-competitive events.

Snowmobile riding opportunities would be reduced to the second greatest extent of the alternatives as 112,682 acres would be open to cross-country use and on 139,921 acres use would be limited to established routes.

Implementing a flat annual Special Recreation Use Permit fee with the long-term goal of developing a coordinated, interagency fee system with MFWP and other agencies would promote fair value revenues from outfitters using waterway access sites for commercial fishing and floating. This alternative would be more efficient than Alternative C for both the customer as well as BLM since there would be less required paperwork and the annual fee would cover all access sites. Preference for granting extensions to the 14-day camping limit during the hunting season would focus on developed recreation campgrounds after the high use fee season. This prescription would better protect resource values while camping opportunities (primarily for hunters) beyond 14 days would be reduced. Restricting special recreation permit camping authorizations during the hunting season to hardened campgrounds and not allowing such uses in developed recreation sites from Memorial to Labor Day weekends would reduce conflicts with public hunters and campers. Impacts to hunting outfitters would be minimal given that no camping permits exist and demands are negligible.

The effects of closing the Scratchgravel Hills area to motorized vehicle uses would reduce use violations, risks of human caused fires, conflicts with proximity residents and law enforcement incidents.

Limiting all BLM boat-in camping opportunities along Holter and Hauser Lake shorelines to designated sites would reduce the number of dispersed recreation sites available along the shoreline.

This alternative would allocate ROS classifications as follows: SPNM-36,800, SPM-71,800, RN-171,100, RM-16,600, and R-11,000. These designations represent a more evenly balanced approach for managing recreation settings, opportunities and experiences for a more diversified representation of settings and experiences as compared to Alternatives C and D. Opportunities for both motorized and non-motorized opportunities within the range of varying settings would be provided most evenly. Approximately 56 percent of the Decision Area would be in the roaded natural ROS (Table 4-36).

In addition to the Sleeping Giant area, a large portion of the Elkhorns, Humbug Spires, and Ringing Rocks would be designated as ACECs. ACEC designation would provide long-term protection of each area's ROS values and recreation opportunities. Alternative B provides the second greatest amount of protection associated with proposed ACEC designations of any of the alternatives.

Nine SRMAs totaling 78,700 acres would be designated for priority recreation management, four more than in Alternatives A and D (Table 4-35). These SRMAs include areas along major waterways (rivers and lakes), highly natural areas, and OHV riding areas where management demands are the greatest. Pipestone and Sheep Mountain would be newly managed as SRMAs. The majority of these areas would be managed as ROS-Roaded Natural (46 percent) and ROS-Semi-primitive Non-motorized (31 percent).

Recommending Muskrat Creek (2.6 miles) as suitable, and the Upper Missouri River (3.1 miles) as preliminarily suitable as National Wild and Scenic Rivers could provide long-term protection for the associated recreation values (natural viewing, hiking, fishing, and hunting) if designated by Congress. Conversely, no additional protection would be established for the recreation values associated with the Upper Big Hole River and Moose Creek segments since they would not be recommended in this alternative.

Across the Field Office, approximately 80,400 acres would be managed as VRM Class I and II areas and therefore recreation settings governed by these classes would be managed for natural character retention. The remaining 226,900 acres would be managed as VRM Class III and IV which would allow more landscape alterations such as roads which would increase motorized access and travel opportunities. This alternative would have the second highest acreage under Classes I and II and the second lowest acreage under Classes III and IV of all the alternatives.

Under Alternative B, 198 acres in eight recreation sites would be recommended for withdrawal from mineral entry. This would protect these recreation facility investments as well as site opportunities and experiences better than in Alternatives A and D, which propose no new withdrawals for developed recreation sites.

This alternative imposes the second highest amount of restrictive stipulations of all alternatives on solid and fluid mineral activities and therefore related impacts would have a lower probability for impacting recreation settings and visitor experiences than in Alternatives A and D.

## Effects of Alternative C

Proposed vegetative treatments for grasslands (up to 2,000 acres/decade), shrublands (up to 750 acres/decade), forest types (up to 8,500 acres per decade), and forest product sales (up to 12 MMBF/decade) would create the lowest potential for impacts on recreation settings and dispersed uses due to associated disturbances from these actions.

Unlike the other alternatives, Alternative C would prohibit new permanent roads associated with forest harvests and timber sales. This prescription would benefit natural recreation settings and limit additional access for motorized-based recreation activities.

Actions to restore riparian areas would improve dispersed recreation experiences and affect developed site management the most of any alternatives, given that Riparian Management Zones would be the most extensive of any alternative.

Impacts from the timing of prescribed fires would be the same as described for Alternative B.

Proposed noxious weed treatments (up to 38,000 acres/decade) would be the second lowest of any alternative and therefore recreationists seeking natural setting experiences would be potentially affected to the second greatest extent due to a relatively small amount of proposed treatments.

Under Alternative C, where road densities exceed 0.5 mi/mi<sup>2</sup> in big game winter range and calving areas, there would be no net increase in permanent roads. This prescription would impact motorized riders the most of all alternatives, primarily in the four pending travel plan areas for which site-specific travel plans would be developed after finalization of this RMP (Missouri Foothills, Broadwater, Jefferson, and Park/Gallatin).

Recreationists seeking organized, motorized events would be affected the most under this alternative since none of these activities would be authorized within the Decision Area. Under this alternative, conflicts with other motorized and non-motorized users would be reduced and groups seeking such events would need to find other non-BLM areas.

Snowmobile riding opportunities would be reduced to the greatest extent of all the alternatives. Designated open areas (to cross-country use) would be reduced to 26,148 acres; closed areas would be increased to 65,270 acres; and limited areas would be increased to 215,891 acres.

Implementing Special Recreation Use Permits and established fees would increase costs to outfitters using BLM sites to access state waterways the most of any of the alternatives. This prescription would displace some outfitter fishing and floating use to non-BLM site segments and it would not be as customer friendly as Alternative B or D due to the need for additional permits and actual use statements. In addition, BLM would incur higher management demands than from any other alternatives due to the large number of permits and required process procedures.

The effects of eliminating variances to the 14-day camping limit would best protect recreation settings while camping opportunities (primarily for hunters) beyond 14 days would be reduced the most compared to the other alternatives. Impacts of restricting commercial camping uses would be similar to Alternative B.

Although closing the entire Scratchgravel Hills area to both motorized and non-motorized recreational uses after dark (dusk to dawn) yearlong would best protect the area from violations, management and law enforcement demands would increase compared to Alternatives A, B, and D. Impacts on legitimate public users would be negligible as their use of the area after dark is minimal.

Closing the entire BLM shoreline on Holter and Hauser Lake to boat-in camping except at developed sites would eliminate opportunities for dispersed camping and best protect the natural conditions within these recreation settings.

This alternative maximizes the acreage designated under ROS as semi-primitive non-motorized at 63,700 acres which is about twice that of Alternatives B and D (Table 4-36). The effects of this increase would enhance opportunities for hiking, walk-in hunting, mountain biking, horseback riding and other forms of non-motorized uses. Conversely, motorized uses would be eliminated within these areas.

Alternative C would designate the same nine SRMAs as Alternative B (Table 4-35); however, most of the SRMAs would be within the semi-primitive, non-motorized ROS, 46 percent, with the roaded natural ROS encompassing approximately 31 percent (Table 4-36).

Recommending all four river segments (12 miles) as suitable National Wild and Scenic Rivers would provide the greatest long-term protection of any of the alternatives for the associated values if designated by Congress.

Alternative C would manage the most areas and acres under ACECs. Impacts on recreation from the Sleeping Giant and Humbug Spires ACECs would be the same as that described in "Effects Common to Action Alternatives". Impacts on recreation from the Ringing Rocks ACEC would be the same as that described for Alternative B.

Management of the Elkhorn ACEC and the addition of Spokane Creek (14 acres) would have similar impacts on recreation uses as described for Alternative B, except Alternative C would emphasize more opportunities for non-motorized recreation.

At the Field Office scale, this alternative would designate 99,100 acres under VRM Class I and II areas. The natural character of the recreation settings within these classes would be best protected from disturbances than in any other alternative. The remaining 208,200 acres would be managed as VRM Class III and IV which would allow more landscape alterations such as roads and would increase motorized access and travel opportunities. This alternative has the highest acreage under Classes I and II and the lowest acreage under Classes III and IV of all alternatives.

As with Alternative B, recommending 198 acres in eight recreation sites for withdrawal from mineral entry would protect these recreation facility investments as well as site opportunities and experiences better than in Alternatives A and D that do not propose these withdrawals.

This alternative would impose the highest amount of restrictive stipulations on solid and fluid mineral activities of all alternatives and therefore related activities would have a lower probability for impacting recreation settings and visitor experiences than with any other alternative.

## Effects of Alternative D

Proposed vegetative treatments for grasslands (up to 3,500 acres/decade), shrublands (up to 6,800 acres/decade), forest types (up to 23,250 acres/decade) and forest product sales (up to 30 MMBF/decade) would create the highest potential of any alternative for impacts on recreation settings and dispersed uses due to associated disturbances from these actions.

Effects of riparian, forest product roads and re-issuance of grazing permit actions would be similar to Alternative A.

Proposed noxious weed treatments (up to 61,000 acres/decade) would be the highest of any alternative and therefore impacts on recreationists seeking natural setting with fewer invasive weeds could be benefited by this alternative the most.

Under Alternative D, where road densities exceed 1.5 mi/mi<sup>2</sup> in big game winter range and calving areas, there would be no net increase in permanent roads. This prescription would have the second lowest impacts on motorized riders in the four pending travel plan areas for which site-specific travel plans would be developed after finalization of this RMP (Missouri Foothills, Broadwater, Jefferson, and Park/Gallatin) since road densities would be more restrictive under Alternatives B and C.

Groups seeking organized motorized activities would be affected less than under Alternative C as the Pipestone

Area would remain available for **competitive and** non-competitive, motorized events. Areas open to snowmobiles and effects on users would be similar to Alternative B.

Special recreation use permits would not be required for commercial fishing and floating outfitters that use BLM river and lake access sites, until a multi-agency state-wide fee system is established. Of all alternatives, Alternative D would be the most customer-friendly and management-efficient method of obtaining fair value returns from commercial users should the state and other agencies decide to participate.

The effects of managing variances to the 14-day camping limit; access within the Scratchgravel Hills; commercial camping permits; and boat-in camping along Hauser and Holter Lakes would be the same as with Alternative A as no changes in current management would occur in Alternative D.

With regard to ROS designations, Alternative D would be similar to Alternative A in that about 90 percent of the total Decision Area would be managed under ROS designations that allow motorized activity (**Table 4-36**).

Planning efforts, recreation opportunities, and management would continue to be prioritized within five SRMAs, as in Alternative A (**Table 4-35**). These SRMAs represent the highest visitor use areas where facility infrastructure and improvements are the greatest.

None of the four eligible river segments would be recommended as suitable for National Wild and Scenic River designation by Congress. Consequently, the ROS and primitive forms of recreation would be subjected to additional resource uses and associated impacts.

Impacts on recreation from management of the Humbug Spires and Sleeping Giant ACECs would be the same as described in Alternative B. The Elkhorns ACEC would be limited to the existing WSA boundary, about 3,575 acres. This designation would ensure that semi-primitive non-motorized recreation opportunities would continue to be provided and emphasized, if the WSA were to be removed from Congressional wilderness consideration. Not designating Spokane Creek and Ringing Rocks could potentially subject these natural settings to increased impacts associated with other resource uses.

This alternative would be the least protective of recreational opportunities and experiences that are dependent on high quality visual resources since the lowest acreage (**38,100** acres) would be managed as VRM Classes I and II.

Mineral entry withdrawal recommendations and their effects would be the same as Alternative A.

This alternative imposes the lowest amount of restrictive stipulations on solid and fluid mineral activities of the action alternatives and therefore related impacts would

have a higher probability for affecting recreation settings and visitor experiences than Alternative B or C.

## TRAVEL MANAGEMENT AND ACCESS

### Effects Common to All Alternatives

#### *Travel Management – Field Office Level*

Restrictions on surface-disturbing activities associated with recreation management, special designations, vegetation management, water quality, watershed and soils management, and wildlife and fisheries management could modify the locations and routes of proposed roads and road realignments.

Access developed for mineral extraction and timber harvesting could enhance travel and access opportunities. Restrictions on road development in areas with important resource values could limit the degree of increased access and travel opportunities.

Vegetation management could affect transportation by providing more roads that could be considered for designation under the travel management system. Additionally, during an active vegetation project, temporary closure of existing roads could be required for safety reasons. The potential for, and degree of these impacts would depend largely on the acres treated and miles affected.

Enhancing and protecting riparian and wetland vegetation could directly affect travel management through the temporary or permanent closure of roads and trails. Effects would be short or long-term, depending on temporary or permanent restrictions. Closures for resource protection could result in an overall net decrease of available routes in the Decision Area. Activities within riparian areas to maintain and restore riparian habitat could lead to roads and trails being relocated outside of riparian areas.

Route restrictions and closures could occur during wildland fire management activities, directly affecting travel management. Short-term effects could include an increase of fire management equipment traffic on BLM-administered routes, and an increase of motorized vehicle traffic on routes that remain accessible until fire management activities stop. Managing invasive species and noxious weeds could potentially cause short-term impacts on travel by temporarily displacing users from closed or restricted treatment areas.

Implementing recovery programs, mitigation activities, or projects to avoid impacts or to enhance riparian and wetland resources or listed plants could affect travel management if travel routes need to be relocated or closed. Effects would be short or long-term depending on the timeframe (temporary or permanent) of the restriction.

Travel management prescriptions and activities in all alternatives would designate areas as either “Open”,

“Closed” or “Limited”, and routes as Open Yearlong, Open with Restrictions, Closed Yearlong, Decommissioned, and Game Retrieval. Four existing travel management plans designate areas as Limited, with a few exceptions in Elkhorn Mountains and Whitetail-Pipestone. There is a direct correlation between area/route management decisions and the level (and quality) of recreational opportunities available to either motorized or non-motorized users. For motorized users, a reduction in the availability of motorized areas and designated routes means relatively fewer motorized opportunities. Simply stated, there would be fewer areas and miles of designated roads or motorized trail available for full sized or OHV vehicles to travel upon, either for recreational driving, or for access. Conversely, for non-motorized users, fewer motorized areas and designated routes means more area and miles of closed roads or trails available for quiet, non-motorized (hiking, biking, horseback riding) recreation use.

Likewise, there is a direct correlation between travel management decisions and the level of conflict between motorized and non-motorized users. Travel management decisions that create separate use areas reduce conflict between motorized and non-motorized recreation users. Conversely, travel management designations that mix motorized and non-motorized recreation use lead to increased conflict.

Additionally, dispersing use activity within areas primarily managed for either motorized or non-motorized use would provide a higher quality of recreational experience. Simply stated, regardless of the type of recreation activity (motorized, non-motorized, etc.) dispersing users over a larger area would result in fewer encounters, improving road/trail safety and providing a higher quality of recreational experience.

Conversion of temporary area closures to permanent area closures would reduce motorized access. New easement agreements with private landowners could increase accessibility for motorized and non-motorized travel into BLM lands. Agreements for interagency travel management could lead to improved trail accessibility, which could increase route connectivity.

Establishing and maintaining information kiosks would enhance user compliance, public safety, and enjoyment.

Under the existing Sleeping Giant travel management plan, motorized wheeled vehicle access would remain restricted to designated routes only. No snowmobile use would be allowed, including travel on designated routes. The Sleeping Giant area would not be available for organized, motorized events.

Any expansion to the Lewis and Clark National Trail system would be related to the day-use activities or lake access for water-based recreation opportunities.

Road and trail access in the Scratchgravel Hills area could increase with expanded hiking, mountain biking, horseback riding, hunting, and other recreation activities.

Under the existing Clancy-Unionville travel management plan, motorized wheeled vehicle access in the Sheep Mountain area would remain restricted to designated routes only. Cross-country snowmobile travel would continue to be permitted south of the Jackson Creek county road during the season of use (December 2-May 15), snow conditions permitting. Under the existing Whitetail-Pipestone travel management plan, motorized wheeled vehicle access would remain restricted to designated routes only. Cross-country snowmobile travel would continue to be permitted (on designated routes as well) during the season of use (12/2-5/15), snow conditions permitting. Travel management would continue to be exclusively non-motorized in the Wilderness Study Areas and would be maintained at current levels. No transportation or access impacts would be expected.

VRM classifications would limit the type, location, and density of roads in the Decision Area. Visually sensitive areas would be more restrictive on transportation system expansion.

Management within ACECs could affect transportation and travel management. Routes determined to be affecting values for which the designations were established could be relocated, reconstructed, or decommissioned.

Under the existing Sleeping Giant travel management plan, the non-WSA portion of the Sleeping Giant ACEC would continue to be managed as primarily non-motorized, with no impact.

Management of soil-disturbing activities could decrease the number of roads and trails available for motorized use for all or part of a year. Management actions would target highly traveled recreation areas for sediment reduction, which would limit access to certain recreation places.

Activities and projects to protect or maintain watersheds could result in seasonal route restrictions or permanent road closures, reducing motorized travel opportunities. Protective measures for cultural resources could affect travel management at specific sites. Restrictions on roads could result in an overall reduction in available routes.

Land acquisitions and easements could improve public access, expanding both motorized and non-motorized opportunities. Lands identified for disposal could decrease public access

Minerals management, including heavy equipment and truck traffic could affect public access, although, most effects would be short term and would only occur during development activities. New permanent routes established for mineral development could increase public access.

Minerals activities in areas with special-status or priority species would be designed to mitigate impacts, which could prohibit or restrict public access to roads.

Activities related to cleanup, remediation, and closure of contaminated or abandoned mine sites could result in the closure of system roads as well as trails to prohibit public access to these hazardous sites.

Remediation of hazardous materials to protect public health and safety could cause temporary or permanent closure, decommissioning, or restriction of some access roads to motorized and non-motorized travel.

**Effects of Alternative A**

***Travel Management – Field Office Level***

This alternative would continue to allow all existing travel plans, including sub-planning and emergency area closures, to be brought forward and remain in effect.

New route construction (up to 5.5 miles per year) could occur during forest product management activities. This could increase road density for both motorized and non-motorized users. New road construction allowed under Alternative A would be more than the action alternatives.

In the Elkhorn Wildlife Management Area, new road construction would be kept to a minimum and all new roads would be closed to the public.

Wheeled travel management would continue in accordance with the 2003 Statewide OHV ROD and Plan Amendment. The ROD did not address snowmobile management. Under Alternative A, existing snowmobile management would be brought forward along with alternative proposals for the five activity level travel plans being developed with this RMP revision, and area designations for four travel plan areas for which activity level plans will be developed in the future. Availability of areas for snowmobiling would be greater than under any other alternative.

Under Alternative A, BLM would continue to allow recreational activities including motorized vehicle uses within the Scratchgravel Hills 24 hours a day. This would lead to continued illegal activities (underage drinking, vandalism, dumping) as described under the Activity Level Plans for the Helena TPA.

**Effects Common to Action Alternatives**

***Travel Management – Field Office Level***

Seasonal wildlife closures would create short term impacts on travel and access to these areas. Maintaining core blocks of 250 acres of unroaded or closed roads during hunting season for big game protection under the action alternatives would affect existing routes by concentrating use on fewer roads than under Alternative A.

Relocating/aligning roads to reduce sedimentation, identifying and removing unnatural barriers, eliminating fish passage barriers, and restoring or maintaining riparian vegetation would have no effect on the transportation system as long as routes are not restricted or closed. Under all action alternatives, the effects of management for fish on transportation and travel management would be greater than under Alternative A.

Closure, decommissioning, or re-routing segments of the existing transportation system could result from the route-by-route evaluations within each Travel Planning Area. Social and environmental considerations would be made when evaluating individual TPAs.

All action alternatives would allocate the same acres of Open, Limited, and Closed Area Designations for wheeled motorized use (Table 4-37). The alternatives differ in their selection of Open Yearlong, Open with Restrictions, and Closed route designations.

<b>Indicator</b>	<b>Alt A</b>	<b>Alt B</b>	<b>Alt C</b>	<b>Alt D</b>
<b>Wheeled Vehicles</b>				
Open	4,367	283	283	283
Limited	271,442	275,526	275,526	275,526
Closed	31,500	31,500	31,500	31,500
Total	307,309	307,309	307,309	307,309
<b>Snowmobiles</b>				
Open	143,206	112,682	26,148	139,138
Limited	137,038	139,921	215,891	136,889
Closed	27,065	54,706	65,270	31,282

Source: BLM Butte Field Office transportation GIS database, 2005.

Under the action alternatives, motorized wheeled cross-country travel would be allowed during any military, fire, search and rescue, or law enforcement emergency.

The 2003 OHV ROD did not address snowmobile management. Under the action alternatives, existing snowmobile management would be brought forward along with alternative proposals for the five activity level travel plans being developed with this RMP revision, and area designations for four travel plan areas for which activity level plans will be developed in the future. Alternatives B and C would provide for less snowmobile use (both area and designated route availability) than Alternatives A and D. Alternatives B and C would help reduce conflicts between non-motorized users (cross-country skiers, snowshoers) and snowmobilers, providing separate areas of use. Alternative C would provide

the highest level of opportunities for non-motorized winter recreationists, and the lowest level of conflicts between motorized and non-motorized winter recreationists of all alternatives.

A feasibility study would be conducted to determine if a motorized section of the Continental Divide National Trail could be re-routed to enhance the non-motorized experience and reduce user conflicts. This action would be done in cooperation and coordination with the Forest Service.

The Humbug Spires potential ACEC would be closed yearlong to all motorized travel in order to protect natural and scenic values. No new roads or motorized trails would be authorized.

## Effects of Alternative B

### *Travel Management – Field Office Level*

Under Alternative B, road density levels in big game winter and calving ranges (1 mi/mi<sup>2</sup>) would result in a net decrease of available motorized routes. This effect would be less than under Alternative C, but more than under Alternatives A and D.

Prohibiting competitive motorized events would result in long-term effects on users who prefer these activities.

Placing restrictions on cross-county snowmobile travel in some areas would create long-term effects on users who prefer to recreate in this manner.

Acquiring easements to access popular travel routes could result in an increase in the overall route network and expand both motorized and non-motorized opportunities.

The signing and long-term monitoring required under Alternative B would result in an increase in BLM travel management costs compared to Alternatives A and D.

With the exception of a few routes needed for residential access, public access would be restricted to non-motorized trailheads. As a result, illegal activities (underage drinking, vandalism, dumping) in the Scratchgravel Hills would be substantially reduced. Travel management costs would increase for signage and user compliance monitoring under Alternative B. See Activity Level Planning for Helena TPA.

Managing special designations in a way that would restrict certain motorized and non-motorized activities from jeopardizing resource values special to the area would potentially alter the transportation network or by restricting access.

Route closures and prohibitions on new construction in the Spokane Creek and Elkhorns potential ACECs could directly affect visitors by restricting access to some sites and would result in an overall reduction in routes available to motorized users. Non-motorized opportunities in this area would increase.

Motorized route closures would be maintained in accordance with the Pipestone Travel Plan for the Ringing Rocks Potential ACEC.

## Effects of Alternative C

### *Field Office Travel Management*

Impacts to travel management from forest treatments would be greater under Alternative C than the other alternatives. Forest treatments would occur in areas already accessible by the current transportation system under Alternative C. No new permanent roads would be constructed and temporary road construction would be kept to a minimum. Temporary roads would be decommissioned within one year of project completion.

Impacts from the management of special status and priority species would be similar to Alternative B, except this alternative would have more strict resource protection.

Disallowing competitive and organized motorized events under Alternative C would result in long-term effects on users who engage in these types of activities.

Restrictions placed on snowmobile travel would create long-term effects on users who prefer cross-country snowmobile use.

Seeking public access easements for all locations where BLM routes are accessed either from or cross private property could increase the overall route network and expand both motorized and non-motorized opportunities.

Closing the entire Scratchgravel Hills area to motorized and non-motorized recreational uses after dark yearlong would decrease illegal activities but would increase travel management costs for signage and user compliance monitoring. See Activity Level Planning for Helena TPA.

Managing special designations to restrict certain motorized and non-motorized activities that may jeopardize resource values would result in route restrictions. This could directly affect visitors by limiting accessibility to some sites and could result in an overall reduction in routes available to access public lands. Alternative C is more restrictive than the other action alternatives.

Managing recreation settings and opportunities in accordance with Alternative C ROS classifications would result in the greatest amount of non-motorized recreation and least motorized recreation under Alternative C compared to the other alternatives.

Route closures and prohibitions on new construction in the Spokane Creek and Elkhorns potential ACECs could directly affect visitors by restricting access to some sites and would result in an overall reduction in routes available to motorized users. Non-motorized opportunities in this area would increase.

Unlike Alternatives B and D, this alternative would not allow new or existing mineral operations to construct access roads within Riparian Management Zones for mineral development.

## Effects of Alternative D

### *Field Office Travel Management*

Effects of forest management would be similar to those identified under Alternative A. Under Alternative D, some new roads may be built for long-term management of areas where multiple entries would be necessary to meet objectives but new and temporary road construction would be kept to a minimum. Some new permanent roads could be “Open Yearlong” to the public if travel plan objectives for the area are met. The degree of new road construction under Alternative D would be less than Alternative A, but more than would be allowed under Alternative B.

Alternative D is less restrictive on management actions that affect travel management than the other action alternatives and could result in more routes in the transportation system.

Allowing no net increase in permanent open road mileage in areas where open road densities are 0.5 mi/mi<sup>2</sup> or less in big game winter and calving ranges and reducing open road densities in big game winter and calving ranges where they currently exceed 1.5 mi/mi<sup>2</sup> would result in an overall net decrease of available motorized routes but to a lesser extent than under Alternatives B and C. Opportunities for walk-in hunters and other non-motorized enthusiasts would also be less than the other action alternatives.

With some exceptions (see activity level plan alternatives), cross-country snowmobile use would be allowed, as well as travel on all existing routes during the season of use (12/2-5/15), snow conditions permitting. Conflicts between non-motorized users (cross-country skiers, snowshoers) and snowmobilers would be expected to continue or increase as a result.

Evaluating competitive and non-competitive motorized events on a case by case basis for the Pipestone area could result in more opportunities for these types of events than under the other action alternatives.

Seeking public access easements for all locations where BLM routes are accessed either from or cross private property would result in an increase in the overall route network, expand both motorized and non-motorized opportunities, and enhance connectivity.

There would be a moderate increase in travel management costs due to initial implementation efforts (signing), and long-term monitoring (trail ranger patrols). This effect would be similar to Alternative B, but less than Alternative C.

Allowing motorized and non-motorized recreational uses 24 hours per day in the Scratchgravel Hills would lead to continued illegal activities, similar to current conditions. See Activity Level Planning for Helena TPA.

Managing special designations in a way that would restrict certain motorized and non-motorized activities that could jeopardize resource values special to the area could result in direct effects on the transportation management system.

Managing recreation settings and opportunities in accordance with Alternative D ROS classifications would result in the greatest amount of motorized recreation and the least amount of non-motorized recreation than any of the alternatives.

## TRANSPORTATION FACILITIES

Effects associated with RMP management are discussed below. Effects associated with the five site-specific travel plans at the scale of each TPA as well as at the Field Office scale are discussed in the “Environmental Consequences of Five Site-Specific Travel Plans” section.

### Effects Common to All Alternatives

Future vegetative regimens and activities have the potential to affect transportation facilities by providing more roads that could require periodic stabilization, sign maintenance, and bridge and culvert maintenance.

Temporary routes would be constructed where other routes are not available under approved travel management plans. BLM would construct such routes to minimal standards and implement BMPs that supplement basic guidelines for road planning, construction, drainage, and maintenance.

Route location could be affected by forest product activities, directly affecting transportation facility management. Under all alternatives route locations would be determined on the basis of topography, drainage, soil type, and other natural features to minimize erosion. Skid roads would be rehabilitated by seeding and/or scarification. Short-term effects could increase maintenance costs to comply.

Maintenance of BLM roads and facilities would create safer conditions for the public and provide for administrative uses. Certain resources could be affected directly by surface-disturbing maintenance activities or indirectly as a result of increased use or traffic generated by improved travel routes.

### Effects of Alternative A

Effects associated with Alternative A are described under “Effects Common to All Alternatives”. Estimated costs for annual maintenance and periodic stabilization would be about 30 percent more than under the action

alternatives (see the “Environmental Consequences of Five Site-Specific Travel Plans” section).

### **Effects Common to Action Alternatives**

Subjecting road maintenance to seasonal timing restrictions to mitigate impacts of human activities on important seasonal wildlife habitat could have short-term effects on facilities management by increasing the planning effort and reducing the economic efficiency of maintenance activities, depending on whether routes in these areas are among those maintained by BLM.

Reducing open road density in big game winter and calving ranges and grizzly bear distribution areas could have indirect effects on facilities management. By condensing current use on fewer roads there could be increased maintenance required and possibly a decrease in public safety due to increased traffic. However, reducing open road miles in these areas would reduce the number of road miles that would need maintenance, thereby contributing to reduced maintenance costs.

Designing roads to reduce the effects of fisheries resources could have short-term economic effects on facility management depending on whether the specifications for these protective features increase project costs or whether additional maintenance would be necessary to ensure their effectiveness.

Installing gates or other barriers at roads and trails closed to the public would have a direct affect on facility management. Increased personnel would be needed to install and maintain these fixtures and therefore, facility management costs would increase.

Under all action alternatives, there would be a moderate increase in facility management costs due to initial travel plan implementation efforts (signing, trailhead development) and sign maintenance. Route maintenance costs would be lower than current levels, due to the overall reduction in available routes.

Designing and maintaining roads in a manner that provides for water quality protection would result in an increase in facility management costs. Controlling placement of fill material, keeping drainage facilities open, following BLM culvert design standards, and repairing ruts and failures to reduce erosion and sedimentation of aquatic habitats would involve additional planning efforts and could result in additional personnel time during maintenance activities.

### **Effects of Alternative B**

Under Alternative B, replacing barbed wire gates with cattle guards and easily operated metal gates (wherever problems are known to occur) would result in a short-term increase in transportation facilities costs. However, due to the overall reduction in available routes under

Alternative B, transportation facility costs would be lower than current levels (see the “Environmental Consequences of Five Site-Specific Travel Plans” section).

Higher design standards under Alternative B, such as outsloping roadway surfaces where possible, minimizing disruption of natural hydrologic flow paths, and minimizing road and landing locations in RMZs may result in a short-term increase in transportation facility costs due to increased engineering efforts during route design and a long-term increase from culvert maintenance compared to Alternative A. Similar effects would be realized from Alternative D.

### **Effects of Alternative C**

Under Alternative C, installing cattle guards and gates on newly constructed roads and trails, as needed, would result in a short-term increase to transportation facility costs. However, due to the overall reduction in available routes under Alternative C, transportation facility costs would be lower than current levels (see the “Environmental Consequences of Five Site-Specific Travel Plans” section).

Higher design standards under Alternative C, such as maintaining stream crossings that would withstand a 100-year flood event, may result in a short-term increase in transportation facility costs due to increased engineering efforts during route design. Less maintenance would be required under Alternative C than under the other action alternatives due to higher capacity drainage fixtures.

### **Effects of Alternative D**

Under Alternative D, replacing barbed wire gates with cattle guards and easily operated metal gates (wherever they currently exist) would result in a short-term increase in cost for transportation facility management. However, due to the overall reduction in available routes under Alternative D, transportation facility costs would be lower than current levels (see the “Environmental Consequences of Five Site-Specific Travel Plans” section).

Increased levels of reconstruction and new route construction to restore deteriorated routes and provide additional loop routes would result in a short-term increase in transportation facility costs for the signage, culverts, and bridges that may be required and a long-term increase for route maintenance.

Higher design standards under Alternative D, such as outsloping roadway surfaces where possible and minimizing road and landing locations in SMZs may result in a short-term increase in transportation facility costs due to increased engineering efforts during route design and a long-term increase from culvert maintenance compared to Alternative A. Similar effects would be realized from Alternative B.

## LANDS AND REALTY

This section includes discussion of effects on land tenure adjustments, land use authorizations, utility corridors, and communication sites.

### Effects Common to All Alternatives

Effects analysis indicated that vegetation, travel management, and abandoned mine lands would not have impacts on lands and realty.

While management actions for livestock grazing vary among the alternatives, the impacts to the Lands and Realty Program are essentially the same. In areas where livestock grazing occurs, land use authorizations such as rights-of-way and BLM access easements could be required to include conditions and or mitigation measures that limit livestock grazing during the construction and rehabilitation phases of the project, and facilitate livestock movement and public travel (e.g., fencing and cattle guards) throughout the effective period of the authorization. Percentage of the Decision Area (DA) available for livestock grazing would be 93 percent under Alternatives A and D, and 90 percent under Alternatives B and C.

In general, wildland fire management actions would help protect facilities on public lands authorized through the Lands and Realty Program by reducing fuel loads and suppressing fires. However, there is always a slight possibility of losing control of prescribed fire and damaging the above-ground facilities.

Management actions to identify, protect, and conserve special status plant and animal species would impact land use authorizations, land ownership adjustments, and acquisition of legal and physical access to public lands. Facilities proposed to be constructed under various land use authorizations or access easements in areas where these types of vegetation and animal species are present may need to be mitigated, constructed in alternate locations, or in extreme cases, dropped from consideration. The need to protect these resources could also result in the restructuring or elimination of a land ownership adjustment proposal such as an exchange or sale.

Recreation management actions, including designation of Special Recreation Management Areas, could result in land ownership adjustments or easement acquisitions in order to improve access to public lands for recreation opportunities.

Under all alternatives, the six existing Wilderness Study Areas would continue to be managed under the Interim Management Policy and Guidelines for Lands under Wilderness Review (BLM Handbook H-8550-1, dated 1995) until such time as Congress either designates them as wilderness or releases them from further consideration as wilderness. Such management would impose restrictions on the use of these areas for land use authorizations and land disposals.

Managing the national trails located within the DA to protect the values for which they were designated could impact land use authorizations such as rights-of-way as well as BLM actions to obtain legal and physical access to public lands. Proposed facilities such as power lines may need to be mitigated (e.g. burial of the line) or re-routed in order to protect trail values. Land ownership adjustments such as sales or exchanges may need to be restructured or eliminated from consideration in order to avoid disposing of public lands containing important trail segments.

Visual Resource Management under all alternatives would affect land use authorizations such as rights-of-way, leases, and permits. Facilities would need to meet objectives for the particular VRM class in which a project was proposed. This could include mitigation, relocation, or elimination of certain facilities resulting in additional time and costs in project development.

Management actions to protect soil, air, and water quality could affect land use authorizations such as rights-of-way, leases, and permits, as well as BLM actions to obtain legal and physical access to public lands. Proposals for facilities and actions that would degrade these resources would have to be mitigated, sited in acceptable alternative locations, or in more extreme cases, denied altogether. Applicants for such proposals could encounter time delays and greater costs in terms of project development.

Management of cultural resources could affect several aspects of the Lands and Realty Program including land use authorizations, land ownership adjustments, and the acquisition of legal and physical access to public lands. These lands and realty actions are considered federal undertakings and must avoid inadvertent damage to federal and non-federal cultural resources through compliance with Section 106 of the National Historic Preservation Act. Cultural inventories would need to be completed prior to these federal undertakings and impacts to important cultural sites would need to be avoided by project redesign, project abandonment, and/or mitigation of adverse impacts through data recovery. This could result in actions such as re-routing a proposed right-of-way or road easement, or restructuring or abandoning a proposed land ownership adjustment such as a land exchange or sale. Such actions can increase processing costs and processing time for both the federal and non-federal parties.

Impacts from the management of paleontological resources would be similar to those of cultural resources. Lands and realty projects occurring in known fossiliferous areas would require that adequate time and resources be allocated to conduct resource inventory. The discovery of scientifically important paleontological resources could result in the rerouting or redesign of proposed land use authorizations and easement facilities. The presence of these resources could also lead to the restructuring or abandoning of land ownership adjustments such as land

exchanges or sales. Such actions can increase processing costs and time for both the federal and non-federal parties.

Locating new right-of-way facilities within or adjacent to existing rights-of-way would minimize the number of acres designated for new right-of-way development. Implementation of *Suggested Practices for Raptor Protection on Power Lines* (APLIC 1996) and Best Management Practices (BMPs) established in the Programmatic Wind Energy EIS and ROD (December 2005) would require mitigation for wildlife impacts on new rights-of-way development.

The Interagency West-wide Energy Corridor Programmatic EIS currently being prepared will identify energy corridors on BLM and other federal lands. The Final PEIS will provide plan amendment decisions that will address energy corridor related issues, including the utilization of existing corridors, identification of new corridors, supply and demand considerations, and compatibility with other corridor and project planning efforts. Identification of corridors in the PEIS may affect the BFO, and the approved PEIS would subsequently amend the Butte RMP.

Reviewing existing withdrawals and classifications and revoking or terminating those that are no longer serving their intended purpose would ensure that public lands are not unnecessarily encumbered and are open to the widest possible array of public land uses consistent with other portions of the plan. Such reviews would also ensure that withdrawals and classifications still serving their intended purpose would remain in place. Withdrawal proposals under all alternatives would be in conformance with current withdrawal and energy policies and would ensure that such actions encumbered the minimum area necessary to achieve the intended purpose.

New withdrawal proposals would be limited to the minimum area required for the intended use, would require strong justification, and would be initiated only where applicable alternative prescriptions, such as the use of rights-of-way, leases, permits, or cooperative agreements, are inadequate to protect the resource values.

Recommendations developed by the BLM/Secretary of the Interior and Department of Army/Department of Defense on the proposed withdrawal at Limestone Hills will be submitted to Congress. Congress and the President will then determine whether the withdrawal should be enacted, and the amount of public land to be withdrawn. Up to approximately 20,000 acres of public land could potentially be transferred to the administration of the Department of the Army, or managed cooperatively with the BLM. The EIS for this withdrawal would subsequently amend the Butte RMP.

Consideration of land ownership adjustments on a case-by-case basis would allow for flexibility in managing public lands to achieve improved management efficien-

cy or enhance other programs. BLM-administered land within disposal areas would be made available for disposal through sales or exchanges or both. BLM lands to be sold would meet the disposal criteria from the Federal Land Policy and Management Act of 1976.

Actions such as exchanges, sales, and purchases would adjust the relatively fragmented public land pattern to better manage public lands over the long-term. Consolidation of public land holdings could facilitate access to public lands and reduce the number of access easements needed. Consolidation could also lead to a reduction in encroachment problems on public lands from adjacent property owners as a result of fewer private inholdings within the DA.

Lands that meet Recreation and Public Purposes Act (R&PP) classification criteria for public purposes would be made available for state and local governments and other organizations. This would assist those entities in meeting the need for reasonably priced land to serve a broad array of public needs.

Access to public lands would be improved by the pursuit of land exchanges, easement acquisitions, and land donations.

The management of leasable, salable, and locatable minerals under all alternatives would likely result in requests for land use authorizations such as rights-of-way and permits for utilities and access.

Any renewable energy developments proposed for public lands managed by the BFO within the DA lands could result in requests for land use authorizations such as rights-of-way and permits. There are two areas where wind energy developments are anticipated to occur: one near Whitehall in the vicinity of Golden Sunlight Mine and one near Livingston.

In terms of health and safety, land use authorizations for uses which would involve the disposal or storage of material which could contaminate the land would not be issued. Lands proposed for acquisition or disposal would need to be inventoried for the presence of hazardous materials. The presence of contaminants may lead to actions such as the modification or abandonment of a land ownership adjustment proposal, or remediation in the form of cleanup and removal of the contaminants.

Management to protect prime or unique farm lands would require that actions be reviewed to evaluate their impacts on these resources. Although no prime or unique farm lands have been identified in the Decision Area, adjustments to land use authorizations and land ownership may be required to minimize or eliminate these impacts if prime farm lands are identified on a case by case basis.

Tribal treaty rights on public lands within the DA could impact land ownership adjustments such as exchanges and sales. It is possible that potential actions such as these would need to be restructured or eliminated from

consideration if it were determined that they adversely affected tribal treaty rights.

## Effects of Alternative A

BLM forest product sales and stewardship projects may also require road easement acquisitions to cross private lands to secure access to the federal sale or project area. In comparison to the other alternatives, Alternative A would likely have a greater need for access to forested areas than Alternative C but a lesser need than Alternatives B and D.

Management of the four National Wild and Scenic River-eligible river segments to protect wild and scenic river eligibility and tentative classification would result in restrictions or denial of land use authorizations for new facilities such as electric transmission lines, roads, etc.

Management actions to protect relevant and important resource values on ACECs would restrict land use authorizations, land ownership adjustments, and access to public lands within the DA. Under Alternative A, the pre-existing Sleeping Giant ACEC (11,679 acres) would continue to be managed as an ACEC. Under the original management plan no new ACECs would be established. Compared to the other alternatives, Alternative A would have the least impact on the Lands and Realty Program from ACEC management.

Alternative A would provide the greatest flexibility in locating facilities such as transmission lines, pipelines, and communication sites since there would be no designated right-of-way corridors or use areas, 74,489 acres of avoidance areas, and no exclusion areas. The lack of designated corridors could lead to a proliferation of separate rights-of-way which would need to undergo NEPA evaluation. Not designating corridors and use areas for the above-mentioned facility types could result in a greater likelihood that other land uses would preclude the location of these types of right-of-way uses. Not concentrating major right-of-way facilities in certain areas could make them, along with the public which relies on them, less vulnerable to potential natural disasters.

Alternative A (along with Alternative D) would allow for the greatest flexibility in authorizing mineral entry activities by considering withdrawals from mineral entry on a case-by-case basis.

Planning guidance with respect to land ownership adjustment would be the same as that provided by the 1984 Headwaters RMP and the 1979 Dillon Management Framework Plan. Further and more specific guidance would be provided by the "Land Pattern and Land Adjustment, Supplement to the State Director Guidance for Resource Management Planning in Montana and the Dakotas, 1984" (BLM 1984b). This guidance was later amended by the 1989 State Director's guidance pertaining to access. This direction established land exchange

as the predominant method of land ownership adjustment. It also established retention, disposal, and acquisition criteria to be used in categorizing public land. Criteria in the supplement were used to identify retention and disposal zones within the DA. These zones would be applied in this alternative.

Under Alternative A, management actions for access would progress toward BLM management goals by following guidance provided by the Headwaters RMP/EIS as supplemented by guidance prepared by the Montana State Office on access (BLM 1989). Alternative A would likely provide the most flexibility than the other alternatives in terms of how and where access could be obtained.

Designation of approximately nine percent of federal mineral estate lands in the DA (54,810 acres) as closed to oil and gas leasing would eliminate effects on land use authorizations, withdrawals, or access from oil and gas leasing in these areas. Under Alternative A, fewer acres would be closed to oil and gas leasing activities than under Alternative C, but more than under Alternatives B and D.

## Effects Common to Action Alternatives

Designation of approximately 283 acres (0.10 percent of lands in the DA) as open to wheeled vehicles under the action alternatives would require less road easement acquisitions than Alternative A.

Managing the two National Trails (Continental Divide National Scenic Trail and Lewis and Clark National Historic Trail) in accordance with the Recreation Opportunity Spectrum settings, Visual Resource Management classes, travel plan direction, and oil and gas stipulations established under the action alternatives would further restrict land use authorizations and land ownership adjustments on public lands containing important trail segments. Land ownership adjustments would be required to re-route the Continental Divide Trail segment in coordination with the Forest Service to enhance non-motorized opportunities; reduce current needs for use easements/acquisitions through private lands; and remove user conflicts associated with the motorized road.

Limiting new communication facilities to the seven designated communication sites would concentrate these uses and diminish the proliferation of separate rights-of-way and their associated impacts when compared to Alternative A. Designation of these use areas would put the public on notice that these are the preferred areas for certain types of right-of-way facilities. Designation and management of right-of-way corridors and use areas would make it more likely that these types of right-of-way uses would not be precluded by other land uses. However, having these types of right-of-way facilities in close proximity to one another could make them, and the public that relies on them, more vulnerable to potential natural disasters.

Designating avoidance (75,626 acres) and exclusion (27,361 acres) areas would limit or exclude potential rights-of-way development in those areas. Issuance of any new land use authorizations in or near riparian areas would include special stipulations to protect riparian values.

New leases, permits, rights-of-way, and easements would be permitted in a manner consistent with meeting Land Health Standards and applicable BMPs, and the guidelines set forth in BLM's Wind Energy Development Programmatic EIS, June 2005.

Compared to Alternative A, implementation of any of the action alternatives would improve land ownership adjustment management and provide better guidance in achieving BLM land ownership goals by prioritizing actions which are associated with chronic management problems and protecting public resource values. High priority areas for retention and potential land acquisition would be associated with ACECs, Wild and Scenic Rivers, Wilderness Study Areas, National Trail Corridors, Special Recreation Management Areas, recreation sites, and habitat for priority and special status species. Under all action alternatives, specific land ownership adjustment criteria developed for retention, disposal and acquisition would be followed. These criteria are described in **Appendix L – Lands and Realty**.

Under all action alternatives, management actions would progress toward BLM access management goals by following guidance provided by the specific access criteria outlined in **Appendix L – Lands and Realty** for obtaining new access and managing existing access to BLM-administered lands. Implementation of the action alternatives would provide better guidance than Alternative A in terms of how and when access should be obtained.

Under all action alternatives, up to 8,901 acres of BLM land identified for disposal could potentially pass to private ownership and would no longer be subject to federal land management laws and policies.

### Effects of Alternative B

Building and using new roads for long-term use for forest products would result in the need for BLM to obtain road access to forested areas through easement acquisition. Compared to the other alternatives, Alternative B would have a greater need for additional access for management of forest products than Alternative C, but likely less than Alternatives A and D.

Under this alternative, impacts to the Lands and Realty Program from the management of suitable Wild and Scenic Rivers segments (5.7 miles) to protect outstandingly remarkable values would be less than under Alternatives A and C, but greater than Alternative D.

Designation of four new ACECs and management actions to protect relevant and important resource values would restrict land use authorizations, land ownership

adjustments, and access to public lands within the DA on approximately 70,644 acres. Compared to the other alternatives, ACEC management in Alternative B would have a greater impact on the Lands and Realty Program than with Alternatives A and D, but a lesser impact than Alternative C.

Alternative B would set the priority for new withdrawal proposals or other protective actions to developed recreation sites followed by new acquisitions, and ACECs to protect resources and values as needed.

In alternative B, approximately 198 acres at various developed recreation sites, would be recommended for withdrawal from mineral location. Designation of approximately 36,406 acres as closed to oil and gas leasing would eliminate the need for land use authorizations, withdrawals, or access for the purpose of oil and gas leasing on approximately 6 percent of BLM-managed federal mineral estate lands in the DA. With fewer acres closed to oil and gas leasing activities than under the other alternatives (except for Alternative D, which would close the same number of acres), Alternatives B and D would have the greatest potential need for land use authorizations, withdrawals, or access from oil and gas leasing in these areas.

### Effects of Alternative C

By not building new roads for long-term use, the need for road access through easement acquisitions would be minimized. Compared to the other alternatives, Alternative C would have the least need for additional access for management of forest products.

Alternative C would allow for a similar number of withdrawn acres as Alternative B by setting the priority for new withdrawals to developed recreation sites followed by all new acquisitions through exchange or purchase, and in ACECs.

Under this alternative, impacts to the Lands and Realty Program from the management of suitable Wild and Scenic Rivers segments (12 miles) to protect outstandingly remarkable values would be the same as under Alternative A.

Designation of four new ACECs and management actions to protect relevant and important resource values on ACECs would restrict land use authorizations, land ownership adjustments, and access to public lands on approximately 87,892 acres of the DA. Compared to the other alternatives, ACEC management under Alternative C would potentially have the greatest impact on the Lands and Realty Program of all the alternatives.

Approximately 180 acres of land in riparian areas of the Muskrat Creek drainage, as well as approximately 198 acres at various developed recreation sites, would be recommended for withdrawal from mineral location in Alternative C.

Alternative C would designate 580,382 acres as closed to oil and gas leasing, more than any other alternative. This would eliminate the need for land use authorizations, withdrawals, or access for the purpose of oil and gas leasing on the greatest amount of acreage of any of the alternatives.

### Effects of Alternative D

Allowing new roads for long-term use for forest products would result in the need for road access to forested areas in the form of road rights-of-way and road use agreements. Compared to the other action alternatives, Alternative D would have the greatest need for additional acres for access for management of forest products.

Like Alternative A, withdrawals from mineral entry would be pursued on a case-by-case basis.

Under this alternative no river segments would be recommended as suitable for inclusion in the National Wild and Scenic River System, and therefore would not be subject to restrictions on lands and realty actions for eligible river segments.

Designation of two new ACECs and management actions to protect relevant and important resource values on ACECs would restrict land use authorizations, land ownership adjustments, and access to public lands on approximately 23,695 acres of the DA. Compared to the other alternatives, Alternative D would potentially have a greater impact on the Lands and Realty Program than Alternative A, but a lesser impact than Alternatives B and C.

The greatest potential need for land use authorizations, withdrawals, or access from oil and gas leasing would be the same as in Alternative B.

## SPECIAL DESIGNATIONS

### Effects Common to All Alternatives

No impacts to special designation areas are anticipated from proposed management associated with special status and priority plants, air quality, soils, water quality, cultural resources and traditional cultural properties, paleontological resources, abandoned mine lands, hazardous materials, social and economic, prime farm lands, environmental justice, or Tribal treaty rights.

Actions emphasize monitoring the impact grazing has on meeting resource value standards, particularly for vegetation and water quality. This action would benefit the values of special designation areas since problems and corrective measures would be identified and potentially corrected in a timely manner.

Wildlife actions to improve habitat to stabilize or increase wildlife populations would indirectly enhance wildlife and vegetation resource values within established special designation areas.

Special designation areas with outstanding values associated with wildlife habitat or species diversity would be protected. Habitat management plans, conservation strategies and coordinating with other agencies to improve habitat within special designation areas would directly help retain or enhance vegetation, wildlife species, solitude, naturalness, and scenic values.

All existing special designation areas would be managed to prevent unnecessary and undue degradation to existing values and resource characteristics.

### Effects Common to Action Alternatives

Vegetative treatment actions would focus on restoring the desired ecological conditions of special management areas and would occur to protect or enhance important resource values. Wildland fire management would concentrate on the enhancement and/or protection of special area values except in instances where private lands and structures are threatened. Active public outreach to educate visitors about noxious weeds and control efforts would have a positive effect on the vegetation and habitat values in ACECs, National Trail corridors, WSRs and WSAs.

The action alternatives would implement a variety of management actions designed to enhance the habitat conditions for special status and priority plant and animal species in the Decision Area, which would directly enhance the wildlife and habitat values of all special designation areas.

The protection and enhancement of riparian areas, native fisheries, and aquatic resources would have a positive impact on special designation areas and visitor experiences.

Travel management and access within the special designation areas would be limited to designated routes or closed to protect unique resource values and enhance primitive and unconfined recreation opportunities.

All lands within special management areas would be classified for future retention and acquisitions that enhance important values and their management would be given priority.

## AREAS OF CRITICAL ENVIRONMENTAL CONCERN

### Effects Common to All Alternatives

**Table 4-38** displays the acres of ACEC proposed by Alternative. ACECs located close to or within urban interface areas could be directly affected by wildland fire prevention and suppression activities designed to control the ignition and spread of wildland fires. Activities, such as mechanical or hand thinning, could damage the special characteristics of an ACEC. Fuels reduction treatments in the ACECs outside of the urban interface areas would emphasize prescribed burning; however,

these treatments would be designed to minimize or mitigate effects to values associated with special designation areas.

Activities to improve and maintain wildlife habitat would enhance wildlife and vegetation resource values in the ACECs.

Management would focus on conserving special status and priority species and implementing habitat improvement projects or recovery plans, which would benefit all ACECs by alternative.

The non-WSA portion of the Sleeping Giant ACEC would be managed as “Limited” to motorized use, which would continue to benefit the ACECs outstanding values while allowing vehicle access to walk-in trailheads.

Existing management would protect the relevant and important values of the Sleeping Giant ACEC.

Many ACECs would be managed as Class II areas and proposed projects would be subject to visual contrast ratings to ensure visual resource disturbances are not evident.

The Sleeping Giant and Humbug Spires and portions of the Elkhorn areas would be designated and managed as ACECs under all action alternatives.

### Effects of Alternative A

The existing Sleeping Giant ACEC (11,679 acres) would continue to be managed under the current ACEC management plan (Table 4-38). No additional ACECs would be designated and therefore this alternative would pro-

vide the least protection of relevant and important resource values.

### Effects of Alternative B

All potential ACECs would be managed as ACECs except Spokane Creek under Alternative B. This alternative would establish the second highest acreage of lands (70,644 acres) under ACEC designation and protection (Table 4-38). This alternative proposes one less ACEC area than Alternative C, and a smaller portion of the Elkhorns area would be designated under Alternative B.

### Effects of Alternative C

Alternative C would designate all five potential areas and the most acres (approximately 87,893 acres) as ACECs of all alternatives (Table 4-38). This alternative would designate all of the land within the Elkhorns Wildlife Management Unit MOU in the Elkhorns ACEC and Spokane Creek. This alternative would provide the greatest protection for the identified relevant and important values associated with the ACEC review process.

### Effects of Alternative D

Of all the action alternatives, Alternative D would manage the least amount of acreage as ACECs (23,695 acres) (Table 4-38). Three potential ACECs would be designated including Sleeping Giant, Elkhorns, and Humbug Spires. The Elkhorns ACEC boundary would be the same as the Elkhorns Tack-on WSA boundary, which is the lowest acreage managed in the Elkhorns ACEC compared to the other action alternatives.

**Table 4-38**  
**Acres of Potential ACECs and WSAs Designated in Each Alternative**

Name	Total Acres			
	Alt A	Alt B	Alt C	Alt D
<b>ACEC</b>				
Sleeping Giant	11,679	11,679	11,679	11,679
Humbug Spires	-	8,374	8,374	8,374
Spokane Creek	-	-	14	-
Ringing Rocks	-	160	160	-
Elkhorns	-	50,431	67,665	3,575
<b>Total Acres Managed as an ACEC</b>	<b>11,679</b>	<b>70,644</b>	<b>87,892</b>	<b>23,628</b>
<b>WSA</b>				
Humbug Spires	11,320	11,320	11,320	11,320
Sleeping Giant	6,666	6,666	6,666	6,666
Sheep Creek	3,801	3,801	3,801	3,801
Black Sage	5,917	5,917	5,917	5,917
Elkhorn	3,575	3,575	3,575	3,575
Yellowstone River Island	69	69	69	69
<b>Total Acres Managed as a WSA</b>	<b>31,349</b>	<b>31,349</b>	<b>31,349</b>	<b>31,349</b>

Source: Alternatives Description, BLM Butte Field Office, 2005.

## NATIONAL TRAILS

### Effects Common to All Alternatives

National Trail segments located close to or within urban interface areas could be directly affected by wildland fire prevention and suppression activities designed to control the ignition and spread of wildland fires.

### Effects of Alternative A

No ROS or VRM designations or management plans would be created for the Continental Divide National Scenic Trail. The Lewis and Clark National Historic Trail would be managed in accordance with the Missouri River Comprehensive Recreation Management Plan. Most lands along this river would be managed as VRM Class II and no ROS designations would be allocated.

Lowest protection provided for the two National Trail corridors given that ROS, VRM, Travel and oil and gas restrictions would be lowest.

### Effects of Alternative B

Alternative B offers the second highest protection for the National Trails as resource use restrictions would be greater than under Alternatives A and D.

### Effects of Alternative C

This alternative offers the greatest protection of the existing National Trails and associated user experiences since all resource uses such as timber harvesting, motorized travel, rights-of-way, minerals, and oil and gas would be restricted the most through ROS, VRM, and travel management.

### Effects of Alternative D

This alternative offers the second lowest protection for National Trails as potential impacts from other resource uses would be higher than Alternatives B and C.

## WILD AND SCENIC RIVERS

### Effects Common to All Alternatives

Management would focus on conserving special status and priority species and implementing habitat improvement projects or recovery plans, which would benefit the Upper Big Hole River, Missouri River and Muskrat Creek WSRs where recommended as suitable by alternative.

### Effects of Alternative A

The outstandingly remarkable values of all eligible Wild and Scenic river segments would be protected and would be negligibly-to-minimally impacted by management.

### Effects of Alternative B

Under this alternative Muskrat Creek would be recommended suitable for inclusion in the National Wild and Scenic Rivers System. The Missouri River segment would be found preliminarily suitable pending Forest Service concurrence. The management of these two segments would not change from the existing management, as described under Alternative A. The Upper Big Hole River and Moose Creek would be identified as non-suitable for the National Wild and Scenic Rivers System, and protective management actions, regarding important resource values, would not continue. The Moose Creek segment would fall back to WSA and ACEC management as it is part of the Humbug Spires WSA (and potential ACEC) while the Upper Big Hole River would be managed as a Special Recreation Management Area under the Upper Big Hole River Management Plan.

### Effects of Alternative C

All four of the Wild and Scenic River segments would be recommended as suitable for consideration in the National Wild and Scenic Rivers System; however, the interim management of these segments would be the same as in Alternative A to manage for their outstandingly remarkable values.

### Effects of Alternative D

All four eligible Wild and Scenic River segments would be identified as non-suitable for inclusion into the National Wild and Scenic Rivers System. Management actions governing these river segments would not specifically protect outstandingly remarkable values so they would be subject to greater impacts than in the other alternatives.

## WILDERNESS STUDY AREAS

### Effects Common to All Alternatives

**Table 4-38** displays the acres of Wilderness Study Area proposed by alternative. There are no additional lands with wilderness characteristics in the Decision Area.

All six WSAs would be managed as they are currently, under the Interim Management Policy and Guidelines for Lands under Wilderness Review. This status may change if Congress designates the WSAs as wilderness or if they are removed from consideration. If a WSA becomes a wilderness area, a wilderness management plan would be created. If a WSA is removed from consideration, the area would no longer have legislative protection for the outstanding values. The Sleeping Giant and Sheep Creek WSAs would have fall back administrative protection since these areas would be designated and managed as ACECs under all alternatives.

Fire management activities would be conducted to avoid unnecessary impairment of each area's suitability for preservation as wilderness. Retardant, motorized equipment and earth disturbances would be restricted to the minimum necessary to protect human life and property. Priority would be given to locate large fire camps outside WSAs and to utilize fire crews to rehabilitate impacts prior to being released. These actions would benefit the preservation of the wilderness characteristics within the WSAs.

Pre-FLPMA grazing uses would be allowed to continue subject to unnecessary and undue degradation concerns while new livestock uses and developments would be restricted to actions that enhance wilderness values and satisfy the nonimpairment criteria. Prohibiting the removal of forest fiber products and vegetation conversions/manipulations; allowing noxious weed to be controlled; and limiting vegetative rehabilitation efforts to native species would prevent impacts to naturalness qualities and reduce impacts to visitors seeking wilderness related experiences.

Activities to improve and maintain wildlife habitat for native, priority, and special status species would be conducted subject to IMP guidelines. These efforts would enhance supplemental wildlife values and natural characteristics in the WSAs.

All WSAs would be closed to motorized travel except Black Sage and the southern portion of Humbug Spires which is limited to established routes. These restrictions enhance fisheries, wildlife, water quality, native vegetation, apparent naturalness, solitude, and primitive recreation values.

Opportunities for solitude and a variety of primitive and unconfined recreation experiences within WSAs would continue to be promoted. Recreational activities that do not meet nonimpairment criteria would generally be prohibited with the exception of motorized uses on established vehicle ways.

WSAs would be managed to achieve VRM Class I, which would directly preserve the naturalness and scenic qualities in each WSA.

All land use authorizations within WSAs would follow interim management policies and guidelines. Given that all new actions are subject to the nonimpairment standard, no wilderness character impacts are foreseeable. Land use authorizations relating to grandfathered and valid existing rights may disrupt natural processes and may cause negative impacts on outstanding values.

Oil and gas leasing and development would be prohibited in all WSAs subject to the rights of owners of non-BLM mineral estate. There are no known leases within the WSAs that have valid existing rights or grandfathered uses associated with them. Geothermal leasing would also be prohibited in all WSAs as no valid or grandfathered leases exist.

Locatable mineral activities would be subject to IMP protection within WSAs. Mineral activities within WSAs studied under Section 603 of FLPMA (Sleeping Giant, Humbug Spires, Black Sage, and the Yellowstone River Island) will be regulated to nonimpairment standards while Section 202 WSAs (Sheep Creek and the Elkhorns Tack-on) will be managed to prevent unnecessary and undue degradation. As a result valid mining claim activities pose greater potential risks for impacting the wilderness characteristics of these 202 WSAs.

## Effects of Alternative A

All WSAs would continue to be managed under the Interim Management Policy and Guidelines and therefore wilderness values would continue to be protected, under the assumption that no Congressional action would occur.

## Effects Common to Action Alternatives

All WSAs (Sleeping Giant, Sheep Creek, Humbug Spires, and Elkhorns Tack-on) except Black Sage and the Yellowstone River Island would be managed as ACECs under all action alternatives. These designations would provide long-term resource value protection should Congress remove these WSAs from further wilderness consideration or in the case of the Elkhorns Tack-on, should the adjoining Forest Service lands be dropped from wilderness consideration.

Black Sage and the Yellowstone River Island, if dropped from wilderness consideration, would be managed under varying fall back managing strategies under Alternatives B, C and D. Management prescriptions for these WSAs would address recreation, motorized travel, visual, minerals, and land ownership, which would aid in protecting their outstanding values (solitude, naturalness and primitive and unconfined recreation opportunities).

The Elkhorn Tack-on WSA would be dropped from further wilderness review, should the adjoining FS lands be released from wilderness consideration, as this small WSA is not capable of providing outstanding opportunities for solitude or primitive and unconfined recreation on its own. This action would not impose major impacts to the existing values of the area given the fall back ACEC designation.

## Effects of Alternative B

Under this alternative fall back management for the Black Sage and the Yellowstone River Island would be less protective than under the IMP guidelines. Major changes in the management of Black Sage would be that existing roads could be re-routed; VRM would be managed as Class II; new Rights-of-Ways could be authorized; locatable minerals would be open subject to unnecessary and undue degradation; oil and gas entry would be allowed subject to big-game timing limitations from 12/1 to 6/30; all saleable and other leasable minerals would remain unavailable; and vegetative treatments

could be conducted provided they were done in a manner that restored or maintained natural processes. The effects of these management changes could impact natural qualities, solitude and primitive and unconfined recreation opportunities and supplemental value characteristics of this 5,917-acre area due to surface disturbances, visual modifications, increased vehicular travel, and noise intrusions.

Fall back management changes for the Yellowstone River Island would be less impacting since most resources and uses would be managed similar to IMP protection guidelines. The major differences would be that the VRM Class would change from I to II, locatable mineral entry would be open subject to unnecessary and undue degradation; and leasable minerals would be subject to No Surface Occupancy. Although the island would be open to locatable minerals, the probability for impacts to the island's wilderness characteristics would be minimal given its difficult accessibility issues, natural river barriers, and low desirability for mineral activity given the high operating and reclamation costs.

### Effects of Alternative C

Fall back management for Black Sage and the Yellowstone River Island would be similar to Alternative B if dismissed from further wilderness consideration by Congress, with the exception of oil and gas. Oil and gas stipulations would be most restrictive of all alternatives in that no new leases would be issued. Impacts on wilderness characteristics would be less than Alternative B given the added restrictions on oil and gas activities.

### Effects of Alternative D

For most land management activities in the Black Sage and Yellowstone River Island WSAs, management would be similar to Alternative B in the event that these areas were dismissed from further wilderness consideration by Congress. The major difference would be that the Black Sage WSA would be open to all salable and leasable minerals and oil and gas leases would have timing limitations from 12/1 to 5/15 for big game winter/spring range protection. These management changes would subject the area's wilderness characteristics to greater potential impact from mineral related activities. Impacts to the Yellowstone River Island could be slightly greater since the island would be available for land adjustment as well as salable and all leasable minerals under this alternative.

## EFFECTS ON SOCIAL AND ECONOMIC CONDITIONS

### ECONOMIC

#### Effects Common to All Alternatives

The economic analysis assesses the economic effects of the direct use of resources in terms of jobs and income.

This type of analysis does not include other types of economic value that may be associated with unique natural resources and protected areas. These types of values, often referred to as non-market values, include natural amenities and quality of life, non-use values, bequest values, and ecosystem services.

#### *Non-Market Values*

Natural amenities and quality of life have been increasingly recognized as important factors in the economic prospects of many rural communities in the American West and elsewhere (Rudzitis and Johnson 2000). While natural amenities and life quality do not directly generate income in the same sense as, for example, a sawmill or a tourist lodge, they do act to attract and keep residents, and may attract new businesses. Open spaces, scenery, and protected lands are important to residents of Montana and throughout the Rocky Mountain west and may contribute to healthy economies and lifestyles (Sonoran Institute 2003). This relationship is, however, difficult to quantify as is assessing the effects of different management actions on the economic activities that these amenities are believed to indirectly generate. In this case, the impacts of the action alternatives relative to Alternative A are not expected to result in measurable changes in this type of indirect economic activity.

#### *Non-Use Values*

Non-use values, as the name might suggest, represent the value that individuals assign to a resource independent of the use of that resource. These types of values, which include existence, option, and bequest values, are usually measured via surveys that ask people how much they would be willing to pay to have a particular area preserved or designated as wilderness. These values represent the value that individuals obtain from knowing that a resource exists, knowing that it would be available to use in the future, and knowing that it would be left for future generations. Wilderness has been the subject of numerous non-use studies, usually conducted for specific natural areas, and willingness-to-pay estimates for protection or designation have identified a wide range of values (Krieger 2001; Loomis and Richardson 2001).

No attempt has been made to quantify potential non-use values associated with the RMP alternatives because none of the alternatives propose new wilderness that would significantly restrict current uses.

Based strictly on the number of acres that would be in an ACEC, Alternative C would likely have the highest wilderness and protected land-related non-use values. Alternative A would have the lowest values, followed by Alternative D.

#### *Ecosystem Services*

Ecosystem services may be defined as those natural processes that provide long-term life support benefits to society as a whole. Examples of these types of benefits include watershed processes, soil stabilization and ero-

sion control, improved air quality, climate regulation and carbon sequestration, and biological diversity (Krieger 2001).

No attempt has been made to assign monetary values to the ecosystem services that would be provided because these values are difficult to quantify at this analysis level. In addition to the difficulties involved in developing accurate estimates of these values, the impacts of project alternatives are rarely quantified in the type of units that would allow these values to be assigned. However, the fact that no monetary value is assigned to ecosystem services in this document does not lessen their importance in the decision making process.

The potentially affected local economy is characterized for the Planning Area counties in the Affected Environment portion of this document (Chapter 3). None of the alternatives would be expected to affect economic diversity (the number of economic sectors) or economic dependency, which occurs when the local economy is dominated by a limited number of industries. While the proposed alternatives have the potential to affect local businesses and individuals, as discussed in the following sections, the relative contribution of Butte Field Office-related activities to the local economy and the relative differences between the alternatives would not be large enough to have any measurable effect on economic diversity or dependency. This is also the case with respect to economic stability, which is typically assessed in terms of seasonal unemployment, sporadic population changes, and fluctuating income growth rates. Butte

Field Office-related activities include logging and recreation, which are typically characterized by seasonal employment, but none of the alternatives would be expected to affect existing trends in these or other industries.

Wildland fuel treatment costs are included for the purposes of this analysis in the total BLM expenditures identified by alternative (**Table 4-39**). Projected fuel treatment costs range from approximately \$400,000 under Alternative C to approximately \$1.26 million under Alternative D. Other potential wildland fire-related costs (such as property loss, lost revenues, and increased suppression costs) are difficult to project and are unknown. It is commonly accepted that fire suppression costs and risk to life and property should be less on wildland fires that occur where hazardous fuels have not been reduced. For example, fires generally burn hotter, flame length is higher, and fires in tree canopies are more likely in non-treated areas. A comparison of fire suppression costs in Western Montana and Eastern Montana help illustrate the differences in suppression costs.

Fire suppression costs incurred on the Beaverhead-Deerlodge, Gallatin, and Helena National Forests from 2000 through 2003 are summarized in (**Table 4-40**). These costs, presented as average suppression costs per acre, are provided to illustrate potential wildland fire suppression costs. The alternatives involve different approaches to, and levels of, vegetation treatment, as well as different approaches to wildland fire manage-

**Table 4-39**  
**Estimated Outputs by Alternative**

<b>Output</b>	<b>Current<sup>1</sup></b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Actual Use Cattle (head month) <sup>2</sup>	31,200	31,200	28,300	28,800	31,200
Actual Use Sheep (head month) <sup>2</sup>	6,430	6,400	6,400	6,400	6,400
Estimated Timber Output (CCF) (PSQ) <sup>3</sup>	9,800	9,800	9,200	4,100	10,800
Dimension Stone (short tons)	N/A	400	400	400	400
Construction Sand and Gravel (short tons)	20,000	20,000	20,000	20,000	20,000
Limestone (short tons)	330,000	330,000	330,000	330,000	330,000
Natural Gas (M Cubic Feet)	0	980,000	980,000	0	980,000
General Recreation (1000 visits)	897	897	889	882	894
Fish and Wildlife Recreation (1000 visits)	437	437	426	417	434
BLM Expenditures (\$000,000s)	3.7	3.7	4.2	3.5	5.0

<sup>1</sup> Estimates include actual use levels (recreation visits in 2004) and authorized amounts (grazing and timber). Data are not available for minerals.

<sup>2</sup> Data, including the current estimate, are based on head months available for activation. Actual use has averaged about 70 percent of the total over the past seven years. 1 head month of cattle and horses = approximately 0.78 AUMs for cattle and horses; 1 head month for sheep and goats = approximately 0.2 AUMs for sheep and goats.

<sup>3</sup> Sawtimber data, including the current estimate, are based on the Probable Sale Quantity (PSQ). Actual sawtimber harvest was approximately 21 percent of the PSQ in 2003.

ment. This would tend to reduce the threat to life and property. Across all fire size class categories, the fire suppression costs per acre for the Custer NF were about one-fourth the average of the cost over the other three forests. It is not, however, possible to project the level of non-prescribed wildland fire that would occur under any of the alternatives. Based on the level of hazardous fuels treatments for each alternative, total wildland fire suppression costs for fires in the Butte Field Office would be highest for Alternative C and lowest for Alternative D.

This section discusses impacts to potentially affected groups that are unlikely to vary substantially by alternative.

**Timber and Forest Product Production**

The local primary forest product industry described by the Bureau of Business and Economic Research (BBER, 2001) is a long standing and basic industry that all of the alternatives would continue to supply with traditional materials shown in the PSQ estimates. The alternatives provide for changes that are anticipated through industrial research and development, and through entry of new businesses in the field, offering a different assortment of products such as biomass, that would use non-traditional and currently low value forest materials that were utilized inefficiently or were often considered to be waste in the past. While the harvest amounts being proposed under all of the alternatives would not have a significant effect on the total amount of material available from all ownerships in the area, they are still important, as the current timber harvest levels in Montana are considered to be insufficient to sustain the current industry for the next decade (BBER, 2004).

The commercial treatments proposed would tend to reduce the intensity of wildfire events and the tree conditions that favor development of epidemic levels of forest insect or disease. These treatments are expected to reduce the severe levels of tree mortality and site damage that are experienced during such large scale, stand replacement events, and would reduce the amount of salvage volume available from such events in the future. The intended reductions in the severity from such events would also tend to insure a steady and continuing supply of future forest products, helping to sustain economic conditions and improving local acceptance of active forest management and forest product removals.

Each of the alternatives also would sustain current local government revenues from the product sales within the eight-county area, as four percent of non-stewardship timber receipts are returned through the state to the counties where they are generated.

**Ranching**

Livestock grazing on BLM-managed land in the eight-county Planning Area would continue to involve approximately the same number of operators. Less than seven percent of the farms and ranches in the Planning Area would hold BLM grazing permits. The amount of livestock grazing would change less than 10 percent among the alternatives and BLM would continue to provide less than one percent of the total forage needed to feed livestock in the Planning Area (AMS, Appendix P (USDI-BLM 2006c)). The economic dependency of livestock producers on BLM forage would remain unchanged. However, often BLM forage would continue to provide a critical element of some livestock producers' complement of grazing, forage, and hay production. Farm income would continue to account for approximately one percent of total income in the eight-county study area.

<b>National Forest</b>	<b>Fire Size Class<sup>1,2</sup></b>						
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>
Beaverhead-Deerlodge	14,667	5,913	2,387	1,435	519	808	340
Custer	8,938	1,156	305	206	264	462	39
Gallatin	15,033	8,136	4,264	4,150	2,881	1,245	411
Helena	8,668	2,500	2,049	N/A	N/A	N/A	120
Average	12,789	5,516	2,900	2,793	1,700	1,027	290

<sup>1</sup>Fire size class is defined as follows:

- |   |                              |   |                                  |
|---|------------------------------|---|----------------------------------|
| A | 0.01 acres to 0.25 acres     | E | 300.00 acres to 999.90 acres     |
| B | 0.26 acres to 9.90 acres     | F | 1,000.00 acres to 4,999.90 acres |
| C | 10.00 acres to 99.90 acres   | G | 5,000.00 acres and larger        |
| D | 100.00 acres to 299.90 acres |   |                                  |

<sup>2</sup>Data are from the Forest Service which manages fire suppression in the Planning Area.

Source: Region 1 (FS) Fire Suppression Average Acre Cost by Unit. Derived from individual S100-2 reports 2000-2003.

### ***Recreation Use, Permitted Outfitters and Guides***

None of the proposed alternatives would be expected to affect current outfitter and guide use. The action alternatives do vary in terms of fee collections for commercial fishing and floating outfitters who use developed BLM river access sites. Payment of these fees would have different administrative impacts, but the actual costs would likely be passed on to the clients. Outfitters and guides would continue to have the same opportunities under all alternatives as they currently do, with the exception of potential hunting outfitter and guides who would not be able to camp at developed fee sites during hunting season under Alternatives B and C. There are currently no commercial outfitter and guides using developed fee sites during hunting season.

Revenues from recreation use permits, campground receipts, and outfitter and guide receipts would be similar (approximately \$123,000 per year) for all alternatives.

### ***Lands and Realty***

Use authorizations, e.g., rights-of-way, permits, and lease rentals would continue to generate an estimated \$110,000 of revenue annually for the federal government. Payments in Lieu of Taxes (PILT) from the federal government to the eight counties would continue to be approximately \$5.1 million with all the alternatives.

### ***Other Impacts***

Under all alternatives, economic diversity indicated by the number of economic sectors would remain relatively unchanged, though shifts in emphasis could occur. Estimated costs to local governments would also remain unchanged, i.e. demand for services and infrastructure would not change.

### ***Environmental Justice***

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires each federal agency to make the achievement of environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low income populations. The Order further stipulates that agencies conduct their programs and activities in a manner that does not have the effect of excluding persons from participation in, denying persons the benefits of, or subjecting persons to discrimination because of their race, color, or national origin.

None of the proposed alternatives would be expected to have disproportionately high and adverse human health or environmental effects on minority and low income populations. All four alternatives are expected to result in increases in employment and labor income over the next decade, with alternatives resulting in a very small

share of total employment within the eight counties that comprise the Planning Area.

Public involvement efforts for this project have been inclusive and the agency has considered input from persons or groups regardless of race, color, national origin, income, or other social and economic characteristics.

### ***Public Health and Safety***

Under all alternatives, the hazardous materials management program focuses on immediate and urgent threats to human health and the environment from spills, releases, dumping, and discovery of hazardous waste sites. In terms of health and safety, land use authorizations for uses which would involve the disposal or storage of materials which could contaminate the land would not be issued. Lands proposed for acquisition or disposal would need to be inventoried for the presence of hazardous materials. The presence of contaminants may lead to actions such as the modification or abandonment of a land ownership adjustment proposal, or remediation in the form of cleanup and removal of the contaminants. Standard operating procedures required under the National Oil and Hazardous Substances Pollution Contingency Plan would be implemented during cleanup.

There would be no effects to public health and safety from proposed management associated with vegetation communities, special status and priority plant and animal species, recreation, ACECs, air quality, soils, water, paleontological resources, energy and minerals, environmental justice or tribal treaty rights.

Under all alternatives, abandoned mines that pose a significant risk to human health and the environment would be remediated.

Abandoned mine land (AML) reclamation prioritization would enable BLM to address immediate problem sites that pose a threat to public health and safety.

Reclamation activities conducted in accordance with Land Health Standards would contribute to achievement of the resource use vision statement.

Monitoring AML sites after reclamation would reduce risk to public safety by clarifying where risk to public health and safety has been reduced as well as where risks still exist.

## **Effects of Alternative A**

### ***Economic Environment***

Estimates of the levels of employment and labor income that would be supported by Alternative A are based on projected resource outputs and projected BLM expenditure levels (**Table 4-39**). Estimated average annual employment and labor income are summarized by resource area in **Table 4-42** and **Table 4-41**, respectively.

Resource	Current	A	B	C	D
Recreation	510	510	506	502	508
Wildlife and Fish	292	292	285	278	290
Grazing	11	11	10	11	11
Timber	106	106	99	45	117
Minerals	D	92	92	D	92
Ecosystem Restoration	10	10	18	6	23
Payment to State/Counties	144	157	157	144	157
BLM Expenditures	89	89	92	87	99
Total Field Office Management	1,193	1,266	1,259	1,104	1,297
<b>Percent Change from Current</b>	---	<b>6.1</b>	<b>5.5</b>	<b>-7.5</b>	<b>8.7</b>

D = Data withheld to avoid disclosing confidential data of individual firms Source: FEAST 2007.

Resource	Current	A	B	C	D
Recreation	\$13,073.6	\$13,073.6	\$12,960.5	\$12,860.7	\$13,030.4
Wildlife and Fish	\$7,549.9	\$7,549.9	\$7,373.3	\$7,206.7	\$7,498.8
Grazing	\$197.9	\$197.9	\$180.1	\$183.0	\$197.9
Timber	\$2,999.9	\$2,999.9	\$2,816.4	\$1,269.8	\$3,312.9
Minerals	D	\$4,592.3	\$4,592.3	D	\$4,592.3
Ecosystem Restoration	\$335.6	\$335.6	\$585.4	\$248.2	\$746.6
Payments to State/Counties	\$5,563.3	\$6,064.9	\$6,064.9	\$5,563.3	\$6,064.9
BLM Expenditures	\$2,887.8	\$2,887.8	\$3,217.2	\$2,699.5	\$3,871.4
Total Field Office Management	\$33,898.5	\$37,701.8	\$37,790.1	\$31,321.8	\$39,315.2
<b>Percent Change from Current</b>	---	<b>11.2</b>	<b>11.5</b>	<b>-7.6</b>	<b>16.0</b>

D = Data withheld to avoid disclosing confidential data of individual firms. Source: FEAST2007

Alternative A would allow an average annual harvest of approximately 9,800 CCF of timber (Table 4-39). The majority of this estimate (9,700 CCF) is based on the sawtimber PSQ and reflects the annual volume that would be available rather than actual harvest projections. Actual sawtimber harvest was approximately 21 percent of the PSQ in 2003. The remainder of the harvest estimate consists of fuel wood (61CCF) and post and poles (5.5 CCF). This harvest, if it were to occur, would support approximately 110 jobs and \$3.0 million in labor income (Table 4-42 and Table 4-41) within the local or regional economy.

Alternative A would continue current levels of forest product offerings and provide no adjustment in current economic condition.

Alternative A would authorize average annual grazing of approximately 31,200 cattle head months (HMs) and 6,400 sheep HMs (Table 4-39) and support about 10 jobs and \$200,000 in labor income (Table 4-42 and Table 4-41). Annual revenues from grazing permits would amount to approximately \$35,000 (25,677 AUMs x \$1.35/AUM= \$34,664). Approximately 64 percent of the AUMs sold within the Butte Field Office are section 3 permits of which 12.5 percent of revenues are distributed to the state and local counties; 36 percent of the

AUMs are section 15 permits of which 50 percent of revenues are distributed to state and local counties. Total consumer surplus associated with 25,677 BLM AUMs would continue to be approximately \$376,000. Annual federal revenues from livestock grazing would be about \$35,000, of which about \$8,400 would be distributed to the state and counties.

Recreation is the largest program managed by the Butte Field Office. It is estimated that recreation, including fish and wildlife-related recreation activities, would account for about 60 percent of all the jobs and about 50 percent of all the labor income that would be supported by Butte Field Office activities (Table 4-42 and Table 4-41). Motorized access and motorized recreation opportunities would not change from the current condition. An annual average of approximately 900,000 general recreation visits and 440,000 fish and wildlife-related recreation visits are projected under Alternative A (Table 4-39). Alternative A would support approximately 800 jobs and \$21 million in labor income (Table 4-42 and Table 4-41). Annual federal revenues from recreation management (including user fees and partnership donations for site maintenance and improvements) would be about \$123,000.

Currently, no oil and gas operations occur on federal lands/minerals. About 36,200 acres of federal minerals are currently leased within the planning area. Although acres available for oil and gas leasing would vary among alternatives, for this analysis the number of acres that would be leased under Alternative A, B, and D is projected to be about 37,700 acres. (37,731 acres are currently suspended with nominations. These would be available for lease upon completion of the RMP under alternatives A, B, and D.) Federal revenues from oil and gas leasing would include one-time lease bids (minimum of \$2.00/acre), and annual rental fees on leases (\$1.50 per acre/year for the first five years and \$2.00 per acre/year each year thereafter). Currently, 36,243 acres are leased and generate about \$72,000 in rental revenues. If all the new acres with suspended nominations were leased in one year the one-time lease bid would be at least \$75,000. Annual lease rentals for the first five years of these new leases would be about \$56,000. After the first five years, annual lease rentals (current and new) would be about \$148,000. Total State lease revenue would be 50 percent of Federal lease revenues. This would amount to about \$74,000 annually. At the scale of development projected, employment and income impacts on local residents would be limited and temporary. For analysis purposes, it is assumed that not more than one exploratory well would be drilled per year. Drilling would employ 15-20 workers per well for periods of up to 300 days. Average income per job in the mining sector would be about \$49,000 per year (average for the State of Montana, 2000, Northwest Economic Association). However, since drilling would likely be undertaken by outside firms, much of the employment and income effects would not show up in the local economy. Gas production would contribute to state and local government revenues through oil and gas tax revenues. For analysis purposes it is assumed that 980,000 MCF of natural gas would be produced annually. This would generate an estimated \$813,000 in Federal royalties (based on a six month average price of natural gas at wellhead of \$6.64/MCF, Energy Information Adminis-

tration, 10/11/07); one half (approximately \$407,000) would be distributed to the State of Montana; and 12.5 percent of the state portion (about \$102,000) would be distributed to the county or counties of production.

Alternative A would result in the estimated average annual production of 980,000 MCF of natural gas, 330,000 short tons of limestone, 400 short tons of dimension stone and 20,000 short tons of construction sand and gravel from public lands and federal minerals (Table 4-39). It is estimated that minerals exploration, development, and production on public lands/federal minerals would support about 90-100 local jobs and an estimated \$4.6 million in local labor income. (Table 4-42 and Table 4-41)

Annual average level of activities associated with ecosystem restoration would include fuels treatments and pre-commercial thinning (1,275 acres), weed spraying (2,000 acres), and road closures (172 miles). These activities would support about 10 jobs and \$340,000 in labor income. BLM expenditures include both expenditures for employee salaries and other non-salary expenditures related to Butte Field Office operations. Non-salary expenditures are purchases made in support of resource programs and operations and include items such as contracts, gasoline, diesel, ammunition and explosives, animal feed, computer equipment, and so on. Budget expenditures by program would remain constant under Alternative A and would continue to support approximately 90 jobs and \$2.9 million in labor income (Table 4-42 and Table 4-41).

In conclusion, the estimated total (direct, indirect, and induced) number of local jobs and associated local labor income contributed by BLM land and resource management would be about 1,270 jobs and \$38 million, respectively. Total employment and labor income generated by BLM resource management would increase by about 6 percent and 11 percent, respectively, compared to current management. These BLM-related contributions, i.e. jobs and labor income, would continue to be less than one percent of total within the local economy. The largest employment and labor income effects would occur in the accommodations and food services, government, and retail trade industry sectors (FEAST, 2007). All program revenues to the federal government would be about \$1.1 million per year. Annual payments to the State of Montana and to counties would be approximately \$5.5 million, most of which would be PILT payments. The dependency of the local economy on livestock industry, timber production, mining, oil and gas exploration, and recreation activities would not be affected by BLM resource management. The influence of resource management on BLM-administered lands would not change local economic diversity (as indicated by the number of economic sectors), dependency (i.e. where one or a few industries dominate the economy), or stability (as indicated by seasonal unemployment, sporadic population changes, and fluctuating income rates).

## ***Social Environment***

The following social analysis assesses the potential effects of different management actions on potentially affected social groups. These groups were identified based on past studies in and around the Planning Area and the results of public scoping conducted for the Butte RMP. The analysis addresses the potential impacts of the alternatives based on the issues and concerns raised by these groups during the public scoping process.

Timber employment is concentrated in only a few areas in the analysis area and lands managed by the Butte Field Office account for a very small portion of total harvest in this area. There would be no change in available timber harvest opportunities under this alternative. Public access and the availability of firewood and other forest resources would also remain unchanged. As a result, this alternative would be unlikely to affect current social conditions with respect to forest products. Timber-related issues, raised during public scoping for this project included concerns regarding noxious weeds, fuel hazard reduction, and dead tree salvage. The action alternatives, with the possible exception of Alternative C, would treat larger areas of weeds and based on this issue, Alternative A is likely to be less favored among those concerned about noxious weed treatments.

Fire suppression within the first burning period would limit the loss of forest products to fire. Wildland fire use and prescribed burning could cause a loss of forest products, but could also create salvage opportunities. Heavily stocked tree conditions contribute to epidemic levels of forest insect or disease and increase the intensity of wildfire events. Commercial treatments would reduce heavily stocked conditions and corresponding severe levels of tree mortality and site damage. Local acceptance of active forest management and forest product removals would likely be improved as the threat of intensive wildfire and the threat of forest mortality from disease and insects is reduced.

Lands managed by the Butte Field Office accounted for less than one percent of the total AUMs in the Planning Area in 2003, ranging from 0.02 percent of total AUMs in Broadwater County to 2.7 percent of the total in Jefferson County. These lands do, however, account for more than one-third of total AUMs for approximately 20 of the 174 existing ranchers who use Butte Field Office lands. In addition, these lands may be important to operators because of their relatively low grazing fees, which are \$1.35 per AUM for 2007.

There would be no change in the authorized AUMs under Alternative A (Table 4-39). Conflicts between livestock grazing and wheeled vehicles would continue under this alternative. A wide range of recreation opportunities are available within the Planning Area. These activities involve diverse groups of people and changes in recreation management can affect people who engage in particular recreation activities very differently. Con-

cerns were expressed during the public scoping process that demand for motorized recreational access has increased in recent years, while motorized access has decreased, largely as a result of federal land management action and policies that favor non-motorized users. Some commenting felt that public lands should be available to all users, both motorized and non-motorized, but some areas and trails should have limited types of use (hiking use only or OHV use only) where different types of use tend to be incompatible. Others felt that non-motorized uses are presently favored over motorized uses and felt that this balance should be changed, with motorized users allowed equal access (USDI-BLM 2005a).

Alternative A would not allocate ROS classes and recreation opportunities on Decision Area lands would continue to be managed under site-specific plans only. Management would continue to be challenging around developed recreation sites during peak recreation use seasons, particularly near shorelines and water-based recreation opportunities. Motorized access and motorized recreational opportunities (including organized motorized events) would continue unchanged under this alternative. As a result, this alternative would not address concerns about conflicts between motorized and non-motorized use or, between motorized use and livestock grazing. It would also not address concerns that the Butte Field Office should provide additional motorized recreation opportunities.

Permit requests by outfitter/guide hunters would be considered on a case-by-case basis throughout the decision area subject to environmental, social, and public health and safety concerns. No fees would be charged for commercial fishing and floating outfitters using developed BLM river access sites. This alternative would likely be favored by outfitter/guides over Alternatives B and C, which would impose constraints on potential outfitter/guide activities.

A number of individuals and organizations commenting during scoping for this project expressed concern about resource protection issues, with particular emphasis placed on wildlife, fisheries, water, and special area designations. Comments included requests that habitat corridors for threatened, endangered, and sensitive species and the integrity and non-motorized character of all roadless areas be maintained. Some respondents identified areas for designation as special use areas, including ACECs, wild and scenic river areas, and recreational river areas (USDI-BLM 2005a).

The current levels, methods, and mix of multiple use management would continue on Decision Area lands under this alternative and activity-level wildlife habitat and riparian protection measures would be less restrictive under this alternative than they would be under Alternatives B and C. The four eligible Wild and Scenic River segments would continue to be managed to protect the values that make them eligible and the six existing

WSAs would continue to be managed under the Interim Management Policy and Guidelines. No new ACECs would be established under this alternative. Based on these criteria, individuals and groups who give high priority to resource protection would be less likely to support this alternative than they would Alternatives B and C.

A number of individuals and groups expressed concern about limitations being placed on the availability of public lands for commercial uses such as livestock grazing, mineral development, and timber harvest. These people believe that local communities depend on these industries, which are a primary source of high paying jobs to local economies. Comments received during scoping for this project requested that the RMP revision focus on beneficial economic and social use of public lands, not locking them up from development or public access.

The current levels, methods, and mix of multiple use management would continue on Decision Area lands under this alternative. Resource outputs and current levels of motorized access and motorized recreation opportunities would not change under this alternative. Individuals and groups concerned about resource use limitations would likely favor this alternative or Alternative D.

## Effects Common to Action Alternatives

### *Social Environment*

ROS classes would be established and used to manage for desired recreation opportunities, experience levels, facility developments, and other resource uses. Implementation plans for Special Recreation Management Areas delineated Recreation Management Zones would be developed where specific management, marketing, monitoring, and administrative guidance is needed. The greatest difference between the action alternatives is the variation between motorized and non-motorized access.

Alternatives B and C would have the overall effect of reducing opportunities available for motorized recreation when compared to Alternative A, but the quality of the experience may increase because separating uses would reduce conflicts between user groups. Allocating areas to non-motorized use lets both non-motorized and motorized users know which areas they would have access to in the future.

Localized impacts from changes in management direction would be most likely to occur in the Scratchgravel Hills area, which would be managed differently under the action alternatives.

### *Public Health and Safety*

In addition to impacts described under Effects Common to All Alternatives, Alternatives B, C and D would include the AML reclamation program requiring an abandoned mine shaft in the Ringing Rocks Potential ACEC

to be reclaimed. The physical safety hazard for this site would be reduced.

## Effects of Alternative B

### *Economic Environment*

Estimates of the levels of employment and labor income that would be supported by Alternative B are based on projected resource outputs and projected BLM expenditure levels (**Table 4-39**). Estimated average annual employment and labor income are summarized by resource area in (**Table 4-42** and **Table 4-41**), respectively. The projected outputs and estimated employment and labor income are discussed by resource in the following sections.

Alternative B would provide for an average annual harvest of approximately 9,200 CCF of timber (**Table 4-39**). The majority of this estimate (9,100 CCF) is based on the sawtimber PSQ and reflects the annual volume that would be available rather than actual harvest projections. Estimated sawtimber harvest (9,100 CCF) would be approximately 99 percent of the PSQ. The remainder of the harvest estimate would consist of fuel wood (82 CCF) and post and poles (7.7 CCF). This harvest, if it were to occur, would support approximately 100 jobs and \$2.8 million in labor income (**Table 4-42** and **Table 4-41**).

Alternative B would cause slightly smaller levels of forest product offerings with higher levels of acreage treatments. These changes would not have noticeable difference in economic conditions locally.

Alternative B would authorize average annual grazing of approximately 28,300 cattle HMs and 6,400 sheep HMs (**Table 4-39**) and support approximately 10 jobs and \$180,000 in labor income (**Table 4-42** and **Table 4-41**). Annual revenues from grazing permits would amount to less than \$32,000. (24,710 AUMs x \$1.35/AUM=\$31,587). Estimated total distribution to state and local counties would be about \$7,600. Total consumer surplus associated with 24,710 BLM AUMs would be about \$362,000. Annual federal revenues from livestock grazing would be about \$31,600 and the amount distributed to the state and counties would be about \$7,600. Alternative B emphasizes a balance of motorized and non-motorized recreation and access opportunities compared to the other action alternatives (Alternatives C and D). The number of recreation visits to Butte Field Office-managed areas is expected to increase at a rate of two percent per year over the next 10 years under all of the alternatives. The projected average annual visits summarized for Alternative B in **Table 4-39** were estimated based on this expected increase. The total number of visits projected under Alternative B is expected to be slightly lower than under Alternative A.

Management actions under Alternative B are projected to result in a relative reduction in the number of visits associated with motorized vehicle travel, hunt-

ing/archery, wildlife/natural viewing, and snowmobiling, and a relative increase in non-motorized recreation visits (e.g., foot travel, biking, and horseback riding) (**Table 4-39**). Annual federal revenues from recreation management would be about the same as with Alternative A (\$123,000).

An annual average of approximately 889,000 general recreation visits and 426,000 fish and wildlife-related recreation visits are projected under Alternative B (**Table 4-39**). These visits would support approximately 790 jobs and \$20.3 million in labor income (**Table 4-42** and **Table 4-41**).

The economic impacts associated with minerals management and operations would be similar to those described for Alternative A. (**Table 4-42** and **Table 4-41**). Indirectly, Alternative B would likely provide an environment that is more conducive to continuing long-term population growth and corresponding economic growth than Alternatives A and D because it offers more protection of public lands and resources through the management of ACECs, Wild and Scenic Rivers, travel management restrictions, and semi-primitive non-motorized recreation management. Studies indicate that “protected public lands, set aside for their wildland characteristics, can and do play an important role in stimulating economic growth...” (Prosperity in the 21st Century West, Rasker et al, 2004).

Estimated annual average level of activities associated with ecosystem restoration would include hazardous fuels treatments and pre-commercial thinning (2,560 acres), weed spraying (2,900 acres), road decommissioning (5 miles), and road closures (318 miles). These activities would support about 20 jobs and \$590,000 in labor income.

In conclusion, the economic effects of Alternative B would be very similar to those of Alternative A. The estimated total (direct, indirect, and induced) number of local jobs and associated local labor income contributed by BLM land and resource management described above in Alternative B would be about 1,260 jobs and \$38 million, respectively. Like Alternative A, total employment and labor income generated by BLM resource management under Alternative B would increase by about 6 percent and 11 percent, respectively, compared to current management. These BLM-related contributions, i.e. jobs and labor income, would continue to be less than one percent of total within the local economy. The largest employment and labor income effects would occur in the accommodations and food services, government, and retail trade industry sectors. All program revenues to the federal government would be about \$1.1 million per year. Annual payments to the State of Montana and to counties would be approximately \$5.53 million, most of which would be PILT payments. The dependency of the local economy on livestock industry, timber production, mining, oil and gas exploration, and recreation activities would not be affected by BLM

resource management. The influence of resource management on BLM-administered lands would not change local economic diversity (as indicated by the number of economic sectors), dependency (i.e. where one or a few industries dominate the economy), or stability (as indicated by seasonal unemployment, sporadic population changes, and fluctuating income rates).

### ***Social Environment***

Projected timber harvest levels under Alternative B are slightly lower than current levels. Access to firewood, Christmas trees and other forest resources would be reduced under this alternative due in part to a 34 percent reduction in the roads currently available for public use to remove such materials and a 17 percent reduction in the forest and woodland area available under Alternative A through Recreational Opportunity Spectrum designation as Semi-primitive non-motorized where in some cases currently open roads would be closed. Access reductions would be greater than under current conditions, but lower than they would be under Alternative C.

An estimated 21,000 to 50,000 acres of weeds would be treated each decade under Alternative B. This may be slightly more to over twice the estimated 20,000 acres that would be treated under Alternative A. As a result, Alternative B would likely be relatively favored by those primarily concerned with noxious weed issues. Fire management impacts would be similar to those projected under Alternative A. Timber salvage would produce sawlogs and other timber products, but salvage would be more limited under this alternative than it would be under Alternatives A and D.

The numbers of AUMs permitted for livestock would be slightly less than for Alternative A; this decrease is not expected to affect any ongoing operation.

The effects to ranching would be the same under this alternative as they would under Alternative A. Relinquished allotments would be evaluated for suburban/urban interface issues, critical wildlife habitat, riparian values, or recreational considerations before being re-offered for permit or lease. Fewer conflicts between livestock grazing and wheeled vehicles would occur under this alternative than under Alternative A.

Alternative B emphasizes a balance of motorized and non-motorized recreation and access opportunities compared to the other action alternatives (Alternatives C and D); with 34 percent of Decision Area lands allocated to semi-primitive ROS classes. Management actions under this alternative are expected to result in a relative reduction in the number of visits associated with motorized vehicle travel, hunting/archery, motorized wildlife/scenery viewing, and snowmobiling, and a relative increase in non-motorized recreation visits (e.g., foot travel, biking, and horseback riding) (**Table 4-39**). Organized motorized events would be limited to the Pipestone area unless being held in conjunction with adjacent public or private lands. With the exception of a few

routes needed for residential access, the entire Scratch-gravel Hills area would be closed to wheeled motorized vehicle use yearlong. This alternative would address concerns about conflicts between non-motorized and motorized use and between motorized use and livestock grazing. It would not address concerns that the Butte Field Office should provide additional motorized recreation activities.

Annual day-use fees (to be established in accordance with FLREA) per commercial guided boat would be charged for commercial fishing and floating outfitters using developed BLM river access sites. Payment would be collected at the time of use. Commercial camping permits within developed fee sites would not be allowed during the fee season (Memorial Day to Labor Day). Special Recreation Use Permits during the hunting season would be limited to day-use activities with the exception that camping uses would be considered within developed recreation sites during the non-fee season. Based on these constraints, commercial outfitter/guides would be less likely to favor this alternative than they would Alternatives A or D.

This alternative emphasizes moderate levels of resource protection, use, and restoration, with project-level wildlife habitat and riparian protection measures greater than under Alternatives A and D, but less than under Alternative C. Individuals and groups who give high priority to resource protection would be more likely to favor this alternative than Alternatives A and D.

This alternative emphasizes moderate levels of resource protection, use, and restoration. Estimated average annual timber harvest would be higher under this alternative than under Alternative C, approximately the same as under Alternative A, but less than under Alternative D (Table 4-39). Oil and gas leasing constraints would be more restrictive than under Alternatives A and D, but less restrictive than under Alternative C. Based on these criteria, individuals and groups who give high priority to resource use would be more likely to favor this alternative than Alternative C and possibly Alternative A, depending on the specific priorities of the group or individuals concerned.

## Effects of Alternative C

### *Economic Environment*

Estimates of the levels of employment and labor income that would be supported by Alternative C are based on projected resource outputs and projected BLM expenditure levels (Table 4-39). Estimated average annual employment and labor income are summarized by resource area in Table 4-42 and Table 4-41, respectively. The projected outputs and estimated employment and labor income are discussed by resource in the following sections.

Alternative C would provide for an average annual harvest of approximately 4,100 CCF of timber (Table 4-39).

This is lower than under current conditions and lower than the other alternatives. The majority of this estimate is based on the sawtimber PSQ and reflects the annual volume that would be available rather than actual harvest projections. This harvest, if it were to occur, would support approximately 50 jobs and \$1.3 million in labor income (Table 4-42 and Table 4-41). The local employment and labor income supported by timber harvest on BLM lands would be less than half of current levels.

This alternative would authorize average annual grazing of approximately 28,800 cattle HMs and 6,400 sheep HMs (Table 4-39) and support approximately 10 jobs and \$183,000 in labor income (Table 4-42 and Table 4-41). Economic effects of and permittee responses to grazing management would be similar to those described for Alternatives A and B. Annual revenues from grazing permits would be similar to Alternative B (about \$32,100), (24,710 AUMs x \$1.35/AUM=\$32,095). Estimated total distribution to state and local counties would be about \$7,700. Total producer surplus would be about \$362,000. The total number of visits projected under Alternative C is the lowest of the four alternatives. Management actions under Alternative C are projected to result in a relative reduction in the number of visits associated with motorized vehicle travel, hunting/archery, wildlife/natural viewing, and snowmobiling. Projected reductions in these areas would be twice as large as those under Alternative B but still relatively minor when measured in terms of regional economic impacts. Alternative C is also expected to result in a relative increase in non-motorized recreation visits (e.g., foot travel, biking, horseback riding, and non-motorized boating).

An annual average of approximately 882,000 general recreation visits and 417,000 fish and wildlife-related recreation visits are projected under Alternative C (Table 4-39). This increase over the current (2004) level of visitation is due to the baseline increase in recreation visits (two percent per year) that is projected under all of the alternatives. Alternative C would support approximately 780 jobs and \$20.1 million in labor income (Table 4-42 and Table 4-41). Annual federal revenues from recreation management would be about the same as with Alternative A because the increase in recreation use would occur largely in dispersed recreation use where BLM does not collect fees. Alternative C would result in the estimated average annual production of 330,000 short tons of limestone, 400 short tons of dimension stone, and 20,000 short tons of construction sand and gravel from public lands (Table 4-39). It is estimated that minerals exploration, development, and production on public lands/federal minerals would support about the same level of employment and labor income as current management. However, there would likely be no contribution from oil and gas leasing from BLM mineral estate lands due to the high degree of leasing restrictions under this alternative.

Estimated annual average level of activities associated with ecosystem restoration would include hazardous fuels treatments and pre-commercial thinning (450 acres), weed spraying (2,200 acres), road decommissioning (5 miles), and road closures (375 miles). These activities would support less than 10 jobs and about \$250,000 in labor income.

BLM budget expenditures would be lower under Alternative C than under any other alternative, including Alternative A, No Action (**Table 4-39**). Alternative C would have lower expenditures than Alternative A in the range, fuels, and weed treatment programs, with the largest reduction occurring under the fuels program. BLM expenditures under this alternative would support approximately 90 jobs and \$2.7 million in labor income (**Table 4-42** and **Table 4-41**).

Indirectly, Alternative C would provide an environment that would be more likely to sustain long-term population growth and corresponding economic growth than the other alternatives because it offers the most protection of public lands and resources through the management of ACECs, Wild and Scenic Rivers, travel management restrictions, semi-primitive non-motorized recreation management, and less mineral development. Studies indicate that “protected public lands, set aside for their wildland characteristics, can and do play an important role in stimulating economic growth...” (Prosperity in the 21st Century West, Rasker et al, 2004).

In conclusion, Alternative C is the only alternative analyzed in detail that would result in a short-term loss of local employment and labor income. The estimated total (direct, indirect, and induced) number of local jobs and associated local labor income contributed by BLM land and resource management described above in Alternative C would be about 1,100 jobs and about \$31.3 million, respectively. Total employment and labor income generated by BLM resource management under Alternative C would decrease by about 8 percent compared to current management. These BLM-related contributions, i.e. jobs and labor income, would continue to be less than one percent of total within the local economy. The largest employment and labor income effects would occur in the accommodations and food services, government, and retail trade industry sectors. All program revenues to the federal government would be about \$0.2 million per year. Annual payments to the State of Montana and to counties would be approximately \$5.1 million, most of which would be PILT payments. The dependency of the local economy on livestock industry, timber production, mining, oil and gas exploration, and recreation activities would not be affected by BLM resource management. The influence of resource management on BLM-administered lands would not change local economic diversity (as indicated by the number of economic sectors), dependency (i.e. where one or a few industries dominate the economy), or stability (as indi-

cated by seasonal unemployment, sporadic population changes, and fluctuating income rates).

### ***Social Environment***

Projected timber harvest levels are much lower under Alternative C than under the other alternatives. This alternative would likely be less favored than the other alternatives by those primarily concerned about timber employment. Access to firewood, Christmas trees and other forest resources would be limited under this alternative due in part to a 41 percent reduction in the roads currently available for public use to remove such materials and a 29 percent reduction in the forest and woodland area available under Alternative A through Recreational Opportunity Spectrum designation as Semi-primitive non-motorized where in some cases currently open roads would be closed.

Projected ground disturbance would be lower under this alternative than it would under the other action alternatives and, as a result, less aggressive weed treatment would be required. An estimated 16,000 to 38,000 acres of weeds would be treated per decade under this alternative.

Timber salvage would be limited under this alternative and, as a result, is less likely to be favored by those primarily concerned with salvage opportunities. Similarly, this alternative would require that firewood be live trees and could, as a result, substantially reduce the number of firewood permits.

The effects to ranchers would be similar to Alternative B. The existing Indian Creek allotment (2,215 acres and 376 AUMs), as well as any lands acquired from the Iron Mask acquisition, would be unavailable for grazing lease or permit under this alternative.

Alternative C would emphasize non-motorized recreation opportunities more than the other alternatives, with 41 percent of the Decision Area lands allocated to semi-primitive ROS classes. Based on this relative distribution, Alternative C is likely to be preferred by recreationists who favor non-motorized recreation opportunities. Management actions under this alternative are expected to result in a relative reduction in the number of visits associated with motorized vehicle travel, hunting/archery, motorized wildlife/scenery viewing, and snowmobiling. Opportunities for organized motorized events would be eliminated and the entire Scratchgravel Hills area would be closed to motorized vehicle use after dark (dusk to dawn) yearlong. This alternative would address concerns about conflicts between motorized and non-motorized use and between motorized use and livestock grazing. It would not address concerns that the Butte Field Office should provide additional motorized activities.

Annual day-use fees of \$90 per commercial guided boat would be charged for commercial fishing and floating outfitters using developed BLM river access sites. Out-

fitters would be billed in advance. Commercial camping permits within developed fee sites would not be allowed during the fee season (Memorial Day to Labor Day). Special Recreation Use Permits during the hunting season would be limited to day-use activities only. Based on these constraints, commercial outfitter/guides would be less likely to favor this alternative than they would the other alternatives.

This alternative emphasizes a lesser degree of vegetative restoration than the other action alternatives (Alternatives B and D), but project-level wildlife habitat and riparian protection measures would be greater than under the other three alternatives. All four eligible Wild and Scenic River segments would be recommended as suitable for the National Wild and Scenic Rivers System and four new ACECs, including a total of approximately 76,000 acres, would be established. Based on these criteria, individuals and groups who give high priority to resource protection would likely favor this alternative.

Estimated average annual timber harvest would be lower under this alternative than under any other alternative (Table 4-39). Oil and gas leasing constraints would be the most restrictive of any alternative. Groups and individuals who are concerned about restrictions on resource use would likely prefer all other alternatives over Alternative C.

## Effects of Alternative D

### *Economic Environment*

Estimates of the levels of employment and labor income that would be supported by Alternative D are based on projected resource outputs and projected BLM expenditure levels (Table 4-39). Estimated average annual employment and labor income are summarized by resource area in Table 4-42 and Table 4-41, respectively. The projected outputs and estimated employment and labor income are discussed by resource in the following sections.

Alternative D would provide for an average annual harvest of approximately 10,800 CCF of timber (Table 4-39). This is higher than the volumes projected for the other action alternatives. The majority of this estimate (10,700 CCF) is based on the sawtimber PSQ and reflects the annual volume that would be available rather than actual harvest projections. This harvest, if it were to occur, would support approximately 120 jobs and \$3.3 million in labor income (Table 4-42 and Table 4-41).

Alternative D would offer higher levels of forest product offerings with higher levels of acreage treatments; however these changes would not be large enough to cause substantial differences in local economic conditions.

Economic impacts associated with grazing management would be similar to current management (Alternative A). This alternative would authorize average annual grazing of approximately 31,200 cattle HMs and 6,400 sheep

HMs (Table 4-39) and support approximately 10 jobs and \$198,000 in labor income (Table 4-42 and Table 4-41). Annual revenues from grazing permits would amount to about \$35,000 (25,677 AUMs x \$1.35/AUM = \$34,664). Estimated total distribution to state and local counties would be about \$8,400. Consumer surplus would be about \$376,000. Annual federal revenues from livestock grazing and the amount distributed to the state and counties would be about the same as with Alternative A.

Alternative D emphasizes motorized access and recreation opportunities more than the other action alternatives. The total number of visits projected under Alternative D is the highest of the four alternatives. Management actions under Alternative D are projected to result in a relative increase in the number of visits associated with motorized vehicle travel, hunting and archery, wildlife and natural viewing, and snowmobiling, with the projected visits for other activities expected to remain as projected under Alternative A.

Management actions under Alternative D, coupled with an annual two percent increase in the number of visits, are expected to result in an annual average of approximately 894,000 general recreation visits and 433,000 fish and wildlife-related recreation visits (Table 4-39) and support approximately 800 jobs and \$20.5 million in labor income (Table 4-3 and Table 4-4). Annual federal revenues from recreation management would be about the same as with Alternative A (\$580,000).

Alternative D would result in the estimated average annual production of 980,000 MCF of natural gas, 330,000 tons of limestone, 400 short tons of dimension stone and 20,000 short tons of construction sand and gravel from public lands (Table 4-39) and support 90-100 jobs and \$4.6 million in labor income (Table 4-42 and Table 4-41). The economic impacts associated with minerals management would be similar to those described for Alternative A.

Estimated annual average level of activities associated with ecosystem restoration would include hazardous fuels treatments and pre-commercial thinning (3,345 acres), weed spraying (3,600 acres), road decommissioning (4 miles), and road closures (266 miles). These activities would support about 20 jobs and \$750,000 in labor income.

Budget expenditures would be higher under Alternative D than under any other alternative, with the majority of the relative increase associated with expenditures in the fuels and fish and wildlife management programs. BLM expenditures under this alternative would support approximately 100 jobs and \$3.9 million in labor income (Table 4-42 and Table 4-41).

In conclusion, the estimated total (direct, indirect, and induced) number of local jobs and associated local labor income contributed by BLM land and resource management described above in Alternative D would be about

1,300 jobs and almost \$39.3 million, respectively. Total employment and labor income generated by BLM resource management under Alternative D would increase by about 9 percent and 16 percent, respectively, compared to current management. These BLM-related contributions, i.e. jobs and labor income, would continue to be less than one percent of total within the local economy. The largest employment and labor income effects would occur in the accommodations and food services, government, and retail trade industry sectors. All program revenues to the federal government would be about \$1.1 million per year. Annual payments to the State of Montana and to counties would be approximately \$5.5 million, most of which would be PILT payments. The dependency of the local economy on livestock industry, timber production, mining, oil and gas exploration, and recreation activities would not be affected by BLM resource management. The influence of resource management on BLM-administered lands would not change local economic diversity (as indicated by the number of economic sectors), dependency (i.e. where one or a few industries dominate the economy), or stability (as indicated by seasonal unemployment, sporadic population changes, and fluctuating income rates).

### ***Social Environment***

Alternative D would have the highest projected timber harvest levels and would support approximately 70 jobs (Table 4-42 and Table 4-41). This alternative would likely be relatively favored by the timber industry and workers concerned about employment. These potential employment opportunities represent a very small share of total employment within the Planning Area, but may be important to those concerned and may have small, but positive, impacts in one or more local communities. Access to firewood, Christmas trees and other forest resources would be reduced under this alternative due in part to a 24 percent reduction in the roads currently available for public use to remove such materials and a 16 percent reduction in the forest and woodland area available under Alternative A through Recreational Opportunity Spectrum designation as Semi-primitive non-motorized where in some cases currently open roads would be closed. Access reductions would be greater than under current conditions, but lower than Alternatives B and C.

Projected ground disturbance would be higher under this alternative than it would under the other action alternatives and, as a result, more aggressive weed treatment would be required. An estimated 25,000 to 61,000 acres of weeds would be treated per decade. Timber salvage would be limited under this alternative compared to Alternative A. Fire created salvage opportunities would be higher under this alternative than under the other action alternatives. The effects on ranching would be the same under this alternative as Alternative A. Unlike the other action alternatives (Alternatives B and C), relinquished allotments would remain available for livestock

grazing leases or permits without evaluation for suburban/urban interface issues, crucial wildlife habitat, riparian values, or recreational considerations before re-offering. Fewer conflicts between ranchers and off-highway motorized vehicle users would occur than under Alternative A.

Alternative D emphasizes motorized access and recreation opportunities more than the other alternatives, with just 21 percent of Decision Area lands allocated to semi-primitive ROS classes. Based on this relative distribution, Alternative D is likely to be preferred by recreationists who favor motorized recreation opportunities, including hunters who prefer motorized hunting opportunities and groups and individuals that engage in snowmobiling. Two areas would remain open for organized motorized events and motorized and non-motorized recreational uses would be allowed 24 hours per day in the Scratchgravel Hills area in accordance with the travel management plan. This alternative would address some of the concerns about conflicts between motorized and non-motorized use. It would not address concerns that the Butte Field Office should provide additional motorized recreation activities.

BLM would postpone fees for commercial fishing and floating outfitters using developed BLM river and lake sites accessing state waterways until a multi-agency statewide fee system is established. Authorization of commercial camping activity and permit requests by outfitter and guide hunters would be considered throughout the Field Office on a case-by-case basis subject to resource constraints, management capabilities, social conflicts and public health and safety concerns. This alternative would impose fewer constraints on commercial outfitter and guides than the other two action alternatives (Alternatives B and C) and would, as a result, be more likely to be favored by those groups.

This alternative emphasizes a greater degree of vegetative restoration than the other action alternatives (Alternatives B and C), but project-level wildlife habitat and riparian protection measures would be less restrictive under this alternative than they would be under the other three alternatives. None of the four eligible Wild and Scenic River segments would be recommended as suitable for the National Wild and Scenic Rivers System. This alternative would establish two new ACECs, including a total of approximately 12,000 acres, less than half the new ACEC acres proposed under the other action alternatives (Alternatives B and C). Based on these criteria, individuals and groups who give high priority to resource protection would be less likely to favor this alternative than the other action alternatives.

Estimated average annual timber harvest would be higher under this alternative than under any of the other alternatives (Table 4-39). Oil and gas leasing constraints would be less restrictive than Alternatives A and B, and much less restrictive than Alternative C. Alternative D emphasizes motorized recreation opportunities more

than the other alternatives. Based on these criteria, individuals and groups who give high priority to resource use would likely favor this alternative.

## TRIBAL TREATY RIGHTS

### Effects Common to All Alternatives

BLM will manage vegetation to fall within the historic range of variability, with diverse plant communities that contain healthy populations of a variety of native species. Enhancement of wildlife habitat and native plant communities provides increases in opportunity for tribal members to exercise tribal treaty rights such as hunting, fishing, and gathering on public lands. New road construction would not occur in association with travel plan alternatives with the exception of a small number of short routes to provide loop opportunities under Alternative D.

## CUMULATIVE EFFECTS

This section is divided into two main parts. The first part describes the past, present, and reasonably foreseeable future actions on lands within the Planning Area, organized by management activities associated with the most pertinent particular resources or resource uses. Activities described under one resource or resource use heading could affect other resources or resource uses in the Planning Area. The second part of this section describes cumulative effects on resources and resource uses.

The cumulative effects analysis area for this RMP consists of the approximately 7.2 million acre Planning Area. BLM lands are generally widely scattered throughout the Planning Area and therefore tend to have a relatively small contribution to cumulative effects of all activities taking place within the Planning Area. Major approximate land ownership acreages within the Planning Area consist of the following: 3.5 million acres of private lands; 2.8 million acres of National Forest (USFS) lands; 320,000 acres of state-owned land; 307,309 acres of BLM lands (Decision Area lands); 150,000 acres of National Park Service lands; 15,000 acres of local government lands; and 11,000 acres of Bureau of Reclamation lands. BLM lands make up approximately four percent of all lands in the Planning Area. The wide distribution of BLM lands within the Planning Area make it necessary to establish such a large analysis area in order to encompass Decision Area lands addressed in this document.

## PAST, PRESENT AND REASONABLY FORESEEABLE ACTIONS

The following discussion characterizes past, present and reasonably foreseeable future actions considered in the cumulative effects analysis. More detail on these activities can be found in the administrative record.

Activities outside of BLM jurisdiction considered in the cumulative effects analysis are included. Some activities identified under a particular resource or resource use heading may affect more than one resource. For example, activities listed under Soil Resources may affect water quality. Effects are discussed in the second main part of this section. It should be noted that acreage figures are approximate based on GIS layers from multiple sources that are subject to varying degrees of error.

## Soil Resources

Approximately 8,000 acres of land near Helena (Fort Harrison) in the Planning Area are managed by the National Guard. Some activities include military maneuvers, non-live fire training, and off-road use of military vehicles. Some soil compaction will likely occur with these activities.

Acquisition of the Iron Mask property would place approximately 5,565 acres of range and mountainous land under more stringent resource protection standards through the implementation of Land Health Standards than are currently in place on these private lands. In addition, the acquisition would protect the area from future development.

Expansion of the Indian Creek Mine could increase the disturbance area within the Limestone Hills Training Area from the present size of about 300 acres.

Construction and use of a 75-acre area for a new qualifying training range proposed for the Limestone Hills Training Area could result in short-term episodes of accelerated erosion during road construction and clearance for facilities. In addition, the range would be located within a grazing area and could occur on productive soils. This potential future action would result in the loss of some soil productivity and short term accelerated erosion.

The proposed Limestone Hills Training Area withdrawal of the Limestone Hills Training Area could result in a transfer of natural resource and resource use management from BLM to the Montana Army National Guard on approximately 20,000 acres of federal land. Because the Montana Army National Guard is required to manage land in accordance with requirements similar to those implemented by BLM, no different impact on soil resources is expected from this reasonably foreseeable action.

## Water Resources

Canyon Ferry Reservoir and Dam on the Missouri River would continue to be operated to provide flood control, power generation, irrigation, municipal water and to stabilize downstream flows.

PPL of Montana manages water flows through Hauser, and Holter Lake dams. Hauser and Holter Lakes are managed as full-pool, run-of-river reservoirs. Flows within and through these three reservoirs are managed to

optimize energy production; provide for water right uses; and maintain appropriate conditions for fisheries, wildlife and recreation.

Since 1997, the Butte Field Office has reclaimed the Alta Mine, Comet Mine/High Ore Creek, Redwing/Waldy Mines, Gregory Mine, Bertha Mine, Park Mine/Upper Indian Creek, Wicks Smelter, Wicks Manganese, and Lower Indian Creek Dredge Piles to address water quality.

Beginning in 1997, BLM began cleanup of abandoned mines under the Abandoned Mine Lands (AML) program. To date, 14 mines have been reclaimed covering approximately 81 acres, 7 repositories were constructed, and 5 mines are planned for reclamation in the next 5 to 10 years including the Belle Lode (Wickes Manganese), Indian Creek Dredge Piles, Great Divide, Iron Mask and Hard Cash.

Irrigation of privately owned lands will continue.

## Vegetation

The Vegetation Management EIS (Draft EIS, November 2005) covering 17 western states, including Montana, expanded herbicide use and allows for use of new herbicides to improve BLM's ability to control hazardous fuels and unwanted vegetation.

Vegetation disturbances likely occur from National Guard training activities. The Guard inventories, maps, and treats noxious weeds on their lands. In the past wildland fires have occasionally initiated there as a result of training exercises.

There are approximately 3.5 million acres of private lands within the Planning Area. Vegetation management will likely include loss of vegetation from road construction and residential development, effects of continued livestock grazing, forest fuels reduction in urban interface areas and timber harvest for commercial uses.

Vegetation management will continue on National Forest System lands (outside some special designation areas) including noxious weed treatment and control, livestock grazing, road construction/management, forest products removal, timber salvage, fuel reduction and wildland fire suppression. Effects would likely be most pronounced on 2.1 million acres, but less pronounced on the approximately 700,000 acres of wilderness on National Forest lands in the Planning Area.

## Wildlife

Past, present, and reasonably foreseeable actions focused on wildlife and wildlife habitat on BLM lands include: establishment of a multi-party vision for vegetation conditions in the Elkhorn Mountains Cooperative Management Area to benefit wildlife, primarily big game; reintroduction of bighorn sheep into historically occupied habitat in several locations including Crow Creek and Indian Creek areas in the Elkhorn Mountains, the

Sleeping Giant area, and the Camp Creek/Soap Gulch area in the Highland Mountains; restoration of approximately 1,000 acres of bighorn sheep habitat through vegetative treatments in the Shep's Ridge area (6 miles west of Townsend); and vegetative treatments to improve approximately 700 acres of habitat in the Toll Mountain area to provide a desirable mosaic of vegetative conditions for local wildlife species.

The Canyon Ferry reservoir supports white-tailed and mule deer, antelope, elk, moose, grouse, ducks, geese, pheasants, numerous song birds, beavers, mink, bald eagles, osprey and other raptors. Approximately 11,500 acres of Bureau of Reclamation lands surrounding Canyon Ferry will continue to be managed to enhance wildlife.

Approximately 170,000 acres in the Planning Area are managed by MFWP as wildlife management areas.

Approximately 2.1 million acres of National Forest lands are managed for multiple use including maintenance and improvement of wildlife habitat through projects such as noxious weed reduction, removal of conifer encroachment in grasslands and shrublands, conifer thinning, road closures, and aspen and riparian restoration. An additional approximately 700,000 acres of National Forest lands are in wilderness where wildlife remains relatively undisturbed by human activity.

An additional approximately 150,000 acres in the Planning Area are within the boundary of Yellowstone National Park and are managed for natural values including wildlife.

## Fish

Fish populations are subject to recreational fishing throughout the Planning Area. Rivers that provide high quality opportunities include the Big Hole River, Missouri, Jefferson, and Madison. Within the Decision Area, Hauser and Holter Lakes as well as Canyon Ferry provide sport fisheries. Most sport fisheries are for non-native fish species such as rainbow trout, brown trout, brook trout, walleye, and yellow perch.

Approximately 11,500 acres of Bureau of Reclamation lands surrounding Canyon Ferry will continue to be managed to enhance fish. The Canyon Ferry reservoir supports a wide variety of sport fish, including rainbow and brown trout, perch, and walleye.

There is one fish hatchery in the Planning Area, located in Anaconda and operated by Montana Department of Fish, Wildlife, and Parks. This hatchery focuses on propagating westslope cutthroat trout for stocking into local lakes, ponds, and waterways to provide sportfishing opportunities. This hatchery may also provide westslope cutthroat trout for restorative re-introduction projects.

## Special Status Species

Federal and state land management agencies will continue to protect habitat for listed species as required by law. Protection for sensitive species will continue on most federal and state lands. No specific requirements for the protection of sensitive species exist on privately owned lands. Some species listed as Threatened on the Endangered Species List could be removed from the list, and others may be added.

One of the most impactful human activities affecting special status fish populations has been the historic stocking of non-native fish. Throughout the Planning Area non-native fish have either outcompeted or hybridized with native fish such as westslope cutthroat trout, Yellowstone cutthroat trout, bull trout, and to some extent Arctic grayling. The result has been broad-scale displacement of native fish species from their historically occupied habitat.

Recent projects on BLM lands to improve habitat for special status fish species include the following: pool creation in LaMarche Creek, tributary to the Big Hole River, to benefit Arctic grayling; and watershed restoration including road decommissioning and instream wood placements in Nursery Creek, tributary to Muskrat Creek in the Elkhorn Mountains, to benefit westslope cutthroat trout.

BLM has continued to be a funding partner in re-establishing the genetically pure westslope cutthroat trout population in Muskrat Creek from approximately 1997 to the present. This project has entailed removal of non-native brook trout and establishment of a barrier to prevent brook trout immigration at the downstream end of approximately 5.3 miles of habitat now occupied solely by westslope cutthroat trout.

## Wildland Fire Management

### Treatments

Fuel reduction and fire management actions that have occurred recently include prescribed fire (472 acres) and mechanical treatments (141 acres) in the Big Hole Watershed since 1997.

Planned projects in the Big Hole watershed include prescribed fire on 3,159 to 4,159 acres with prescribed fire and approximately 3,087 to 7,087 acres of mechanical treatment.

BLM has treated approximately 2,332 acres of forest and non-forest ground with prescribed fire, and approximately 2,339 acres of the same using mechanical methods since 1997 in the Jefferson River watershed.

In the Missouri River watershed, BLM has treated approximately 4,965 acres with prescribed fire and 2,284 acres with mechanical methods since 1997. Currently three projects are planned with prescribed fire on a total of approximately 314 acres, and mechanical treatment is

planned on approximately 8,500 acres could occur in these areas over approximately the next decade.

In the Yellowstone River watershed, BLM has treated approximately 40 acres with prescribed fire and currently, no mechanical or prescribed fire treatments are planned.

Wildland fire suppression and management will continue on most lands within the Planning Area, including state, private, Bureau of Recreation, BLM, and National Forest Lands. Counties within the Planning Area have generally developed plans to identify where fuels treatments are needed to protect communities. Federally managed lands generally have a plan in place that allows some areas to burn where conditions would result in beneficial vegetation changes as a result of naturally occurring wildland fires.

Vegetation management on privately owned lands and National Forest System lands will likely include forest fuels reduction in urban interface areas.

### Wildland Fire

The Butte Field Office has record of approximately 200 wildland fire starts in the Planning Area from 1981 to 2004, 93 of which were lightning caused, and 107 of which were human-caused wildfires. The total acres were approximately 20,257.8 acres from human-caused wildland fire and 435.8 acres of lightning caused wildland fire. Wildland fire will continue to occur in the Planning Area. The numbers of recorded fire starts and acres affected may increase in rate in the future because past fire statistics underestimated past fire history and hazardous fuels buildup has made fires harder to control.

In the past wildland fires have occasionally initiated from National Guard training exercises.

Across the Planning Area, wildland fires will continue to be ignited from lightning and human activities (mostly accidental). In most cases, these fires will continue to be suppressed to protect health, safety, property, and natural resources. Some may be allowed to burn where a plan is in place and results would be beneficial.

## Forestry and Woodland Products

**Table 4-43** characterizes the forest products removed from BLM lands prior to and after 1996. For the same period of time, this amounts to less than 20 percent of the total product volume removed from BLM lands in Montana and less than 0.1 percent from all timber lands in Montana for the same period (USFS Region 1, 2005). Out of a total timber harvest of 6,994 MMBF in Montana during that period, private lands harvested approximately 70 percent, state lands under DNRC administration harvested 5 percent and the National Forests harvested 19 percent.

Removal of forest products will continue mainly from privately owned lands in the Planning Area as well as

from State Lands managed by DNRC and the non-wilderness National Forest System lands, including timber salvage.

### Livestock Grazing

In the past, livestock grazing has been permitted on approximately 90 percent of Butte Field Office lands, or 273,000 acres. On average, 70 to 75 percent of allowable AUMS (25,677 Active preference) have been activated each year—roughly 18,000 to 19,000 AUMS.

Livestock grazing and vegetation management to facilitate availability of livestock forage will continue on privately owned lands. The extent of livestock grazing on private lands will likely decrease over the next 20 years due to continuing subdivision and residential development of existing ranches.

Other past and future grazing related activities include development of livestock water wells, new spring developments, new fence construction, and fence removal.

Livestock grazing will continue on National Forest lands throughout the Planning Area. This will likely focus mostly on the 2.1 million acres available for multiple use. Some livestock grazing may occur in the 700,000 acres of wilderness areas on National Forest System lands but relatively little commodity production would occur here.

### Energy and Minerals

#### Leasable Minerals

There are currently 34 suspended lease nominations within the Planning Area covering approximately 41,611 acres. These parcels will be offered for lease when this RMP is finalized. In addition there are seven lease nominations covering approximately 4,892 acres under review by BLM staff as of July 2006. In June 2006, nine leases were issued by the BLM for lands within Broadwater and Gallatin counties for mineral estate under BLM jurisdiction. These leases cover approximately 7,583 acres. Activity is anticipated to take place from 2006 through 2016. If fluid minerals are discovered then activity would expand and occur over a much longer time period.

It is estimated that a total of 31 conventional oil and gas wells could be drilled, most likely within the five areas with the most potential over 15-20 years. Nineteen of these wells would be exploratory, with six of them being producers. The RFD assumes that there would be two additional step-out wells developed for each of the six producers, resulting in a total of 18 producing wells overall. The RFD also assumes that seven of these producing wells would be on federal mineral estate with the remainder being non-federal. As many as 40 wells might be drilled for coal bed natural gas, most likely near Bozeman Pass. None of this activity is forecast to take place on federal mineral estate. (A further description of the RFD scenario can be found in **Appendix M – Fluid Minerals**). Each well would consist of a well pad, mud pit, and staging complex, generally totaling less than 5 acres per site with associated access roads if needed.

In addition to BLM activity, there are currently 68 suspended oil and gas leases on the Gallatin National Forest that cannot be developed until the Forest Service, with assistance from the BLM, completes an EIS that examines the effects of leasing and development of these leases.

Canyon Ferry Reservoir and Dam on the Missouri River would continue to be operated to provide power generation. Water flow through Hauser and Holter Lake dams will continue to be managed to optimize energy production.

#### Locatable Minerals

Larger-scale mining operations are listed in **Table 4-44**.

The Butte Field Office routinely permits a number of small scale placer mining operations. These take place in various locations throughout the field office and collectively occupy up to 30 acres of BLM land at any one time. Small-scale placer mining has taken place since before the previous RMP was written and will continue into the foreseeable future.

At any given time there are a number of precious and/or base metal exploration projects taking place at various locations throughout the field office. These may occupy up to 30 acres of BLM land at any one time.

#### Salable Minerals

Forest Product	1984 – 1995	1996 – 2004
Sawtimber (MMBF)	2.951	6.444
Christmas Trees and Boughs (# of trees/lbs. of boughs)	6,633/500	4,013/1,500
Post and Pole Sales (CCF)	253	50
Public Use Products (# permits)	No data	352
Firewood (cords)	1,082	694
Trespass (MMBF)	0.4	0.4

**Table 4-44  
Present and Foreseeable Mining Activity**

Name	Description	Location	Approximate Size	Anticipated Operation Timeframe
	rock quarry railroad ballast and other durable crushed rock	T2N, R5W, Section 20	55-acre	1992 - 2010
<b>Golden Sunlight Mine</b>	gold and silver open pit mine	T2N, R3-4W,	2,500 acres with approximately 600 acres on BLM	1992 - 2010
<b>Montana Tunnels Mine</b>	lead and zinc with associated gold and silver from an open pit mine	T7N, R4W, various sections	1,500 acres with 130 acres on BLM.	1986 - 2008
<b>Graymont Western U.S.</b>	limestone to produce lime and hydrated lime	T7N, R1E, various sections	600 acres on BLM	1981 - 2060
<b>Bald Butte Mine</b>	molybdenum	T11N, R6W, section 10	Currently less than 5 acres, likely to expand to a total of 30 acres with 5 acres of BLM	2006 - 2015

The Butte Field Office routinely permits a number of mineral material sales, the majority of which are sand and gravel for county or state use. These take place in various locations throughout the field office and collectively occupy up to 30 acres of BLM land at any one time. These sales have been important sources for construction material in the past and will continue into the foreseeable future.

### ***Mineral Developments on Private Land***

On private land, Holcim currently mines limestone north of the town of Three Forks (T2N, R3E, various sections). This mine is approximately 300 acres, none of which occurs on BLM lands.

Ash Grove Cement company mines limestone west of Montana City (T9N, R3W, various sections) on approximately 100 acres. None of this occurs on BLM lands.

Activity began in 1980 and is anticipated to continue until approximately 2060.

The Butte Mine operated by Washington Group is currently mining molybdenum, copper and associated precious metal by-products from the open pit mine in Butte. This activity occurs in uptown Butte over an extensive area of several thousand acres. Mining activity has occurred here since 1870 and will likely continue well into the foreseeable future. None of this ongoing activity is on public land.

### **Recreation**

Past, present, and reasonably foreseeable actions include ROS designations; improvement of recreation sites at White Sandy, Holter Dam, Holter Lake day-use facilities, French Bar, and Spokane Bay; 15 to 20 special use permits annually for a variety of events; VRM classification; and continued management of 49 recreation sites on BLM lands.

Canyon Ferry will continue to be managed to enhance recreation. There are approximately 24 recreation sites

around the reservoir, 12 of which are managed for camping. In addition there are three boat marinas that are managed as private concessions.

Lands owned by local governments in the Planning Area would continue to be managed as parks to provide public recreation opportunities.

On National Forest Lands, Recreation Opportunity Spectrum classifications would continue to be used to manage for a variety of recreation opportunities, including road access and degree of development.

The BLM will continue to participate fully in the coordinated management of the Missouri River through the Missouri River Comprehensive Recreation Plan.

Motorized and non-motorized recreation and developed and undeveloped recreation will continue on state and federal lands.

### **Travel Management and Access**

Past, present and reasonably foreseeable future actions for Travel management and access are discussed in the "Environmental Consequences of Five Site-Specific Travel Plans" section.

### **Lands and Realty**

#### ***Land Use Authorizations***

The Butte Field Office administers approximately 554 rights-of-way, which encumber over 40,837 acres of BLM land including: water pipelines, communication sites, ditches, railroads, material sites, fiber optic lines and a Montana Army National Guard training site. Road rights-of-way are the most common type of grant, accounting for 53 percent, or over half of the total. Approximately 10 to 15 right-of-way actions are processed annually.

Twenty communication site rights-of-way on seven different locations are authorized within the Planning Area.

The Butte Field Office administers seven FLPMA Section 302 leases involving about 910 acres of BLM land (BLM 2004i): 904.91 acres to the Great Divide Ski Area and six occupancy leases for a total of 5.3 acres. There are no permits or easements under Section 302 of FLPMA or airport leases located within the DA. One R&PP lease has been issued under Section 212 of FLPMA to the Last Chance Handgunners involving 39.1 acres (USDI-BLM 2004i). R&PP patent transfers are discussed below under the section Land Ownership Adjustment.

Approximately 20,000 acres in the Limestone Hills west of Townsend, is under a right-of-way grant held by the Montana Army National Guard for military training purposes (BLM 1984c).

Wind Hunter LLC has submitted an application for a Wind Energy Site Testing and Monitoring Facility near Whitehall Montana.

**Land Ownership Adjustments**

Seven land acquisitions were completed using Land and Water Conservation Fund (LWCF) appropriations: one in the Devil’s Elbow area, two associated with Crimson Bluffs, portions of the Iron Mask Ranch, McMaster Ranch, and a small portion of the Ward Ranch. The Causeway Land Exchange is currently pending. Eight parcels of land were donated to the United States, through BLM: one in the Sleeping Giant area, two on Holter Lake, two on the Ward Ranch, two at Iron Mask, and one at White Sandy. Three land sales were completed, one southeast of Mount Helena, one near Montana City, and one east of Holter Lake.

The Butte Field Office completed five Recreation and Public Purposes (R&PP) patent transfers since approval of the Headwaters RMP. These are: 34.09 acres to the MFWP for a recreation site; 40 acres to Lewis and Clark County for a sewage treatment area; 71.62 acres to Jefferson County for a warehouse and storage area; 400 acres to Broadwater County for a shooting range; and 622.38 acres to MFWP for expansion of the Beartooth State Wildlife Management Area.

**Table 4-45** lists land ownership adjustment actions for the Planning Area since the approval of the Headwaters RMP in 1984. Note that acreage values are approximate.

**Access**

Since 1984, 40 permanent exclusive easements were acquired for legal access to BLM land. Six permanent non-exclusive easements were acquired. Eleven temporary easements, encroachment permits/easements or permanent easements for specific projects such as fences, livestock or water pipelines and troughs were acquired.

**Special Designations**

Nearly 700,000 acres of National Forest are designated wilderness lands managed to protect natural values and provide non-motorized recreation experiences.

The Forest Service is the lead managing agency for the Continental Divide National Scenic Trail and is currently in the process of reconstructing and upgrading numerous segments of this trail system. The National Park Service is the lead managing agency for the Lewis and Clark National Historic Trail.

**Social and Economic**

No cumulative impacts were identified for Environmental Justice.

**Social Conditions**

Under all the RMP alternatives, public access and recreational opportunities have the greatest potential to affect social conditions. As such, Alternative C, being the most restrictive on public access for firewood and other product gathering as well as motorized recreational access, would have the greatest cumulative effects. Other federal land management agencies in the Planning Area are following a trend of reducing motorized access. Alternatives B and D also reduce motorized access and would have some cumulative effects as described above, but not to the same degree. Alternative A maintains current access. Since BLM manages only 4.2 percent of the access in the Planning Area, the extent of cumulative

Type of Action	Number of Actions	Acres Disposed	Acres Acquired
Public Sales	3	10	-
Purchases	4	None	140
LWCF Purchases	9	None	8,987
Donations	7	None	2,352
R&PP Patent transfers	5	1,168	-
Land Exchanges	13	23,290	18,895
<b>Total Acres</b>		<b>24,468</b>	<b>30,374</b>

effects is not great. However, federal and state public lands are used more extensively than other lands for these purposes.

### ***Economic***

Outputs compared to the overall output in the Planning Area are relatively minor and cumulative impacts from BLM resource management would likely not be noticeable.

The differences in timber production between the alternatives would amount to less than five percent of the annual timber volume removed from the Planning Area.

Reduced AUMs in Alternatives B and C would place additional grazing pressure on private lands and/or increase the demand for hay or other forage alternatives. Expanding recreational demand across all alternatives could increase opportunities for private sector business growth.

While some BLM actions may affect individuals or businesses in a few communities, none of the alternatives would cause more than one percent change in local employment or labor income over the Planning Area.

### ***Public Health and Safety***

Under all alternatives, BLM actions to reclaim abandoned mine lands should contribute to a cumulative beneficial effect to public safety by reducing the numbers of hazardous mine openings and improving water quality in areas where projects occur.

### **Tribal Rights**

Cumulative impacts on cultural resources may occur through incremental resource degradation. Decreases in resource conditions such as water quality, riparian habitat, wildlife forage, native plant communities, or land

tenure and access could affect cultural, traditional, and other tribal treaty rights important to Native Americans. If resources were to become scarce on BLM lands or other adjacent federal lands, there could be increased competition between tribal members and non- members for these resources.

## **CUMULATIVE EFFECTS ON RESOURCES**

Cumulative effects discussions below are general due to the general lack of site-specificity of proposed management actions in RMP alternatives. At the activity plan or project level, site-specific NEPA analyses would be completed for proposed management actions. Finer scale cumulative effects analysis would occur within these finer scale NEPA documents and would more specifically analyze and describe cumulative effects to pertinent resources and resource uses.

Cumulative effects on resources or resource uses may result from any of the alternatives considered. For many resources (air, soil, special status species, cultural and paleontological resources, energy and minerals, transportation facilities, lands and realty, special designations), and tribal rights) management actions in each alternative are similar enough that the cumulative effects would be the same. Cumulative effects for those resources are discussed below, but not by alternative. For other resources (water, vegetation, wildlife, fish, wildland fire management, visual quality, forestry and woodland products, recreation, transportation, and access, and social and economic conditions) management actions would result in differing direct and indirect effects and therefore, their potential cumulative effects may vary. Cumulative effects on those resources are broken out by alternative.

<b>Watershed</b>	<b>Total Acres in Watershed</b>	<b>BLM Managed Acres In Watershed</b>	<b>Percent of Watershed Managed by BLM</b>
Blackfoot	126,749	932	0.7%
Big Hole	406,542	58,983	14.5%
Boulder	485,996	40,341	8.3%
Gallatin	1,023,095	872	0.1%
Jefferson	465,188	40,748	8.8%
Shields	514,509	223	0.0%
Upper Missouri	1,894,597	153,103	8.1%
Upper Clark Fork	520,950	649	0.1%
Upper Yellowstone	994,054	8,010	0.8%
Scattered*	760,669	3,449	0.5%
<b>Total</b>	<b>7,192,349</b>	<b>307,309</b>	<b>4.2%</b>

\*These acres occur within the counties that make up the Planning Area, but not in any of the major watersheds listed.

An important component of the cumulative effects analysis is the degree of influence that management actions taken by the BLM would have when added to actions taken by other land owners or management agencies. Because of the distribution of public lands managed by BLM in any particular watershed, BLM's actions would have limited impacts on the ecosystem and human environment. **Table 4-46** demonstrates the percent of each watershed managed by BLM. As shown, over the extent of the Planning Area, BLM manages slightly more than four percent of the land base.

## AIR QUALITY

Smoke from prescribed or wildland fires burning on state, federal, and private land could cause air quality to deteriorate in local airsheds. Large wildland fires or escaped prescribed fires could occur simultaneously, resulting in an increase in air quality degradation caused by separate events. Dust generation from unpaved federal, state, and county roads would add to the particulates contributed by smoke.

Additional adverse effects to air quality due to airborne dust and greenhouse gas (GHG) emissions would occur from a variety of activities in the Planning Area such as vehicle emissions, residential and industrial developments on non-BLM lands, agricultural uses, energy development, and energy consumption in day to day human life activities. Contributions of BLM activities to greenhouse gas emissions would be relatively low in the context of other activities on non-BLM lands due to the dominance of non-BLM lands and the presence of many human communities within the Planning Area. On BLM-administered lands, greenhouse gas emissions would originate from implementation of BLM projects, permitted public recreation and use of roads/trails, permitted livestock grazing, and potential oil and gas exploration and development.

While oil and gas development potential is low overall on BLM mineral estate lands, the RFD predicts up to 7 producing federal conventional gas wells. This represents a small proportion of the total of up to 18 producing conventional oil and gas wells, and up to 30 producing coalbed natural gas wells forecast in the RFD Planning Area-wide. The wells on federal mineral estate would constitute approximately 0.1 percent of projected state-wide oil and gas development. Greenhouse gas emissions from this activity would be minor at both the Planning Area-wide and state-wide scales. While there are potential emissions of GHGs from the RFD for oil and gas development in this RMP, these effects may not actually occur. The Butte Field Office would permit the development in the RFD, but this office has not received an Application for a Permit to Drill (APD) on any of its federal mineral estate lands in over 20 years.

While some BLM activities would emit GHGs, carbon sequestration would also occur on BLM lands as vegetation takes in and uses carbon dioxide. Vegetation treat-

ment activities may promote increased carbon sequestration in the long-term. It is unknown whether BLM lands and activities would be a net source or sink of GHGs under the various RMP alternatives.

## SOIL RESOURCES

All identified reasonably foreseeable activities across all land ownerships in the Planning Area would contribute to soil disturbance, erosion, and compaction. At the scale of the 7.2 million acre Planning Area, the extent of effects from BLM activities would be relatively minor.

Within the RMP alternatives, livestock grazing, vegetation treatments, roads management, and mining activities have the greatest potential to contribute to cumulative effects to soils on BLM lands. Alternatives A and D would likely contribute the greatest to cumulative effects to soils. Alternative B would contribute less than either Alternative A or D, but more than Alternative C.

## WATER RESOURCES

Under all alternatives, water quality on BLM managed lands should improve, over the long-term, through the management actions proposed in these alternatives. The most important actions are improving riparian conditions through the use of the Riparian Land Health Standard and vegetative restoration, road closures and reclamation, abandoned mine land reclamation, and reducing the risk of high severity fire.

While ground disturbing activities on adjacent ownerships would continue to affect BLM managed lands, there should not be substantial increases in adverse effects over the current levels. Part of the reason for this is that there are now several watershed groups in the area that have been formed to improve water quality at the watershed scale. This is a ground based effort that includes local landowners, conservation districts, environmental groups, local governments, state government, and other federal governments. The efforts of these groups should improve overall water quality throughout the Planning Area.

Another factor that should lead to improved water quality is the anticipated completion of several "Total Maximum Daily Loads" (TMDL). The Lake Helena TMDL has already been completed and water quality restoration work is already being planned (road rehabilitation). TMDLs for the rest of the Planning Area are scheduled for completion by 2012. The BLM would also work with Montana Department of Environmental Quality to ensure that contaminants affecting BLM resources are addressed, regardless of ownership (as noted in our 2002 Memorandum of Understanding).

Given the expected long-term improvements on both BLM and non-BLM managed lands, there should be an overall cumulative improvement of water quality under all alternatives. Potential impacts resulting from additional decreases in stream flow should be negligible

since most basins in the Planning Area are closed to additional appropriation.

Of the alternatives, B and C would tend to minimize cumulative effects to water quality associated with erosion and sedimentation because they provide for Riparian Management Zones that would be more protective of water resources than the standard Streamside Management Zones provided for under Alternatives B and D. These alternatives also have the greatest potential for water quality improvement due to road related restoration and reduced grazing impacts.

It is expected that coalbed natural gas would be developed in the Butte Field Office on non-federal lands. These wells would likely be injected with a combination of sand and chemicals to allow the gas to flow to the surface. The fluids can migrate along the coal seam and contaminate groundwater and streams (Pembina 2007). After completion, water produced during coalbed methane operations may have high levels of salinity that may seep into the groundwater or be directly discharged into stream channels (Davis et al. 2006). The production of water from coalbed methane developments can significantly drawdown aquifers and reduce important ground and surface water. This could reduce the flow in rivers and streams adjacent to the wells. In this case, based on projected well depths, it is assumed that produced water would be reinjected if technically possible and not disposed of on the surface which will mitigate potential impacts.

## VEGETATIVE COMMUNITIES

**Table 4-47** displays the extent of proposed vegetation treatments on communities on BLM lands within the Planning Area per decade.

### *Grasslands and Shrublands*

Management actions on grasslands and shrublands throughout the Planning Area (e.g., prescribed fire, weed treatments, livestock grazing, mechanical treatments, and reseeded) would affect vegetation composition and structure. Grasslands and shrublands would likely continue to be altered or lost on private lands where residential and urban development occurs. Although proposed vegetation treatments on Decision Area lands would vary by RMP alternative (**Table 4-47**), effects at the Planning Area scale would be minor for all alternatives.

### *Riparian*

Riparian vegetative communities would likely continue to be altered on private lands by residential/urban development, mining, livestock grazing, road construction, timber harvest, wildland fire, and other uses.

On public lands riparian vegetation would continue to be affected primarily by livestock grazing, wildland and prescribed fire, timber harvest, road construction/maintenance, and in some cases mining exploration and development.

Although proposed vegetation treatments to restore riparian vegetative communities on Decision Area lands would vary by RMP alternative (**Table 4-47**), effects at

			Acres and % of Planning Area Treated Per Decade on BLM Lands*			
Vegetation Zone	Acres in Planning Area	% of Acres in Planning Area	Alternative A	Alternative B	Alternative C	Alternative D
Grassland Zone	2,451,212	34	5,250	11,800	2,000	19,050
			0.2%	0.5%	0.1%	0.8%
Shrubland Zone	313,385	4	0	3,650	750	6,800
			0.0%	1.2%	0.2%	2.2%
Dry Forest	1,091,820	15	5,100	14,750	4,800	18,200
			0.5%	1.4%	0.4%	1.7%
Cool Moist Forest	800,387	11	2,400	3,750	550	5,050
			0.3%	0.5%	0.1%	0.6%
Subalpine Fir Zone	1,305,766	18	0	0	0	0
			0.0%	0.0%	0.0%	0.0%
Riparian	171,313	2	30	700	200	1,700
			0.0%	0.4%	0.1%	1.0%
BLM Treatment Totals/ Percent of PA Total Acres			12,780 0.2%	34,650 0.5%	8,300 0.1%	50,800 0.7%

\*Based on top range identified in Chapter 2.

the Planning Area scale would be minor for all alternatives.

On Decision Area lands, Alternatives B and C would lessen impacts to riparian vegetation associated with potentially harmful activities and promote vegetative recovery more than Alternatives A and D due to the provision of Riparian Management Zones in Alternatives B and C. This effect would be minor in the context of the Planning Area scale.

### ***Forests and Woodlands***

Timber harvest activities would continue on private, state, and federal land throughout the Planning Area. On private lands in urban interface areas there would likely be a focus on removing trees and snags to reduce fuel loading, especially where forest insects or disease have caused substantial tree mortality. Some forest and woodlands on private lands may be converted to residential or urban developments.

Roads built to access forest treatment units on BLM land may lead to timber harvest on adjacent land. Under all RMP alternatives, timber harvest and other vegetation management actions on BLM lands would be geared toward restoring forest health in most cases. This could reduce vegetation density and fuel loads and help prevent wildland fires that could affect non-BLM vegetation resources in the Planning Area.

Although proposed forest vegetation treatments on Decision Area lands would vary by RMP alternative (**Table 4-47**), effects at the Planning Area scale would be minor for all alternatives.

### ***Noxious Weeds***

The total acres of noxious weed and non-native invasive species infestations would increase in the Decision Area. Noxious weed infestations would increase on BLM land and on adjacent private, state land and other federal land through natural expansion and with management actions that disturb soils and vegetation and increase motorized traffic. Noxious weeds would also increase with severe wildland fire on BLM and adjacent land. Infestations of noxious weeds and non-native invasive species could displace desirable native plants and increase erosion.

## **WILDLIFE**

Vegetation management and travel management in the RMP alternatives have the most potential to affect wildlife. Many other activities would continue to occur within the Planning Area that can also affect wildlife including timber harvesting, livestock grazing, fire, road construction and use, mining, weed treatment, residential and commercial development, and recreational activities. Low density rural home development is the fastest growing form of land use in the United States since 1950 (Hansen et al. 2005). Many people are choosing to live away from town on small parcels of land or in rural subdivisions. This is currently occurring adjacent to

many communities in the Planning Area including but not limited to; Helena, Butte, Bozeman, Livingston, and Boulder. Land that was traditional used for ranching, forest products, or mining is now being converted to home sites. Although these lands had historic human uses, they also provided quality and/or functioning wildlife habitat. Historically, these areas provided a diversity of habitats that contributed to; big game winter range, travel corridors, habitat for resident and migrating wildlife, as well as foraging, breeding and hiding habitat. For many plant and animal communities, native species richness decreases as housing density increases. Non-native species, however, tend to increase with development (Hansen et al. 2005). Wildlife populations, including carnivores, may be reduced even at very low levels of residential development due to; loss of habitat, an increase in human access (from roads) in areas that previously had low levels of disturbance, and an increase in hunting pressure. Residential development can also lead to an increase in noxious weed infestations that can reduce the quality and quantity of wildlife habitat.

Pets can also have a negative impact to native wildlife. Cats hunt and kill birds and small mammals. Dogs that are allowed to roam can chase, injure, or kill wildlife. This can result in areas becoming unavailable to wildlife.

Other federal and state agencies are generally following a trend of reducing areas where motorized access is allowed in the Planning Area. As shown in Appendix P of the AMS (USDI-BLM 2006c), timber harvest has also declined across the Planning Area in the last 30 years, which reduces human disturbance of wildlife, including roads and road use.

Throughout the Planning Area, regardless of land ownership, roads can impact wildlife in a number of ways. Roads can increase harassment, poaching, collisions with vehicles, and displacement of terrestrial vertebrates, affecting a variety of large mammals such as caribou, bighorn sheep, mountain goat, pronghorn antelope, grizzly bear, and gray wolf. Direct mortality of large mammals on forest roads is usually low, except for those with a home range that straddles a road. Forest roads pose a greater hazard to slow-moving migratory amphibians than to mammals. Nearly all species of reptiles seek roads for cooling and heating. Vehicles may kill considerable numbers to a point of making well-used roads population sinks for some species. Roads can prevent wildlife movement, create disturbance, cause the spread of noxious weeds, and fragment habitats on the landscape. Open roads typically increase the level of recreation within areas adjacent to them. This can result in additional disturbance or displacement of wildlife species within the vicinities of more heavily used open roads.

Timber harvest has declined across the Planning Area over the last 30 years. This reduction in timber harvest activity has resulted in reduced alteration of habitat and

disturbance to wildlife associated with timber harvest operations including road construction and use.

Alternative C reduces the effects on wildlife associated with roads and in some cases disturbance due to other management actions more than the other RMP alternatives and therefore would contribute less to the cumulative effects. Alternative A would contribute the most, followed by Alternative D, then Alternative B. With any RMP alternative, the relative extent of effects at the Planning Area scale is limited by the area of BLM lands where effects could occur, less than five percent of the Planning Area.

Alternative D would, however, be the most active in restoring vegetation to more resemble its historic conditions, which would, in turn benefit most wildlife within the cumulative effects analysis area (Planning Area) in the long-term. Alternative B would have the second greatest long-term benefits to wildlife of all alternatives due to vegetation restoration, followed by Alternatives A and C. Again, the extent of the effects is limited by the acres BLM manages.

Livestock grazing in the Planning Area could reduce the amount of annual residual grass, forbs, and shrub vegetation, and potentially cause changes to productivity. In the Decision Area, the applied utilization and resource management standards would provide for maintenance or improvement of vegetative and soil resource conditions that are consistent with objectives. Deferred and rotational grazing systems used in allotments would vary the time of year each pasture is grazed so plants have the ability to reproduce and recover.

Throughout the Planning Area, continued development of mining operations can affect wildlife by reducing the quality and quantity of habitat available, creating disturbance to wildlife, and releasing contaminants. Effects to wildlife from mining vary by the size and nature of individual operations.

## FISH

BLM is responsible for managing lands containing about 239 miles of the 7,638 miles of stream within the Planning Area (3 percent). Consequently, the variation between effects from most activities within the RMP alternatives is likely to be immeasurable within the cumulative effects analysis area. Additionally, activities that occur on other ownerships have a much greater potential to have effects on fisheries at the Planning Area scale than the BLM's RMP alternatives.

The types of activities that can result in cumulative effects to fisheries include, but are not limited to, new proposals and ongoing actions involving:

- Livestock grazing;
- Placer and hard-rock mining;
- Highway construction;
- Construction or maintenance of power transmission corridors;
- Maintenance of irrigation diversions;
- Maintenance of existing communication lines;
- Crop production;
- Herbicide application for weed control;
- Road and highway maintenance;
- General travel management;
- Construction of new or improvement of existing developed recreational sites; or,
- Fisheries and watershed enhancement projects.

Many watersheds in the Decision Area are already in less than optimal condition due at least partly to negative cumulative effects that have occurred from past activities. In some cases, ongoing activities or conditions present from past activities continue to result in localized negative effects on fisheries and aquatic resources.

The effects of roads on aquatic habitat can be widespread. At the landscape scale, roads can influence the frequency, timing, and magnitude of disturbance to aquatic habitat. Increased fine-sediment composition in stream gravel has been linked to decreased fry emergence, decreased juvenile fish densities, loss of winter carrying capacity, and increased predation of fishes, and can reduce benthic organism populations and algal production. Roads can act as barriers to migration, lead to water temperature changes, and alter stream flow regimes. Improper culvert placement at road-stream crossings can limit or eliminate fish passage. Roads greatly increase the frequency of landslides, debris flow, and other mass movement. These effects are currently taking place to varying degrees across all land ownerships in the Planning Area. In some areas where increased residential or urban development occur on private lands, these effects would likely increase in severity.

Within Decision Area lands, Alternative C would have the least contribution to adverse cumulative effects to fisheries resources associated with roads and vegetation treatments combined. Alternative D would have the greatest contribution of all alternatives associated with roads and vegetation treatments combined. Alternative A would have the greatest contribution to cumulative effects associated with roads but a lesser contribution associated with vegetation treatments than Alternative D. Alternative B would have a greater contribution to cumulative effects to fisheries resources associated with roads and vegetation treatments than Alternative C but a lesser contribution than either Alternatives A or D. Although Alternative B proposes more ground-disturbing

vegetation treatments than Alternative A, it also establishes more protective Riparian Management Zones than the Streamside Management Zones provided in Alternatives A and D.

Mineral development has occurred across the region in the past and will continue into the future. The effects from mining in both the Planning and Decision Areas could be loss of habitat due to placer mining and mining in riparian habitat, the introduction of contaminants and effects due to associated development such as roads and facilities. Mining in the Planning Area could result in isolated populations of aquatic species or the decline in species.

Other effects of activities in the Planning Area could include loss of fish habitat or reduction in habitat quality associated with oil and gas related development, prescribed fire or wildland fire, or water diversion and reservoir drawdown.

## **SPECIAL STATUS SPECIES**

Activities on non-federal lands such as timber harvest, livestock grazing, residential development, mining, agriculture, and road construction would negatively influence special status species. Human developments are expected to expand in major valleys, resulting in barriers to movement and displacement or increased mortality of grizzly bear, wolf, and lynx.

Loss of riparian habitat associated with residential and industrial development and agriculture on non-federal land is expected to cause additional loss of habitat for bald eagle.

Roads can cause a wide variety of effects to terrestrial wildlife. Species, such as gray wolf and grizzly bear, are adversely affected by repeated encounters with people. Roads can increase harassment, poaching, collisions with vehicles and displacement of special status wildlife species.

In the context of special status fish species, historic stocking of non-native sport fishes has displaced native fishes (bull trout, westslope cutthroat trout, Yellowstone cutthroat trout, and Arctic grayling to some extent) from the majority of their historic habitat in the Planning Area.

Restoration and maintenance of the Muskrat Creek population of westslope cutthroat trout has beneficial cumulative effects in many places within the Upper Missouri River watershed. Westslope cutthroat trout from Muskrat Creek are currently being used by Montana Fish, Wildlife and Parks as brood stock for re-introduction of this species in several streams within and near the Planning Area. Muskrat Creek fish are also being collected and used in development of a westslope cutthroat trout broodstock that will be used throughout the Upper Missouri River watershed beyond the Planning Area boundaries. The proposed mineral withdrawal of 180 acres of

riparian areas in the Muskrat Creek watershed under Alternatives B and C would protect westslope cutthroat trout habitat in 2.4 miles of stream from direct effects of potential mining activities. This benefit would not take place with either Alternative A or D as these alternatives do not include the proposed withdrawal.

Cumulative effects to special status plant species across all land ownerships in the Planning Area would be habitat loss, destruction of individual plants, habitat conversion to less than marginal habitats, and loss of habitat connectivity and variability.

Noxious weed management may have the greatest potential to affect special status plant species and habitat conditions under all of the alternatives. Ineffective control of noxious weed spread would lead to habitat degradation and loss. Herbicides used to control noxious weeds could have a cumulative and detrimental effect on potential future special status plant species (i.e. species which are not considered imperiled or threatened now, but may be in the future.) Unauthorized herbicide treatments could potentially have detrimental effects on special status plants and habitat.

Activities implemented on non-public lands could detrimentally affect special status plant populations in a manner that contributes to federal listings of special status plants. Although the BLM could not change the way other land owners manage special status plant species, the development of conservation agreements and species management plans with other land managers/owners could potentially reduce these off-site effects to special status plant species. The BLM would consider these effects in the analysis of all proposed management activities that affect special status plant species and their habitats.

Because Alternative A would provide the least protection of special status species, it may contribute to adverse cumulative impacts resulting from activities on adjacent lands, particularly wildland fire, residential development and grazing. Alternatives B, C, and D would improve conditions to varying degrees, but due to the limited extent of BLM's influence on management across the Planning Area, these effects would not likely be measurable or distinguishable at the Planning Area scale, with the exception of the proposed Muskrat Creek mineral withdrawal in Alternatives B and C described above.

## **WILDLAND FIRE MANAGEMENT**

Residential development and population increases could create more Wildland Urban interface areas. Additional interface areas could increase potential ignition sources, the need for fire protection services, and the potential need for fuel treatments. Residential development and population growth could also result in an increase in the numbers of recreational users and create the potential for more human-caused ignitions on public lands. As a

result, an increase in these activities would also add risk to firefighter and public safety.

Compared to the present levels of fuels treatments, there could be an increase of treatment acres over the long-term across federal, state, and private lands. As a result more acres would move toward historic fire regimes and a reduction of fuel loading would occur. Where treatments have been implemented, future fire intensity and severity could be reduced. Urban interface areas would be the highest priority for treatment. This could increase conflicts with visual concerns, smoke emissions, and funding for these projects.

## CULTURAL RESOURCES

Cumulative impacts to cultural resources could occur through incremental degradation of the resource base from a variety of sources and all ownerships. Degradation which reduces the interpretive and informational potential of historic and prehistoric properties, or affects the traditional cultural values important to Native Americans impacts cultural resources. Potential impacts could stem from vegetation management, recreation, travel route closures and development, wildland fire, wildland fire suppression, mineral/oil and gas development, increases in human population and vandalism.

Other regional resource, land use and economic development planning could affect the types and intensity of uses on lands within the Planning Area and could potentially affect regional cultural resources, in addition development of lands not protected by federal or state cultural resource statutes and regulations could further decrease the resource base and limit cultural resource management opportunities in the Planning Area. Planning coordination at the regional level could help protect important cultural resource values.

## PALEONTOLOGICAL RESOURCES

Cumulative impacts to paleontological resources would be similar to those described in the *Cultural Resources* section.

## VISUAL RESOURCES

Activities such as timber harvest, mine development, subdivision and development, road construction or the occurrence of wild and prescribed fire on adjacent lands will continue to impact the visual features of form, line, color, and texture. These changes will influence development of similar projects on BLM lands where visual resource management objectives are a consideration.

Alternative C provides for the least amount of forest products removal, thereby resulting in the least cumulative impacts on visual resources. Alternative D could have the greatest impact on visual resources in the Planning Area due to its highest level of proposed vegetation treatments.

## CUMULATIVE EFFECTS ON RESOURCE USES

### FORESTRY AND WOODLAND PRODUCTS

Private and state forests and woodlands would tend to be managed for timber products and commodities while federal lands would tend to be managed for forest health and restoration with associated commodity outputs from restorative vegetation treatments.

Additional effects on forested vegetation would occur from stand replacing fires; continued fire suppression necessary as a result of increasing wildland urban interface; intermingled land ownership; and large-scale insect and disease outbreaks that are likely to continue throughout the planning period.

Fuel build-up on adjacent lands could influence the susceptibility of BLM stands to high severity fire events. Insects and diseases present in adjacent forest stand could impact BLM forest. Loss of forest resources due to insects and disease and wildfire events occurring under the current declining forest health and fuel conditions could result in long-term resource impacts and a general reduction in the future availability of forest products from the stands impacted by such events.

On BLM lands Alternative D would provide the most forest products and contribute the most to long-term forest health improvement due to restorative vegetation treatments. Alternative B would provide the next highest contribution to these effects, followed by Alternative A, then Alternative C.

### LIVESTOCK GRAZING

Potential cumulative impacts on livestock grazing would occur from a combination of activities and land uses occurring within the Planning Area. Such impacts would result primarily from surface-disturbing activities such as road construction, mining operations, and possibly some vegetation treatments, that reduce the quantity of available forage. These activities result in livestock displacement and direct removal and indirect degradation of forage, regardless of land ownership.

On BLM lands, mine reclamation efforts and some vegetation treatments would increase forage for livestock to a similar degree in all alternatives.

BLM lands would provide less than one percent of the AUMs available in the Planning Area under any of the RMP alternatives. The variability in livestock grazing by RMP alternative would have a negligible effect on livestock grazing at the Planning Area scale.

Sale, subdivision, and residential development of rangeland on private lands will likely increase in the future and reduce the amount of livestock grazing in the Planning Area.

## ENERGY AND MINERALS

### *Leasable Minerals*

Oil and gas resources would be removed by producing wells on leases.

Oil and gas development will have the potential to occur on BLM and other lands within the Planning Area. Alternative C would reduce the available mineral estate more than other alternatives for a total of 88 percent.

Alternatives A, B, and D are similar within the extent of the Planning Area and would maintain current development levels. However, under Alternatives B, C, and D the impact to federal leases would be a reduction in lease value resulting from stipulations and regulations. The impacts to lease developments would result from a reduction in wells drilled on leases encumbered with stipulations, an increase in wells drilled on leases with minimal constraints, and an increase in operating costs because of land use decisions, lease stipulations, and regulations.

Restrictions on federal leases could impact the leasing and development of adjacent non-federal leasable minerals. If an exploration company cannot put a block of leases together because of restriction on federal leasable minerals, the private or state minerals may not be leased or developed. Leasing of federal minerals on the other hand, could encourage the leasing of private or state minerals.

### **Locatable Minerals**

Within the Planning Area, all the RMP alternatives would generally have similar impacts on locatable mineral exploration and development. While there are differences in the levels of restrictions between the alternatives, the majority of the lands in all categories of mineral potential, high, moderate, and low, would be open to mineral location. There would be little discernible cumulative effects on locatable minerals associated with the RMP alternatives.

### **Salable Minerals**

The effects on salable minerals would be similar between RMP alternatives, and have a minor contribution to cumulative effects within the Planning Area.

## RECREATION

Demands for recreational opportunities and resources will continue to increase with increases in population. Development of private and other state and federal land will decrease the resource base available for recreation putting further pressure on BLM resources.

Potential impacts also include management directed activities such as prescribed fire, thinning, timber harvest, weed control, riparian restoration, wildlife habitat improvement, and other activities which would affect recreational experiences in the short term but provide long-term resource benefits.

Mineral and gas leasing on BLM or adjacent lands may limit recreational opportunities due to area closures, development of facilities, roads, and increased traffic.

Alternatives B and C would provide for greater solitude on BLM lands by reducing road access. However, they also concentrate motorized use which increases impacts on recreation values and facilities.

Recreation management and enhancements along the Missouri River would continue to be coordinated in a comprehensive manner by numerous agencies and the public through a multi-agency MOU and the Missouri River Comprehensive Recreation Management Plan.

## TRAVEL MANAGEMENT AND ACCESS

Cumulative effects to travel management and access are discussed in the Cumulative Effects portions of the "Environmental Consequences of Five Site-Specific Travel Plans" section.

## TRANSPORTATION FACILITIES

Continued growth in population and demands for recreation facilities is expected. Furthermore, impacts could occur as the result of population growth, changing recreation values and changes in accessibility on other federal state and private lands in the Planning Area. Changes in resource availability (funding) for continued compliance monitoring, weed control, signage and maintenance of roads and trails could affect transportation facilities. Regional coordination of recreation and travel planning could reduce potential impacts on facilities in the Planning Area.

Alternatives B and C provide the least miles of open road and could concentrate recreation and other forest uses; having the greatest effect on existing facilities.

## LANDS AND REALTY

Demand for communication facilities, road rights-of-way, and utility corridor rights-of-way and permits for communication sites will increase as population increases and if resources are developed in the area for mineral or power generation. In addition, development of adjacent federal, state, and private land will increase the need for utility and communication equipment and right-of-way development.

## CUMULATIVE EFFECTS ON SPECIAL DESIGNATIONS

### ACECs

No other agency in the Planning Area has ACECs so there would be no cumulative effects from ACEC designations. Impacts from activities implemented on adjacent land not managed by BLM could create additional cumulative impacts to relevant and important values in an indirect fashion. Lack of noxious weed abatement on adjacent land could impact relevant and important special status plant values, and exercise of water rights could result in impacts to water or wetland-based values. Upstream de-watering actions above Spokane Creek or Humbug Spires would degrade aquatic and riparian habitats as well as fish spawning activities. Adjacent land disturbances to soils and vegetation from development actions could create both short and long-term air quality, soil erosion and visual impacts within potential ACECs. Finally, trespass actions such as grazing, timber harvests, motorized travel, and created routes within the ACECs could cause serious impacts to relevant and important values.

### National Trails

Resource management decisions or actions on state, private, and other federal lands have the potential to affect designated National Trails in the Planning Area, particularly since segments of both National Trails are across other agency lands and potential cumulative impacts are difficult to estimate.

### Wild and Scenic Rivers

Potential impacts to outstandingly remarkable values from present or future projects or actions on lands within the Decision Area would be considered to be negligible to nonexistent because of the existing protections under current laws, regulations and policies. Water related projects on streams within the Decision Area have had an influence on natural stream flows, but not to the extent to alter their free-flowing nature. However, impacts from activities implemented on adjacent land not managed by BLM could create additional cumulative impacts to outstandingly remarkable values. Should upstream water users fully exercise their water rights during low flow periods, both the quantity and quality of water flows within BLM segments would be degraded. In addition, wetland plant species and fisheries would be impacted. The lack of weed control efforts on proximity lands could impact special status plant species and native vegetation. Poor livestock grazing practices upstream could alter water quality and adversely impact aquatic communities. Finally, additional residential developments or other soil disturbing activities could have detrimental impacts on Wild and Scenic Rivers as well.

## Wilderness Study Areas

There are several wilderness areas within the planning area on Forest Service lands. In addition the FS has other areas that are under wilderness review. There are no known legislative bills pending before Congress that affect these areas. The wilderness characteristics of the six existing WSAs will continue to be protected under the Interim Management Policy and Guidelines for Lands under Wilderness Review until Congress acts and therefore impacts to these values are unlikely.

## CUMULATIVE EFFECTS ON SOCIAL AND ECONOMIC CONDITIONS

### Social and Economic

No cumulative impacts were identified for Environmental Justice.

#### *Social Conditions*

Under all the RMP alternatives, public access and recreational opportunities have the greatest potential to affect social conditions. As such, Alternative C, being the most restrictive on public access for firewood and other product gathering as well as motorized recreational access, would have the greatest cumulative effects. Other federal land management agencies in the Planning Area are following a trend of reducing motorized access. Alternatives B and D also reduce motorized access and would have some cumulative effects as described above, but not to the same degree. Alternative A maintains current access.

#### *Economic*

BLM's contribution of outputs compared to the overall output in the Planning Area is relatively minor and cumulative impacts from BLM resource management would likely not be noticeable.

The differences in timber production between the alternatives would be less than five percent of the annual timber volume removed from the Planning Area.

Reduced AUMs in Alternatives B and C would place additional grazing pressure on private lands and/or increase the demand for hay or other forage alternatives. Expanding recreational demand across all alternatives could increase opportunities for private sector business growth.

While some BLM actions may affect individuals or businesses in a few communities, none of the alternatives would cause more than one percent change in local employment or labor income over the eight-county planning area.

#### *Public Health and Safety*

Under all alternatives, BLM actions to reclaim abandoned mine lands should contribute to a cumulative beneficial effect to public safety by reducing the num-

bers of hazardous mine openings and improving water quality in areas where projects occur.

## Tribal Treaty Rights

Cumulative impacts on cultural resources may occur through incremental resource degradation. Decreases in resource conditions such as water quality, riparian habitat, wildlife forage, native plant communities, or land tenure and access could affect cultural, traditional, and other tribal treaty rights important to Native Americans. If resources were to become scarce on BLM lands or other adjacent federal lands, there could be increased competition between tribal members and non- members for these resources.

Ongoing consultation would strengthen the government-to-government relationships between the Butte Field Office and tribal entities associated with the DA. These relationships would help preserve resource availability and access to those resources guaranteed by treaty.

## GLOBAL CLIMATE CHANGE (GCC)

The science of assessing “greenhouse gas” (GHG) emissions and their effect on global climate change is in its formative phase; therefore, it is not yet possible to predict with confidence impacts to climate from particular sources of GHG emissions. The lack of scientific tools designed to predict climate change on regional or local scales also limits the ability to quantify potential future impacts. This is due, in large part, to the lack of historical baseline data from which to form definitive conclusions (Easterling et al. 1999), so various predictive models have been formulated to explain GCC. Generally, these models lack the predictive ability to be of use at a site-specific scale to aid in land management practice decision making and can even offer contradictory predictions (Zhang 2003). Efforts are underway by other agencies and educational institutions to improve climatic monitoring with GCC in mind, which may in the future lead to better analytical tools for analyzing and quantifying the effects of land management activities on GCC as well as the effects and trends of GCC on natural resources. Because the tools and necessary level of information are not available to address net effects of climate change quantitatively, impacts in this section are described qualitatively and are “common to all alternatives.”

At the scale of the state of Montana, greenhouse gas (GHG) emissions associated with the Butte RMP would be minimal. Leading sectors emitting GHGs in Montana include electricity (26 percent), agriculture (26 percent), transportation (20 percent), and the fossil fuel industry (11 percent). Most activities associated with GHG emissions that may be authorized consistent with the Butte RMP would fall under transportation (public use of BLM roads), agriculture (livestock grazing), and the fossil fuel industry (fluid mineral leasing). At approx-

imately 307,300 acres, the Decision Area for surface management makes up 0.3 percent of total acres state-wide. The approximately 652,000 acres of federal mineral estate in the Decision Area make up 0.7 percent of state-wide acreage. There are no activities proposed with this RMP that would be disproportionate contributors to GHG emissions beyond other contributing activities in the state. Montana GHG emissions make up 0.6 percent of total gross emissions in the United States (Center for Climate Strategies 2007). However, most BLM acres in the Decision Area are vegetated where carbon sequestration occurs and where proposed vegetation treatments would emit GHGs during implementation, but would tend to foster improved carbon sequestration in the long-term. Net effects of all these activities are unknown.

It is important to note that many of the projected effects associated with global climate change described for specific resources or resource uses would occur at variable rates, mostly over the next several decades to a century. The monitoring approach described in **Appendix N** of this RMP is intended to provide for flexibility to alter management as needed based on site-specific conditions to respond to changes that may occur for particular resources or resource uses. A more specific monitoring plan will be described in the Approved RMP that will be released with the Record of Decision for this plan.

## IRRETRIEVABLE OR IRREVERSIBLE COMMITMENT OF RESOURCES

Irreversible and irretreivable resource commitments are related to the use of nonrenewable resources and the effects this use could have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretreivable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., loss of special status species habitat or the disturbance of a cultural resource).

Actions that alter a vegetation community sufficiently enough to change the site potential, or give other species competitive advantage over native species may represent irreversible commitment of resources. Mineral development would result in the loss of vegetation resources, habitat, and wildlife and livestock forage. While reclamation of disturbed areas would reduce the magnitude of these impacts, loss of wildlife habitat could result in altered migration patterns and displacement of local wildlife populations. Irretreivable losses to visual characteristics near mining sites would occur during development and operation. In addition, irretreivable loss of forested habitat could result from wildland fire, insects and disease, or harvesting. Most forest habitat loss, while long-term, would eventually regenerate and is therefore not irreversible. Without vegetation treatments,

noxious weeds or invasive species may not be reasonably controlled, potentially resulting in an irreversible change in ecosystem health.

Alternative A, having the most miles of open road, could contribute to irreversible impacts on passive or wilderness experiences if OHV use continues to grow. Cultural resources are by their nature irreplaceable, so the alteration or elimination of any such resource due to management under one of the alternatives, represents an irreversible and irretrievable commitment. There would be no irretrievable or irreversible impacts on recreational resources if management restrictions were implemented effectively. The exact nature and extent of any irreversible and irretrievable commitment of resources cannot be well defined due to uncertainties about location, scale, timing, and rate of implementation, as well as the relationship to other actions and the effectiveness of mitigation measures.

## **UNAVOIDABLE ADVERSE IMPACTS**

Unavoidable adverse impacts are impacts that remain following the implementation of mitigation measures, or impacts for which there are no mitigation measures.

Some unavoidable adverse impacts would occur as a result of proposed management under one or more of the alternatives.

Vegetative treatments including prescribed fire could cause displacement of wildlife, decreases in quantity and quality of forage, and loss of non-target ecosystem components. Changes in the amount of recreational visitation and patterns of use could result in increased conflicts between users, vandalism, and illegal collection of cultural resources.

Other unavoidable adverse impacts also result from public use within the Planning Area such as development of mineral resources which could create visual intrusions, soil erosion, compaction problems, or loss of vegetation cover. Accidental introduction of exotic plant or animal species could result in harm or loss of populations of native plants or animals. However, proposed restrictions on recreation, livestock operations, and other land use authorizations to protect sensitive resources and other values would lessen the ability of operators, permittees, individuals, and groups to use the public lands and could increase their operating costs. Potential unavoidable adverse impacts could range from short-term to long-term and are difficult to quantify.

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**Maps**

*(located in the map packet of the printed document--all files here are pdf--maps not listed are located in either the Draft RMP/EIS or the Proposed RMP/FEIS document)*

- Map 2 – Fire Management Unit Designations – Alternative A
- Map 3 – Fire Management Unit Designations – Alternative B
- Map 4 – Fire Management Unit Designations – Alternative C
- Map 5 – Fire Management Unit Designations – Alternative D
- Map 7 – Helena TPA – Alternative B
- Map 11 – East Helena TPA – Alternative B
- Map 15 – Lewis and Clark TPA – Alternative B
- Map 19 – Boulder- Jefferson City TPA – Alternative B
- Map 23 – Upper Big Hole TPA – Alternative B
- Map 26 – Recreational Opportunity Spectrum Classifications – Alternative B
- Map 27 – Recreational Opportunity Spectrum Classifications – Alternative C
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- Map 30 – Special Recreation Management Area Designations – Alternative B & C
- Map 32 – Existing and Proposed Area of Critical Environmental Concern Designations – Alternative C
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- Map 41 – Areas of Disposal and Retention Alternatives B, C and D
- Map 42 – Oil and Gas Leasing Restrictions – Alternative A
-

[Map 43 – Oil and Gas Leasing Restrictions – Alternative B](#)

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- [Map 46 – Lands Proposed for Withdrawal from Locatable Mineral Entry – Alternatives B and C](#)

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**Travel Plan Maps**

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## CHAPTER 4

### ENVIRONMENTAL CONSEQUENCES – CONTINUED

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#### ENVIRONMENTAL CONSEQUENCES OF FIVE SITE- SPECIFIC TRAVEL PLANS

This section discusses effects of alternatives for five site-specific travel plans (implementation decisions). After a discussion of Analysis Assumptions, the section is organized by travel planning area such that all effects (including cumulative effects) are described for the various resources and resource uses contiguously for each specific travel planning area. Alternatives for the Helena, East Helena, Lewis and Clark County NW, Boulder/Jefferson City, and Upper Big Hole River Travel Planning Areas (TPAs) are discussed.

Adjustments made to the Preferred Alternative for travel management between the Draft RMP/EIS and the Proposed RMP/Final EIS were assessed to be so minor as to not cause any marked changes in analyses or conclusions based on road management. Therefore, while actual road mileage changes are reflected for each TPA where pertinent in the Proposed RMP/Final EIS, road-based analyses (such as road density calculations, road-based moving windows analyses, mileage distribution by soil erosion impact categories, economic analyses) were not re-done since the Draft RMP/EIS.

#### ANALYSIS ASSUMPTIONS

##### Travel Management and Access

- Designating roads as either “Open Yearlong,” “Open with Restrictions,” or “Closed Yearlong” would improve travel management and protection of natural resources.
- Comprehensive inventories of all existing routes would be used.
- Routes were considered non-motorized if they were existing trails, closed roads or decommissioned roads.
- Visitor-use and demand is likely to continue to increase for both motorized as well as non-motorized users.
- Demand for adequate public and agency access to public lands will remain high in the future.
- Changes in OHV and snowmobile design and technology will continue, enabling OHV users to travel into areas that were once thought of as inaccessible due to terrain and water or soil features.
- Analysis of the travel system only included routes documented during the inventory period.

##### Transportation Facilities

- Road maintenance will be conducted on routes designated as Open and Restricted.
- Annual road maintenance is estimated at \$400/mile for this analysis.
- Annual trail maintenance is estimated \$200/mile for this analysis and would only be performed on motorized trails.
- Periodic road stabilization is estimated at \$40/mile for this analysis.
- Periodic trail stabilization is estimated at \$20/mile for this analysis and would only be performed on motorized trails.
- Twenty percent of Open/Restricted routes will require annual maintenance.
- Eighty percent of Open/Restricted routes will require periodic maintenance.
- Monitoring/compliance costs are estimated at \$50/mile for this analysis.
- Weed control is estimated for this analysis at 2.5 acres of spraying/mile of road at \$15/mile.

##### Air Quality

- Visitor use and demand for recreational motorized use is expected to continue to increase, resulting in higher vehicle emissions (exhaust gasses, particulates) levels.
- Most BLM roads and motorized trails have dirt or granitic surfaces. Few have been paved or graveled. This situation is unlikely to change, due to budget restraints, and user preference. Motorized travel across these substrates creates airborne dust. Wind erosion of these substrates also creates airborne dust. In sufficient quantities, airborne dust could pose a safety hazard (visual obstruction), or act as a respiratory irritant.
- Drier climate conditions could make unimproved route surfaces (soil road base) more susceptible to motorized erosion, resulting in higher levels of airborne dust.

##### Soil Resources

- BLM roads will continue to be maintained, with priority placed on those most heavily used by the public.
- State and major county roads will continue to be maintained to current levels and generally, county roads will not be abandoned. BLM facilities, mainly

roads, will continue to be maintained, with priority placed on those most heavily used by the public.

- Natural process assumptions include: roads in the Butte Field Office will continue to erode from natural causes, increased vegetative cover would lead to reduced soil erosion, and removal of conifer encroachment could minimize accelerated soil erosion.

## Water Resources

- Natural process assumptions include: roads in the Butte Field Office will continue to erode from natural causes resulting in potential impacts on water quality in adjacent streams, increased vegetative cover will lead to reduced soil erosion and in certain instances reduced deposition of sediments into streams, and removal of conifer encroachment could result in an increased quantity of water.

## HELENA TPA

The Helena TPA area contains 10,162 acres of BLM lands within the 95,492-acre TPA. The majority of lands in the TPA are privately owned (56,499 acres) with USFS lands making up a substantial portion as well (23,911 acres). The approximately 52.2 miles of BLM roads make up about 7.5 percent of the approximate total of 694 road miles in the entire TPA. Most roads (528 miles) are on private lands.

## AIR QUALITY

### Effects Common to All Alternatives

Motorized recreation use is expected to continue to increase, resulting in higher levels of vehicle emissions.

Motorized travel across dry unpaved routes or trails would continue to produce airborne dust.

There could be areas with localized air pollution as a result of higher use numbers, and more concentrated use on fewer miles of available routes.

Drier climate conditions could make soils more susceptible to the effects of motorized travel, resulting in higher levels of airborne dust.

Impacts to air quality vary by alternative and travel plan area. In general, alternatives that reduce the level of motorized use (have fewer available miles) could have a positive impact on air quality; while alternatives that maintain or increase the level of motorized use, could lead to increased air quality impacts. This would not necessarily be a direct relationship, however, because reduction in available road miles for motorized use could redistribute use or focus more use on remaining open routes.

Under all alternatives, impacts from airborne dust could be reduced through mitigation such as hardening native surface roads with gravel or periodically spraying them with water trucks during the dry season. During BLM

project work, in addition to watering native surface roadbeds, speed limits could be reduced to further minimize dust emissions.

## Effects of the Alternatives

Under Alternative A (present management), adverse impacts to air quality would be expected to continue, and likely increase, concurrent with higher levels of motorized recreational use. Each of the action alternatives, however, would provide fewer available motorized routes. Alternatives B and C would provide 80 percent and 85 percent fewer motorized routes respectively than Alternative A, while Alternative D would provide 58 percent fewer routes than Alternative A. As a result, airborne dust and vehicle emissions would be taking place on fewer BLM routes and could be reduced.

It should be noted that even without motorized use, airborne dust, resulting from wind erosion of exposed native surface roads will continue. Therefore, travel plans with more miles of native surface roads would result in more airborne dust.

Under all alternatives, mitigation measures, such as graveling and /or watering native surface roads, could reduce dust emissions even further, and/or help offset the effects of increased or concentrated use on the remaining open routes.

## Cumulative Effects on Air Quality

Under all alternatives, the cumulative effects to air quality from travel management in the Helena TPA would arise from a number of past, present, and reasonably foreseeable future actions on BLM lands as well as non-BLM lands.

For perspective, BLM managed lands in the Helena Travel Plan area represent approximately 11 percent of the total travel planning area (95,492 total acres, 10,162 BLM acres). Under present management (Alternative A) BLM routes represent a small portion, approximately 7.5 percent, of the total routes available (693 total miles, 52.2 miles BLM roads/trails). Potential air quality impacts associated with activities on non-BLM lands and roads would be a greater contributor to cumulative effects to air quality than activities on BLM lands and roads.

In the past, prior to the 2003 Statewide OHV ROD, BLM management allowed unrestricted cross country travel by all forms of wheeled motorized use. Under present management, in the absence of other existing travel plan direction, all motorized wheeled travel is restricted to existing roads and trails. Under current management, all BLM routes in the Helena TPA are open yearlong. This mileage available for use would be reduced under the action alternatives as described above with associated potential differences in effects to air quality.

Under all alternatives, cumulative increases in human population, urbanization, recreation use, user conflicts; and concerns for wildlife, noxious weed spread, soil erosion, air/water quality, and illegal activities may lead to increased demands to restrict motorized travel.

## SOILS

### Effects Common to All Alternatives

Road construction, use, and maintenance affect soils in a number of ways. Soils are often compacted by these activities. Soil compaction can lessen the amount of precipitation that can infiltrate into soil and increase runoff, erosion, and sedimentation – in turn decreasing soil/site stability and hydrologic function, as well as soil productivity and plant vigor and diversity.

Ground disturbance associated with road construction, use, and maintenance can result in erosion. Erosion affects soil/site stability and hydrologic function. Erosion and sedimentation can destabilize the surface and sub-surface cohesion of the soil, resulting in soil loss from erosion sites. Loss of soil can impede or prevent establishment and development of vegetation communities.

Closing or decommissioning roads often leads to beneficial effects to soils through decreased site disturbance and re-establishment of vegetative cover on road surfaces. This tends to reduce soil erosion and stabilize soils. Decommissioning roads may in some cases entail ripping road surfaces to de-compact them, thus improving water infiltration, hydrologic function, and the ability of the treated area to revegetate more successfully.

Impacts to soils associated with site-specific travel plan alternatives were assessed based on the potential for soil erosion using the following erosion risk criteria:

- High – the area a route travels through has slopes greater than 30 percent gradient.
- Moderate – the area a route travels through has slopes ranging from 15 to 30 percent gradient; or, for granitic soils, slopes ranging from 0 to 30 percent gradient.
- Low – the area a route travels through has slopes ranging from zero to 15 percent gradient and soils are not granitic in origin.
- Unrated – road mapping not available at time of erosion impact rating.

### Effects of the Alternatives

The distribution of road miles by erosion impact category and by proposed road management category for all the alternatives is shown for the Helena TPA in **Table 4-48** Error! Reference source not found.. Roads in the “unrated” category were excluded from detailed consideration and are provided for the purpose of displaying the extent of lacking information.

Under current conditions (Alternative A) approximately 11.8 miles of open BLM roads are located in areas with high erosion risk, and 34.3 miles are in moderate erosion areas. Soil erosion would be reduced under Alternative B because this alternative would reduce those open road mileages in high and moderate erosion categories to 4.4 miles and 7.4 miles, respectively. Approximately 28.2 miles of road in the high and moderate classes would be closed under Alternative B with an additional 6.6 miles in these categories being decommissioned. Vegetative recovery should occur on closed and decommissioned roads, with a beneficial effect on soils of reducing erosion from these areas.

Soil erosion would be most reduced under Alternative C because the lowest mileage of roads in the high and

<b>Proposed Road Management</b>	<b>Erosion Risk Category</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Open Road Miles (including Open w/restrictions)</b>	High	11.8	4.4	2.1	6.3
	Moderate	34.3	7.4	4.0	13.4
	Low	3.5	0.9	0.8	0.8
	Unrated	2.6	1.0	0.1	0.8
<b>Closed Road Miles</b>	High	0	4.5	8.1	5.4
	Moderate	0	23.7	27.7	17.7
	Low	0	2.2	2.3	2.3
	Unrated	0	1.7	2.6	2.2
<b>Decommissioned Road Miles</b>	High	0	3.0	1.7	0.2
	Moderate	0	3.2	2.6	2.6
	Low	0	0.4	0.4	0.4
	Unrated	0	0	0	0

Note: Open roads include seasonally open roads as well as roads open yearlong.

moderate erosion categories would be left open (6.1 miles combined), while the greatest mileage in these categories would be closed (35.8 miles combined) of all alternatives. An additional 4.3 miles in these categories would be decommissioned under Alternative C.

Soil erosion associated with roads would be reduced under Alternative D compared to Alternative A, but would still be higher than under either Alternative B or C. Approximately 19.7 miles of BLM road in the moderate and high erosion categories combined would remain open under Alternative D, while about 23.1 miles in these categories would be closed and 2.8 miles would be decommissioned under this alternative.

### Cumulative Effects on Soils

Under all alternatives, cumulative effects to soils in the Helena TPA would arise from a number of past, present, and reasonably foreseeable future actions on BLM lands as well as non-BLM lands. Within this 95,492-acre TPA, BLM lands comprise about 10,162 acres or 11 percent of total lands. The approximately 52 miles of BLM roads (under Alternative A) make up about 7.5 percent of the approximately 693 road miles in the TPA. Therefore road-related effects to soils described by alternative for BLM roads would affect about 7.5 percent of all roads in the TPA. The majority of lands and roads within the TPA boundary are private property. Non-BLM roads are managed by the county, Forest Service, state, and private landowners.

Approximately 8,000 acres of land in the Helena TPA are managed by the National Guard. In addition to having and using various barracks and classrooms present, the Guard conducts various military maneuvers and training on these lands including non-live fire training and off-road use of military vehicles. Some helicopter-based training also occurs here including landings to drop off soldiers. Some soil erosion and compaction as well as loss of vegetative ground cover further exacerbating soil effects occur here, but to an unknown degree.

Approximately 481 BLM acres are permitted for various rights-of-way and leases. About 359 of these acres are for specific road rights-of-way. The remaining 122 acres are associated with powerlines, waterlines, communication sites, oil and gas pipelines, and other utility facilities.

Impacts to soils range from compaction and occupation of ground with buildings, roadbeds, and other facilities, to revegetation and ground cover being re-established to stabilize soils.

Selective timber harvest has occurred on about 133 acres of BLM land in the TPA since 1995. Adverse effects on soils were minor with treated areas having undergone revegetation and soil stabilization since treatment. Timber harvest has also occurred on private and Forest Service lands, will likely continue, and will likely have localized impacts on soils for the foreseeable future.

From 1981 to 2004, wildland fire has burned across 65 acres in the Helena TPA, having a mosaic of soil effects with more severely burned areas experiencing localized erosion while many areas were relatively little affected.

There has been one fuels reduction treatment on BLM lands in the TPA in the last 10 years. Approximately 150 acres in the Scratchgravel Hills around the Wildland Urban Interface had hazardous fuels mechanically removed and ground up on site. Effects to soils from this project were negligible. Within the next several years, BLM anticipates additional fuels treatments on 1,500 to 2,500 acres of WUI areas in the Scratchgravel Hills. These treatments would consist of a combination of mechanical and prescribed fire treatments and would generally have minor effects on soils. Prescribed burning would occur under conditions where fire severity and intensity would be low, thereby minimizing potential damage to soil or desired vegetation. All treatments would minimize compaction so as to promote vegetative recovery. Fuels treatments conducted on private and Forest Service lands will also likely occur for the foreseeable future with variable effects to soils. Reducing fuels under the controlled conditions of deliberate treatments may benefit soils in the long-term by reducing the risk of high severity fires in treated areas.

Livestock grazing on BLM lands, other public and private lands throughout much of the TPA has created areas of localized soil erosion and compaction. This will continue to occur for the foreseeable future.

Increasing residential development will likely continue for the foreseeable future to variable degrees within the TPA. Erosion, compaction, and covering of soils would occur due to additional road construction, clearing/leveling for home sites, and establishment of utility infrastructure for residential developments.

Under Alternative A, the contribution to cumulative effects on soils from BLM road management would continue as it occurs today. Retaining approximately 52 miles of road open yearlong would allow for the same level of compaction and erosion impacts that currently exist.

From a BLM road management perspective, all action alternatives would benefit soil resources compared to Alternative A. Alternative B would benefit soils by providing for a reduced contribution to adverse cumulative effects than would Alternative A because about 73 percent of BLM roads would be closed or decommissioned under Alternative B (compared to all being open yearlong under Alternative A). Erosion should be reduced on these closed/decommissioned roads as disturbance is eliminated and revegetation occurs and stabilizes soils.

Alternative C would benefit soils the most and provide for the least contribution to adverse cumulative effects on soils of all alternatives. This alternative would provide for closure or decommissioning of about 86 percent

of BLM roads in the TPA, thus allowing these areas to vegetatively recover and stabilize soils.

Alternative D would provide for the greatest contribution to adverse cumulative effects on soils of the action alternatives, but would still provide for greater long-term benefits to soils than Alternative A. Alternative D would provide for closure or decommissioning (and therefore vegetative recovery and/or soil stabilization) of about 58 percent of BLM roads in the TPA, compared to 73 percent for Alternative B, and 86 percent for Alternative C.

Due to the scattered distribution and relatively small proportion of BLM lands (11 percent) and roads (7.5 percent) relative to the total quantities of lands and roads in the TPA, none of the BLM alternatives would substantially contribute to cumulative effects to soils at the scale of the entire Helena TPA.

## WATER RESOURCES

### Effects Common to All Alternatives

Hydrologic function is an interaction between soil, water, and vegetation, and reflects the capacity of a site to:

- Capture, store, and safely release water from rainfall, runoff, and snowmelt;
- Resist a reduction in this capacity; and
- Recover this capacity following degradation.

Interception of precipitation results when precipitation falls on vegetation. When vegetation is removed, precipitation falls directly on the soil. This can increase surface erosion and sedimentation, and decrease the amount of time between initial precipitation arrival and peak surface runoff – in turn decreasing soil/site stability and hydrologic function. Roads remove vegetation and therefore decrease interception of precipitation.

Infiltration is the process of precipitation entering and traveling through soil. Infiltration reduces the peak runoff during precipitation events by extending the period of runoff after a precipitation event. Infiltration also filters precipitation and reduces erosion and sedimentation. If infiltration is reduced, runoff and erosion will increase and hydrologic function will decrease. Generally, roads are compacted surfaces that have decreased infiltration, thus increasing runoff and potentially increasing erosion.

Runoff can affect the amount of erosion and sedimentation, as well as flooding – both onsite and offsite. If runoff is increased, all of these effects can increase with a result that water quality and hydrologic function will decrease.

Increased sediment entering water bodies increases turbidity; increases width-to-depth ratios, and consequently increases temperature and dissolved oxygen saturation levels; and creates adverse habitat for aquatic animals and plants.

Alteration of flow routing can also affect water resources. For example, roadcuts into areas with relatively shallow groundwater can intercept groundwater, bring it to the surface, and transport it some distance (i.e. in a roadside ditch) before delivering it to a stream. This can lead to erosion of road ditchlines and subsequent sedimentation of streams during runoff periods, or increased thermal loading of water before delivery to streams during summer periods.

Closure and decommissioning of roads tend to reduce erosion and sedimentation effects stemming from roads on water quality. On an equivalent road mile basis, decommissioning roads would benefit water quality to a greater degree than closing roads because the decommissioning process would often entail implementing measures to restore hydrologic function. During road decommissioning, items such as compaction, drainage, stream crossing culverts, and ground cover are often addressed in a manner that markedly improves hydrologic function. These features are not fully addressed on roads that are merely “closed”. However, because surface disturbance is reduced on newly closed roads, and because vegetation tends to re-establish ground cover on them, erosion and subsequent sedimentation effects to water quality are often reduced from closed roads.

### Effects of the Alternatives

Generally, road density is an indicator of overall watershed health and function. Watersheds with higher road densities tend to have lower water quality due to greater disruption of hydrologic function (described above), and potential for erosion and subsequent sedimentation. Road density also is related to the distribution and spread of noxious weeds. **Table 4-49** shows acres of BLM land in three road density categories by alternative for the Helena TPA. These data reflect differences between alternatives based on roads proposed for “decommissioning” by alternative. While many “closed” roads would gradually contribute to increased hydrologic function over time, decommissioned roads would more directly contribute to hydrologic function because restoring hydrologic function would likely be part of the treatment during decommissioning. Alternative A would have the greatest amount of BLM land with “high” road densities of greater than 2 mi/mi<sup>2</sup>. Alternative B would

TPA Alternative	Road Density Category		
	Low (<1 mi/mi <sup>2</sup> )	Moderate (1 to 2 mi/mi <sup>2</sup> )	High (> 2 mi/mi <sup>2</sup> )
<b>A</b>	461	1,446	8,294
<b>B</b>	461	1,623	8,117
<b>C</b>	461	1,539	8,200
<b>D</b>	461	1,484	8,258

have the lowest acreage in the high category with the greatest acreage in the moderate category of all alternatives. Alternative C would have the next lowest acreage in the high road density category while Alternative D would have more acres in the high category than either Alternative B or C, but less than Alternative A. Overall, all the action alternatives would improve hydrologic function but by this measure Alternative B would make the greatest contribution to improved hydrologic function of all the alternatives.

Motorized routes within 300 feet of streams generally have greater potential to directly impact water quality through erosion and sedimentation, increased water temperatures (due to loss of shading vegetation), and direct alteration of stream channel morphology than those farther away. **Table 4-50** shows the miles of open and closed roads on BLM lands within 300 feet of streams by alternative. Under Alternative A there are about 7 miles of open road within 300 feet of streams. All action alternatives would improve water quality by closing or decommissioning roads in close proximity to perennial streams. Alternatives B and C would create the most benefit as both would close or decommission 4.1 of the seven total miles of road within 300 feet of streams. Alternative D would have slightly less benefit by closing or decommissioning 2.5 of these 7 miles.

### Cumulative Effects on Water Resources

Cumulative effects to water resources in the East Helena TPA would arise from a number of past, present, and reasonably foreseeable future actions on BLM lands as well as non-BLM lands. Within this 95,492-acre TPA, BLM lands comprise about 10,162 acres or 11 percent of total lands. The approximately 52 miles of BLM roads (Alternative A) make up about 7.5 percent of the approximately 693 road miles in the TPA. Therefore road-related effects to water resources described by alternative for BLM roads would pertain to about 7.5 percent of all roads in the TPA. Within the entire TPA (all land ownerships) there are approximately 108 miles of perennial streams, including 37 miles of fish bearing streams. Of these, approximately 8 miles (including 2 miles of fish bearing) flow through BLM lands. The majority of lands and roads within the TPA boundary are private

property. Non-BLM roads are managed by the county, Forest Service, state, and private landowners.

Some of the main access roads (non-BLM) follow valley bottoms and parallel streams. Many of these roads are directly affecting stream channel and floodplain function by filling or impinging on active stream channels or floodplains, precluding the presence of riparian vegetation (including large woody material in forested locations), producing sedimentation in streams (from road surfaces, ditchlines, winter “road sanding” operations), and promoting thermal loading by lessening streamside shade.

Approximately 8,000 acres of land in the Helena TPA are managed by the National Guard. In addition to having and using various barracks and classrooms present, the Guard conducts various military maneuvers and training on these lands including non-live fire training and off-road use of military vehicles. Some helicopter-based training also occurs here including landings to drop off soldiers. Some soil erosion and compaction as well as loss of vegetative ground cover occur here. This is exacerbating potential erosion and sedimentation effects, but to an unknown degree. Sevenmile Creek, one of the streams listed as impaired by Montana Department of Environmental Quality on the 303(d) list flows through these lands.

Approximately 481 BLM acres are permitted for various rights-of-way and leases. About 359 of these acres are for specific road rights-of-way. The remaining 122 acres are associated with powerlines, waterlines, communication sites, oil and gas pipelines, and other utility facilities. Impacts to water resources are generally minor with some localized erosion and sedimentation emanating from areas of ground disturbance.

Selective timber harvest has occurred on about 133 acres of BLM land in the TPA since 1995. Adverse effects on water resources were minor with treated areas having undergone revegetation to minimize erosion. Timber harvest has also occurred on private and Forest Service lands and will likely continue. This activity will have localized sedimentation and possibly increased runoff effects associated with compaction for the foreseeable future.

**Table 4-50**  
**Miles of Open and Closed Roads on BLM Lands within 300 ft. of Fish-Bearing Streams and Perennial, Non-Fish-Bearing Streams by Alternative for the Helena TPA**

	Perennial Fish-Bearing Streams		Perennial Non-Fish-Bearing Streams	
	# Open Road Miles	# Closed Road Miles	# Open Road Miles	# Closed Road Miles
<b>Alt. A</b>	1.7	0	5.3	0
<b>Alt. B</b>	1.7	0	1.2	4.1
<b>Alt. C</b>	1.7	0	1.2	4.1
<b>Alt. D</b>	1.7	0	2.8	2.5

Note: Open roads include seasonally open roads as well as roads open yearlong. Closed roads include decommissioned roads.

From 1981 to 2004, wildland fire has burned across 65 acres in the Helena TPA, having minimal effects in streams.

There has been one fuels reduction treatment on BLM lands in the TPA in the last 10 years. Approximately 150 acres in the Scratchgravel Hills around the Wildland Urban Interface had hazardous fuels mechanically removed and ground up on site. Effects to water resources from this project were negligible as site-specific ground disturbance was minor and there are no streams in this portion of the TPA. Within the next several years, BLM anticipates additional fuels treatments on 1,500 to 2,500 acres of WUI areas in the Scratchgravel Hills. These treatments would consist of a combination of mechanical and prescribed fire treatments and would likely have minor effects on water resources. Prescribed burning would occur under conditions where fire severity and intensity would be low so as not to scorch soils and facilitate severe erosion. All treatments would minimize compaction so as to promote vegetative recovery and retain hydrologic function. There are no perennial streams in the area where this project is being planned so effects to water resources are expected to be minor to negligible.

Fuels treatments conducted on private and Forest Service lands will also likely occur for the foreseeable future with variable effects to water quality. Reducing fuels under the controlled conditions of deliberate treatments may benefit water quality in the long-term by reducing the risk of high severity fires in treated areas.

Livestock grazing on BLM land, other public and private lands throughout much of the TPA has created areas of localized streambank trampling, soil erosion and compaction, and nutrient inputs to streams. In severe cases stream channel morphology may be altered due to severe loss of riparian vegetation, loss of streambank integrity, channel widening and shallowing, and substantial sediment inputs. These effects to water quality will continue to occur for the foreseeable future. Agricultural water withdrawals occur on private lands in this TPA. These withdrawals reduce stream flows in the TPA, notably in Sevenmile Creek (listed as impaired water body by MDEQ on the 303(d) list).

Increasing residential development will likely continue for the foreseeable future to variable degrees within the TPA. Impairments to hydrologic function such as erosion, soil compaction, and runoff would likely increase due to additional road construction, clearing/leveling for home sites, and establishment of utility infrastructure for residential developments. Nutrient, chemical pollutant, and pathogen inputs to streams would also likely increase due to leaching from septic systems, urban runoff (fertilizer, chemicals, and petroleum pollutants), and waste from livestock.

Under Alternative A, the contribution to cumulative effects on water quality from BLM road management

would continue as it occurs today. Retaining approximately 52 miles of road open yearlong would allow for the same level of effects to water resources that currently exist.

From a BLM road management perspective, all action alternatives would benefit water resources compared to Alternative A. Alternative B would benefit water quality by providing for a reduced contribution to adverse cumulative effects from BLM roads compared to Alternative A because about 81 percent of BLM roads would be closed or decommissioned under Alternative B (compared to all being open yearlong under Alternative A). Alternative B would provide for decommissioning the greatest road mileage (6.5 miles) of all alternatives. Erosion and sedimentation should be reduced on these closed/decommissioned roads as disturbance is eliminated and vegetation becomes re-established on roadbeds. On an equivalent road mile basis, decommissioning roads would benefit water quality to a greater degree than closing roads because the decommissioning process would often entail implementing measures to restore hydrologic function.

Alternative C would reduce the contribution to adverse cumulative effects from BLM roads (and benefit water resources) to a similar degree as Alternative B although there are some differences between the two alternatives. Alternative C would provide for the most closed roads (40.7 miles compared to 36 under Alternative B) of all alternatives, but only the second most decommissioned roads (4.6 miles).

Alternative D would provide for the greatest continuing contribution to adverse cumulative effects on water resources of the action alternatives, but would still provide for greater long-term benefits to water resources than Alternative A. Alternative D would provide for closure (27.7 miles) or decommissioning (3.1 miles) of about 58 percent of BLM roads in the TPA, compared to 81 percent for Alternative B, and 86 percent for Alternative C.

Due to the scattered distribution and relatively small proportion of BLM lands (11 percent) and roads (7.5 percent) relative to the total quantities of lands and roads in the TPA, none of the BLM alternatives would substantially contribute to cumulative effects on water resources at the scale of the entire Helena TPA.

## **VEGETATIVE COMMUNITIES – FOREST RESOURCES AND FOREST AND WOODLAND PRODUCTS**

### **Effects of the Alternatives**

Under all alternatives, existing roads and roads built to access timber and forest product sales on BLM lands may encourage timber harvest and forest product sales on adjacent lands, particularly where landowners and other agencies are looking to improve economic effi-

ciency or opportunities in the management on their lands.

In general, vegetative treatment contractors tend to bid more readily on projects in areas with vehicle access or valuable forest products. BLM often prioritizes forest vegetation management activities such as forest products and forest protection activities (e.g. wildfire suppression and forest insect and disease control) in similar areas.

Rehabilitation of roads (decommissioning or in some cases road closure) would revegetate currently unvegetated roadbeds, which would increase vegetation biomass production on the landscape through colonization of sites with grasses, forbs, shrubs, and trees. Increases in revegetated area would occur at a rate of approximately 1.5 to 3 acres per mile of rehabilitated road. Eventually rehabilitated roads would support plant communities consistent with site potentials which would help resist weed invasions. However, road closures and removals (decommissioning) could make vegetation management treatments more difficult and costly, thereby inhibiting proposed treatments, reducing public access for forest product use and removal, and potentially slowing fire detection and suppression.

Under Alternatives A (52.2 open road miles) and D (21.9 open road miles) in the Helena TPA, the major vehicle access roads in the forest and woodland areas remain open, so there would be little increase in project analysis and implementation costs, and no change in the feasibility of vegetative and fuels reduction treatments. Under Alternatives B (9.8 open road miles) and C (7 open road miles), the access roads into the forest and woodland areas would be closed, so there could be a reduction in the feasibility of many projects. For projects that are feasible, there could also be increases in vegetative analysis, project planning, and treatment costs to the BLM.

In the context of gathering firewood and other forest products by the general public, mileage of open roads would represent the relative extent of public opportunities by alternative. For the Helena TPA, Alternative A would retain the most public opportunities for these activities, followed in sequence by Alternative D, Alternative B, then Alternative C.

## **Cumulative Effects on Forest and Woodland Resources and Products**

No BLM forest health/silvicultural treatments or resource product removal projects are currently imminent in this TPA within the next five years. Fuels reduction projects with forest health considerations have a high priority because of the high degree of residential development surrounding BLM lands. The major block of land that includes BLM forest and woodlands in this TPA is located in the Scratchgravel Hills, with some woodland stands in a block located northwest of Fort Harrison near Austin. One fuels reduction project (antic-

ipated at 1,500 to 2,000 acres) is currently being planned in the Scratchgravel Hills area. These stands are of low productivity and commercial value, so the forest products generated would provide little revenue in timber sale projects. In other vegetation manipulation projects, derived products would provide only small offsets to costs for stewardship (exchange of goods for services) projects.

Forested vegetation on BLM lands would also be affected by approximately 481 acres of rights-of-way and leases on BLM land. Forested vegetation located in these areas usually is harvested and/or removed to accommodate the necessary access or facilities. Forest vegetation removal would occur on new authorizations in the future and would occur as necessary to maintain sight distances and safety clearances associated with roads and facilities.

Urbanization is expected to continue on the 56,499 acres of private lands within this TPA. Forest products are commonly removed from these areas prior to permanent construction. Urbanization is likely to continue in the future and will affect forested vegetation at an unknown rate. As private construction increases, miles of road on private land will most likely increase from the current 528 miles.

Risk to forests from human-caused wildfires is commonly associated with miles of open roads because increased fire starts occur in these areas. Risk to forests from wildfire on BLM lands would be greatest under Alternative A with 52.2 miles of open road. Alternative B would have less risk of human-caused fire starts with 9.8 miles of open road. Alternative C would have the least risk to forests of all alternatives with only 7.0 miles of road open during summer months. Alternative D (21.9 miles) would have less risk than Alternative A but more risk than either Alternative B or C. Given that the majority of roads in the TPA (92 percent) are non-BLM roads, this contribution to reduced fire risk from BLM roads in the action alternatives is relatively small in the context of the entire TPA.

Since BLM roads constitute only 7.5 percent of all roads in this TPA, and BLM lands make up only 11 percent of all lands in the TPA, urbanization and activities on open non-BLM roads in the vicinity may have more cumulative effects on forested vegetation in the TPA than BLM decisions regarding miles of open and closed road.

## **VEGETATIVE COMMUNITIES – NOXIOUS WEEDS**

Under all alternatives, any snowmobile use would have negligible effects on noxious weed spread. Invasive noxious weeds and non-native species are degrading wildland health. These aggressive plants can outcompete many native plants, as they have few natural enemies to keep them from dominating an ecosystem. These plant species are spread by many means. However, any land

disturbing activity in the TPA has the most potential to introduce and spread weed species. Motorized vehicles are one vector for noxious weed spread as weed seed becomes attached to vehicles and their tires, and are transported from one area to another where seeds become detached and germinate to inhabit new areas.

### Effects of Alternative A

Under Alternative A, all existing routes in the Helena TPA would continue to be open yearlong (52.2 miles open yearlong, zero miles seasonally restricted and closed) to wheeled motorized users. Cross-country snowmobile travel would continue to be allowed as well as travel on all routes. Under Alternative A the open BLM roads would represent about 7.5 percent of all open roads in the Helena TPA.

Alternative A would have the most roads open and in turn would promote the greatest amount of weeds and other undesirable plant spread and production of all alternatives. More herbicide control would be needed to control weeds under Alternative A than under the other alternatives.

### Effects of Alternative B

Under Alternative B wheeled motorized travel (9.8 miles open yearlong) would be restricted in the Scratchgravel Hills to routes leading to five non-motorized trailheads; as well as several routes needed for residential access. Roads would be open yearlong. Cross-country snowmobile use would be allowed, as well as snowmobile travel on all existing routes during the season of use (12/2-5/15), conditions permitting. Under Alternative B, 42.5 miles of BLM road would be closed or decommissioned, leaving 9.8 miles open yearlong as compared to 52.2 miles of road open yearlong under Alternative A. This would prevent weed spread caused by motorized vehicles on these closed routes, but would increase spread on the open routes because of the more concentrated use of these routes. Overall Alternative B would reduce weed spread, but would increase weed treatment costs per road mile on the remaining open road miles compared to Alternative A. Under Alternative B, the 9.8 miles of open BLM road would constitute about 2 percent of all open roads in the Helena TPA.

### Effects of Alternative C

Alternative C would restrict wheeled motorized travel to five non-motorized trailheads in the Scratchgravel Hills. This alternative would provide the least number of wheeled motorized routes in the Helena TPA (7.0 miles open yearlong). Under this alternative, no snowmobile use would be allowed, including at the trailhead access routes. Under Alternative C, 40.7 miles of BLM road would be closed, leaving 7.0 miles open yearlong as compared to 52.2 miles of road open yearlong under Alternative A and 9.8 miles open under Alternative B. This would prevent weed spread caused by motorized

vehicles on these closed routes, but would increase spread on the open routes because of the more concentrated use of these routes. Overall Alternative C would reduce weed spread more than any other alternative, but would increase weed treatment costs per road mile on the remaining open road miles compared to Alternative A. Under Alternative C, the 7 miles of open BLM road would make up about 1 percent of all open roads in the Helena TPA.

### Effects of Alternative D

Under Alternative D, 21.9 miles of open routes would be available yearlong for wheeled motorized use. Of the action alternatives, Alternative D would provide the greatest opportunities for motorized users, and the least for non-motorized users. Cross-country snowmobile use would be allowed, as well as travel on all existing routes during the season of use (12/2-5/15), snow conditions permitting. This alternative would close 27.7 miles of road leaving 21.9 miles open yearlong as compared to 52.2 miles of road open yearlong for Alternative A. This would prevent weed spread caused by motorized vehicles on these closed routes, but would increase spread on the open routes because of the more concentrated use of these routes. Overall Alternative D would reduce weed spread more than Alternative A but less than Alternatives B and C, but would increase weed treatment costs per road mile on the remaining open road miles compared to Alternative A. Under Alternative D, the 21.9 miles of open BLM road would make up about 3 percent of all open roads in the Helena TPA.

### Cumulative Effects on Noxious Weeds

Under all alternatives, other past, present and reasonably foreseeable future BLM and non-BLM actions and outside influences affect noxious weeds.

Recreation use is well established in the TPA. Primary recreation activities include motorized OHV uses (ATV, motorcycle) and non-motorized uses (hiking, jogging, horseback riding, mountain biking, etc.). Motorized recreation uses are one of the leading causes of introduction and spread of noxious weeds and non native species. Weed seeds are transported by many recreational vectors (i.e. motorized vehicles including their tires), non-motorized vehicles including their tires, pack animals, and humans.

Urban development may lead to an increase in right-of-way permits on public lands to accommodate private property/development access. As a result, soil disturbing activities (i.e. roads, powerlines, telephone lines, etc.), will increase causing weeds to increase.

A variety of resource management projects, such as BLM initiated vegetation treatments, or fuels reduction projects, could affect weeds in the TPA. The Scratchgravel Hills Fuel Treatment Project is proposed in this TPA. It will consist of mechanical and/or prescribed fire treatments on from 1,500 to 2,500 acres focused on the

urban interface areas. There has been a fuels treatment project completed in the Scratchgravel Hills in the last 5 years which consisted of reducing fuels on a 150 acre area. Any project creating soil disturbance has the capability to increase weedy plant species. Prescribed burning projects give the ground surface a fertilization effect and eliminate some plant competition for weedy species giving them a niche for establishment and expansion in some areas. Ground disturbing equipment could also transport noxious weed seed to these project sites. BLM implements weed control measures in the aftermath of such ground-disturbing activity so as to minimize noxious weed spread.

Wildland fires create good seed beds and supply nutrients for weed species introduction and production. From 1981 to 2004 there have been 14 wildland fires that have burned about 65 acres. This TPA contains sufficient fuel to support a wildland fire in the foreseeable future.

Mining is a land disturbing activity and the activity itself and weed seed contaminated equipment that is used could promote weeds in the area. There are a number of active claims in the TPA but relatively little ground-disturbing activity associated with them is taking place at this time.

Noxious weeds and non-native invasive species are well established and spreading in the area. Weed control activities by BLM and other entities, while often effective at reducing or minimizing weed spread and weed populations, can also lead to some weed spread. Herbicide spray equipment is driven through weed infestations and weed seeds as well as other weed vegetative parts are spread to other lands during and following treatment. Herbicide and biological control treatments in recent years have been accomplished on approximately 30 to 40 acres in the Scratchgravel Hills area. These weed treatments have varying success in killing undesirable plants, depending on many environmental parameters. The weeds that have been treated are primarily in the urban interface area where heavy motorized use plays a large role in the distribution of noxious weeds.

Timber sales have built in stipulations for mitigating weed production and spread. However, with ground disturbance the potential exists for weed introduction to occur on these sites. Vehicular access for tree plantings could contribute to the spread of existing weeds on site. Since 1984, there has been 10 acres of forest planting. From 1995 to the present there has been 133 acres of timber harvest in the TPA. Herbicide treatment of existing weeds was coordinated with tree seedling planting locations and timing so as to minimize potential exacerbation of weed spread. Reclamation associated with abandoned mine lands has led to some spread of weeds. Herbicide control treatments have followed these reclamation actions to minimize or eliminate impacts.

Future travel management (for all agencies, nationwide) is likely to lead to fewer opportunities for motorized recreational use than under current management (particularly for OHV use). As a result, the Scratchgravel Hills could experience increased use from displaced users, and such use could cause a larger than anticipated introduction and spread of weeds. An increase in weeds would lead to an increase in needed treatment on BLM lands.

The National Guard manages approximately 8,000 acres of land (Fort Harrison) in the Helena area. These actions could potentially increase weed spread and production on (and off) BLM managed lands.

Portions of the TPA provide winter range for mule deer and elk. The Birdseye section is within a wildlife movement corridor that provides a connection between the Northern Continental Divide Ecosystem and the Greater Yellowstone Ecosystem, as well as local daily movements and seasonal movements between higher elevation summer ranges. Noxious weed seed are transported and spread by wildlife through their digestive systems and by attaching to the animals themselves and then being released at a later time.

Livestock grazing on and off BLM lands also contributes to weed spread either through seed being introduced by livestock themselves, or through vehicular uses needed to manage grazing operations.

Like much of the West, the Helena Valley has been experiencing steady human population growth. This trend is expected to continue, along with increased recreational use of this travel planning area. The increasing population in the Helena area will in turn lead to an increase in use of this TPA creating more opportunities for weed spread and production.

The majority of BLM managed routes for the Helena Travel Planning area are located in or adjacent to the Scratchgravel Hills and Birdseye area. Scratchgravel Hills is basically an island of undeveloped hills surrounded by residential development (there is some internal development as well). Residential development has tripled from 300 residential homes in 1984 to over 1,000 homes today. Additional development is ongoing. This development/increase in human population has led to an increase in use of the Scratchgravel Hills area by residents living adjacent to or within this area which in turn leads to an increase in weed spread and propagation.

Only 7.5 percent of all the travel routes in the Helena TPA are located on BLM managed lands (under Alternative A). Lands near roads and away from roads in the TPA are infested with weeds. The travel on all roads in the TPA is spreading weeds and weeds off these roads are being spread by the weed plants themselves and other natural means. Because the majority of roads (92 percent) and lands (89 percent) in the TPA are non-BLM, activities in these areas play a stronger role than activi-

ties on BLM lands in determining the status of weed spread and weed populations in the TPA overall.

## VEGETATIVE COMMUNITIES – RIPARIAN VEGETATION

### Effects Common to All Alternatives

This section focuses on effects to riparian vegetation. For additional discussion of effects to water quality and stream channels, see the Water Resources and Fish sections.

Roads in riparian areas constitute ground disturbance that can eliminate or preclude presence of native riparian vegetation. This ground disturbance and loss of riparian vegetation may facilitate erosion and sedimentation of streams. Roads may also interfere with natural stream channel functions by occupying floodplains or active stream channel margins (see Water Resources section for more discussion). Noxious weeds may dominate riparian vegetation communities after some type of disturbance (such as roads, livestock grazing, mining, etc.) has reduced native vegetation. Noxious weed seed can be spread into riparian areas by motor vehicles via open roads. Closure of roads and trails can improve or maintain riparian condition by reducing avenues of noxious weed spread, as well as allowing for bare area revegetation which filters sediment in addition to stabilizing banks in some areas. Road and trail restrictions have the same effects but to a lesser degree, because some traffic will inhibit vegetation growth and recovery.

### Effects of the Alternatives

As a means of comparing alternatives, **Table 4-51** depicts the miles of wheeled motorized routes that cross or are within 300 feet of streams on BLM lands for the Helena TPA.

Under Alternative A, 10.9 miles of roads and trails would remain open that cross or are within 300 feet of streams on BLM lands. The noxious weed spread, streambank, and sediment delivery effects would continue as described above.

Under Alternative B, 4.2 miles of BLM roads and trails that cross or are within 300 feet of streams would remain open, and 6.7 miles of roads and trails would be closed. The noxious weed spread, streambank, and sediment

delivery effects would be slightly reduced in comparison to Alternative A, however the roads along Sevenmile Creek and Skelly Gulch which impact riparian areas the most would remain open because they are non-BLM county roads and provide access to these respective areas.

Under Alternative C, 3.4 miles of BLM roads and trails that cross or are within 300 feet of streams would remain open, and 7.4 miles of roads and trails would be closed. The noxious weed spread, streambank, and sediment delivery effects would be slightly reduced in comparison to Alternatives A and B, however the roads along Sevenmile Creek and Skelly Gulch which impact riparian areas the most would remain open because they are non-BLM county roads and provide access to these respective areas. Alternative C would provide the most benefit of all alternatives to riparian vegetation on BLM lands.

Under Alternative D, 4.9 miles of BLM roads and trails that cross or are within 300 feet of streams would remain open, and 6.0 miles of roads and trails would be closed. The noxious weed spread, streambank, and sediment delivery effects would be slightly reduced in comparison to Alternatives A, but would be greater than under Alternatives B and C. The roads along Sevenmile Creek and Skelly Gulch which impact riparian areas the most would remain open because they are non-BLM county roads and provide access to these respective areas.

### Cumulative Effects on Riparian Vegetation

Noxious weed spread, mining, roads and trails, logging operations, and livestock grazing have affected riparian resource conditions in all TPAs, including the Helena TPA. Some of these factors continue to cause riparian area degradation primarily through direct disturbance or loss of riparian vegetation. Ground disturbance and loss of riparian vegetation facilitate erosion and sedimentation of streams. In the case of noxious weeds, they usually dominate riparian vegetation communities after some type of disturbance (such as roads, livestock grazing, mining, etc.) has reduced native vegetation.

Anticipated subdivision growth on private lands will lead to more road construction and maintenance. More roads and development will increase severity of runoff events which in turn will cause more sediment delivery to creeks and streams. The additional sediment is likely to affect the functioning condition of some riparian areas by causing streambeds to aggrade at unnatural rates. Streambanks may also be affected if road placements do not allow for natural stream movements or meanders.

Logging and forestry practices on public and private lands are subject to streamside management zone (SMZ) requirements designed to maintain water quality and riparian vegetation. The proposed Riparian Management Zones under Butte RMP Alternatives B and C would be wider than SMZs and activities in these areas would be

<b>Miles of Wheeled Motorized Routes</b>	<b>ALT A</b>	<b>ALT B</b>	<b>ALT C</b>	<b>ALT D</b>
Open	10.9	4.2	3.4	4.9
Restricted	0	0	0	0
Closed	0	6.7	7.4	6.0

designed to benefit riparian resources, thus providing more riparian protection and more targeted management of riparian vegetation in both forested and non-forested areas than under RMP Alternatives A and D. The disturbance associated with timber activities does have the potential to increase noxious weed spread which degrades riparian area function and health. On public lands noxious weed control is a standard feature of any ground disturbing activities whereas on private lands noxious weed control is variable.

Livestock grazing will continue in the area and has the potential to impact riparian resource conditions. On BLM lands, ongoing rangeland health assessments and implementation of livestock grazing guidelines would continue to improve or maintain riparian vegetation health and vigor. On private lands, livestock grazing is expected to decline slowly as more ranch and farmland is subdivided. Riparian conditions may improve or degrade as management changes.

Noxious weed control will continue on both public and private lands with varying degrees of success. To the extent that these efforts are successful, riparian conditions would improve because of the streambank protection gained from shrubby root systems and filtering capability of native riparian sedge and rush species.

The BLM fuels reduction project currently being planning for the Scratchgravel Hills would not have any cumulative effects to riparian vegetation because no activities would be planned near riparian areas. There are very few riparian areas in the Scratchgravel Hills portion of the TPA.

Cumulatively the effects of Alternative B would be similar to Alternative A, but would be a slight improvement to riparian vegetation. The closure of a few roads may slightly offset some of the private land road construction and maintenance effects described above.

Cumulatively the effects of Alternative C would be similar to Alternatives A and B, though Alternative C would make the greatest contribution to riparian vegetation by closing the greatest mileage of riparian roads on BLM lands of all alternatives. In comparison to Alternative B, the closure of a few more roads than Alternative B may slightly offset more of the private land road construction and maintenance effects described above.

Cumulatively the effects of alternative D would be similar to alternatives A, B, and C. In comparison to Alternatives B and C, the closure of a few less roads than Alternatives B or C may slightly offset less of the private land road construction and maintenance effects described above.

Overall, because BLM roads make up only 7.5 percent of all roads in the TPA (under Alternative A), and BLM lands make up 11 percent of all lands in the TPA, the contributions to riparian vegetation benefits associated with closing riparian roads on BLM lands would be minor at the scale of the entire Helena TPA.

## WILDLIFE

### Effects of Alternative A

Under Alternative A, the Helena TPA would have substantially more open roads (52 miles) compared to the action alternatives and would have the highest actual road density on BLM lands, 1.9 mi/mi<sup>2</sup> (Table 4-52) compared to the action alternatives. Open roads typically increase the level of recreation adjacent to roads. This can result in additional disturbance and displacement of wildlife species. Roads can also encourage the public to recreate in areas that had formerly been secluded. Roads can cause direct mortality to wildlife through road kill, prevent wildlife movement, create disturbance to wildlife via vehicular use, cause the spread of noxious weeds, reduce or eliminate habitat and cause habitat fragmentation on the landscape (Joslin et al. 1999). Open road miles that exceed 1 mi/mi<sup>2</sup> have also been found to provide less than 60 percent of functional habitat for elk (Christensen et al. 1993). Permanent and temporary roads could negatively impact wildlife, including special status species, particularly if roads are open during critical periods such as during the winter or breeding seasons.

Under Alternative A, this TPA would have fewer acres of functional winter range (461 acres of low road density area) compared to the action alternatives (Table 4-52). The action alternatives would all provide a similar amount of functional winter range, approximately 1,200 acres. Due to the isolated nature of BLM parcels and the substantial amount of development in the TPA, winter range value for big game species is extremely low compared to other areas.

**Table 4-52**  
**Decision Area Road Densities (mi/mi<sup>2</sup>) within Elk Winter Range in the Helena Travel Planning Area**

	Actual Road Density	Acres of Low Road Density	Acres of Moderate Road Density	Acres of High Road Density
<b>Alternative A</b>	1.9	461	1,331	2,611
<b>Alternative B</b>	1.0	1,152	1,165	2,087
<b>Alternative C</b>	0.7	1,270	1,113	2,021
<b>Alternative D</b>	0.9	1,267	1,110	2,027

Low Density = 0-1 mi/mi<sup>2</sup>, Moderate Density = 1-2 mi/mi<sup>2</sup>, High Density = >2 mi/mi<sup>2</sup>

Although the Helena TPA is open for cross country snowmobile use under Alternatives A, B and D, BLM lands in this TPA do not often get favorable snow conditions for this use. Due to snow conditions, the use of snowmobiles would be limited and the effects to big game and other wildlife species would be expected to be minimal the majority of the time. However, when snow conditions do become favorable, snowmobile use of the TPA could have negative effects to big game and other wildlife species. The negative effects due to cross-country snowmobile use could include harassment of big game and other species during the high stress winter season (Joslin et al. 1999). This could cause individuals to leave an area (temporarily or permanently) and/or an increase in stress that could lead to mortality.

In evaluating impacts of travel planning on elk and other big game species, it is important to consider impacts on security habitat. Elk security is the inherent protection allowing elk to remain in an area despite increases in stress or disturbance associated with the hunting season or other human activities. Security habitat includes blocks of nonlinear forested habitats greater than 250 acres in size that are at least 0.5 mile from an open road (Hillis et al. 1991). Security habitat should also consist of larger trees (greater than 8 inches DBH) with vegetation dense enough to hide an adult elk (Thomas et al. 2002). Under Alternatives A and D, there would be no functional security habitat for big game species and Alternatives B and C would provide only a negligible amount of security habitat (257-404 acres) (Table 4-53). As with winter range, the isolated nature of BLM parcels along with development of private lands and open roads throughout the TPA prevents the area from having a large amount of functional security habitat.

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
<b>Helena TPA</b>	0	257	404	0

Core areas are areas large enough for wildlife (especially animals with large home ranges such as carnivores and big game) to forage and reproduce. Subcore areas are areas that could act as stepping stones for wildlife as they move through the region (Craighead et al. 2002). For all lands in the Helena TPA, all alternatives would have the same amount of acres with low (5,942 acres with road density less than 1 mi/mi<sup>2</sup>), moderate (2,762 acres with road densities of 1-2 mi /mi<sup>2</sup>), and high (2,061 acres with road densities greater than 2 mi/mi<sup>2</sup>) road densities in core and subcore habitat.

On BLM lands, there are only 501 acres in core/subcore habitat. All alternatives would have the same acres in low (71 acres), moderate (216 acres) and high (114 acres) road densities for core and subcore habitat.

Wildlife corridors are areas of predicted movement within or between core and subcore areas. Within the Helena TPA there are no acres identified as “high quality” wildlife movement corridors under any land ownership. There are approximately 21,804 acres identified as moderate quality corridors for all land ownerships and 19,439 acres within low quality corridors. Under all alternatives, moderate quality movement corridors would have 6,455 acres with low road density, 4,803 acres with moderate road density but the majority of acres, 10,546, would be in high road density. On BLM lands in the TPA there are only 379 acres mapped as moderate quality movement corridors but there is more BLM land (2,660 acres) in areas considered to be low quality corridors.

Riparian areas provide crucial habitat and critical travel corridors for wildlife including special status species. Riparian areas also provide a refuge for native plants and animals in times of stress such as drought or fire. Roads in riparian areas can prevent use of these crucial areas by wildlife, limit use, or cause loss of habitat (Wisdom et al. 2000). Under Alternative A, there would be 10.9 miles of open roads in riparian areas, the most of any alternative.

### Effects of Alternative B

Under Alternative B, the Helena TPA would have substantially fewer open roads (9.8 miles) compared to Alternative A (52 miles). Alternative B would have more open road than Alternative C (7 miles) but less than Alternative D (22 miles). Alternative B would decrease harassment to wildlife during all seasons of use compared to Alternatives A and D. This alternative would also improve habitat and reduce fragmentation more than Alternatives A and D but less than Alternative C.

Under Alternative B, the actual road density in elk winter range in the Helena TPA would be at the 1 mi/mi<sup>2</sup> recommended as a maximum by FWP in big game winter range. This is lower than the road density under Alternative A, 1.9 mi/mi<sup>2</sup>, higher than Alternative C (0.7 mi/mi<sup>2</sup>) and higher, but similar, to Alternative D (0.9 mi/mi<sup>2</sup>) (Table 4-52). Open road miles that are 1 mi/mi<sup>2</sup> have also been found to provide roughly 60 percent of functional habitat for elk (Christensen et al. 1993).

Under Alternative B, this TPA would have more acres of functional winter range (1,152 acres) compared to Alternative A (461 acres), slightly less than Alternative C (1,270 acres) but also slightly less than Alternative D (1,267 acres) (Table 4-52). All action alternatives would improve the quality and quantity of winter range in the Helena TPA to a similar degree and all action alternatives would have more beneficial effects on winter range compared to Alternative A.

Like Alternatives A and D, the entire Helena TPA would be open for cross country snowmobile use with Alternative B. The effects would be the same as described under Alternative A.

The amount of big game security habitat would be low, but still more under Alternatives B and C (257 and 404 acres, respectively) compared to Alternatives A and D which would have no functional security habitat (**Table 4-53**).

Alternative B would protect and restore more riparian habitat than Alternative A by reducing the miles of open roads in riparian areas to 4.2 miles (from 10.9 miles under Alternative A). Alternative B would have more open roads in riparian areas than Alternative C (3.4 miles) but less than Alternative D (4.9 miles). Alternative B would allow for more breeding, foraging, and hiding habitat as well as improve more movement corridors for a wide variety of species than Alternatives A and D but less than Alternative C.

### Effects of Alternative C

Under Alternative C, the Helena TPA would have substantially fewer open roads (7.0 miles) compared to Alternative A (52 miles). Alternative C would also have fewer open roads than Alternative B (9.8 miles) and Alternative D (22 miles). Alternative C would decrease harassment to wildlife during all seasons of use compared to all other alternatives. This alternative would also improve habitat and reduce fragmentation more than all other alternatives.

Under Alternative C, the actual road density in elk winter range in the Helena TPA on BLM lands would be 0.7 mi/mi<sup>2</sup>, below the maximum of 1 mi/mi<sup>2</sup> recommended by FWP in big game winter range. This is lower than the road density under Alternative A (1.9 mi/mi<sup>2</sup>), lower than Alternative B (1.0 mi/mi<sup>2</sup>) and lower than Alternative D (0.9 mi/mi<sup>2</sup>) (**Table 4-52**). Christensen et al. (1993) found that reducing open road miles to 0.7 mi/mi<sup>2</sup> would increase the amount of effective habitat available to elk to roughly 65 percent.

Under Alternative C, this TPA would have more acres of functional winter range (1,270 acres) compared to Alternative A (461 acres), slightly more than Alternative B (1,152 acres) and nearly the same as Alternative D (1,267 acres) (**Table 4-52**). All action alternatives would improve the quality and quantity of winter range in the Helena TPA to a similar degree and all action alternatives would have more beneficial effects on winter range compared to Alternative A.

Under Alternative C, snowmobile use throughout the entire Helena TPA would be limited to open routes (2.8 miles). This would greatly reduce the negative effects associated with snowmobile use to big game and other wildlife species compared to all other alternatives.

The amount of big game security habitat under Alternative C would be low (404 acres), but would still be greater than under any other alternative (**Table 4-53**).

Alternative C would protect and restore more riparian habitat than Alternative A by reducing the miles of open roads in riparian areas to 3.4 miles (from 10.9 under

Alternative A). Alternative C would also have fewer open roads in riparian areas than Alternative B (4.2 miles) and Alternative D (4.9). Alternative C would allow for more breeding, foraging, and hiding habitat as well as improve more movement corridors for a wide variety of species more than all other alternatives.

### Effects of Alternative D

Under Alternative D, the Helena TPA would have considerably fewer open roads (22 miles) compared to Alternative A (52 miles). Alternative D, however, would have considerably more open roads than Alternative B (9.8 miles) and, especially, Alternative C (7 miles). Alternative D would allow considerably more harassment to wildlife during all seasons of use than Alternatives B and C but less than Alternative A. This alternative would also restore fewer acres of habitat and allow more fragmentation than Alternatives B and C but substantially less than Alternative A.

Under Alternative D, the actual road density in elk winter range in the Helena TPA would be below the maximum of 1 mi/mi<sup>2</sup> recommended by FWP in big game winter range at 0.9 mi/mi<sup>2</sup>. This is lower than the road density under Alternative A (1.9 mi/mi<sup>2</sup>), lower than Alternative B (1.0 mi/mi<sup>2</sup>) and higher than Alternative C (0.7 mi/mi<sup>2</sup>) (**Table 4-52**).

Under Alternative D, this TPA would have more acres of functional winter range (1,267 acres) compared to Alternative A (461 acres), slightly more than Alternative B (1,152 acres) and nearly the same as Alternative C (1,270 acres) (**Table 4-52**).

Like Alternatives A and B, the entire Helena TPA would be open for cross country snowmobile use with Alternative D. The effects would be the same as described under Alternative A.

There would be no functional big game security habitat under Alternatives D and A. Although low, there would be 257 acres of security habitat under Alternative B and 404 acres under Alternative C (**Table 4-53**).

Alternative D would protect and restore more riparian habitat than Alternative A by reducing the miles of open roads in riparian areas to 4.9 miles (from 10.9 under Alternative A). Alternative D would have more open roads in riparian area than Alternative B (4.2 miles) and Alternative C (3.4 miles). Alternative D would allow for more breeding, foraging and hiding habitat as well as improve more movement corridors for a wide variety of species than Alternative A but less than Alternatives B and C.

### Cumulative Effects on Wildlife

Wildlife habitat in the Helena TPA has been affected by roads, historic and current mining, timber harvest, weed infestations, urbanization and development, recreation, powerline corridor development and communication sites.

Like much of the West, the Helena Valley has been experiencing steady population growth. This trend is expected to continue, along with increased recreational use of this travel planning area. The majority of BLM managed routes for the Helena TPA are located in or adjacent to the Scratchgravel Hills and Birdseye area. The Scratchgravel Hills is an island of undeveloped hills surrounded by residential development. Residential development has tripled from 300 residential homes in 1984 to over 1,000 homes today. Additional development is ongoing.

Land that was traditionally used for ranching, forest products, or mining is now being converted to home sites in the Helena Valley. Although these lands had historic human uses, they also provided quality wildlife habitat. These areas historically provided a diversity of habitats that contributed to; big game winter range, travel corridors, habitat for resident and migrating wildlife, as well as foraging, breeding and hiding habitat. Many of the areas currently experiencing residential development are in big game winter range. Because of the loss of winter range on private lands, it is critical that public and state lands maintain quality and secure winter range or improve the habitat in these areas.

For many plant and animal communities, native species richness decreases as housing density increases. Non-native species, however, tend to increase with development (Hansen et al. 2005). Wildlife populations, including carnivores, may be reduced even at very low levels of residential development due to; loss of habitat, an increase in human access (from roads) in areas that previously had low levels of disturbance, and an increase in hunting pressure. Residential development can also lead to an increase in noxious weed infestations that can reduce the quality and quantity of wildlife habitat.

Pets can also have a negative impact to native wildlife. Cats hunt and kill bird and small mammals. Dogs that are allowed to roam can chase, injure, or kill wildlife. This can result in areas becoming unavailable to wildlife.

Approximately 8,000 acres within the TPA is also managed by the National Guard for military maneuvers and training. Some helicopter-based training also occurs there.

Recreation use is well established in the TPA. Primary recreation activities include motorized OHV uses (ATV, motorcycle) and non-motorized uses (hiking, jogging, horseback riding, mountain biking, etc.).

The Scratchgravel Hills contains precious and base metals in both hard rock and placer deposits. Over the years there have been a large number of patented and unpatented mining claims distributed throughout the area. Currently, only a few claims are maintained but increases in mineral prices could lead to increased or renewed mining activity.

In the TPA, there are eight powerlines and six pipelines. There are no existing communication sites in the TPA and, in the future, communication sites on BLM lands will be restricted to existing sites. No future communication sites are expected on BLM lands in the TPA but could occur on private or other public lands. There is the potential for future powerlines and pipelines to be built in this TPA.

There are approximately 26 rights-of-way (ROW) in the TPA and applications for ROW permits to access private property or for commercial development are likely to increase in the future. As a result, public access to BLM lands could increase. Fewer ROWs would be expected under Alternative A because all BLM roads would remain open under this alternative. Alternative B would be expected to have fewer ROWs than Alternative C but more than Alternatives A and D. Alternative C would be expected to have the most ROWs and, of the action alternatives, Alternative D would have the fewest.

From 1981-2004 there have been 14 wildland fires that burned 65 acres of BLM lands (it is unknown how many acres burned in the entire TPA). Eleven of the fires were identified as human-caused and these fires burned the majority of the BLM acres (54). There has been one fuels reduction treatment that consisted of grinding small to medium size understory trees on 150 acres in the Scratchgravel Hills. Timber harvest has occurred on approximately 133 acres of BLM lands in the TPA over the last 17 years. In the foreseeable future, approximately 1,500-2,000 acres of BLM lands will likely be treated in the Scratchgravel Hills to thin dense, overstocked stands of dry Douglas fir and ponderosa pine as well as remove conifer encroachment from meadows. This would improve habitat for dry forest species. Vegetative treatments on BLM lands have had minor effects to wildlife habitat in the TPA. However, timber harvest and development on private lands has substantially altered the landscape and caused a substantial decline in the quality and quantity of wildlife habitat in the TPA.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the TPA. Motorized activities play a large role in the distribution of noxious weeds. The cumulative effects of the spread of noxious weeds from open roads would be greater under Alternative A than all other alternatives. Alternative A would result in more wildlife habitat being lost or degraded due to noxious weed infestations compared to the action alternatives. Alternative B would have fewer open roads than Alternatives A and D resulting in fewer infestations of noxious weeds. Alternative C would close the most roads and would have the fewest cumulative effects from loss of habitat due to noxious weeds of all alternatives. Open roads and development adjacent to BLM lands and the substantial amount of public use this area receives would still allow for the spread of noxious weeds.

Fragmentation of BLM lands in the TPA (only 11 percent of the TPA is in BLM ownership); open roads on BLM (52 miles), private (about 581 miles), and other public lands (about 60 miles); as well as adjacent residential development has reduced the quality of wildlife habitat within the TPA. Roads and development within the TPA can cause disturbance to wildlife along with fragmentation and loss of habitat. Roads are associated with nearly every type of activity that has the potential to occur in the TPA including; vegetation treatments, timber salvage, mining, access to private lands (ROWs), fire suppression, powerline corridors and recreation. Open roads in the Planning Area would likely increase due to development and management of private lands. Alternative A would have the greatest negative cumulative effects to wildlife and wildlife habitat from open roads with 52 miles of open roads. Alternative B would have fewer negative cumulative effects with 9.8 miles of open road than Alternatives A and D (22 miles) but more than Alternative C (7 miles).

Of the action alternatives, Alternative C would have the most beneficial cumulative effects by reducing habitat fragmentation, restoring habitat, and reducing disturbance. Alternative B would be more beneficial than Alternatives A and D but less than Alternative C.

Historic and recent timber cutting (mostly on private lands), past mining activity and firewood gathering in the TPA has reduced the amount of suitable snag habitat for cavity nesting species and the area is snag deficient. Alternative A would allow a substantial amount of access to the area for firewood cutting. This could continue to prevent snag recruitment for snag dependant species and minimize the amount of down woody material. Alternative B would protect more snag and down wood habitat from loss due to firewood cutting than Alternatives A and D but would protect less of this habitat type than Alternative C.

In the Helena TPA, open habitat of grasslands and shrublands along with high road densities in both the Decision and Planning Areas have prevented BLM lands from providing suitable security habitat for big game during the hunting seasons. Under Alternatives A and D, there would be no security habitat in the TPA in the Decision Area and there would be no security habitat in the future. Alternatives B and C would provide some security habitat for big game (257 and 404 acres, respectively). Security habitat would still be limited on private (unless closed to hunting) and other public lands.

There would be no differences in cumulative effects from travel planning with any alternative for core/subcore habitat or wildlife movement corridors in the Helena TPA. Fragmentation of habitat due to development, roads, and disturbance has caused the greatest impact on the amount and quality of core/subcore habitat and wildlife movement corridors. Only 11 percent of the TPA is considered core/subcore habitat and the majority of this is on Forest Service lands.

The cumulative effects of high road densities would continue to negatively affect wildlife species during the breeding season more under Alternative A than under the action alternatives. Alternatives B and C would have the most beneficial cumulative effects to wildlife during the breeding season compared to Alternative D and, especially, Alternative A.

## FISH

For the sake of this discussion, “open” roads include roads that are open with seasonal restrictions as well as roads that are open yearlong. Roads identified as “closed” within 300 feet of streams also include roads that would be “decommissioned” in these areas by alternative. Effects to water quality described in the Water Resources section would affect fish populations and fish habitat quality. Analyses described and tabulated in the Water Resources section are referred to in the context of effects to fish in the discussion below.

### Effects of Alternative A

Under Alternative A, the Helena TPA would have substantially more open roads (52 miles) compared to the action alternatives. Roads can have a wide range of effects on fish and fish habitat. These effects would include, but are not limited to, increased sedimentation from road construction and vehicle use, increased runoff, changes in surface water and drainage patterns from stream crossings, conduits for noxious weeds, loss of riparian vegetation, potential decreases in stream shading that could lead to water temperature increases, and changes in local fish populations when culverts are impassable and limit fish migration.

Watershed (or hydrologic) function can be used as an indicator of relative risk or impacts to fish habitat (Doppelt et al. 1993). Generally, watersheds with high road densities often have the largest negative effects on fish and aquatic resources. To determine the effects on watershed function, a moving windows analysis was conducted on BLM lands to look at the miles of roads that would be decommissioned and removed from the landscape for each alternative. During this analysis, it was assumed that even though closing roads would improve watershed function, closed roads would remain on the landscape and could still have negative impacts to water quality and prevent or impede the restoration of riparian vegetation. Under all alternatives, there would be 461 acres with low road density on BLM lands in the TPA (Table 4-49). Alternatives A and D would have nearly similar acres with moderate road density (1,446 and 1,484 acres, respectively), which would be less than Alternatives B (1,623 acres) and C (1,539 acres). All alternatives would have similar acres with high road density, ranging from 8,117 to 8,294 acres. This comparison shows relatively little difference between Alternative A and the action alternatives. Because the action alternatives close more roads, they would be expected to

have fewer negative effects to fish habitat than Alternative A.

For this discussion, road miles within 300 feet of fish bearing streams on BLM lands would be considered an indicator of direct effects to fish habitat and fish populations. Under all alternatives, there would be 0 miles of closed road and 1.7 miles of open road within 300 feet of fish bearing streams on BLM lands. All miles of open roads would be adjacent to streams (Greenhorn Creek and Skelly Gulch) with BLM special status species (westslope cutthroat trout). There is no difference between alternatives in terms of direct effects to fish habitat in the Helena TPA.

Perennial non-fish bearing streams contribute to fish habitat indirectly by serving as conduits of watershed products (water, sediment, nutrients, contaminants, and in some cases woody material) to fish bearing streams. Under Alternative A, there would be 0 miles of closed road and 5.3 miles of open road within 300 feet of perennial non-fish bearing streams on BLM lands in the TPA. Alternative A would have more miles of open road adjacent to perennial streams than Alternative B (1.2 miles) Alternative C (1.1 miles) and Alternative D (2.8 miles). Alternative A would have the greatest negative impacts to fish and aquatic resources from open roads.

### Effects of Alternative B

Under Alternative B, the Helena TPA would have substantially fewer open roads (9.8 miles) compared to Alternative A (52 miles). Alternative B would have more open roads than Alternative C (7 miles) but less than Alternative D (22 miles).

All alternatives would have the same acreage of BLM lands in the low road density category, and relatively similar acreages of land in moderate and high road density categories (Table 4-49). However, Alternative B would provide the greatest acreage in the moderate road density category, and the lowest acreage in the high road density category of all alternatives. Alternative B would also improve watershed function and slightly lessen impacts to fish compared to Alternative A because the closed roads under Alternative B would make a slight contribution to improved watershed function.

Effects associated with roads within 300 feet of fish bearing streams (Greenhorn Creek and Skelly Gulch) on BLM lands under Alternative B would be the same as under Alternative A.

Alternative B would contribute fewer indirect effects to fish habitat associated with roads within 300 feet of perennial non-fish bearing streams on BLM lands than Alternative A. Under Alternative B there would be 4.1 miles of closed road and 1.2 miles of open road within 300 feet of perennial non-fish bearing streams on BLM lands in the TPA. Under Alternative A there would be no closed roads and 5.3 miles of open road in these riparian areas.

Overall, Alternative B would have fewer negative effects to fish and aquatic habitats from increased fine sediment inputs, loss of large woody material and loss of riparian vegetation than Alternative A.

### Effects of Alternative C

Under Alternative C, the Helena TPA would have substantially fewer open roads (7.0 miles) compared to Alternative A (52 miles). Alternative C would also have fewer open roads than Alternative B (9.8 miles) and Alternative D (22 miles).

All alternatives would have the same acreage of BLM lands in the low road density category, and relatively similar acreages of land in moderate and high road density categories (Table 4-49). However, Alternative C would improve watershed function and slightly lessen impacts to fish compared to Alternatives A and D because the mileage of closed roads under Alternative C (compared to any other alternative) would contribute to improved watershed function.

Effects associated with roads within 300 feet of fish bearing streams (Greenhorn Creek and Skelly Gulch) on BLM lands under Alternative C would be the same as under Alternatives A and B.

Indirect effects associated with roads within 300 feet of perennial non-fish bearing streams on BLM lands under Alternative C would be the same as described under Alternative B.

Alternatives C and B would have similar benefits to fish habitat and would have fewer negative effects to fish and aquatic habitats from increased fine sediment, loss of large woody material and loss of riparian vegetation compared to Alternative A.

### Effects of Alternative D

Under Alternative D, the Helena TPA would have fewer open roads (22 miles) compared to Alternative A (52 miles). Alternative D, however, would have more open roads than Alternative B (9.8 miles) and Alternative C (7 miles).

All alternatives would have the same acreage of BLM lands in the low road density category, and relatively similar acreages of land in moderate and high road density categories (Table 4-49). However, Alternative D would have the greatest acreage of BLM lands in the high road density category and the lowest acreage in the moderate road density category of the action alternatives. Still, Alternative D would contribute to improved watershed function and slightly lessen impacts to fish compared to Alternative A because approximately 30 miles of road would be closed or decommissioned in this alternative compared to all roads being open under Alternative A.

Effects associated with roads within 300 feet of fish bearing streams (Greenhorn Creek and Skelly Gulch) on

BLM lands under Alternative D would be the same as under all other alternatives.

Alternative D would contribute fewer indirect effects to fish habitat associated with roads within 300 feet of perennial non-fish bearing streams on BLM lands than Alternative A. Under Alternative D there would be 2.5 miles of closed road and 2.8 miles of open road within 300 feet of perennial non-fish bearing streams on BLM lands in the TPA. While it would be an improvement over the current condition, Alternative D would contribute more indirect effects to fish habitat from these streams than either Alternative B or Alternative C.

Alternative D would have more adverse effects to fish and aquatic habitats from increased fine sediment, loss of large woody material and loss of riparian vegetation than Alternatives B and C but less than Alternative A.

### Cumulative Effects on Fish

The Helena TPA supports a variety of native and introduced fish species. One of the major human influences to fish in the TPA has been the introduction of non-native trout species including rainbow trout, brook trout, and brown trout throughout the TPA. Rainbow trout have hybridized with the native westslope cutthroat trout in many streams. Brook trout and brown trout have displaced the native cutthroats in other streams; especially those altered by sedimentation and increased water temperatures brought on by human activities.

Like much of the West, the Helena Valley has been experiencing steady human population growth. This trend is expected to continue, along with increased recreational use of this travel planning area. The majority of BLM managed routes for the Helena TPA are located in or adjacent to the Scratchgravel Hills and Birdseye area. Scratchgravel Hills is an island of undeveloped hills surrounded by residential development. Residential development has tripled from 300 residential homes in 1984 to over 1,000 homes today. Additional development is ongoing. There are no perennial streams in the Scratchgravel Hills portion of the TPA that could be affected by this development. However, development and urbanization have had substantial impacts to watershed function in this TPA.

Agricultural activities from farming and ranching also contribute increases in nutrients, sedimentation, and loss of aquatic habitats. Many streams in the TPA have been impacted by historic and on-going livestock grazing that breaks down streambanks, widens channels, removes vegetative cover, and causes an increase in fine sediment and nutrients.

The Scratchgravel Hills contains precious and base metals in both hard rock and placer deposits. Over the years there have been a large number of patented and unpatented mining claims distributed throughout the area. Although some streams in the TPA may have been impacted by historic mining activities, it is expected that

the amount of aquatic habitat impacted has been minimal due to the lack of streams in this portion of the TPA.

Fires, floods, and drought have historically affected fish habitat in the TPA. These disturbances can cause a pulse of sediment or may temporarily reduce the quality of fish habitat in some watersheds while leaving other streams largely unaffected. Natural disturbances are typically followed by periods of stability, during which fish habitats and populations recover. Population recovery in disturbed streams may be facilitated by fish immigration from nearby drainages less affected by the catastrophic event. From 1981-2004 there have been 14 wildland fires that burned 65 acres. Eleven of the fires were identified as human-caused and these fires burned the majority of the acres (54). There has been one fuels reduction treatment that consisted of grinding small to medium size understory trees on 150 acres in the Scratchgravel Hills. This project had no effects to aquatic habitats.

Timber harvest can alter the recruitment of large woody debris, reduce canopy closures, and result in an increase in fine sediment to streams. Timber harvest along with associated roads can contribute substantially to the overall cumulative effects in forested watersheds. Timber harvest has occurred on approximately 133 acres of BLM lands in the TPA over the last 17 years. In the foreseeable future, approximately 1,500-2,000 acres will be treated in the Scratchgravel Hills to thin dense, overstocked stands of dry Douglas fir and ponderosa pine as well as remove conifer encroachment from meadows. This would have no impacts to aquatic habitats or species. Vegetative treatments on BLM lands have had minor effects to aquatic habitats in the TPA. However, timber harvest and development on private lands have substantially altered the landscape and may have caused a decline in the quality and quantity of aquatic habitat in the TPA.

Roads are another major contributor of sediment to streams and a major problem with regards to cumulative watershed effects. Roads and trails can have localized effects on nearby stream segments or at stream crossing sites, especially fords. In some cases, effects are more extensive and may impair fish habitat for longer reaches of streams. Cumulatively, roads degrade aquatic habitat due to sedimentation from road construction and vehicle use, increased runoff, changes in surface water and drainage patterns from stream crossings, loss of riparian vegetation, loss of large woody material, and alteration of stream channels and floodplains. Roads can cause changes in local fish populations when culverts are impassable and limit fish migration. Alternative A would have more negative cumulative effects to watersheds and individual streams due to roads than the action alternatives. Alternative B would have fewer negative cumulative effects than Alternatives A and D but more than Alternative C. Alternative B would improve overall watershed functions as well as improve habitat in individual streams more than Alternatives A and D but less than

C. Alternative C would have the greatest beneficial effects to fish habitat of all alternatives.

## SPECIAL STATUS PLANTS

### Effects Common to All Alternatives

Ground-disturbing activities from road construction and maintenance, as well as road use by vehicles can affect special status plant populations and habitat. These activities can reduce sensitive plant species through disturbance to individual populations, increasing competition from invasive species, and reducing habitat connectivity. Closure of roads and trails can improve or maintain sensitive plant populations or habitat by reducing avenues of noxious weed spread, maintaining habitat connectivity, and improving pollinator habitat. Road and trail restrictions have the same effects but to a lesser degree.

### Effects of the Alternatives

Under Alternative A, 52.2 miles of roads and trails would remain open. The effects would continue as described in the Effects Common to All Alternatives section.

Under Alternative B, 9.8 miles of roads and trails would remain open, 36 miles of roads and trails would be closed, and 6.5 miles would be decommissioned. On the closed routes, vectors of noxious weed spread would be reduced and habitat connectivity and health would be improved for sensitive plants and their pollinators. The seasonally restricted roads would reduce weed spread a limited amount. Alternative B would reduce risk to and benefit special status plants compared to Alternative A.

Under Alternative C, 7 miles of roads and trails would remain open, 40.7 miles of roads and trails would be closed, and 4.6 miles would be decommissioned. As with Alternative B, on the closed routes, vectors of noxious weed spread would be reduced and habitat connectivity and health would be improved for sensitive plants and their pollinators. The restricted roads would reduce weed spread a limited amount. Alternative C would benefit and reduce the most risk to special status plants the most of all alternatives because it would eliminate disturbance, vehicular use, and spread of noxious weeds on the most road miles.

Under Alternative D, 21.9 miles of roads and trails would remain open, 27.7 miles of roads and trails would be closed, and 3.1 miles would be decommissioned. On the open roads, effects would continue as described in the Effects Common to All Alternatives section. On the closed routes, vectors of noxious weed spread would be reduced and habitat connectivity and health would be improved for special status plants and their pollinators. The restricted roads would reduce weed spread a limited amount. Alternative D would benefit and reduce risk to special status plants compared to Alternative A, but would pose more risk compared to Alternatives B and C.

## Cumulative Effects on Special Status Plants

Under all alternatives there are a number of past, present, and reasonably foreseeable future actions that affect special status plant populations.

Livestock grazing will continue in the area and has the potential to impact sensitive plant populations and habitat. On public lands, ongoing rangeland health assessments and implementation of livestock grazing guidelines would continue to improve or maintain sensitive species populations and habitat. On private lands, livestock grazing is expected to decline slowly as more ranch and farmland is subdivided. Conditions may improve or degrade as management changes.

Noxious weed control will continue on both public and private lands with varying degrees of success. To the extent that these efforts are successful, sensitive plants would benefit from the reduced competition. Use of herbicides for noxious weed control could cause mortality to special status plants if individual plants are inadvertently sprayed.

Recent and anticipated subdivision growth on private lands will lead to more road construction and maintenance. More roads and development will reduce sensitive plant species habitat and in some cases individual populations. Additionally, subdivisions have the potential to disrupt the connectivity of plant habitat and populations as well as disturbing or eliminating pollinators needed by sensitive species. Some sensitive species that require soil disturbance may benefit.

Timber sale activity disturbance can destroy or degrade sensitive plant habitat. On public lands, projects would be designed to avoid, mitigate, or enhance sensitive plant habitats. The disturbance associated with timber harvest activities does have the potential to increase noxious weed spread which degrades sensitive species habitat and individual plant populations.

The fuels reduction project scheduled for the Scratch-gravel Hills is not anticipated to have any adverse effects on special status plants. Treatments would be designed to minimize surface disturbance in sensitive plant habitat. Additionally, treatment would improve habitat in some areas by opening up parks and edges where trees have expanded into grassland soils and trees have thickened to the point of closing canopies.

At the scale of the entire Helena TPA (all land ownerships), the BLM travel plan alternatives would have slightly variable contributions to cumulative effects on special status plants. Under Alternative B adverse effects on special status plants would be slightly reduced compared to Alternative A because 5.6 percent of all roads in the TPA would be closed or decommissioned. Alternative C would provide the most benefits of all alternatives as 6.5 percent of all roads in the TPA would be closed or decommissioned. Alternative D would provide slightly

more benefits than Alternative A but slightly fewer benefits than either Alternatives B or C as 4.4 percent of all roads in the TPA would be closed or decommissioned. Because BLM lands make up only 11 percent of all lands in the TPA, activities on non-BLM lands would play a greater role in determining the status of special status plants.

## WILDLAND FIRE MANAGEMENT

Travel planning alternatives were analyzed to determine whether they could result in impacts on wildland fire management, causing change to any of the following indicators:

- Fire regime condition class (FRCC)
- Firefighter and public safety
- Reducing threat to Wildland Urban Interface (WUI)

### Effects Common to All Alternatives

Public road access during the fire season provides opportunities for human-caused fires either due to catalytic converters on vehicles igniting dry vegetation, or due to some types of human activities. Roads that are closed to public access reduce the risk of human-caused fire starts in those areas.

Decommissioned roads and roads that are closed and not regularly maintained for navigability reduce access for fire suppression. Closed roads may become impassible due to vegetation regrowth, downfall of trees, or severe erosion. Some roads may be closed with earthen berms or fallen trees and would need to be physically manipulated to make them useable for vehicles again. These roads would extend firefighting response time and have negative impacts on efforts to reduce wildland fire threat to WUI areas and firefighter and public safety. In an emergency fire suppression situation, any navigable closed roads needed for fire suppression would be used immediately. Non-navigable closed roads could also be used if deemed to be needed for fire suppression, after needed improvements are made to make those roads useable. Planning and implementation of fuels reduction treatments could occur in association with closed roads if variances for temporary road use were to be allowed. Variances would be subject to internal BLM review.

In the context of fuels reduction projects, availability of open roads is important to facilitating fuels project location as well as increasing project feasibility and decreasing costs. Open roads also facilitate spread of noxious weeds by transporting weed seed on vehicles and their tires. Presence of large noxious weed populations could delay or cause fuels projects to be cost-prohibitive due to the fact that the weeds may have to be treated before and/or after the fuels treatment. Also, some applications of fuel treatments (e.g., prescribed fire) may promote the spread of some weeds. The presence of weeds and non-

native species are indicators that FRCC has departed from historical conditions.

Noxious weeds and non-native invasive species are well established and spreading in the Helena TPA.

### Effects of Alternative A

Under Alternative A all existing routes in the Helena TPA would continue to be open yearlong (52.2 miles) to wheeled motorized users. Alternative A would allow for the greatest flexibility between alternatives for access for suppression purposes. Fuels project feasibility would be highest under this alternative. However, public access during the fire season would be the greatest under this alternative and would provide the most opportunities for human-caused fire starts.

The distribution of noxious weeds could be the greatest under Alternative A with the most open roads and noxious weeds already well established. This would contribute to reduced feasibility of fuels projects more than under any other alternative.

### Effects of Alternative B

Under Alternative B, wheeled motorized travel (9.8 miles) would be restricted to the following four areas in the Scratchgravel Hills: routes leading to five non-motorized trailheads; a short out-and-back route off of Norris Road; a loop route between Head Lane and Echo Lane; and all existing public access rights-of-way. Roads in these four areas would be open yearlong.

Alternative B would limit the flexibility for access for suppression purposes, and fuels project feasibility would go down compared to Alternative A due to the fact that access would be limited to 9.8 miles of road. Of the 42.5 of closed and decommissioned roads, 6.5 miles would be decommissioned. The risk of human-caused fires associated with motorized use would be limited compared to Alternative A, due to an 81 percent decrease in miles of road open to motorized public travel.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the area. Because more roads would be closed under this alternative, Alternative B should help reduce the spread of noxious weeds and may make fuels treatments more feasible than under Alternative A, reducing FRCC departure.

### Effects of Alternative C

Alternative C would restrict wheeled motorized travel to five non-motorized trailheads in the Scratchgravel Hills. This alternative provides the least number of wheeled motorized routes in the Helena TPA (7.0 miles) but provides an extensive network of routes for non-motorized enthusiasts.

Alternative C would limit the flexibility for access for suppression purposes, and fuels project feasibility would go down due to the fact that access would be limited to 7

miles of road. Of the 45.2 miles of closed roads, 4.6 miles would be decommissioned. The risk of human-caused fires associated with motorized use would be reduced more than under either Alternatives A or B, due to an 87 percent decrease in miles of open road compared to Alternative A. However, this may promote more non-motorized users to a concentrated area, increasing the odds for a human-caused fire to occur by another ignition source.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the area. Because more roads would be closed than under any other alternative, Alternative C should help reduce the spread of noxious weeds and may make fuels treatment more feasible than any other alternative, reducing FRCC departure.

### Effects of Alternative D

Under Alternative D, 21.9 miles of open routes would be available yearlong for wheeled motorized use and 3.1 miles of the 30.8 of closed roads would be decommissioned. Alternative D would be more flexible than alternatives B and C, but again it would limit flexibility for access for suppression purposes and fuels project feasibility would go down compared to Alternative A. The risk of human-caused fires associated with motorized use would be reduced compared to Alternative A but would be greater than under Alternatives B and C, due to a 58 percent decrease in miles of open road compared to Alternative A.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the area. Because an intermediate number of road miles would be closed under this alternative, Alternative D should help reduce the spread of noxious weeds and may make fuels treatments more feasible than under Alternative A, but would increase weed spread and potentially make projects less feasible than Alternatives B or C.

### Cumulative Effects on Wildland Fire Management

Effects on wildland fire management associated with any of the BLM travel plan alternatives would be overshadowed by reasonably foreseeable uncharacteristic fire, continued fire suppression made necessary by WUI and intermingled landownership, and large-scale insect infestations and disease outbreaks that would continue to increase fuel loading for the planning period.

Revision of the Helena National Forest Plan could result in more or less treatment of adjacent areas. Because no decision has been made, the effects are not known. Wildland fire management on USFS lands will be determined in the plan decision, particularly areas where wildland fire use (management of naturally ignited wildland fires to achieve resource objectives) may occur. BLM would need to coordinate with USFS on all wild-

land fire use actions and events. Wildland fire use on USFS lands could affect FRCC on BLM lands. USFS lands make up 25 percent of all lands in the TPA so activities there would likely have more influence on future fire characteristics than activities on BLM lands (10.6 percent of all lands in TPA).

Additionally, decisions to increase the level of wildland fire use, prescribed fire, or open burning by public could impact the BLM's ability to use wildland fire and prescribed fire due to air quality concerns and requirements. This could postpone or eliminate BLM fuel reductions or treatments to improve FRCC.

Access is a critical component of wildland fire suppression. In some cases, access to public lands is being reduced by adjacent landowners gating or closing roads, which could hamper wildland fire suppression efforts and pose a risk to public and firefighter safety. Reducing access would also increase the potential for larger fires to occur due to an increase in time needed to access a fire and control it. Time needed to move in crews would be extended, and the ability to effectively apply and place resources (e.g., engines, water tenders, etc.) would be limited.

Effects on wildland fire management, including FRCC and firefighter and public safety due to management accomplished by other landowners may affect wildland fire management on public lands. When activity fuels (i.e. slash from logging) are not treated adequately, fuel hazard could increase on adjacent lands which could affect fire intensity and severity on public lands. When adjacent landowners treat fuels or implement fire mitigation plans in the WUI, fires are easier to suppress and firefighter safety is increased. In this TPA, activities on private lands (59 percent of all lands in TPA) would have more influence on future fire characteristics in the area overall than activities on BLM lands (10.6 percent of all lands in TPA). Human population increases and subsequent development are likely to expand the WUI and could alter forest management, taking the emphasis off restoring historic composition and structure and focusing more on fuels reduction.

## CULTURAL AND PALEONTOLOGICAL RESOURCES

### Effects Common to All Alternatives

Alternative-specific risks or impacts to cultural and paleontological resources are difficult to discern due to a lack of extensive site-specific knowledge about the presence of these resources in a given TPA. By designating open routes, limiting open-country travel, and closing some routes, inadvertent discovery of cultural and paleontological resources and vandalism to them is reduced. Higher road densities in a given area would allow greater access to more land on the average, but that does not imply greater amounts of vandalism, since the vehicles would remain on designated routes.

## VISUAL RESOURCES

### Effects Common to All Alternatives

Roads (temporary or permanent) may affect visual quality. Roads that remain open for public use may impact visual qualities where noticeable. The quantity of open roads would also influence sensitivity levels since with more open roads, more areas would generally be viewed by more members of the public. Closing or decommissioning roads would generally reduce effects to visual resources and reduce sensitivity levels because fewer members of the public would generally be accessing and viewing areas with closed roads.

### Effects of the Alternatives

Under Alternative A, all 52.2 miles of BLM road would remain open, thereby providing for the greatest level of impact to visual resources of all alternatives.

Under Alternative B there would be 9 miles of open road, 36 miles of closed road, and 6.5 miles of decommissioned road. Road closures and decommissioning under this alternative would reduce effects on visual resources compared to Alternative A. Under Alternative C there would be 7 miles of open road, 40.7 miles of closed road, and 4.6 miles of decommissioned road. Alternative C would have fewer adverse effects and would improve visual resources the most of all alternatives.

Under Alternative D, there would be 21.9 miles of open road, 27.7 miles of closed road, and 3.1 miles of decommissioned road. Alternative D would improve visual resources compared to Alternative A, but would have more adverse effects than Alternatives B and C.

### Cumulative Effects on Visual Resources

Under all alternatives, most activities on BLM lands would generally not adversely affect visual resources to unacceptable degrees because discretionary activities on BLM lands would be required to meet Visual Resource Management objectives within individual project areas. The Scratchgravel Hills fuels reduction project currently being planned would be designed to meet VRM objectives.

Activities on non-BLM lands, particularly activities near BLM lands associated with residential development, urbanization, or vegetation management, could have adverse cumulative effects on visual resources on BLM lands because BLM VRM objectives would obviously not apply to non-BLM activities.

## LIVESTOCK GRAZING

### Effects Common to All Alternatives

Roads and trails can potentially affect livestock grazing management. Roads and trails often act as avenues of noxious weed spread. Noxious and invasive weeds can reduce the quantity and quality of forage available for

livestock. Users of roads and trails can cause management problems for livestock permittees when they leave gates open at fences, vandalize range improvements, or harass livestock either purposely or unintentionally.

Closure of roads and trails can improve or maintain the forage base by reducing vectors of noxious weed spread. Additionally, road and trail closures can reduce management conflicts. On the other hand, closures may increase permittees' time requirements if and when work has to be conducted with horses or afoot. Permittees could minimize effects of closed roads on grazing management by seeking variances from the BLM for temporary use of specific closed roads.

### Effects of the Alternatives

Under Alternative A, 52.2 miles of roads and trails would remain open. Effects associated with these roads would be as described above. All action alternatives would close or decommission more roads and trails than Alternative A. As more roads and trails are closed, noxious and invasive weed spread along with multiple user conflicts would be reduced. On the other hand, permittee management time may increase. Consequently, more effects as described under the Effects Common to All Alternatives section would occur under Alternative C (7 miles open, 45.3 miles closed or decommissioned) than under any other alternative. Alternative B (9.8 miles open, 42.5 miles closed or decommissioned) would produce fewer effects than Alternative than C, but more than Alternative A or Alternative D (21.9 miles open, 30.8 miles closed or decommissioned). Alternative D would have fewer effects than Alternatives B or C, but more than Alternative A.

### Cumulative Effects on Livestock Grazing

A number of past, present, and reasonably foreseeable future actions affect livestock grazing at the scale of the entire Helena TPA. Livestock grazing will continue in the area and has the potential to impact forage quality and quantity. On public lands, ongoing rangeland health assessments and implementation of livestock grazing guidelines would continue to improve or maintain forage quality and quantity. On private lands, livestock grazing is expected to decline slowly as more ranch and farmland is subdivided.

Noxious weed control will continue on both public and private lands with varying degrees of success. To the extent that these efforts are successful, forage conditions would benefit.

The fuels reduction project scheduled for the Scratchgravel Hills is not anticipated to have any adverse effects on livestock grazing.

Because BLM lands make up only 11 percent of all lands in the Helena TPA, all of the BLM travel plan alternatives would have a minimal contribution to cumula-

tive effects on livestock grazing at the scale of all lands in the Helena TPA.

## MINERALS

### Effects Common to All Alternatives

Road closures and decommissioning could affect access to locatable minerals in areas of moderate or high mineral potential. Operators would be required to seek travel variances from the BLM to use motor vehicles to conduct mineral exploration on closed roads, or to conduct exploration on seasonally restricted routes during the season of closure. Decommissioned roads could not be used for motorized exploration. Travel management

provisions that require a permit or variance could result in reducing access to mining claims or interfere with the ability to conduct exploration work for some operators. Historic knowledge of mineralized areas associated with “closed” roads may be lost after long periods of time if no exploration occurs there. Additional costs and time could be required for exploration and development of mining projects associated with closed or decommissioned roads. Impacts of road closures or decommissioning in areas with low mineral potential would not be substantial to mineral development.

### Effects of the Alternatives

Effects of the alternatives for the Helena TPA on access to mineralized areas are summarized in **Table 4-54**. Alternative A for the Helena TPA would not impact any mineralized areas as all roads would be left open.

Alternative B for the Helena TPA would close 56 percent and would decommission 12 percent of roads in high mineral potential areas. An additional 2 percent of the roads in moderate mineral potential areas would be closed under this alternative (**Table 4-54**). Alternative B would have more impacts than Alternative A.

Alternative C of the Helena TPA would close 72 percent and decommission 9 percent of the roads in areas with high mineral potential. Two percent of the roads in areas with moderate mineral potential would be closed under this alternative for this area (**Table 4-54**). Alternative C would have the most potential to affect access to mineralized areas of all the alternatives.

Alternative D of the Helena TPA would close 49 percent and decommission 6 percent of the roads in areas with high mineral potential. Two percent of the roads in areas with moderate mineral potential would be closed in this alternative in this TPA (**Table 4-54**). Alternative D would have more impacts than Alternative A, but less than Alternatives B and C.

### Cumulative Effects on Access to Mineralized Areas

No other past, present, or reasonably foreseeable future actions in the Helena TPA would adversely affect mineral availability or access.

## RECREATION

Effects of travel plan alternatives on Recreation in the Helena TPA are described qualitatively below.

### Effects of Alternative A

Under Alternative A, all existing routes in the Helena TPA would continue to be open yearlong (52.2 miles) to wheeled motorized users. Cross-country snowmobile travel would continue to be allowed as well as travel on all routes. Alternative A provides the greatest opportunities for motorized users, and the least for non-motorized users (mountain bikers, hikers, cross-country skiers,

<b>Mineral Potential</b>	<b>Open Miles (%)</b>	<b>Seasonally Restricted Miles (%)</b>	<b>Closed Miles (%)</b>	<b>Decom Miles (%)</b>
<b>Alternative A</b>				
High	48.4 (93%)	0.0 (0%)	0.0 (0%)	0.0 (0%)
Moderate	1.0 (2%)	0.0 (0%)	0.0 (0%)	0.0 (0%)
Low	2.8 (5%)	0.0 (0%)	0.0 (0%)	0.0 (0%)
Total Miles = 52.2				
<b>Alternative B</b>				
High	12.9 (25%)	0.0 (0%)	29.1 (56%)	6.5 (12%)
Moderate	0.0 (0%)	0.0 (0%)	1.0 (2%)	0.0 (0%)
Low to none	0.7 (1%)	0.0 (0%)	2.0 (4%)	0.0 (0%)
Total Miles = 52.2				
<b>Alternative C</b>				
High	6.2 (12%)	0.0 (0%)	37.6 (72%)	4.6 (9%)
Moderate	0.0 (0%)	0.0 (0%)	1.0 (2%)	0.0 (0%)
Low to none	0.7 (1%)	0.0 (0%)	2.0 (4%)	0.0 (0%)
Total Miles = 52.2				
<b>Alternative D</b>				
High	20.0 (38%)	0.0 (0%)	25.9 (49%)	3.1 (6%)
Moderate	0.0 (0%)	0.0 (0%)	1.0 (2%)	0.0 (0%)
Low to none	1.9 (4%)	0.0 (0%)	0.8 (1%)	0.0 (0%)
Total Miles = 52.7 (Includes Proposed New Construction)				

Mineral Potential areas have been delineated by the Montana Bureau of Mines and Geology (MBMG)

snowshoers, etc.) of all alternatives. Conflicts between motorized and non-motorized users would be expected to increase under this alternative.

### Effects of Alternative B

Under Alternative B, wheeled motorized travel (9.8 miles) would be restricted to four areas in the Scratchgravel Hills: routes leading to five non-motorized trailheads; a short out-and-back route off of Norris Road; and all existing public access rights-of-ways. Roads in these three areas would be open yearlong. Cross-country snowmobile use would be allowed, as well as snowmobile travel on all existing routes during the season of use (12/2-5/15), conditions permitting. Conflicts between non-motorized users (cross-country skiers, snowshoers) and snowmobilers would be expected to continue or increase as a result.

The effects of closing the Scratchgravel Hills interior area to motorized vehicle uses yearlong would reduce use violations, risks of human caused fires, conflicts with proximity residents and law enforcement incidents.

### Effects of Alternative C

Alternative C would restrict wheeled motorized travel to five non-motorized trailheads in the Scratchgravel Hills. This alternative would provide the least number of wheeled motorized routes in the Helena TPA (7.0 miles), but would provide an extensive network of routes for non-motorized enthusiasts. Under Alternative C, no snowmobile use would be allowed, including the trailhead access routes.

Although closing the entire Scratchgravel Hills area to both motorized and non-motorized recreational uses after dark (dusk to dawn) yearlong would best protect the area from violations. Management and law enforcement demands would increase compared to Alternatives A, B, and D. Impacts on legitimate public users would be negligible as their use of the area after dark is minimal.

### Effects of Alternative D

Under alternative D, 21.9 miles of open routes would be available yearlong for wheeled motorized use. Alternative D would provide the greatest opportunities for motorized users, and the least for non-motorized users. Cross-country snowmobile use would be allowed, as well as travel on all existing routes during the season of use (12/2-5/15), snow conditions permitting. Under Alternative D, conflicts between non-motorized users (cross-country skiers, snowshoers) and snowmobilers would be expected to continue or increase as a result.

### Cumulative Effects on Recreation

Cumulative effects of travel plan alternatives are discussed below in the context of effects of past, present, and reasonably foreseeable future activities in the Helena TPA.

Under Alternative A, current travel management of the Scratchgravel Hills coupled with increased projections in area use and residential developments nearby would increase the potential for greater conflicts between motorized and non-motorized users. Projected fuel treatments, mining activity and inholding developments could adversely impact the natural setting and user experiences. Special Recreation Use Permits (SRP) events (folging, foot racing, horseback riding and mountain biking) would continue although social conflicts could increase. The three trailhead sites would continue to be maintained and user demands would continue to increase. Motorized users would be least impacted under this alternative.

Under Alternative B, closing all major motorized travel routes would greatly enhance non-motorized opportunities during the spring/summer and fall seasons and reduce user violations. Motorized opportunities would be greatly reduced and riders would be displaced to other areas. Increased demands on the area due to additional residential developments, rights-of-way permits, fuel treatments, and possible mining activities would present fewer social conflicts and management concerns given these additional restrictions. Unregulated snowmobile uses in the area could perpetuate future conflicts with non-motorized users and nearby residents during limited periods of favorable snow conditions. SRP events (folging, foot racing, horseback riding and mountain biking) would be enhanced and visitor uses at the established trailheads would be expected to increase moderately.

Under Alternative C, motorized travel management restrictions coupled with all other past, present and reasonably foreseeable actions described under Alternatives A and B would best enhance opportunities for non-motorized uses. Conflicts between motorized and non-motorized users would be minimized to the greatest extent while cumulative impacts on motorized users would be the highest. Other impacts would be similar to Alternative B.

Under Alternative D, travel management of the Scratchgravel Hills coupled with increased projections in area use and nearby residential developments would increase the potential for continued conflicts between motorized and non-motorized users. Projected fuel treatments, mining activity and inholding developments could adversely impact the natural setting and user experiences. SRP events (folging, foot racing, horseback riding and mountain biking) would continue although social conflicts could increase. The trailhead sites would continue to be maintained and user demands would continue to increase. Motorized users would be impacted less than under Alternatives B and C, but more than under Alternative A.

## TRAVEL MANAGEMENT AND ACCESS

### Effects of Alternative A

All existing routes in the Helena TPA would continue to be open yearlong (52.2 miles), providing a greater number of miles to wheeled motorized users than the action alternatives (**Table-4-55**). Cross-country snowmobile travel would continue to be allowed as well as travel on all routes, resulting in conflicts between non-motorized users (cross-country skiers, snowshoers) and snowmobilers. Non-motorized users would have a lower quality recreation experience due to the lack of separate use areas.

Proposed Management	Total Miles			
	Alt A	Alt B	Alt C	Alt D
<b>Wheeled Motorized Routes</b>				
Open Yearlong	52.2	9.8	7.0	21.9
Seasonally Restricted	-	-	-	-
Closed	-	36.0	40.7	27.7
Decommissioned	-	6.5	4.6	3.1
Non-motorized trails <sup>1</sup>	-	42.5	45.3	30.8

<sup>1</sup>Non-motorized trails include all existing trails, closed roads, and decommissioned roads.

Under Alternative A, BLM would continue to allow recreational activities, including motorized vehicle use, would continue 24 hours a day within the Scratchgravel Hills. This would allow more illegal activities to occur than under the action alternatives.

The extent of management activities and costs under Alternative A would be mixed. Less personnel time would be required to monitor travel compliance; however, more effort would be required for initial implementation (signing designated routes, installing bulletin boards).

The need for the BLM and members of the public to obtain travel variances for temporary specific uses of specific closed roads would be minimal under this alternative, given the availability of motorized access. Estimated costs for road/trail maintenance would be highest of all alternatives.

### Effects Common to Action Alternatives (B, C, and D)

All action alternatives call for a reduction of open routes in the Birdseye area.

User conflicts would be minimized in the Scratchgravel Hills by providing separate recreational opportunities for wheeled motorized and non-motorized users. This would provide for increased enjoyment for non-motorized recreationists and enhanced road and trail safety among all users of the area.

Illegal activities (underage alcohol use, drug use, vandalism, unauthorized travel, and dumping) in the Scratchgravel Hills would be reduced due to closure of at least 60 percent of the roads to motorized use.

Since the Scratchgravel Hills have historically been open to motorized use, a substantial effort would be required to educate the public on its change in use. BLM would need to enforce road closures through law enforcement actions until such a time when motorized users conform to the new restrictions. New signage would be required under all action alternatives; at designated trailheads, along roads and trails, and at other unauthorized access points originating from bordering private property.

### Effects of Alternative B

Motorized wheeled travel in the Scratchgravel Hills would be restricted to designated routes leading to five non-motorized trailheads, and all existing public access rights-of-way. These roads would be managed as Open Yearlong. Alternative B would allow motorized use on 9.8 miles, about 19 percent of the number of open road miles under Alternative A. Alternative B would have 42.5 miles of closed roads that could serve as non-motorized trails, compared to none under Alternative A.

Motorized (wheeled) and non-motorized users would have separate routes and conflicts would be substantially reduced compared to Alternative A.

Route closures across 81 percent of the area would reduce unauthorized travel (illegal off-road use by ATVs and motorcycles) and illegal activities (underage alcohol use, drug use, vandalism, dumping) in the Scratchgravel Hills and elsewhere. With the exception of a few routes needed for residential access, public access would be restricted to non-motorized trailheads.

Cross-country snowmobile use would be allowed, as well as snowmobile travel on all existing routes during the season of use (12/2-5/15), conditions permitting. Conflicts between non-motorized users (cross-country skiers, snowshoers) and snowmobilers would be expected to continue or increase as a result.

The reduction in motorized use in the Scratchgravel Hills would greatly enhance safety for non-motorized users as compared to Alternative A.

The extent of management activities and costs under Alternative B would be mixed. Less personnel time would be required for initial implementation (signing designated routes, installing bulletin boards). However, more effort on the part of the BLM would be required for public education and compliance. Estimated costs for road/trail maintenance would be less than under Alternative A.

The need for the BLM and members of the public to obtain travel variances for temporary specific uses of specific closed roads would increase under Alternative B compared to Alternative A.

## Effects of Alternative C

Alternative C would restrict wheeled motorized travel to five non-motorized trailheads in the Scratchgravel Hills. This alternative would provide the least number of motorized routes in the Helena TPA (7.0 miles), which is about 85 percent fewer miles than Alternative A, and about 30 percent fewer miles than Alternative B.

This alternative would diminish the opportunity for motorized use of the Scratchgravel Hills, but would provide an extensive network of routes for enjoyment by non-motorized enthusiasts. Alternative C would have 6 percent more miles of closed roads that could serve as non-motorized trails than Alternative B, and would have more closed roads than any other alternative. Under Alternative C, no snowmobile use would be allowed, including on the trailhead access routes. This action would eliminate conflicts between snowmobilers and non-motorized winter users (cross-country skiing, snowshoeing).

Under Alternative C, unauthorized travel (illegal off-road use by ATVs and motorcycles) and illegal activities (underage drinking, vandalism, dumping) would be curtailed due to the restriction of motorized vehicles from the interior of the Scratchgravel Hills and closing the area after dark.

By eliminating motorized use within the interior of the Scratchgravel Hills there would be less potential for accident or injury resulting from conflict between user groups.

The five trailhead parking lots may need to be expanded to accommodate the number of vehicles bringing non-motorized users to the area. Since the Scratchgravel Hills have historically been open to motorized use, a substantial effort would be required to educate the public on its change in use. It is expected that the level of education and signage would be comparable to Alternative B, but less than required under Alternative A.

The extent of management activities and costs under Alternative C would be mixed. Less personnel time would be required for initial implementation (signing designated routes, installing bulletin boards). However, more effort on the part of the BLM would be required for public education and compliance. Estimated costs for road/trail maintenance would be the lowest of all the alternatives.

The need for the BLM and members of the public to obtain travel variances for temporary specific uses of specific closed roads would be the greatest under Alternative C than under any other alternative.

## Effects of Alternative D

Alternative D would have 21.9 miles of open routes available for yearlong wheeled motorized travel (Table-4-55). This would be 58 percent less than under Alternative A, but 55 and 68 percent more than under

Alternatives B and C, respectively. Road system projects would include reconstructing some segments and constructing new connector routes between other segments. Through the development of interconnecting routes, motorized opportunities under Alternative D would be enhanced compared to Alternatives B and C. Non-motorized users would be accommodated through a network of routes that would be restricted from use by vehicles, ATVs and motorcycles, similar to Alternative B.

Under Alternative D, cross-country snowmobile use would be allowed, as well as travel on all existing routes during the season of use (12/2-5/15), snow conditions permitting. Conflicts between non-motorized users (cross-country skiers, snowshoers) and snowmobilers would be expected to continue or increase as a result.

Under Alternative D, illegal activities in the Scratchgravel Hills (underage alcohol use, unattended campfires, vandalism, dumping) are expected to be less than under Alternative A, but more than Alternatives B and C.

The extent of management activities and costs under Alternative D would be mixed. Less personnel time would be required to monitor travel compliance than under Alternatives B and C. However, more effort would be required for initial implementation (signing designated routes, installing bulletin boards). Estimated costs for road/trail maintenance would be higher than under the other action alternatives, but would be greater than under Alternative A.

The need for the BLM and members of the public to obtain travel variances for temporary specific uses of specific closed roads would be greater under Alternative D than under Alternative A, but less than under Alternatives B and C.

## Cumulative Effects on Travel Management and Access

Under all alternatives, there are a number of past, present, and reasonably foreseeable BLM and non-BLM actions and activities affecting Travel management and access in the Helena TPA.

Like much of the west, the Helena Valley has been experiencing steady human population growth. This trend is expected to continue, along with increased recreational use of this travel planning area. These factors could lead to increased public pressure to alter travel planning to accommodate more, or less motorized use.

The majority of BLM managed routes for the Helena Travel Planning area are located in or adjacent to the Scratchgravel Hills and Birdseye areas. Scratchgravel Hills is basically an island of undeveloped hills surrounded by residential development (there is some internal development as well). Residential development has tripled from 300 residential homes in 1984 to over 1,000 homes today. This combination of rapid urbanization and increased recreational use has led to increased social

conflict; between area residents and recreation users, and among recreational users themselves (motorized/non-motorized). As a result, there have been public demands to alter the existing travel management to reduce motorized use.

Recreation use is well established in the TPA. Primary recreation activities include motorized OHV uses (ATV, motorcycle) and non-motorized uses (hiking, jogging, horseback riding, mountain biking, etc.). As recreation use grows, conflicts between non-motorized and motorized recreation users could lead to increased public demands for either more, or less motorized use.

Portions of the TPA provide winter range for mule deer and elk. The Birdseye section is within a wildlife movement corridor that provides a connection between the Northern Continental Divide Ecosystem and the Greater Yellowstone Ecosystem, as well as local daily and seasonal movement between higher elevation summer ranges. Concerns could lead to the need to restrict motorized use.

In some site specific cases, visual resource management may affect or restrict new road/trail construction.

Urban development may lead to an increase in right-of-way permits to accommodate private property/development access. As a result, public access to BLM lands, via these rights-of-way, could increase as well.

Limits or reductions in the BLM's funding and ability to maintain designated routes could lead to an overall reduction in open road miles.

A variety of resource management projects, such as BLM initiated vegetation treatments, or wildland fire fuels reduction projects, could affect travel management. Forest management activities from 1984 to present include 10 acres of forest planting and 133 acres of timber harvest. Wildland fire management activities from 1981 to 2004 include a fuels treatment (150 acres of fuels grinding) in the Scratchgravel Hills. Future projects include a 1,500-2,500 acre mechanical and/or prescribed fire treatment for the Scratchgravel Hills, anticipated to occur over a 5 year period. Depending on the type and scope of project, effects could vary from temporary, short-term area/route closures, to new opportunities (new routes) for motorized or non-motorized access.

The Scratchgravel Hills area contains precious and base metals in both hard rock and placer deposits. While presently, only a few mining claims are maintained on BLM lands, increases in mineral prices could lead to increased or renewed mining activity. Depending on the type and scope of mining activity, effects could vary from temporary, short-term area/route closures, to increased opportunities (new routes) for motorized or non-motorized access.

Noxious weeds and non-native invasive species are well established and spreading in the area. Motorized activi-

ties play a large role in the distribution of noxious weeds. Concerns over the spread of noxious weeds could influence travel management, and lead to fewer motorized opportunities.

Motorized use on dirt roads and trails is a major contributor to soil erosion and stream sedimentation. These concerns may influence travel management, and result in fewer motorized opportunities. This is an important consideration in the Helena area as the Montana Department of Environmental Quality is working on water quality restoration plans in the area.

Trash dumping, drug use, underage alcohol use, unattended camp fires, and vandalism occur throughout the travel planning area, but especially in the rural/urban interface areas. Most of these activities are directly associated with motorized use. Continuing concerns with illegal activities may influence travel management and lead to fewer motorized opportunities.

The National Guard manages approximately 8,000 acres of land (Fort Harrison) in the Helena City area. National Guard activities (helicopter landings, ground maneuvers, off-road travel, etc.) may influence travel management on adjacent BLM lands as well, exerting pressure for either more or less motorized access.

For perspective, BLM managed lands represent approximately 11percent of the total travel planning area (95,492 total acres, 10,162 BLM acres); while BLM managed routes under Alternative A represent approximately 7.5 percent of the total routes available (693 total miles, 52.2 miles BLM roads/trails). Future travel management (for all agencies, nationwide) is likely to lead to fewer opportunities for motorized recreational use than under current management (particularly for OHV use). As a result, BLM routes available to motorized use in this TPA (especially the Scratchgravel Hills area) could experience increased use from displaced users, leading to more concentrated use, increased resource impacts, user conflicts, and pressure to reduce motorized use.

Under all alternatives, increases in human population, urbanization, recreation use, user conflicts; and concerns for wildlife, noxious weed spread, soil erosion/water quality, and illegal activities are likely to lead to increased demands to restrict motorized travel, particularly in areas with urban development, such as the Scratchgravel Hills. Under Alternative A, as urbanization continues around the Scratchgravel Hills, and both motorized (wheeled and snowmobile) and non-motorized use increases, these conflicts would increase. Under Alternative B, these pressures would have less impact on travel management than under Alternatives A and D, due to the overall reduction in motorized opportunities and separation of uses under Alternative B. Alternative C would be more beneficial to reducing these conflicts in light of these pressures than all the other alternatives. Alternative D would lessen conflicts associated with these pres-

tures, but not as much as Alternatives B and C. Both motorized and non-motorized users would have dispersed recreational opportunities under Alternative D.

## TRANSPORTATION FACILITIES

For the sake of this discussion, “open” roads include roads that are open yearlong as well as those that are open with seasonal restrictions.

### Effects of Alternative A

The Helena TPA would have 52.2 miles of open roads and no motorized trails (**Table 4-56**). Estimated costs for annual maintenance and stabilization of roads under Alternative A would be highest of all alternatives; almost three times more than under Alternatives B and D, and six times higher than under Alternative C. Estimated annual costs for both monitoring, compliance and weed control would be much higher under Alternative A than under the action alternatives.

### Effects of Alternative B

Under Alternative B, the Helena TPA would have 9.8 miles of open roads and no motorized trails (**Table 4-56**). Estimated costs for annual maintenance and stabilization of roads under Alternative B would be less than under Alternatives A and D, and more than under Alternative C.

Estimated annual costs for monitoring, compliance and weed control would also be less than under Alternatives A and D, but more than under Alternative C.

Restricting motorized access to the Scratchgravel Hills area to five existing non-motorized trailheads would result in an increase in transportation facility costs for trailhead maintenance and signage. Closing the Scratchgravel Hills to motorized vehicle use after dark would result in a short-term increase in facility costs for installing signs and gates at appropriate access points and a long-term increase in cost for sign maintenance. Effects of this alternative associated with the Scratchgravel Hills nighttime closure would be similar to Alternative C.

### Effects of Alternative C

Under Alternative C, the Helena TPA would have 7 miles of open roads and no motorized trails (**Table 4-56**). Estimated costs for annual maintenance and stabilization of roads under Alternative C would be the least of all the alternatives due to the least number of motorized routes. Estimated annual costs for monitoring, compliance, and weed control would also be less than the other alternatives.

Closing the Scratchgravel Hills to motorized and non-motorized vehicle use after dark would result in a short-term increase in transportation facility costs for installing signs and gates at appropriate access points and a long-term increase in cost for personnel and sign maintenance. Effects of this alternative associated with the

<b>Classification/ Cost</b>	<b>Alt A</b>	<b>Alt B</b>	<b>Alt C</b>	<b>Alt D</b>
Miles of Open/ Restricted Roads	52.2	9.8	7	21.9
Motorized Trails	0	0	0	0
Annual Road Maintenance	\$4,176	\$784	\$560	\$1,752
Annual Trail Maintenance	\$0	\$0	\$0	\$0
Periodic Road Stabilization	\$1,670	\$313	\$224	\$701
Periodic Trail Stabilization	\$0	\$0	\$0	\$0
Monitoring/ Compliance	\$2,610	\$490	\$350	\$1,095
Weed Control	\$783	\$147	\$105	\$329

Scratchgravel Hills nighttime closure would be the same as under Alternative B.

### Effects of Alternative D

Under Alternative D, the Helena TPA would have 21.9 miles of open roads and no motorized trails (**Table 4-56**). Estimated costs for annual maintenance and periodic stabilization of roads under Alternative D would be greater than under Alternatives B and C, but less than under Alternative A. Estimated annual costs for monitoring, compliance and weed control would be less under Alternative D than under Alternative A and more than under Alternatives B and C.

Constructing new connector routes and reconstructing several existing routes would result in a short-term increase in transportation facility costs for signage, and potentially for additional culverts, and a long-term increase for route maintenance.

## LANDS AND REALTY

### Effects Common to All Alternatives

The Butte Field Office administers approximately 57 rights-of-way (ROW) and 1 non-commercial occupancy lease within the boundaries of the Helena TPA, which encumber approximately 481 acres of BLM land (**Table 4-57**).

Various types of road rights-of-way (ROW) are the most common type of grant, accounting for 44 percent, or just under half of the total. Other types of authorized uses include: oil and gas pipelines, lines for electrical distribution and telephone facilities, ditches, railroads, and mineral material sites.

Approximately three right-of-way applications for new facilities as well as amendments, assignments, renewals, or relinquishments of existing right-of-way grants are

processed annually in the TPA. This would not vary by alternative.

Type	Approximate Number	Approximate Acres
Roads	26	359
Power	8	9
Telephone	12	11
O&G Pipelines	6	96
Comm. Sites	0	0
2920 Leases	1	1
Other	5	5
<b>Totals</b>	<b>58</b>	<b>481</b>

The general trend of granting rights-of-way is expected to increase through the planning period as a result of increasing public demands. From a cumulative effects standpoint, development of adjacent federal, state, and private land, increased recreational use and the trend of homeownership away from urban areas, coupled with traditional on-going uses, are all expected to require more guaranteed access involving public land, including BLM lands in this TPA.

## SPECIAL DESIGNATIONS

There would be no effects to any special designation areas such as Wild and Scenic Rivers, Wilderness Study Areas, or Areas of Critical Environmental Concern under any of the travel plan alternatives for the Helena TPA. No areas with special designations are located within the Helena TPA.

## EAST HELENA TPA

The 200,991-acre East Helena TPA contains 20,039 acres of BLM lands. There are approximately 71 miles of BLM road, making up about 8 percent of the approximate total of 892 road miles in the TPA. The majority of roads (690 miles) lie on private lands.

## AIR QUALITY

### Effects Common to All Alternatives

Motorized recreation use is expected to continue to increase, resulting in higher levels of vehicle emissions.

Motorized travel across dry unpaved routes or trails would continue to produce airborne dust.

There could be areas with localized air pollution as a result of higher use numbers, and more concentrated use on fewer miles of available routes.

Drier climate conditions could make soils more susceptible to the effects of motorized travel, resulting in higher levels of airborne dust.

Impacts to air quality vary by alternative and travel plan area. In general, alternatives that reduce the level of motorized use (have fewer available miles) could have a positive impact on air quality; while alternatives that maintain or increase the level of motorized use, could lead to increased air quality impacts. This would not necessarily be a direct relationship, however, because reduction in available road miles for motorized use could redistribute use or focus more use on remaining open routes.

Under all alternatives, impacts from airborne dust could be reduced through mitigation such as hardening native surface roads with gravel or periodically spraying them with water trucks during the dry season. During BLM project work, in addition to watering native surface roadbeds, speed limits could be reduced to further minimize dust emissions.

### Effects of the Alternatives

Under Alternative A (present management), adverse impacts to air quality would be expected to continue, and likely increase, concurrent with higher levels of motorized recreational use. Each of the action alternatives, however, would provide fewer available motorized routes. Alternatives B and C would provide 61 percent and 73 percent fewer motorized routes, respectively, than Alternative A, while Alternative D would provide 14 percent fewer routes than Alternative A. As a result, impacts to air quality associated with airborne dust and vehicle emissions would be taking place on substantially fewer routes under Alternatives B and C, but only slightly fewer routes under Alternative D.

It should be noted that even without motorized use, airborne dust, resulting from wind erosion of exposed native surface roads will continue. Therefore, travel plans with more miles of native surface roads will result in more airborne dust.

Under all alternatives, mitigation measures, such as graveling and/or watering native surface roads, could reduce dust emissions even further, and/or help offset the effects of increased or concentrated use on the remaining open routes.

### Cumulative Effects on Air Quality

Under all alternatives, the cumulative effects to air quality from travel management in the East Helena TPA would arise from a number of past, present, and reasonably foreseeable future actions on BLM lands as well as non-BLM lands.

For perspective, BLM managed lands in the East Helena Travel Plan area represent approximately 10 percent of the total travel planning area (200,991 total acres; 20,039 BLM acres). Under present management (Alternative A), BLM managed routes represent a small portion, approximately 8 percent, of the total routes available (892.2 total miles; 70.7 miles BLM roads/trails).

Potential air quality impacts associated with activities on non-BLM lands and roads would be a greater contributor to cumulative effects to air quality than activities on BLM lands and roads.

In the past, prior to the 2003 Statewide OHV ROD, BLM management allowed unrestricted cross country travel by all forms of wheeled motorized use. Under present management, in the absence of other existing travel plan direction, all motorized wheeled travel is restricted to existing roads and trails. Under current management, approximately 44.3 of the 70.7 miles of existing BLM routes are available for motorized use. This mileage available for use would be reduced under the action alternatives as described above with associated potential differences in effects to air quality.

Under all alternatives, cumulative increases in human population, urbanization, recreation use, user conflicts; and concerns for wildlife, noxious weed spread, soil erosion, air/water quality, and illegal activities may lead to increased demands to restrict motorized travel.

## SOILS

### Effects Common to All Alternatives

Road construction, use, and maintenance affect soils in a number of ways. Soils are often compacted by these activities. Soil compaction can lessen the amount of precipitation that can infiltrate into soil and increase runoff, erosion, and sedimentation – in turn decreasing soil/site stability and hydrologic function, as well as soil productivity and plant vigor and diversity.

Closing or decommissioning roads often leads to beneficial effects to soils through decreased site disturbance and re-establishment of vegetative cover on road surface.

es. This tends to reduce soil erosion and stabilize soils. Decommissioning roads may in some cases entail ripping road surfaces to de-compact them, thus improving water infiltration, hydrologic function, and the ability of the treated area to revegetate more successfully.

Impacts to soils associated with site-specific travel plan alternatives were assessed based on the potential for soil erosion using the following erosion risk criteria:

- High – the area a route travels through has slopes greater than 30 percent gradient.
- Moderate – the area a route travels through has slopes ranging from 15 to 30 percent gradient; or, for granitic soils, slopes ranging from 0 to 30 percent gradient.
- Low – the area a route travels through has slopes ranging from zero to 15 percent gradient and soils are not granitic in origin.
- Unrated – road mapping not available at time of erosion impact rating.

### Effects of the Alternatives

The distribution of road miles by erosion risk category and by proposed road management category by alternative is shown for the East Helena TPA in **Table 4-58**. Roads in the “unrated” category were excluded from detailed consideration and are shown for the purpose of displaying the extent of lacking information.

Under current conditions (Alternative A) approximately 6.9 miles of open BLM roads are located in areas with high erosion risk, and 23.3 miles are in moderate erosion areas. Soil erosion would be reduced under Alternative B because this alternative would reduce those open road

**Table 4-58**  
**BLM Road Miles in Soil Erosion Impact Categories by Alternative for the East Helena TPA**  
(mileages are GIS-generated estimates)

Proposed Road Management	Erosion Risk Category	Alternative A	Alternative B	Alternative C	Alternative D
Open Road Miles (including Open w/restrictions)	High	6.9	6.8	0.8	7.1
	Moderate	23.3	6.4	3.8	18.0
	Low	9.1	7.6	5.2	9.0
	Unrated	2.8	1.2	0.1	1.8
Closed Road Miles	High	6.8	5.8	12.0	5.7
	Moderate	15.5	29.1	31.9	18.8
	Low	3.9	5.3	7.8	3.9
	Unrated	0.2	1.7	2.9	1.2
Decommissioned Road Miles	High	0	1.2	1.0	1.0
	Moderate	0	3.3	3.0	1.9
	Low	0	0	0	0.1
	Unrated	0	0.1	0	0

Note: Open roads include seasonally open roads as well as roads open yearlong.

mileages in high and moderate erosion categories to 6.8 miles and 6.4 miles, respectively. Approximately 34.9 miles of road in the high and moderate classes combined would be closed under Alternative B with an additional 4.5 miles in these categories being decommissioned. This should allow vegetative recovery on these areas and further reduce soil erosion.

Under Alternative C, soil erosion from roads would be reduced more than under any other alternative because the lowest mileage of roads in the high and moderate erosion categories would be left open (4.6 miles combined), while the greatest mileage in these categories combined would be closed (43.9 miles) and decommissioned (4 miles) of all alternatives.

Soil erosion associated with roads would be reduced under Alternative D compared to Alternative A, but would still be higher than under either Alternative B or C. Approximately 25.1 miles of BLM road in the moderate and high erosion categories combined would remain open under Alternative D, while about 24.5 miles in these categories would be closed and 2.9 miles would be decommissioned under this alternative.

### **Cumulative Effects on Soils**

Cumulative effects to soils in the East Helena TPA would arise from many past, present, and reasonably foreseeable future actions on BLM lands as well as non-BLM lands. Within this 200,991-acre TPA, BLM lands comprise about 20,039 acres or 10 percent of total lands. The approximately 71 miles of BLM roads make up about 8 percent of the approximately 892 road miles in the TPA. Therefore road-related effects to soils described by alternative for BLM roads would affect about 8 percent of all roads in the TPA. The majority of lands and roads within the TPA boundary are private property. Non-BLM roads are managed by the local counties, Forest Service, state, Bureau of Reclamation, and private landowners.

Approximately 1,609 BLM acres are permitted for various rights-of-way and leases. About 746 of these acres are for specific road rights-of-way. The remaining 863 acres are associated with powerlines, waterlines, railroads, communication sites, and other utility facilities. Impacts to soils range from compaction and occupation of ground with buildings, roadbeds, railroad tracks, and other facilities, to revegetation and ground cover being re-established to stabilize soils.

Since 1981 wildland fires have burned across approximately 15,577 acres in the East Helena TPA. The majority of these acres (15,535) burned in 2000 across a mixture of land ownerships. The fire burned with variable severity creating a mosaic of effects to soils. More severely burned areas underwent more severe erosion than areas burned less severely. Fire rehabilitation activities such as reseeding with grasses/herbaceous species, contour felling of trees/snags in severely burned areas to trap sediment, waterbarring of firelines, and

post-fire noxious weed treatments helped minimize soil loss due to post-fire erosion. Tree planting on approximately 250 BLM acres (in 2002) of this burned area have contributed to longer term soil stabilization.

From 1995 to the present, timber salvage has occurred on approximately 250 acres of BLM land in this TPA. Adverse effects on soils were minor with treated areas having undergone revegetation and soil stabilization since treatment. Timber harvest has also occurred on private and Forest Service lands and will likely continue into the foreseeable future. These activities will have localized impacts (compaction, erosion) on soils.

While there have been no hazardous fuels treatment projects here in the last 10 years, BLM anticipates treating approximately 500 to 1,500 acres within this TPA to reduce hazardous fuels in Wildland Urban Interface areas within the next several years. Treatments would consist of mechanical and/or prescribed fire treatments. Effects to soils would likely be variable but for the most part would be minor. Prescribed burns would occur under prescriptions to minimize fire severity and impacts to soils. Mechanical treatments would be designed to minimize ground disturbance that could facilitate compaction or erosion. Fuels treatments conducted on private and Forest Service lands will also likely occur for the foreseeable future with variable effects to soils. Reducing fuels under the controlled conditions of deliberate treatments may benefit soils in the long-term by reducing the risk of high severity fires in treated areas.

Livestock grazing on public and private lands throughout much of the TPA has created areas of localized soil erosion and compaction, especially in grassland and shrubland areas. This will continue to occur for the foreseeable future.

Increasing residential development will likely continue for the foreseeable future. Erosion, compaction, and covering of soils would occur due to additional road construction, clearing/leveling for home sites, and establishment of utility infrastructure for residential developments.

Under Alternative A, the contribution to cumulative effects on soils from BLM road management would continue as it occurs today. Retaining approximately 36 miles of road open yearlong and an additional approximately 7 miles open with a seasonal restriction of 10/15 to 12/1 would allow for the same level of compaction and erosion impacts that currently exist.

From a BLM road management perspective, all action alternatives would benefit soil resources compared to Alternative A. Alternative B would benefit soils by providing for a reduced contribution to adverse cumulative effects than would Alternative A because about 68 percent of BLM roads would be closed or decommissioned under Alternative B (compared to 39 percent under Alternative A). Of the approximately 22 miles of open road, nearly one half of them (about 10 miles) would be

seasonally restricted to exclude motorized vehicle use in the wet spring runoff period each year. This would reduce erosion from these BLM roads.

Alternative C would benefit soils the most and provide for the least contribution to adverse cumulative effects of all alternatives. This alternative would provide for closure or decommissioning of about 86 percent of BLM roads in the TPA, thus allowing these areas to vegetatively recover and stabilize soils.

Alternative D would provide for the greatest contribution to adverse cumulative effects on soils of the action alternatives, but would still provide for greater long-term benefits to soils than Alternative A. Alternative D would provide for closure or decommissioning (and therefore vegetative recovery and soil stabilization) of about 48 percent of BLM roads in the TPA, compared to 39 percent for Alternative A, 68 percent for Alternative B, and 86 percent for Alternative C.

Due to the scattered distribution and relatively small proportion of BLM lands (10 percent) and roads (8 percent) relative to the total quantities of lands and roads in the TPA, none of the BLM alternatives would substantially contribute to cumulative effects on soils at the scale of the entire East Helena TPA.

## WATER RESOURCES

### Effects Common to All Alternatives

There are a number of key concepts that are critical to understanding road effects to water resources.

Hydrologic function is an interaction between soil, water, and vegetation. It reflects the capacity of a site to:

- Capture, store, and safely release water from rainfall, runoff, and snowmelt;
- Resist a reduction in this capacity; and
- Recover this capacity following degradation.

Interception of precipitation results when precipitation falls on vegetation. When vegetation is removed, precipitation falls directly on the soil. This can increase surface erosion and sedimentation, and decrease the amount of time between initial precipitation arrival and peak surface runoff – in turn decreasing soil/site stability and hydrologic function. Roads remove vegetation and therefore decrease interception of precipitation.

Infiltration is the process of precipitation entering and traveling through soil. Infiltration reduces the peak runoff during precipitation events by extending the period of runoff after a precipitation event. Infiltration also filters precipitation and reduces erosion and sedimentation. If infiltration is reduced, runoff and erosion will increase and hydrologic function will decrease. Generally, roads are compacted surfaces that have decreased infiltration, thus increasing runoff and potentially increasing erosion.

Runoff can affect the amount of erosion and sedimentation, as well as flooding – both onsite and offsite. If runoff is increased, all of these effects can increase with a result that water quality and hydrologic function will decrease.

Increased sediment entering waterbodies increases turbidity, increases width-to-depth ratios, and consequently increases temperature and dissolved oxygen saturation levels, and creates adverse habitat for aquatic animals and plants.

Alteration of flow routing can also affect water resources. For example, roadcuts into areas with relatively shallow groundwater can intercept groundwater, bring it to the surface, and transport it some distance (i.e. in a roadside ditch) before delivering it to a stream. This can lead to erosion of road ditchlines and subsequent sedimentation of streams during runoff periods, or increased thermal loading of water before delivery to streams during summer periods.

Closure and decommissioning of roads tend to reduce erosion and sedimentation effects stemming from roads on water quality. On an equivalent road mile basis, decommissioning roads would benefit water quality to a greater degree than closing roads because the decommissioning process would often entail implementing measures to restore hydrologic function. During road decommissioning, items such as compaction, drainage, stream crossing culverts, and ground cover are often addressed in a manner that markedly improves hydrologic function. These features are not fully addressed on roads that are merely “closed”. However, the reduced disturbance on newly closed roads combined with the tendency for revegetation to re-establish ground cover on them, reduces erosion and subsequent sedimentation effects to water quality.

### Effects of the Alternatives

Generally, road density is an indicator of overall watershed health and function. Watersheds with higher road densities tend to have lower water quality due to greater disruption of hydrologic function (described above), and potential for erosion and subsequent sedimentation. Road density also is related to the distribution and spread of noxious weeds.

**Table 4-59** shows acres of BLM land in three road density categories by alternative for the East Helena TPA. These data reflect differences between alternatives based on roads proposed for “decommissioning” by alternative. While many “closed” roads would gradually contribute to increased hydrologic function over time, decommissioned roads would more directly contribute to hydrologic function because measures aimed at restoring hydrologic function would likely be part of the treatment during decommissioning. Alternative A would have the greatest amount of BLM land with “high” road densities of greater than 2 mi/mi<sup>2</sup>. Alternative B would have the lowest acreage in the high category with the greatest

**Table 4-59**  
**Acres of BLM land in road density categories by alternative for the East Helena TPA**

TPA Alternative	Road Density Category		
	Low (<1 mi/mi <sup>2</sup> )	Moderate (1 to 2 mi/mi <sup>2</sup> )	High (> 2 mi/mi <sup>2</sup> )
Alt. A	5,969	4,665	9,317
Alt. B	6,557	4,457	8,936
Alt. C	6,500	4,384	9,066
Alt. D	6,502	4,353	9,096

acreage in the low category of all alternatives. Alternatives C and D would be similar but Alternative C would have the next lowest acreage in the high road density category while Alternative D would have more acres in the high category than either Alternative B or C, but less than Alternative A. Overall, all the action alternatives would improve hydrologic function but by this measure Alternative B would make the greatest contribution to improved hydrologic function of all the alternatives.

Motorized routes within 300 feet of streams generally have greater potential to directly impact water quality through erosion and sedimentation, increased water temperatures (due to loss of shading vegetation), and direct alteration of stream channel morphology than those farther away. **Table 4-60** shows the miles of open and closed roads on BLM lands within 300 feet of streams by alternative. Under Alternative A there are about 7 miles of open road within 300 feet of streams. All action alternatives would improve water quality by closing or decommissioning roads in close proximity to perennial streams. Alternative C would create the most benefit followed closely by Alternative B, then Alternative D.

Although the benefits to water resources are fairly similar between alternatives, overall Alternative C would contribute the most benefits to water resources of all alternatives, followed by Alternative B, Alternative D, then Alternative A which would retain the same effects as currently exist.

## Cumulative Effects on Water Resources

Cumulative effects to water resources in the East Helena TPA would arise from many past, present, and reasonably foreseeable future actions on BLM lands as well as non-BLM lands. Within this 200,991-acre TPA, BLM lands comprise about 20,039 acres or 10 percent of total lands. The approximately 71 miles of BLM roads make up about 8 percent of the approximately 892 road miles in the TPA. Therefore road-related effects to water resources described by alternative for BLM roads would affect about 8 percent of all roads in the TPA.

There are approximately 171 miles of perennial non-fish bearing streams and 100 miles of fish bearing streams in the TPA. Of these, there are about 7.6 miles of perennial non-fish bearing streams and 1 mile of fish bearing stream on BLM lands. The majority of lands and roads within the TPA boundary are private property. Non-BLM roads are managed by the local counties, Forest Service, state, Bureau of Reclamation, and private landowners.

Approximately 1,609 BLM acres are permitted for various rights-of-way and leases. About 746 of these acres are for specific road rights-of-way. The remaining 863 acres are associated with powerlines, waterlines, railroads, communication sites, and other utility facilities. Impacts to water resources are generally minor with some localized erosion and sedimentation and some contribution to decreased hydrologic function (decreased infiltration, increased runoff) due to compaction.

Since 1981 wildland fires have burned across approximately 15,577 acres in the East Helena TPA. The majority of these acres (15,535) burned in 2000 across a mixture of land ownerships. The fire burned with variable intensity and severity creating a range of effects to water resources. In burned areas, nutrient inputs to streams increased (perhaps for several years). Streams in more severely burned areas (some near Canyon Ferry Reservoir) underwent more severe erosion and sedimentation than those in areas burned less severely. Water temperatures in some streams may have increased due to loss of stream-side shade from the fires. Wood recruit-

**Table 4-60**  
**Miles of Open and Closed Roads on BLM Lands within 300 ft. of Fish-Bearing Streams and Perennial, Non-Fish-Bearing Streams by Alternative for the East Helena TPA**

	Perennial Fish-Bearing Streams		Perennial Non-Fish-Bearing Streams	
	# Open Road Miles	# Closed Road Miles	# Open Road Miles	# Closed Road Miles
Alt. A	0	0.4	2.0	0.7
Alt. B	0	0.4	0.9	1.8
Alt. C	0	0.4	0.7	2.0
Alt. D	0	0.4	1.0	1.7

Note: Open roads include seasonally open roads as well as roads open yearlong. Closed roads include decommissioned roads.

ment to streams in forested areas of high burn intensity may be increasing due to riparian tree mortality from fires. Stream flows may increase in some streams for several years. Peak flows may increase due to reduced snow interception by vegetation resulting in greater snow accumulations available for snowmelt in warmer periods. Summer flows may increase due to a lack of live vegetation to conduct evapotranspiration of water so more groundwater may reach stream channels. Fire rehabilitation activities such as reseeding burnt ground with grasses/herbaceous species, contour felling of snags in severely burned areas to trap sediment, waterbarring of firelines, and post-fire noxious weed treatments helped stabilize soils and minimize sedimentation effects to streams due to post-fire erosion. Tree planting on approximately 250 BLM acres (in 2002) of this burned area have contributed to longer term soil stabilization and subsequent reduction of stream sedimentation.

From 1995 to the present, timber salvage has occurred on approximately 250 acres of BLM land in this TPA. Adverse effects on water resources were minor to negligible from this activity. Timber harvest has also occurred on private and Forest Service lands and will likely continue into the foreseeable future. Ground disturbance from these activities will have localized impacts to water resources including some sedimentation, loss of woody material recruitment for streams, and potential water temperature increases due to shade loss.

While there have been no hazardous fuels treatment projects here in the last 10 years, BLM anticipates treating approximately 500 to 1,500 acres within this TPA to reduce hazardous fuels in Wildland Urban Interface areas within the next several years. Treatments would consist of mechanical and/or prescribed fire treatments. Prescribed burns would occur under prescriptions to minimize fire severity and impacts to soils and desirable vegetation, thereby minimizing effects to hydrologic function. Mechanical treatments would be designed to minimize ground disturbance that could facilitate compaction or erosion. These project design measures would minimize potential erosion/sedimentation effects to water resources. Fuels treatments conducted on private and Forest Service lands will also likely occur for the foreseeable future with variable effects to water resources. Reducing fuels under the controlled conditions of deliberate treatments may benefit water resources in the long-term by reducing the risk of future high severity fires that could have severe adverse effects on water resources in treated areas.

Livestock grazing on BLM land, other public and private lands throughout much of the East Helena TPA has created areas of localized streambank trampling, soil erosion and compaction, and nutrient inputs to streams. In severe cases stream channel morphology may be altered due to severe loss of riparian vegetation, loss of streambank integrity, channel widening and shallowing, and substantial sediment inputs. These effects to water

quality will continue to occur for the foreseeable future. Agricultural water withdrawals occur on private lands in this TPA. These withdrawals reduce stream flows in the TPA, including within Prickly Pear Creek, one of two streams that flows through BLM lands and is listed as an impaired water body by MDEQ.

Increasing residential development will likely continue for the foreseeable future to variable degrees within the TPA. Impairments to hydrologic function such as erosion, soil compaction, and runoff would likely increase due to additional road construction, clearing/leveling for home sites, and establishment of utility infrastructure for residential developments. Nutrient, chemical pollutant, and pathogen inputs to streams would also likely increase due to leaching from septic systems, urban runoff (fertilizer, chemicals, and petroleum pollutants), and waste from livestock.

Damming of the Missouri River to create Holter Lake, Hauser Lake, and Canyon Ferry Reservoir dramatically altered water resources. Approximately 40 miles of the Missouri River were converted into lake habitat, dramatically altering water quality and quantity.

Canyon Ferry Reservoir and the Missouri River from Canyon Ferry Dam to Hauser Lake are both identified as impaired water bodies on the MDEQ 303(d) list. Canyon Ferry Reservoir has impairments related to excess nitrogen and ammonia as well as excess algal growth, likely related to municipal point source discharges, septic systems, agriculture, and abandoned mine lands. Canyon Ferry also has excessive arsenic and thallium attributed to contamination from abandoned mine lands. Missouri River from Canyon Ferry Dam to Hauser Lake has impairments primarily related to excessive nutrients and dissolved oxygen deficiency. These impairments are attributed to dam construction, grazing in riparian or shoreline zones, municipal point source discharges, and septic systems. These impairments will continue into the foreseeable future although ongoing efforts are gradually addressing some of them.

Hauser Lake (3,800 acres) is listed as impaired on the 303(d) list due to pesticide contamination, mercury, and dissolved oxygen impairments attributed to agriculture, silvicultural activities, natural sources (mercury), impacts from hydrostructure flow regulation, and highway/road/bridge runoff. Holter Lake (5,500 acres) is listed as impaired on the 303(d) list due to mercury contamination attributed to placer mining, inappropriate waste disposal, abandoned mine lands, historic bottom deposits, and atmospheric deposition. Lake Helena (1,600 acres) is listed as impaired on the 303(d) list due primarily to heavy metal contamination attributed to acid mine drainage, abandoned mine lands, hydrostructure flow regulation, irrigated crop production, and natural sources. All of these impairments in these reservoirs will continue for the foreseeable future although ongoing efforts are gradually addressing some of them.

Bureau of Reclamation manages the Canyon Ferry Reservoir and Dam on the Missouri River. The reservoir (35,200 acres, 76 miles of shoreline perimeter) is operated to provide flood control, power generation, irrigation, municipal water, and to enhance recreation, fish, and wildlife benefits. The reservoir is generally managed to stabilize downstream flows. By preventing flows from becoming too low, this management tends to minimize potential further water resource concerns during summer periods.

Pennsylvania Power and Light of Montana manages water flows through Hauser and Holter Lake dams in close coordination with the Bureau of Reclamation at Canyon Ferry upstream. Hauser and Holter Lakes are managed as full-pool, run-of-the-river reservoirs as per FERC re-licensing completed in 2000. Flows are managed to optimize energy production, provide for water right uses, and maintain appropriate conditions for fisheries, wildlife, and recreation values. By preventing flows from becoming too low, this management tends to minimize potential further water resource concerns during summer periods.

Under Alternative A, the contribution to cumulative effects on water resources from BLM road management would continue as it occurs today. Retaining approximately 36 miles of road open yearlong and an additional approximately 7 miles open with a seasonal restriction of 10/15 to 12/1 would allow for the same level of effects on water resources that currently exist.

From a BLM road management perspective, all action alternatives would benefit water resources compared to Alternative A. Alternative B would benefit water resources by providing for a reduced contribution to adverse cumulative effects compared to Alternative A because about 68 percent of BLM roads would be closed or decommissioned under Alternative B (compared to 39 percent closed under Alternative A). Of the approximately 22 miles of open road under Alternative B, nearly one half of them (about 10 miles) would be seasonally restricted to exclude motorized vehicle use in the wet spring runoff period each year. This would reduce erosion from these BLM roads and further benefit water resources.

Although the greatest road mileage would be decommissioned under Alternative B (4.7 miles), Alternative C would likely benefit water resources the most and provide for the least contribution to adverse cumulative effects on water resources of all alternatives. This alternative would provide for closure or decommissioning of about 86 percent of BLM roads in the TPA (compared to about 68 percent for Alternative B), thus allowing these areas to vegetatively recover, stabilize soils, and reduce erosion.

Alternative D would provide for the greatest contribution to adverse cumulative effects on water resources of the action alternatives, but would still provide for greater

long-term benefits to water resources than Alternative A. Alternative D would provide for closure or decommissioning (and therefore vegetative recovery, soil stabilization, and reduced erosion/sedimentation) on about 48 percent of BLM roads in the TPA, compared to 39 percent for Alternative A, 68 percent for Alternative B, and 86 percent for Alternative C.

Due to the scattered distribution and relatively small proportion of BLM lands (10 percent) and roads (8 percent) relative to the total quantities of lands and roads in the TPA, none of the BLM alternatives would substantially contribute to cumulative effects on the streams and reservoirs in the East Helena TPA on the whole.

## **VEGETATIVE COMMUNITIES – FOREST RESOURCES AND FOREST AND WOODLAND PRODUCTS**

### **Effects of the Alternatives**

Under all alternatives, existing roads and roads built to access timber and forest product sales on BLM lands may encourage timber harvest and forest product sales on adjacent lands, particularly where landowners and other agencies are looking to improve economic efficiency or opportunities in the management on their lands.

In general, vegetative treatment contractors tend to bid more readily on projects in areas with vehicle access or valuable products. BLM often prioritizes forest vegetation management activities such as forest products and forest protection activities (e.g. wildfire suppression and forest insect and disease control) in similar areas.

Rehabilitation of roads (decommissioning and in some cases road closure) would revegetate currently unvegetated roadbeds, which would increase vegetation biomass production on the landscape through colonization of sites with grasses, forbs, shrubs, and trees. Increases in revegetated area would occur at a rate of approximately 1.5 to 3 acres per mile of rehabilitated road. Eventually rehabilitated roads would support plant communities consistent with site potentials which would help resist weed invasions. However, road closures and removals (decommissioning) could make vegetation management treatments more difficult and costly, thereby inhibiting proposed treatments, reducing public access for product use and removal, and potentially slowing fire detection and suppression.

Under Alternative A where 37 percent of the existing roads have been historically closed, there would be no increase in project analysis and implementation costs. However, under Alternative B approximately 50 percent of roads into forested areas would be closed. Under Alternative C about 83 percent of roads into forested areas would be closed, while under Alternative D about 46 percent of these roads would be closed. These closures would result in commensurate potential increases in ve-

getative analysis and treatment costs by alternative. These potential cost increases would need to be considered on a case by case basis by the BLM during project feasibility determinations, and additional funding may be needed to analyze and implement the projects that would remain feasible. Road closures could also result in potential decreases in quantities of forest products removed. The extent of the effects described above would be minimized because BLM would likely still be able to plan and implement projects in many areas on closed roads through the variance process for temporary road use. Road-related effects would be greatest under Alternative C, followed in sequence by Alternative B, then Alternative D.

Roaded access to forested areas would also affect the gathering of firewood and other forest products by the general public. Most public parties prefer to drive close to areas of product removal so they do not have to carry products over long distances to their vehicles. There have been few publicly requested small sales of materials in most areas of this TPA. Requests received have been concentrated mainly where the lands are crossed by main access routes or in the vicinity of mining claims and homes. The requests received have generally been few due to the preponderance of pine trees which are generally considered to be low quality firewood and Christmas trees. It is likely that local requests for products would continue as has occurred in the past. For the East Helena TPA, Alternative A would retain the most public opportunities for these activities, followed in sequence of decreasing opportunities by Alternative D, Alternative B, then Alternative C. Alternatives B and D would have similar effects to public access for forest product gathering. Under the action alternatives, public searching for, and removal of personal use and small products would generally be confined to motorized travel corridors along the main roads.

## **Cumulative Effects on Forest and Woodland Resources and Products**

No BLM forest health/silvicultural treatments or resource product removal projects are currently scheduled in this TPA within the next five years. Fuels reduction projects with forest health considerations have a high priority in general and would likely occur in this area in the future due to the close proximity of wildland urban interface areas adjacent to several blocks of BLM lands. The major blocks of BLM forest and woodlands in this TPA are located in the North Hills, the Ward Ranch area by Hauser Lake and the Spokane Hills west of Canyon Ferry Lake. These generally contain stands of low productivity and commercial value as in the northern portions of the North Hills and the Spokane Hills (approximately 40 percent of BLM lands in the TPA) where wildfire has severely damaged the forest and woodland stands over the last 25 years. The formerly privately-owned Ward Ranch area has undergone commercial logging that has removed the larger trees since the early

1900s. The products from the forested areas in this TPA would provide little revenue in timber sale projects. In other vegetation manipulation projects, derived products would provide only small offsets to costs for stewardship projects where goods are exchanged for services.

There would be little cumulative effect from any of the action alternatives to forest management activities on inholding and adjacent private lands, as many of the proposed closed roads end in public lands along the shores of the Missouri River and the Lakes. Those roads used for main access to private lands would continue to provide vehicular access through BLM lands under all alternatives for personal use or authorized purposes for the landowners. Projects on private lands would promote fuels reduction objectives in the area as well.

Forested vegetation on BLM lands would also be affected by approximately 1,609 acres of rights-of-way and leases on BLM land. Forested vegetation located in these areas usually is harvested and/or removed to accommodate the necessary access or facilities. Forest vegetation removal would occur on new authorizations in the future and would occur as necessary to maintain sight distances and safety clearances associated with roads and facilities.

Urbanization is expected to continue on the 128,048 acres of private lands (64 percent of total acreage) within this TPA. Forest products are commonly removed from these areas prior to permanent construction. Urbanization is likely to continue in the future and will affect forested vegetation at an unknown rate. As private construction increases, miles of road on private will most likely increase from the current 690 miles.

Risk to forests from human-caused wildfires is commonly associated with miles of open roads. Risk to forests from wildfire is greatest under Alternative A with 44.3 miles of open roads. Alternative B would have less risk of human-caused fire starts with about 17 miles of open road during summer months. Alternative C would have the least risk to public forests with only 12.0 miles of road open during summer months. Alternative D (38 miles of open road during summer) would have more risk than either Alternatives B or C, but less risk than Alternative A. Given that the majority of roads in the TPA (92 percent) are non-BLM roads, this contribution to reduced fire risk from BLM roads in the action alternatives is relatively small in the context of the entire TPA.

Since BLM roads constitute only 8 percent of all roads in this TPA, and BLM lands make up only 10 percent of all lands in the TPA, urbanization and activities on open non-BLM roads in the vicinity may have more cumulative effects on forested vegetation in the TPA than BLM decisions regarding miles of open and closed road.

## VEGETATIVE COMMUNITIES – NOXIOUS WEEDS

Under all alternatives, any snowmobile use would have negligible effects on noxious weed spread and populations. Invasive noxious weeds and non-native species are degrading wildland health. These are aggressive plants that can outcompete many native plants, as they have few natural enemies to keep them from dominating an ecosystem. These plant species are spread by many means. However, any land disturbing activity in the TPA has the most potential to introduce and spread weed species. Motorized vehicles are one vector for noxious weed spread as weed seed becomes attached to vehicles and their tires, and are transported from one area to another where seeds become detached and germinate to inhabit new areas.

### Effects of Alternative A

Under Alternative A, a total of 44.3 miles of wheeled motorized routes are open (36.6 miles open yearlong, 7.7 miles seasonally restricted, 26.4 miles closed). With the exception of the Ward Ranch, McMasters, and Spokane Hills temporary area closures, the remainder of the travel planning area would remain available to cross-country area snowmobile use, as well as travel on all existing routes during the season of use (12/2-5/15), conditions permitting.

Alternative A would leave the most roads open and in turn would promote the greatest amount of weeds and other undesirable plant spread and production of all alternatives. More herbicide control would be needed to control weeds than under the other alternatives. Under Alternative A the 44.3 miles of open BLM road would make up about 4 percent of all open roads in the East Helena TPA.

### Effects of Alternative B

Under Alternative B, 13.7 miles of wheeled motorized routes would be available yearlong, and 3.3 miles would be open with seasonal restrictions. Cross-country snowmobile travel would be allowed, as well as travel on all existing routes during the season of use (12/2-5/15), except for the North Hills, Dana's Bar, and the area located to the west of Prickly Pear Creek. The remainder of the travel planning area (McMaster Hills, Ward Ranch, and Spokane Hills) would be closed to all cross-country snowmobile use, including travel on existing roads and trails. This alternative would close 41.9 miles of road leaving 13.7 miles open yearlong as compared to 36.6 miles of road open yearlong under Alternative A. This would prevent weed spread caused by motorized vehicles on closed routes, but would increase weed spread on open routes because of the more concentrated use on the fewer available routes. Overall Alternative B would reduce weed spread, but would increase weed treatment costs per road mile on remaining open roads

compared to Alternative A. Under Alternative B the 13.7 miles of BLM road open yearlong along with the 3.3 miles of seasonally restricted road would make up about 2 percent of all open roads in the East Helena TPA.

### Effects of Alternative C

Alternative C would provide the least amount of wheeled motorized access in the East Helena travel planning area. Under Alternative C, 12.0 miles of wheeled motorized routes would be available yearlong. No cross-country snowmobile use would be allowed; use would be restricted to designated routes only during the season of use (12/2-5/15), snow conditions permitting. This alternative would close 54.6 miles of road leaving 12.0 miles open yearlong as compared to 36.6 miles of road open yearlong for Alternative A. This would prevent weed spread caused by motorized vehicles on these closed routes, but would increase weed spread on open routes because of the more concentrated use on the fewer available road miles. Overall Alternative C would reduce weed spread more than any other alternative, but would increase weed treatment costs per road mile on the remaining open roads compared to Alternative A. Under Alternative C the 12 miles of open BLM road would make up about 1 percent of all open roads in the East Helena TPA.

### Effects of Alternative D

Alternative D would provide the highest level of motorized access (of the action alternatives), and the least non-motorized opportunities. Under Alternative D, 36.0 miles of wheeled motorized routes would be available yearlong, and 1.9 miles would be open with seasonal restrictions. Snowmobile management under this alternative would be as follows: cross-country travel would be allowed, as well as travel on all existing routes during the season of use (12/2-5/15), for the North Hills, Dana's Bar, and the area located to the west of Prickly Pear Creek. The Ward Ranch and the Big Bend areas would be closed to all cross-country snowmobile use as well as travel on designated routes. This alternative would close 29.7 miles of road, leaving 36.0 miles open yearlong as compared to 36.6 miles of road open yearlong for Alternative A. This alternative would have very similar environmental effects as Alternative A, though to a slightly lower degree. Under Alternative D the open BLM roads would make up about 4 percent of all open travel routes in the East Helena TPA.

### Cumulative Effects on Noxious Weeds

Under all alternatives, other past, present and reasonably foreseeable future BLM and non-BLM actions and outside influences affect noxious weeds.

Recreation use is well established in the TPA. Primary recreation activities include water based activities, big game hunting, non-motorized uses (hiking, jogging, horseback riding, mountain biking, etc), and OHV uses

(ATV, motorcycle). Motorized recreation uses are one of the leading causes of introduction and spread of noxious weeds and non-native species. Weed seeds are transported by many recreational vectors such as water recreation uses, motorized vehicles including their tires, non-motorized vehicles including their tires, pack animals, and humans.

Urban development may lead to an increase in right-of-way permits to accommodate private property/development access. As a result, soil disturbing activities (i.e. roads, powerlines, telephone lines, etc.), will increase causing weeds to increase.

A variety of resource management projects, such as BLM initiated vegetation treatments, or wildland fire fuels reduction projects, could affect weeds in the TPA. There have been no fuels treatments in this area in the last 10 years. There are as yet unplanned fuels treatments potentially slated for planning and implementation over the next five years for this area, mainly in the area of the North Hills. These treatments would consist of mechanical and/or prescribed burning from 500 to 1,500 acres focused on the urban interface areas. Any project creating soil disturbance has the capability to increase weedy plant species. Prescribed burning projects give the ground surface a fertilization effect and eliminate some plant competition for weedy species giving them a niche for establishment and expansion in some areas. Ground disturbing equipment could also transport noxious weed seed to these project sites. BLM implements weed control measures in the aftermath of such ground-disturbing activities so as to minimize noxious weed establishment and spread.

Wildland fires create good seed beds and supply nutrients for weed species introduction and production. From 1981 to 2004 there have been 18 wildland fires that burned approximately 15,577 acres in this TPA. The 2000 Bucksnot Fire accounts for the large majority of this total. This fire has promoted and increased noxious weed production in this TPA. Part of fire rehabilitation activities involved weed treatments to minimize weed spread.

Mining is a land disturbing activity and the activity itself and potentially weed seed contaminated equipment that is used could promote weeds in the area.

Noxious weeds and non-native invasive species are well established and spreading in the area. Weed control activities by BLM and other entities, while often effective at reducing or minimizing weed spread and weed populations, can also lead to some weed spread. Herbicide spray equipment is driven through weed infestations and weed seeds as well as other weed vegetative parts are spread to other lands during and following treatment. The Bucksnot Wildfire area received ground treatments of about 75 acres in size following the fire. In 2003 herbicide and biological control treatments on the Bucksnot fire area were approximately 500 acres in size.

Much of this treatment acreage was by aerial means coordinated with the Natural Resource Conservation Service (NRCS) and Lewis and Clark County. These weed treatments have varying success in killing undesirable plants, depending on many environmental parameters. The weeds that have been treated are primarily in the urban interface area where heavy motorized use plays a large role in the distribution of noxious weeds.

Timber sales have built in stipulations for mitigating weed production and spread. However, with ground disturbance the potential exists for weed introduction to occur on these sites. Vehicular access for tree plantings could contribute to the spread of existing weeds on site. Since 1995 there has been 250 acres of timber salvage and 250 acres of forest planting (replanted in 2002). Herbicide treatment of existing weeds was coordinated with tree seedling planting locations and timing, so as to minimize potential exacerbation of weed spread.

Future travel management (for all agencies, nationwide) is likely to lead to fewer opportunities for motorized recreational use than under current management (particularly for OHV use). As a result, BLM routes available to motorized use could experience increased use from displaced users, leading to more concentrated use. Such use could cause a larger than anticipated introduction and spread of weeds. An increase in weeds would lead to an increase in needed treatment on BLM lands.

The Bureau of Reclamation (BOR) manages approximately 11,500 acres of land surrounding Canyon Ferry Reservoir. BOR actions (such as new recreation site developments) could influence travel management on adjacent BLM lands. These actions could potentially increase weed spread and production on BLM managed lands.

Portions of the TPA (North Hills, areas adjacent to Canyon Ferry and Hauser Lakes) provide winter range for mule deer and elk. Noxious weed seed are transported and spread by wildlife through their digestive system and by attaching to the animals themselves and then being released at a later time.

Livestock grazing on and off BLM lands also contributes to weed spread either through seed being spread by livestock themselves, or through vehicular uses needed to manage grazing operations.

East Helena Valley has been experiencing steady population growth. This trend is expected to continue, along with increased recreational use of this travel planning area. These factors could lead to increased public pressure to alter travel planning for either more, or less motorized use. The increasing population in the Helena and East Helena areas will in turn lead to an increase in use of this TPA creating more opportunities for weed spread and production.

The majority of BLM managed routes for the East Helena Travel Planning area are located in or adjacent to the

Ward Ranch or North Hills sub-travel planning areas. The remaining routes are located in the Spokane Hills and Townsend sub-travel planning areas. As with the Scratchgravel Hills (Helena TPA), the Ward Ranch and North Hills sub-planning areas are surrounded by residential development (there is some internal development as well). Like the Scratchgravel Hills, they have experienced steady residential development over the past 15-20 years. The Spokane Hills and Townsend sub-travel planning areas are more rural in character, but also have experienced residential/subdivision growth, near the northern and southwest portions of the Spokane Hills and north of Townsend. This development/increase in population has led to an increase in use of the TPA by residents living adjacent to or within this area which in turn leads to an increase in weed spread and propagation.

Only 8 percent of all the travel routes in the East Helena TPA are located on BLM managed lands (under Alternative A). Lands near roads and away from roads in the TPA are infested with weeds. The travel on all roads in the TPA spreading weeds, and weeds off these roads are being spread by the weed plants themselves and other natural means. Because the majority of roads (92 percent) and lands (90 percent) in the TPA are non-BLM, activities in these areas play a stronger role than activities on BLM lands in determining the status of weed spread and weed populations in the TPA overall.

**VEGETATIVE COMMUNITIES –  
RIPARIAN VEGETATION**

**Effects Common to All Alternatives**

This section focuses on effects to riparian vegetation. For additional discussion of effects to water quality and stream channels, see the Water Resources and Fish sections.

Roads in riparian areas constitute ground disturbance that can eliminate or preclude presence of native riparian vegetation. This ground disturbance and loss of riparian vegetation may facilitate erosion and sedimentation of streams. Roads may also interfere with natural stream channel functions by occupying floodplains or active stream channel margins (see Water Resources section for more discussion). Noxious weeds may dominate riparian vegetation communities after some type of disturbance (such as roads, livestock grazing, mining, etc.) has reduced native vegetation. Noxious weed seed can be spread into riparian areas by motor vehicles via open roads. Closure of roads and trails can improve or maintain riparian condition by reducing avenues of noxious weed spread, as well as allowing for bare area revegetation which filters sediment in addition to stabilizing banks in some areas. Road and trail restrictions have the same effects but to a lesser degree, because some traffic will inhibit vegetation growth and recovery.

**Effects of the Alternatives**

As a means of comparing alternatives, **Table 4-61** depicts the miles of wheeled motorized routes that cross or are within 300 feet of streams and wet areas on BLM lands by alternative for the East Helena TPA.

<b>Table 4-61 Miles of Roads and Trails by Proposed Management Category Within 300 feet of Streams (including intermittent streams) in the East Helena Travel Planning Area</b>				
<b>Miles of Wheeled Motorized Routes</b>	<b>ALT A</b>	<b>ALT B</b>	<b>ALT C</b>	<b>ALT D</b>
Open	3.5	3.0	3.0	3.9
Restricted	0	0	0	1.9
Closed	3.6	4.1	4.1	1.2

Under Alternative A, 3.5 miles of BLM roads and trails would remain open that cross or are within 300 feet of streams or wet areas, and 3.6 miles of roads and trails would remain closed. The noxious weed spread, streambank, and sediment delivery effects would continue on the open roads and trails as described above. BLM roads and trails have very minor effects on riparian conditions in this TPA because the roads and trails parallel the Missouri River/Hauser Lake shore for quite short distances or simply dead-end at or before water’s edge.

Under Alternative B, 3.0 miles of BLM roads and trails would remain open that cross or are within 300 feet of streams or wet areas, and 4.1 miles of roads and trails would be closed. The noxious weed spread, streambank, and sediment delivery effects would continue on the open roads and trails as described in the effects common to all section. Alternative B would have slightly reduced effects to riparian areas than Alternative A.

Effects of Alternative C would be the same as those described for Alternative B.

Under Alternative D, 3.9 miles of BLM roads and trails would remain open that cross or are within 300 feet of streams or wet areas, 1.9 miles of roads and trails would have seasonal restrictions, and 1.2 miles of roads and trails would remain closed. The noxious weed spread, streambank, and sediment delivery effects would continue on the open roads and trails as described above. Restricted roads would reduce some of these effects. BLM roads and trails have very minor effects on riparian conditions in this TPA because the roads and trails parallel the Missouri River/Hauser Lake shore for quite short distances or simply dead-end at or before water’s edge. Alternative D could have slightly greater effects than all other alternatives on riparian vegetation on BLM lands, but these differences in effects would be minor.

## Cumulative Effects on Riparian Vegetation

Noxious weed spread, mining, roads and trails, logging operations, and livestock grazing have affected riparian resource conditions in all TPAs, including the East Helena TPA. Some of these factors continue to cause riparian area degradation primarily through direct disturbance or loss of riparian vegetation. Ground disturbance and loss of riparian vegetation facilitate erosion and sedimentation of streams. In the case of noxious weeds, they usually dominate riparian vegetation communities after some type of disturbance (such as roads, livestock grazing, mining, etc.) has reduced native vegetation.

Anticipated subdivision growth on private lands will lead to more road construction and maintenance. More roads and development will increase severity of runoff events which in turn will cause more sediment delivery to creeks and streams. The additional sediment is likely to affect the functioning condition of some riparian areas by causing streambeds to aggrade at unnatural rates. Streambanks may also be affected if road placements do not allow for natural stream movements or meanders.

Logging and forestry practices on public and private lands are subject to streamside management zone (SMZ) requirements designed to maintain water quality and riparian vegetation. The proposed Riparian Management Zones under Butte RMP Alternatives B and C would be wider than SMZs and activities in these areas would be designed to benefit riparian resources, thus providing more riparian protection and more targeted management of riparian vegetation in both forested and non-forested areas than under RMP Alternatives A and D. The disturbance associated with timber activities does have the potential to increase noxious weed spread which degrades riparian area function and health. On public lands noxious weed control is a standard feature of any ground disturbing activities whereas on private lands noxious weed control is variable.

Livestock grazing will continue in the area and has the potential to impact riparian resource conditions. On BLM lands, ongoing rangeland health assessments and implementation of livestock grazing guidelines would continue to improve or maintain riparian vegetation health and vigor. On private lands, livestock grazing is expected to decline slowly as more ranch and farmland is subdivided. Riparian conditions may improve or degrade as management changes.

Noxious weed control will continue on both public and private lands with varying degrees of success. To the extent that these efforts are successful, riparian conditions would improve because of the streambank protection gained from shrubby root systems and filtering capability of native riparian sedge and rush species.

The Bucksnot Fire of 2000 burned a large portion of the Spokane Hills (approximately 15,535 acres) across mul-

tipale land ownerships. Before the vegetation could recover, subsequent storm events caused considerable sediment delivery to Canyon Ferry Reservoir from a number of ephemeral gulches.

While there are slight differences in effects to riparian vegetation between East Helena travel plan alternatives at the site scale on BLM lands as described above, in the context of cumulative effects the differences between alternatives would be negligible.

Overall, because BLM roads make up only 8 percent of all roads in the TPA (under Alternative A), and BLM lands make up 10 percent of all lands in the TPA, the contributions to riparian vegetation benefits associated with closing riparian roads on BLM lands would be minor at the scale of the entire East Helena TPA. Activities on private lands (64 percent of total acreage in TPA) would play a dominant role in determining riparian conditions at the scale of the entire TPA.

## WILDLIFE

### Effects of Alternative A

Under Alternative A, the East Helena TPA would have substantially more open roads (44 miles) compared to the action alternatives and would have the highest actual road density in elk winter range, 1.1 mi/mi<sup>2</sup> (**Table 4-63**) compared to the action alternatives. Open roads typically increase the level of recreation adjacent to roads which can result in additional disturbance and displacement of wildlife species. Roads can also encourage the public to recreate in areas that had formerly been secluded. Roads can cause direct mortality to wildlife through road kill, prevent wildlife movement, create disturbance to wildlife via vehicular use, cause the spread of noxious weeds, reduce habitat and cause habitat fragmentation on the landscape (Joslin et al. 1999). Open road miles that exceed 1 mi/mi<sup>2</sup> have also been found to provide less than 60 percent functional habitat for elk (Christensen et al. 1993). Permanent and temporary roads could negatively impact wildlife including special status species, particularly if roads are open during critical periods such as during the winter or breeding seasons.

High open road densities under Alternative A could result in the loss of year-round habitat and migration corridors, disturbance and displacement of wildlife, road kill, and fragmentation of habitat. Wildlife, including special status species, that are especially sensitive to roads in the TPA include (but are not limited to) elk, northern goshawk and boreal toads. The detrimental effects of open road densities to wildlife under Alternative A could be minor to major and long-term. This alternative would have the greatest negative impacts to wildlife including special status species from open roads.

Under Alternative A, this TPA would have slightly fewer acres of functional winter range (6,415 acres of area with low road density) compared to Alternative B (6,915

acres), but considerably less than Alternative C (8,899 acres) (Table 4-63). This Alternative, however, would have more functional winter range than Alternative D (5,923 acres).

Under Alternative A, approximately 1,600 acres of the East Helena TPA would be closed to snowmobile use in the Ward Ranch and McMasters areas but approximately 15,000 acres would be open for cross country use by snowmobiles. An additional 3,600 acres would be available for snowmobile use on open routes only (44 miles of open roads). Although the majority of the East Helena TPA is open to cross country snowmobile use or for use on open roads, BLM lands in this TPA do not often get favorable snow conditions for snowmobiling. Due to snow conditions, the use of snowmobiles would be limited and the effects to wintering big game and other wildlife species would be expected to be minimal the majority of the time. However, when snow conditions do become favorable, snowmobile use of the TPA could have considerable negative effects to big game and other wildlife species. The negative effects due to cross-country snowmobile use could include harassment of big game and other species during the high stress winter season (Joslin et al. 1999). This could cause individuals to leave an area (temporarily or permanently) and/or an increase in stress that could lead to mortality.

In evaluating impacts of travel planning on elk and other big game species, it is important to consider impacts on security habitat. Elk security is the inherent protection allowing elk to remain in an area despite increases in stress or disturbance associated with the hunting season or other human activities. Security habitat includes blocks of nonlinear forested habitats greater than 250 acres in size that are at least 0.5 mile from an open road (Hillis et al. 1991). Security habitat should also consist of larger trees (greater than 8 inches DBH) with vegetation dense enough to hide an adult elk (Thomas et al. 2002). There would be less big game security habitat under Alternative A (1,181 acres) compared to Alternatives B (1,447 acres) and C (1,546 acres), but slightly more than Alternative D (1,048 acres) (Table 4-62).

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
<b>East Helena TPA</b>	1,181	1,447	1,546	1,048

Core areas are areas large enough for wildlife (especially animals with large home ranges such as carnivores and big game) to forage and reproduce. Subcore areas are areas that could act as stepping stones for wildlife as they move through the region (Craighead et al. 2002).

Within the East Helena TPA, there are 20,266 acres of BLM lands. On BLM lands, 2,142 acres provide good quality habitat for core or subcore habitat and 6,361 acres were identified as low quality wildlife movement corridors (Craighead et al. 2002). The remaining 11,763 acres of BLM lands do not provide highly functional or predictable corridors for wildlife movement due to fragmentation of habitat, high road densities, and development.

Within all lands of the East Helena TPA there are approximately 17,292 acres identified as “core/subcore” habitat. Under this alternative, there would be 8,209 acres with low road density (less than 1 mi/mi<sup>2</sup>), 3,270 with moderate road density (1-2 mi/mi<sup>2</sup>) and 5,814 acres with high road density (greater than 2 mi/mi<sup>2</sup>) in the TPA for all land ownerships. Alternative A would provide slightly lower quality habitat in core and subcore habitat at the landscape level compared to the other alternatives.

On BLM lands, there are approximately 2,142 acres in core/subcore habitat. In core/subcore habitat under Alternative A, there would be 1,436 acres with low road density, 311 acres with moderate road density and 395 acres with high road density. Alternative A would provide slightly lower quality habitat in core and subcore habitat in the Decision Area compared to the other alternatives.

	<b>Actual Road Density</b>	<b>Acres of Low Road Density</b>	<b>Acres of Moderate Road Density</b>	<b>Acres of High Road Density</b>
<b>Alternative A</b>	1.1	6,415	2,252	2,547
<b>Alternative B</b>	0.5	6,915	3,349	950
<b>Alternative C</b>	0.3	8,899	1,606	709
<b>Alternative D</b>	0.7	5,923	3,024	2,267

Low Density = 0-1 mi/mi<sup>2</sup>, Moderate Density = 1-2 mi/mi<sup>2</sup>, High Density = >2 mi/mi<sup>2</sup>

Wildlife corridors are areas of predicted movement within or between core and subcore areas. Within the East Helena TPA there are no acres identified as “high quality” wildlife movement corridors under any land ownership. There are approximately 3,374 acres identified as moderate quality corridors for all land ownerships but the majority of movement corridors are considered to be low quality (35,123 acres) due to development and road densities. In moderate quality movement corridors all alternatives would have 1,808 acres with low road density, 1,485 acres with moderate road density and 81 acres with high road density.

Riparian areas provide crucial habitat and critical travel corridors for wildlife including special status species. Riparian areas also provide a refuge for native plants and animals in times of stress such as drought or fire. Roads in riparian areas can prevent use of these crucial areas by wildlife, limit use, or cause loss of habitat (Wisdom et al. 2000). Under Alternative A there would be 3.5 miles of open roads in riparian areas.

### Effects of Alternative B

Under Alternative B, the East Helena TPA would have substantially fewer open roads (17 miles) compared to Alternative A (44 miles). Of the 17 miles of open roads, 13.7 would be open year round and the remaining 3.3 miles would be seasonally restricted. Alternative B would have more open roads than Alternative C (12 miles) but considerably less than Alternative D (38 miles). Alternatives B and C would decrease harassment to wildlife during all seasons of use compared to Alternatives A and D. Alternatives B and C would also improve habitat and reduce fragmentation more than Alternatives A and D.

Under Alternative B, the actual road density in elk winter range in the East Helena TPA would be 0.5 mi/mi<sup>2</sup>, below the maximum of 1 mi/mi<sup>2</sup> recommended by FWP in big game winter range. This is substantially lower than the road density under Alternative A (1.1 mi/mi<sup>2</sup>), higher than Alternative C (0.3 mi/mi<sup>2</sup>) and lower than Alternative D (0.7 mi/mi<sup>2</sup>) (Table 4-63). Christensen et al. (1993) found that reducing open road miles to 0.5 mi/mi<sup>2</sup> would increase the amount of effective habitat available to elk to greater than 70 percent.

Under Alternative B, this TPA would have more acres of functional winter range (6,915 acres) compared to Alternative A (6,416 acres), less than Alternative C (8,899 acres) but more than Alternative D (5,923 acres) (Table 4-63). Alternative B would improve the quality and quantity of winter range in the East Helena TPA compared to Alternatives A and D but would have substantially fewer beneficial effects to winter range than Alternative C.

Alternatives B and C would close more acres to cross country snowmobile use than Alternatives A (15,066 open acres) and D (14,461 open acres). Approximately 6,400 acres would be open to cross country snowmobile

use under Alternative B and Alternative C would limit all snowmobile use to existing roads with no open areas for cross-country snowmobiling. Due to unfavorable snow conditions, the use of snowmobiles would most likely be limited in the TPA and the affects to wintering big game and other wildlife species would be expected to be minimal the majority of the time. However, when snow conditions do become favorable, snowmobile use under Alternative B would have fewer negative effects to big game and other wildlife species than Alternatives A and D.

The amount of big game security habitat would be slightly more under Alternative B (1,447 acres) compared to Alternatives A and D (1,181 and 1,048 acres, respectively) (Table 4-62).

For all land ownerships, Alternatives B and C would have identical acres of core and subcore habitat in low (8,624 acres), moderate (3,180 acres) and high road densities (5,488 acres). Alternatives B and C would have 415 more acres in the low road density category and 326 fewer acres in the high road density category than Alternative A. Alternatives B and C would improve the quality of core/subcore habitat across the landscape more than Alternative A.

Under Alternatives B and C, BLM lands in core and subcore habitat would have slightly higher acres in low road density (1,703 acres) compared to Alternative A (1,436 acres). Alternatives B and C would also have fewer acres with moderate road density (191 acres) compared to Alternative A (311 acres) and slightly fewer acres with higher road density (249 acres) compared to Alternative A (394 acres). Alternatives B and C would improve the quality of core/subcore habitat on BLM lands more than Alternative A.

Alternatives B and C would protect and restore more riparian habitat than Alternative A by reducing the miles of open roads in riparian areas to 3.0 miles (from 3.5 under Alternative A). Reducing roads in riparian habitats under Alternatives B and C would allow for more breeding, foraging and hiding habitat as well as improve movement corridors for a wide variety of species.

### Effects of Alternative C

Under Alternative C, the East Helena TPA would have substantially fewer open roads (12 miles) compared to Alternative A (44 miles). Alternative C would have fewer open roads than Alternative B (17 miles) and considerably less than Alternative D (38 miles). Alternatives C and B would decrease harassment to wildlife during all seasons of use compared to Alternatives A and D. Alternatives C and B would also improve habitat and reduce fragmentation more than Alternatives A and D.

Under Alternative C, the actual road density in elk winter range in the East Helena TPA would be 0.3 mi/mi<sup>2</sup>, below the 1 mi/mi<sup>2</sup> recommended by FWP in big game winter range. This is substantially lower than the road

density under Alternative A (1.1 mi/mi<sup>2</sup>) and also lower than Alternative B (0.5 mi/mi<sup>2</sup>) and Alternative D (0.7 mi/mi<sup>2</sup>) (Table 4-63). Christensen et al. (1993) found that reducing open road miles to 0.3 mi/mi<sup>2</sup> would increase the amount of effective habitat available to elk to greater than 80 percent.

Under Alternative C, this TPA would have substantially more acres of functional winter range (8,899 acres) compared to Alternative A (6,416 acres), Alternative B (6,915 acres) and Alternative D (5,923 acres) (Table 4-63). Alternative C would improve the quality and quantity of winter range in the East Helena TPA more than all other alternatives.

Under Alternative C, snowmobile use throughout the entire East Helena TPA would be limited to open routes (12 miles). This would greatly reduce the negative effects associated with snowmobile use to big game and other wildlife species compared to all other alternatives.

The amount of big game security habitat on BLM lands would be greater under Alternative C (1,546 acres) than under any other alternative (Table 4-62).

Effects associated with core and subcore habitat under Alternative C would be the same as under Alternative B.

Effects associated with riparian habitat under Alternative C would be the same as under Alternative B.

## Effects of Alternative D

Under Alternative D, the East Helena TPA would have fewer open roads (38 miles) compared to Alternative A (44 miles). Of the 38 miles of open roads, 36 would be open year-round and the remaining 1.9 miles would be seasonally restricted. Alternative D would have considerably more open roads than Alternative B (17 miles) and Alternative C (12 miles). Alternatives D and A would allow more harassment to wildlife during all seasons of than Alternatives B and C. Alternatives D and A would restore less habitat and allow more fragmentation of habitats than Alternatives B and C.

Under Alternative D, the actual road density in elk winter range in the East Helena TPA would be 0.7 mi/mi<sup>2</sup>, below the maximum of 1 mi/mi<sup>2</sup> recommended by FWP in big game winter range. This is lower than the road density under Alternative A (1.1 mi/mi<sup>2</sup>), higher than Alternative B (0.5 mi/mi<sup>2</sup>), and considerably higher than Alternative C (0.3 mi/mi<sup>2</sup>) (Table 4-63).

Under Alternative D, this TPA would have the fewest acres of functional winter range (5,923 acres) of any alternative. Alternative A would have 6,416 acres, Alternative B would have 6,915 acres, and Alternative C would have 8,899 acres of functional winter range (Table 4-63). Alternative D would have substantially fewer beneficial effects to winter range than all other alternatives.

Alternative D would close more acres (5,805 closed acres) to cross country snowmobile use than Alternative A, but would close less area than Alternatives B and C. While no areas would actually be “closed” under Alternative C, the entire TPA would be in the “limited” category, meaning that snowmobile use would only be allowed on open roads and trails. Under Alternative D, approximately 14,460 acres would be open to cross country snowmobile use. Alternative D would have more acres open to cross country snowmobile use than Alternatives B and C but fewer than Alternative A. Due to snow conditions, the use of snowmobiles would most likely be limited in the TPA and the effects to wintering big game and other wildlife species would be expected to be minimal the majority of the time. However, when snow conditions do become favorable, snowmobile use under Alternative D would have greater negative effects to big game and other wildlife species than Alternatives B and, especially, C because Alternative C would limit all snowmobile use to open roads (12 miles), with no open cross country use areas.

The amount of big game security habitat under Alternative D would be 1,048 acres, the least of all alternatives (Table 4-62).

For all land ownerships in core and subcore habitat, Alternative D would have more acres (8,434 acres) with low road density than Alternative A (8,209 acres). However, Alternative D would have fewer acres with low road density than the other action alternatives. Alternatives B and C would have approximately 8,624 acres with low road density. Alternative D would also provide more acres in moderate road density (3,359 acres) than Alternative A (3,270 acres) as well as more than Alternatives B and C (3,180 acres). Alternative D would also have fewer acres in high road density (5,500 acres) compared to Alternative A (5,814 acres), but would have slightly more than Alternatives B and C (5,488 acres). Alternative D would improve the quality of core/subcore habitat across the landscape more than Alternative A but slightly less than Alternatives B and C.

Under Alternative D, BLM lands in core and subcore habitat would have slightly higher acreage with low road density (1,549 acres) compared to Alternative A (1,436 acres), but would have fewer acres with low road density compared to Alternatives B and C (1,703 acres). Alternative D would also have more acres with moderate road density than Alternatives A (311 acres), B and C (191 acres for both Alternatives B and C). Alternative D would have the same amount of acres with high road density as Alternatives B and C (249 acres) which would be fewer than those in Alternative A (394 acres). Alternative D would improve the quality of core/subcore habitat on BLM lands more than Alternative A but slightly less than Alternatives B and C.

Alternative D would protect and restore less riparian habitat than all other alternatives. Alternative D would

provide the most negative effects to riparian habitats with 3.9 miles of open roads.

## Cumulative Effects on Wildlife

Wildlife habitat in the East Helena TPA has been affected by roads, historic and current mining, timber harvest and salvage, weed infestations, urbanization and development, recreation, powerline corridor development, and communication sites.

The East Helena Valley has been experiencing steady population growth. This trend is expected to continue, along with increased recreational use of this travel planning area. Primary recreation activities in the TPA include big game hunting, non-motorized uses (hiking, jogging, horseback riding, mountain biking, etc) and OHV uses (ATV, motorcycle).

Land that was traditionally used for ranching, forest products, or mining is now being converted to home sites in the East Helena Valley. Although these lands had historic human uses, they also provided quality wildlife habitat. These areas historically provided a diversity of habitats that contributed to; big game winter range, travel corridors, habitat for resident and migrating wildlife, as well as foraging, breeding and hiding habitat. Many of the areas currently experiencing residential development are in big game winter range. Because of the loss of winter range on private lands, it is critical that public and state lands maintain quality and secure winter range or improve the habitat in these areas.

For many plant and animal communities, native species richness decreases as housing density increases. Non-native species, however, tend to increase with development (Hansen et al. 2005). Wildlife populations, including carnivores, may be reduced even at very low levels of residential development due to; loss of habitat, an increase in human access (from roads) in areas that previously had low levels of disturbance, and an increase in hunting pressure. Residential development can also lead to an increase in noxious weed infestations that can reduce the quality and quantity of wildlife habitat.

Pets can also have a negative impact to native wildlife. Cats hunt and kill bird and small mammals. Dogs that are allowed to roam can chase, injure, or kill wildlife. This can result in areas becoming unavailable to wildlife.

Active mining claims are common in the area, and there are active notices in the travel planning area as well. Increases in mineral prices could lead to increased or renewed mining activity. Mineral activity along with associated road construction and development on both private and public lands could add substantially to the negative cumulative effects to wildlife and wildlife habitats in this TPA.

In the TPA, there are 16 powerlines, three pipelines and four communication sites. In the future, communication sites on BLM lands will be restricted to existing sites but

future communication sites could be built on private and other public lands in the TPA. There is the potential for future powerlines and pipelines to be built in this TPA.

There are approximately 21 right-of-ways (ROW) in the TPA and applications for ROW permits to access private property or for commercial development are likely to increase in the future. As a result, public access to BLM lands could increase. Fewer ROWs would be expected under Alternative A because more BLM roads would remain open under this alternative. Alternatives B and C would be expected to have more ROWs than Alternative D.

From 1981-2004 there have been 18 wildland fires that burned 15,577 acres in the Planning Area. Five of the fires were identified as human-caused and these fires burned the majority of the acres (15,535 acres). After the 2000 Bucksnot Fire, timber salvage occurred on approximately 250 acres of BLM lands as well as on many acres of private lands. Vegetation treatments may occur on BLM lands in the future and timber harvest is expected on private as well as other public lands in the future. Vegetation treatments would be expected to be less under Alternatives A and C than Alternatives B and D. Overall, vegetative treatments on BLM lands have had minor effects to wildlife habitat in the TPA. However, timber salvage on BLM lands has substantially reduced the distribution and amount of snag habitat for snag dependant species in the salvage units. Timber harvest along with residential development on private lands has substantially altered the landscape and caused a decline in the quality and quantity of wildlife habitat in the TPA.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the TPA. Motorized activities play a large role in the distribution of noxious weeds. The cumulative effects of the spread of noxious weeds from open roads would be greater under Alternative A than all other alternatives. Alternative A would result in more wildlife habitat being lost or degraded due to noxious weed infestations compared to the action alternatives. Alternative B would have fewer open roads than Alternatives A and D resulting in fewer infestations of noxious weeds. Alternative C would close the most roads and would have the fewest cumulative effects from loss of habitat due to noxious weeds. Open roads adjacent to BLM land would still be a conduit for the spread of noxious weeds.

Fragmentation of BLM lands in the TPA (only 10 percent of the TPA is in BLM ownership) as well as open roads on BLM lands (about 71 miles), private lands (about 769 miles), and other public lands (about 52 miles) has reduced the quality of wildlife habitat within the TPA. Roads within the TPA can cause disturbance to wildlife along with fragmentation and loss of habitat. Roads are associated with nearly every type of activity that has the potential to occur in the TPA including; vegetation treatments, timber salvage, mining, access to

private lands (ROWs), fire suppression, powerline corridors and recreation. Open roads in the Planning Area would likely increase due to development and management of private lands. Alternative A would have the greatest negative cumulative effects to wildlife and wildlife habitat from open roads with 44 miles of open roads. Alternative B would have fewer negative cumulative effects with 17 miles of open road than Alternatives A and D (38 open miles) but more than Alternative C (12 miles).

Historic and recent timber cutting, salvage harvest, past mining activity and firewood gathering in the TPA may have reduced the amount of suitable snag habitat for cavity nesting species. Alternative A would allow continued access to the area for firewood cutting. This could continue to prevent snag recruitment for snag dependant species and minimize the amount of down woody material. Alternative B would protect more snag and down woody habitat from loss due to firewood cutting than Alternatives A and D but would protect less of this habitat type than Alternative C.

Alternative A would have the greatest negative cumulative effects from open roads to wildlife and wildlife habitat of all alternatives. Under Alternative A, habitat on BLM lands would not be restored and would continue to be degraded over time. Disturbance to wildlife from open roads would continue to impact the distribution and use of the TPA by wildlife. Alternatives B and C would have greater beneficial cumulative effects to wildlife and wildlife habitats from closing roads than Alternatives A and D.

Even though the East Helena TPA is large (approximately 200,991 acres), open habitats of grasslands and shrublands along with high road densities in both the Decision and Planning Areas have prevented BLM lands from providing a large amount of suitable security habitat for big game during the hunting seasons. Under Alternatives A and D, roads would continue to reduce functional security habitat in this TPA more than Alternatives B and C.

Habitat mapped as core and subcore habitat and wildlife movement corridors would continue to have higher road densities and more negative cumulative effects under Alternative A than under the action alternatives. An increase in open roads in both the Decision and Planning Areas could result in a loss of core and subcore habitat under all alternatives but, especially, Alternatives A and D. The cumulative effects to core and subcore habitat and wildlife movement corridors would be beneficial under the action alternatives, especially Alternatives B and C.

The cumulative effects of high road densities would continue to negatively affect wildlife species during the breeding season more under Alternative A than under the action alternatives. Alternatives B and C would have the most beneficial cumulative effects to wildlife during

the breeding season compared to Alternative D and, especially, Alternative A.

## FISH

For the sake of this discussion, “open” roads include roads that are open with seasonal restrictions as well as roads that are open yearlong. Roads identified as “closed” within 300 feet of streams also include roads that would be “decommissioned” in these areas by alternative. Effects to water quality described in the Water Resources section would affect fish populations and fish habitat quality. Analyses described and tabulated in the Water Resources section are referred to in the context of effects to fish in the discussion below.

### Effects of Alternative A

Under Alternatives A, the East Helena TPA would have substantially more open roads (44 miles) compared to the action alternatives. Roads can have a wide range of effects on fish and fish habitat. These effects would include, but are not limited to, increased sedimentation from road construction and vehicle use, increased runoff, changes in surface water and drainage patterns from stream crossings, conduits for noxious weeds, loss of riparian vegetation, potential decreases in stream shading that could lead to water temperature increases, and changes in local fish populations when culverts are impassable and limit fish migration.

Watershed (or hydrologic) function can be used as an indicator of relative risk or impacts to fish habitat (Doppelt et al. 1993). Generally, watersheds with high road densities often have the largest negative effects on fish and aquatic resources. To determine the effects on watershed function, a moving windows analysis was conducted on BLM lands to look at the miles of roads that would be decommissioned and removed from the landscape for each alternative. During this analysis, it was assumed that even though closing roads would improve watershed function, closed roads would remain on the landscape and could still have negative impacts to water quality and prevent or impede the restoration of riparian vegetation. Under Alternative A, there would be 5,969 acres with low road density (**Table 4-59**), 4,665 acres with moderate road density, and 9,317 acres with high road density on BLM lands in the TPA. Alternative A would have fewer acres with low road density and more acres with high road density than the action alternatives. This alternative would be expected to have greater overall negative effects to watershed function due to roads than the action alternatives.

For this discussion, road miles within 300 feet of fish bearing streams on BLM lands would be considered an indicator of direct effects to fish habitat and fish populations. Under all alternatives, there would be 0.4 miles of closed road and 0 miles of open road within 300 feet of fish bearing streams. There are no roads (open or closed)

within 300 feet of streams containing special status fish species on BLM lands in the TPA.

Perennial non-fish bearing streams contribute to fish habitat indirectly by serving as conduits for watershed products (water, sediment, nutrients, contaminants, and in some cases woody material) (Meehan 1991 and Reid et al. 1994) to fish bearing streams (Forest Ecosystem Management Assessment Team 1993 and Takahi et al. 2002). Under Alternative A, there would be 0.7 miles of closed road and 2.0 miles of open road within 300 feet of perennial non-fish bearing streams on BLM lands in the TPA. Alternative A would have 1-1.3 more miles of open roads and 1-1.3 fewer miles of closed roads within 300 feet of perennial streams than the action alternatives.

This alternative would have the greatest negative impacts to fish and aquatic resources from open roads of all the alternatives.

### Effects of Alternative B

Under Alternative B, the East Helena TPA would have substantially fewer open roads (17 miles) compared to Alternative A (44 miles). Alternative B would have more open roads than Alternative C (12 miles) but less than Alternative D (38 miles). In the context of watershed function, Alternative B would have approximately 588 more acres in the low road density category and 381 fewer acres in the high road density category on BLM lands than Alternative A (Table 4-59). Alternative B would contribute to improved hydrologic function more than Alternative A. This analysis does consider “decommissioned” roads, but does not consider “closed” roads as contributing to watershed function. Even though closed roads could still have adverse effects to aquatic habitats, these roads have more potential to become revegetated and lessen sedimentation and runoff, and restore riparian vegetation (thus contributing to improved fish habitat conditions) than open roads. Under Alternative B, there would be approximately 15 more miles of closed roads than under Alternative A, an additional indication that Alternative B would pose less risk to fish habitat than Alternative A.

Effects associated with roads within 300 feet of fish bearing streams on BLM lands under Alternative B would be the same as under Alternative A. Alternative B would contribute fewer indirect effects to fish habitat associated with roads within 300 feet of perennial non-fish bearing streams on BLM lands than Alternative A. Under Alternative B there would be 1.8 miles of closed road and 0.9 mile of open road within 300 feet of perennial non-fish bearing streams on BLM lands in the TPA. Alternative A would leave 1.1 more miles open, and this same mileage less closed in these areas than Alternative B.

Overall, Alternative B would have fewer adverse effects to fish and aquatic habitats from increased fine sediment inputs, loss of large woody material, and loss of riparian vegetation than Alternative A.

### Effects of Alternative C

Under Alternative C, the East Helena TPA would have substantially fewer open roads (12 miles) compared to Alternative A (44 miles). Alternative C would have fewer, but similar, miles of open road as Alternative B (17 miles) and considerably less than Alternative D (38 miles).

In the context of watershed function, Alternative C would have approximately 531 more acres in the low road density category and 251 fewer acres in the high road density category on BLM lands than Alternative A (Table 4-59). This alternative would have 57 fewer acres in the low road density category and 130 more acres in the high road density category than Alternative B. Alternative C would contribute to improved hydrologic function more than Alternative A, but to a similar degree as Alternative B. This analysis does consider “decommissioned” roads, but does not consider “closed” roads as contributing to watershed function. Even though closed roads could still have adverse effects to aquatic habitats, these roads have more potential to become revegetated and lessen sedimentation and runoff, and restore riparian vegetation (thus contributing to improved fish habitat conditions) than open roads. Under Alternative C, there would be approximately 28 more miles of closed roads than under Alternative A, and about 13 more miles than under Alternative B.

Effects associated with roads within 300 feet of fish bearing streams on BLM lands under Alternative C would be the same as under Alternatives A and B.

Alternative C would contribute fewer indirect effects to fish habitat associated with roads within 300 feet of perennial non-fish bearing streams on BLM lands than all other alternatives. Under Alternative C there would be 2.0 miles of closed road and 0.7 mile of open road within 300 feet of perennial non-fish bearing streams on BLM lands in the TPA. This is a range of 0.2-1.3 more closed miles than the other alternatives. Alternatives C and B would have fewer negative effects to fish and aquatic habitats from fine sediment, loss of large woody material and loss of riparian vegetation compared to Alternative D and, especially, Alternative A.

### Effects of Alternative D

Under Alternative D, the East Helena TPA would have fewer open roads (38 miles) compared to Alternative A (44 miles). Alternative D would have considerably more open roads than Alternative B (17 miles) and Alternative C (12 miles).

With regard to hydrologic function, Alternative D is very similar to Alternative C. Alternative D would have approximately 533 more acres in the low road density category and 221 fewer acres in the high road density category on BLM lands than Alternative A (Table 4-59). This alternative would have 55 fewer acres in the low road density category and 160 more acres in the high

road density category than Alternative B. Alternative D would contribute to improved hydrologic function more than Alternative A. Under Alternative D, there would be approximately 3 more miles of closed roads than under Alternative A, about 12 miles less than under Alternative B, and about 25 miles less than under Alternative C. Since Alternative D would have fewer closed roads than Alternatives B and C, overall watershed function would be expected to be less under this alternative.

Effects associated with roads within 300 feet of fish bearing streams on BLM lands under Alternative D would be the same as under the other alternatives.

Alternative D would contribute fewer indirect effects to fish habitat associated with roads within 300 feet of perennial non-fish bearing streams on BLM lands than Alternative A. This alternative would have similar effects as Alternative B in this respect as it would leave 0.1 more mile of road open in these areas. Alternative D would have more road-related adverse effects to fish and aquatic habitats than Alternatives B and C, but would improve conditions over the current conditions in Alternative A.

### Cumulative Effects on Fish

The East Helena TPA supports a variety of native and introduced fish species. One of the major human influences to fish in the TPA has been the introduction of non-native trout species including rainbow trout, brook trout, and brown trout throughout the TPA and also Yellowstone cutthroat trout into Beaver Creek. Rainbow trout have hybridized with the native westslope cutthroat trout in many streams. Brook trout and brown trout have displaced the native cutthroats in other streams especially those altered by sedimentation and increased water temperatures brought on by human activities. Non-native fish stocking has eliminated native westslope cutthroat trout from much of its historic habitat in this TPA.

Damming of the Missouri River to create Holter Lake, Hauser Lake, and Canyon Ferry Reservoir dramatically altered aquatic habitat. Approximately 40 miles of the Missouri River were converted into lake habitat. These alterations, along with long-term stocking of non-native fish and other human-caused impacts have combined to replace native westslope cutthroat trout populations with non-native sport fisheries such as walleye, yellow perch, rainbow trout, and brown trout. These reservoirs now have multiple water quality impairments (see Water Resources section).

The East Helena Valley has been experiencing steady population growth. This trend is expected to continue, along with increased recreational use of this travel planning area. Primary recreation activities in the TPA include big game hunting, non-motorized uses (hiking, jogging, horseback riding, mountain biking, etc) and OHV uses (ATV, motorcycle).

Land development and urbanization has caused substantial impacts to watershed function in this TPA.

Agricultural activities from farming and ranching also contribute increases in nutrients, sedimentation, and loss of aquatic habitats. Many streams in the TPA have been impacted by historic and ongoing livestock grazing that breaks down streambanks, widens channels, removes vegetative cover, and causes an increase in fine sediment and nutrients.

Active mining claims are common in the area and there are active notices in the TPA, as well. Increases in mineral prices could lead to increased or renewed mining activity. Many watersheds and aquatic habitats in the TPA have been degraded by historic mining activities.

Fires, floods, and drought have historically affected fish habitat in the TPA. These disturbances can cause a pulse of sediment or may temporarily reduce the quality of fish habitat in some watersheds while leaving other streams largely unaffected (Reeves et al. 1995 and Dunham et al. 2003). Natural disturbances are typically followed by periods of stability, during which fish habitats and populations recover. Population recovery in disturbed streams may be facilitated by fish immigration from nearby drainages less affected by the catastrophic event (Dunham et al. 2003). From 1981-2004 there have been 18 wildland fires that burned 15,577 acres. Five of the fires were identified as human-caused and these fires burned the majority of the acres (15,535). The largest fire to occur from 1981-present was the 2000 Bucksnot Fire.

Timber harvest can alter the recruitment of large woody debris, reduce canopy closures and resulted in an increase in fine sediment to streams. Timber harvest along with associated roads can contribute substantially to the overall cumulative effects in forested watersheds. After the 2000 Bucksnot Fire, timber salvage occurred on approximately 250 acres of BLM lands as well as on private lands. Additional vegetation restoration may occur on BLM lands in the future. Vegetative treatments would be expected to be less under Alternatives A and C than Alternatives B and D. Overall, vegetative treatments on BLM lands have had minor effects to aquatic habitat in the TPA.

Roads are another major contributor of sediment to streams and a major problem with regards to cumulative watershed effects. Roads and trails can have localized effects on nearby stream segments or at stream crossing sites, especially fords. In some cases, effects are more extensive and may impair fish habitat for longer reaches of streams. Cumulatively, roads degrade aquatic habitat due to sedimentation from road construction and vehicle use, increased runoff, changes in surface water and drainage patterns from stream crossings, loss of riparian vegetation, loss of large woody material and roads can cause changes in local fish populations when culverts are impassable and limit fish migration. Alternative A

would have more negative cumulative effects to watersheds and individual streams due to roads than the action alternatives. Alternative B would have fewer negative cumulative effects than Alternatives A and D but more than Alternative C. Alternative B would improve overall watershed function as well as improve habitat in individual streams more than Alternatives A and D, and to a similar degree as Alternative C.

## SPECIAL STATUS PLANTS

### Effects Common to All Alternatives

Ground-disturbing activities from road construction and maintenance, as well as road use by vehicles can affect special status plant populations and habitat. These activities can reduce sensitive plant species through disturbance to individual populations, increasing competition from invasive species, and reducing habitat connectivity. Closure of roads and trails can improve or maintain sensitive plant populations or habitat by reducing avenues of noxious weed spread, maintaining habitat connectivity, and improving pollinator habitat. Road and trail restrictions have the same effects but to a lesser degree.

### Effects of the Alternatives

Under Alternative A, 36.6 miles of roads and trails would remain open, 7.7 miles of roads and trails would be open with seasonal restrictions, and 26.4 miles of roads and trails would be closed. On the open roads, effects would continue as described in the Effects Common to All Alternatives section. On the closed routes, vectors of noxious weed spread would be reduced and habitat connectivity and health would be improved for sensitive plants and their pollinators.

Under Alternative B, 13.7 miles of roads and trails would remain open, 3.3 miles of roads and trails would be open with seasonal restrictions, 41.9 miles of roads and trails would be closed, and 4.7 miles would be decommissioned. On the closed routes, vectors of noxious weed spread would be reduced and habitat connectivity and health would be improved for sensitive plants and their pollinators. The restricted roads would reduce weed spread a limited amount. By providing more closed and decommissioned roads, Alternative B would benefit and reduce risk to special status plants more than Alternative A.

Under Alternative C, 12 miles of roads and trails would remain open, 54.6 miles of roads and trails would be closed, and 4.0 miles would be decommissioned. On the closed routes, vectors of noxious weed spread would be reduced and habitat connectivity and health would be improved for sensitive plants and their pollinators. The restricted roads would reduce weed spread a limited amount. Alternative C would benefit and reduce risk to special status plants the most of all alternatives because it would eliminate disturbance, vehicular use, and spread of noxious weeds on the most road miles.

Under Alternative D, 36 miles of roads and trails would remain open, 1.9 miles of roads and trails would be open with seasonal restrictions, 29.7 miles of roads and trails would be closed, and 3.1 miles would be decommissioned. On the open roads, effects would continue as described in the Effects Common to All Alternatives section. On the closed routes, vectors of noxious weed spread would be reduced and habitat connectivity and health would be improved for sensitive plants and their pollinators. The restricted roads would reduce weed spread a limited amount. Alternative D would benefit and reduce risk to special status plants compared to Alternative A, but would pose more risk compared to Alternatives B and C.

### Cumulative Effects on Special Status Plants

Under all alternatives there are a number of past, present, and reasonably foreseeable future actions that affect special status plant populations.

Livestock grazing will continue in the area and has the potential to impact sensitive plant populations and habitat. On public lands, ongoing rangeland health assessments and implementation of livestock grazing guidelines would continue to improve or maintain sensitive species populations and habitat. On private lands, livestock grazing is expected to decline slowly as more ranch and farmland is subdivided. Conditions may improve or degrade as management changes.

Noxious weed control will continue on both public and private lands with varying degrees of success. To the extent that these efforts are successful, sensitive plants would benefit from the reduced competition. Use of herbicides for noxious weed control could cause mortality to special status plants if individual plants are inadvertently sprayed.

Recent and anticipated subdivision growth on private lands will lead to more road construction and maintenance. More roads and development will reduce sensitive plant species habitat and in some cases individual populations. Additionally, subdivisions have the potential to disrupt the connectivity of plant habitat and populations as well as disturbing or eliminating pollinators needed by sensitive species. Some sensitive species that require soil disturbance may benefit.

Timber sale activity disturbance can destroy or degrade sensitive plant habitat. On public lands, projects would be designed to avoid, mitigate, or enhance sensitive plant habitats. The disturbance associated with timber harvest activities does have the potential to increase noxious weed spread which degrades sensitive species habitat and individual plant populations.

The Bucksnot fire of 2000 burned a large portion of the Spokane Hills. The burn encouraged a lot of noxious weed spread, particularly Dalmatian toadflax on south facing slopes, which degraded sensitive plant habitat.

Conifer encroachment into grassland habitats was reversed by the fire thus restoring grassland habitat that could benefit some special status plant species.

At the scale of the entire East Helena TPA (all land ownerships), the BLM travel plan alternatives would have slightly variable contributions to cumulative effects on special status plants. Under Alternative A approximately 3 percent of all roads in the TPA would be closed. Under Alternative B adverse effects on special status plants would be slightly reduced compared to Alternative A because 5.2 percent of all roads in the TPA would be closed or decommissioned. Alternative C would provide the most benefits of all alternatives as 6.6 percent of all roads in the TPA would be closed or decommissioned. Alternative D would provide slightly more benefits than Alternative A but slightly fewer benefits than either Alternatives B or C as 3.7 percent of all roads in the TPA would be closed or decommissioned. Because BLM lands make up only 10 percent of the area in the TPA, activities on non-BLM lands would play a greater role in determining the status of special status plants.

## WILDLAND FIRE MANAGEMENT

Travel planning alternatives were analyzed to determine whether they could result in impact on wildland fire management, causing change to any of the following indicators:

- Fire regime condition class (FRCC)
- Firefighter and public safety
- Reducing threat to Wildland Urban Interface (WUI)

### Effects Common to All Alternatives

Public road access during the fire season provides opportunities for human-caused fires either due to catalytic converters on vehicles igniting dry vegetation, or due to some types of human activities. Roads that are closed to public access reduce the risk of human-caused fire starts in those areas.

Decommissioned roads and roads that are closed and not regularly maintained for navigability reduce access for fire suppression. Closed roads may become impassible due to vegetation regrowth, downfall of trees, or severe erosion. Some roads may be closed with earthen berms or fallen trees and would need to be physically manipulated to make them useable for vehicles again. These roads would extend firefighting response time and have negative impacts on efforts to reduce wildland fire threat to WUI areas and firefighter and public safety. In an emergency fire suppression situation, any navigable closed roads needed for fire suppression would be used immediately. Non-navigable closed roads could also be used if deemed to be needed for fire suppression, after needed improvements are made to make those roads useable. Planning and implementation of fuels reduction

treatments could occur in association with closed roads if variances for temporary road use were to be allowed. Variances would be subject to internal BLM review.

In the context of fuels reduction projects, availability of open roads is important to facilitating fuels project location as well as increasing project feasibility and decreasing costs. Open roads also facilitate spread of noxious weeds by transporting weed seed on vehicles and their tires. Presence of large noxious weed populations could delay or cause fuels projects to be cost-prohibitive due to the fact that the weeds may have to be treated before and/or after the fuels treatment. Also, some applications of fuel treatments (e.g., prescribed fire) may promote the spread of some weeds. The presence of weeds and non-native species are indicators that FRCC has departed from historical conditions.

Noxious weeds and non-native invasive species are well established and spreading in the East Helena TPA.

### Effects of Alternative A

Alternative A provides more motorized opportunities than non-motorized opportunities. Under Alternative A, a total of 44.3 miles of wheeled motorized routes would continue to be open (36.6 open yearlong, 7.7 miles seasonally restricted), while 26.4 miles (37 percent of total) would continue to be closed. Alternative A would allow for the greatest flexibility between alternatives for access for suppression purposes. Fuels project feasibility would be highest under this alternative. However, public access during the fire season would be the greatest under this alternative and would provide the most opportunities for human-caused fire starts.

The distribution of noxious weeds could be the greatest under alternative A with the most open roads and noxious weeds already well established. This would contribute to reduced feasibility of fuels reduction projects more than under any other alternative.

### Effects of Alternative B

Alternative B provides for separate use areas for wheeled motorized and non-motorized recreational opportunities. Under Alternative B, 13.7 miles of wheeled motorized routes would be available yearlong and 3.3 miles would be seasonally restricted. Alternative B would limit the flexibility for access for suppression purposes, and fuels project feasibility would go down compared to Alternative A due to the fact that motorized access would be limited to 17 miles of road. Of the 46.3 miles of closed roads, 4.7 miles would be decommissioned and would likely be unusable for fire suppression. The risk of human-caused fires associated with motorized use would be limited compared to Alternative A, due to a 28 percent decrease in miles of road open to motorized public travel compared to Alternative A.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the area. Motorized

activities play a large role in the distribution of noxious weeds. Because more roads would be closed under this alternative, Alternative B should help reduce the spread of noxious weeds and may make fuels treatments more feasible than under Alternative A, reducing FRCC departure.

### Effects of Alternative C

Alternative C would provide the least amount of wheeled motorized access in the East Helena travel planning area. Under Alternative C, 12.0 miles of wheeled motorized routes would be available yearlong.

Alternative C would limit the flexibility for access for suppression purposes, and fuels project feasibility would go down compared to both Alternatives A and B, due to the fact that access would be limited to 12 miles of road. Of the 58.6 miles of closed roads, 4.0 miles would be decommissioned and would likely be unusable for fire suppression. The risk of human-caused fires associated with motorized use would be the lowest of all alternatives, due to a 45 percent decrease in open road miles compared to Alternative A. However, this degree of reduced motorized access may promote more non-motorized users to a concentrated area, increasing the odds for a human-caused fire to occur by another ignition source.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the area. Because more road miles would be closed than under any other alternative, Alternative C should help reduce the spread of noxious weeds more than under any other alternative, and may make fuels treatments more feasible, reducing FRCC departure.

### Effects of Alternative D

Under Alternative D, 36 miles of open routes would be available yearlong for wheeled motorized use and 1.9 miles would be seasonally restricted. Of the 32.8 miles of closed roads, 3.1 miles would be decommissioned and would likely be unusable for fire suppression. Alternative D would be more flexible than Alternatives B and C, but it would limit flexibility for access for suppression purposes, and fuels project feasibility would go down compared to Alternative A. The risk of human-caused fires associated with motorized vehicle use would be reduced compared to Alternative A, but would be greater than under Alternatives B and C, due to a 9 percent decrease in open roads compared to Alternative A.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the area. Because an intermediate number of road miles would be closed under this alternative, Alternative D should help reduce the spread of noxious weeds and may make fuels treatments more feasible than under Alternative A, but would increase weed spread and potentially make projects less feasible than under Alternatives B or C.

## Cumulative Effects on Wildland Fire Management

Effects on wildland fire management associated with any of the BLM travel plan alternatives would be overshadowed by reasonably foreseeable uncharacteristic fire, continued fire suppression made necessary by WUI and intermingled landownership, and large-scale forest insect infestations and disease outbreaks that would continue for the planning period. BLM lands make up about 10 percent of all lands while BLM roads make up about 8 percent of all roads in the TPA.

Revision of the Helena National Forest Plan could result in more or less treatment of adjacent areas. Because no decision has been made, the effects are not known. Wildland fire management, particularly where wildland fire use (management of naturally ignited wildland fires to achieve resource objectives) may occur on USFS lands, will be determined in the plan decision. BLM would need to coordinate with USFS on all wildland fire use actions and events. Wildland fire use on USFS lands could affect FRCC on BLM lands. USFS lands make up 6.6 percent of all lands in the TPA.

Additionally, decisions to increase the level of wildland fire use, prescribed fire, or open burning by the public could impact the BLM's ability to use wildland fire and prescribed fire due to air quality concerns and requirements. This could postpone or eliminate BLM fuel reductions or treatments to improve FRCC.

Access is a critical component of wildland fire suppression. In some cases, access to public lands is being reduced by adjacent landowners gating or closing roads, which could hamper wildland fire suppression efforts and pose a risk to public and firefighter safety. Reducing access would also increase the potential for larger fires to occur due to an increase in time needed to access a fire and control it. Time needed to move in crews would be extended, and the ability to effectively apply and place resources (e.g., engines, water tenders, etc.) would be limited.

Effects on wildland fire management, including FRCC and firefighter and public safety due to management accomplished by other landowners may affect wildland fire management on public lands. When activity fuels (such as logging slash) are not treated adequately, fuel hazard could increase on adjacent lands which could affect fire intensity and severity on public lands. When adjacent owners treat fuels or implement fire mitigation plans in the WUI, fires are easier to suppress and firefighter safety is increased. In this TPA, activities on private lands (64 percent of all lands in TPA) would have more influence on future fire characteristics in the area overall than activities on BLM lands (10 percent of all lands in TPA).

Human population increases and subsequent residential development are likely to expand the WUI and could

alter forest management, taking the emphasis off restoring historic composition and structure and focusing more on fuel reduction.

## **CULTURAL AND PALEONTOLOGICAL RESOURCES**

### **Effects Common to All Alternatives**

Alternative-specific risks or impacts to cultural and paleontological resources are difficult to discern due to a lack of extensive site-specific knowledge about the presence of these resources in a given TPA. By designating open routes, limiting open-country travel, and closing some routes, inadvertent discovery of cultural and paleontological resources and vandalism to them is reduced. Higher road densities in a given area would allow greater access to more land on the average, but that does not imply greater amounts of vandalism, since the vehicles would remain on designated routes.

## **VISUAL RESOURCES**

### **Effects Common to All Alternatives**

Roads (temporary or permanent) may affect visual quality. Roads that remain open for public use may impact visual qualities where noticeable. The quantity of open roads would also influence sensitivity levels since with more open roads, more areas would generally be viewed by more members of the public. Closing or decommissioning roads would generally reduce effects to visual resources and reduce sensitivity levels because fewer members of the public would generally be accessing and viewing areas with closed roads.

### **Effects of the Alternatives**

Under Alternative A, 44.3 road miles would be open (including open with seasonal restrictions), 26.4 miles would be closed. Alternative A would have the greatest impact on visual resources of all alternatives.

Under Alternative B there would be 17 miles of open road (including roads open with seasonal restrictions), 41.9 miles of closed road, and 4.7 miles of decommissioned road. Additional road closures and decommissioning under this alternative would reduce effects on visual resources compared to Alternative A.

Under Alternative C there would be 12 miles of open road, 54.6 miles of closed road, and 4 miles of decommissioned road. Alternative C would have fewer adverse effects and would improve visual resources the most of all alternatives.

Under Alternative D there would be 38.6 miles of open road (including roads open with seasonal restrictions), 29.7 miles of closed road, and 3.1 miles of decommissioned road. Effects to visual resources would be similar but slightly less than under Alternative A, the greater than under Alternatives B and C.

## **Cumulative Effects on Visual Resources**

Under all alternatives, most activities on BLM lands would generally not adversely affect visual resources to unacceptable degrees because discretionary activities on BLM lands would be required to meet Visual Resource Management objectives within individual project areas.

Activities on non-BLM lands, particularly activities near BLM lands associated with residential development, urbanization, or vegetation management, could have adverse cumulative effects on visual resources on BLM lands because BLM VRM objectives would obviously not apply to non-BLM activities.

## **LIVESTOCK GRAZING**

### **Effects Common to All Alternatives**

Roads and trails can potentially affect livestock grazing management. Roads and trails often act as avenues of noxious weed spread. Noxious and invasive weeds can reduce the quantity and quality of forage for livestock. Users of roads and trails can cause management problems for livestock permittees when they leave gates open at fences, vandalize range improvements, or harass livestock either purposely or unintentionally.

Closure of roads and trails can improve or maintain the forage base by reducing vectors of noxious weed spread. Additionally, road and trail closures can reduce management conflicts. On the other hand, closures may increase permittees' time requirements if and when work has to be conducted with horses or afoot. Permittees could minimize effects of closed roads on grazing management time by seeking variances from the BLM for temporary use of specific closed roads.

### **Effects of the Alternatives**

Under Alternative A, 44.3 miles of roads and trails would remain open during grazing season, and 26.4 miles of roads and trails would be closed. Effects would continue as described in the Effects Common to All Alternatives section. All action alternatives would close or decommission more roads and trails than Alternative A. As more roads and trails are closed, noxious and invasive weed spread along with multiple user conflicts would be reduced. On the other hand, permittee management time may increase. Consequently, more effects as described under the Effects Common to All Alternatives section would occur under Alternative C (12 miles open, 58.6 miles closed or decommissioned) than under any other alternative. Alternative B (16 miles open during grazing season, 46.6 miles closed or decommissioned) would produce fewer effects than Alternative C, but more than Alternative A or Alternative D (38 miles open during grazing season, 32.8 miles closed or decommissioned). Alternative D would have fewer effects than Alternatives B or C, but more than Alternative A.

## Cumulative Effects on Livestock Grazing

A number of past, present, and reasonably foreseeable future actions affect livestock grazing at the scale of the entire East Helena TPA. Livestock grazing will continue in the area and has the potential to impact forage quality and quantity. On public lands, ongoing rangeland health assessments and implementation of livestock grazing guidelines would continue to improve or maintain forage quality and quantity. On private lands, livestock grazing is expected to decline slowly as more ranch and farmland is subdivided.

Noxious weed control will continue on both public and private lands with varying degrees of success. To the extent that these efforts are successful, forage conditions would benefit.

The Bucksnot fire of 2000 burned a large portion of the Spokane Hills. The burn encouraged a lot of noxious weed spread, particularly Dalmatian toadflax on south facing slopes. On the other hand, many grasslands were improved with the reduction of conifers; forage production for livestock increased substantially.

Because BLM lands make up only 11 percent of all lands in the East Helena TPA, all of the BLM travel plan alternatives would have a minimal contribution to cumulative effects on livestock grazing at the scale of the entire TPA.

## MINERALS

### Effects Common to All Alternatives

Road closures and decommissioning could affect access to locatable minerals in areas of moderate or high mineral potential. Operators would be required to seek travel variances from the BLM to use motor vehicles to conduct mineral exploration on closed roads, or to conduct exploration on seasonally restricted routes during the season of closure. Decommissioned roads could not be used for motorized exploration. Travel management provisions that require a permit or variance could result in reducing access to mining claims or interfere with the ability to conduct exploration work for some operators. Historic knowledge of mineralized areas associated with “closed” roads may be lost after long periods of time if no exploration occurs there. Additional costs and time could be required for exploration and development of mining projects associated with closed or decommissioned roads. Impacts of road closures or decommissioning in areas with low mineral potential would not be substantial to mineral development.

### Effects of the Alternatives

Effects of the alternatives for the East Helena TPA on access to mineralized areas are summarized in **Table 4-64**. Alternative A would close 18 percent of the roads in high mineral potential areas.

Alternative B for the East Helena area travel plan would seasonally restrict 7 percent and would close 15 percent of the roads in high mineral potential areas (**Table 4-64**). Alternative B would have more impacts than Alternative A.

Alternative C would close 22 percent of the roads in areas with high mineral potential and 1 percent of those with moderate mineral potential (**Table 4-64**). Alternative C would have the most potential to affect access to mineralized areas of all the alternatives.

Alternative D would seasonally restrict 3 percent, and close 9 percent of the roads in areas with high mineral potential (**Table 4-64**). Alternative D would more impacts than Alternative A, but less than Alternatives B and C.

<b>Table 4-64</b>				
<b>Analysis of Access to Mineral Potential Areas</b>				
<b>East Helena TPA</b>				
<b>Mineral Potential</b>	<b>Open Miles (%)</b>	<b>Seasonally Restricted Miles (%)</b>	<b>Closed Miles (%)</b>	<b>Decom Miles (%)</b>
<b>Alternative A</b>				
High	8.8 (12%)	0.0 (0%)	12.4 (18%)	0.0 (0%)
Moderate	1.3 (2%)	0.1 (0%)	0.0 (0%)	0.0 (0%)
Low	26.5 (37%)	7.6 (11%)	14.0 (20%)	0.0 (0%)
Total Miles = 70.7				
<b>Alternative B</b>				
High	6.0 (8%)	4.8 (7%)	10.5 (15%)	0.0 (0%)
Moderate	0.5 (1%)	0.8 (1%)	0.1 (0%)	0.0 (0%)
Low to none	7.2 (10%)	4.8 (7%)	31.3 (44%)	4.7 (7%)
Total Miles = 70.7				
<b>Alternative C</b>				
High	5.4 (8%)	0.0 (0%)	15.8 (22%)	0.0 (0%)
Moderate	0.7 (1%)	0.0 (0%)	0.8 (1%)	0.0 (0%)
Low to none	6.0 (8%)	0.0 (0%)	38.0 (54%)	4.0 (6%)
Total Miles = 70.7				
<b>Alternative D</b>				
High	12.9 (18%)	1.9 (3%)	6.5 (9%)	0.0 (0%)
Moderate	1.4 (2%)	0.0 (0%)	0.0 (0%)	0.0 (0%)
Low to none	21.7 (31%)	0.0 (0%)	23.2 (33%)	3.1 (4%)
Total Miles = 70.7				

Mineral Potential areas have been delineated by the Montana Bureau of Mines and Geology (MBMG)

## Cumulative Effects on Access to Mineralized Areas

No other past, present, or reasonably foreseeable future actions in the East Helena TPA would adversely affect mineral availability or access.

Overall, there is low potential for leasable fluid mineral development throughout federal mineral estate lands in the Butte Field Office. However, in this context, the Reasonably Foreseeable Development Scenario for the Butte RMP identified approximately 13,492 acres of federal mineral estate lands in this TPA where oil and gas development potential is slightly higher (low to moderate) and may potentially occur. Potential contribution of this activity to cumulative effects for other resources would be unknown until this activity is site-specifically planned.

## RECREATION

Effects of travel plan alternatives on Recreation in the East Helena TPA are described qualitatively below.

### Effects of Alternative A

Alternative A would provide more motorized opportunities than non-motorized opportunities. Under Alternative A, a total of 44.3 miles of wheeled motorized routes would be open (36.6 miles open yearlong, 7.7 miles seasonally restricted). With the exception of the Ward Ranch, McMasters, and Spokane Hills temporary area closures, the remainder of the travel planning area would remain available to cross-country area snowmobile use, as well as travel on all existing routes during the season of use (12/2-5/15), conditions permitting.

### Effects of Alternative B

Alternative B would provide for separate use areas for wheeled motorized and non-motorized recreational opportunities. Under Alternative B, 13.7 miles of wheeled motorized routes would be available yearlong, and 3.3 miles would be seasonally restricted. Cross-country snowmobile travel would be allowed, as well as travel on all existing routes during the season of use (12/2-5/15), except for the North Hills, Dana's Bar, and the area located to the west of Prickly Pear Creek. The remainder of the travel planning area (McMasters Hills, Ward Ranch, and Spokane Hills) would be closed to all cross-country snowmobile use, including travel on existing roads and trails. Conflicts between non-motorized users (cross-country skiers, snowshoers) and snowmobilers would be expected to continue or increase in areas with shared use.

### Effects of Alternative C

Alternative C would provide the least amount of wheeled motorized access in the East Helena travel planning area of all alternatives. Under Alternative C, 12.0 miles of wheeled motorized routes would be avail-

able yearlong. No cross-country snowmobile use would be allowed; use would be restricted to designated routes only during the season of use (12/2-5/15), snow conditions permitting. This would likely reduce conflicts with non-motorized winter users (cross-country skiing, snowshoeing).

### Effects of Alternative D

Alternative D would provide the highest level of motorized access and the fewest non-motorized opportunities of the action alternatives. Under Alternative D, 36.0 miles of wheeled motorized routes would be available yearlong, and 1.9 miles would be seasonally restricted. Snowmobile management under would be as follows: cross-country travel would be allowed, as well as travel on all existing routes during the season of use (12/2-5/15), for the North Hills, Dana's Bar, and the area located to the west of Prickly Pear Creek. The Ward Ranch and the Big Bend areas would be closed to all cross-country snowmobile use as well as travel on designated routes.

### Cumulative Effects on Recreation

Under Alternative A, motorized travel opportunities would be the greatest under this alternative given the miles of roads available to wheeled vehicles and the acres available to snowmobile use. Big game hunting opportunities within the North Hills, McMaster Hills, Ward Ranch and Spokane Hills would continue. Existing travel restrictions in these areas would encourage big game retention, quality walk-in hunting and game retrieval challenges as motorized vehicle use would be limited. During the non-hunting season conflicts between non-motorized and motorized users would remain relatively high within the North Hills. Public access and management of developed recreation sites along the Missouri River would continue to provide for a wide spectrum of water based opportunities and visitor trends are expected to increase. The newly constructed 30-unit campground and day-use facility at White Sandy on lower Hauser Lake scheduled to be open 5/25/07 will help meet growing visitation needs and better distribute use on the 15-mile lake.

Under Alternative B, motorized travel opportunities would be decreased while non-motorized opportunities would be enhanced overall. Big game hunting opportunities within the North Hills, McMaster Hills, Ward Ranch, and Spokane Hills would continue. Additional travel restrictions in these areas would promote more big game retention on public lands and better walk-in hunting experiences. Opportunities for individuals who are physically challenged would be improved in the Spokane Hills. In addition, game retrieval would be enhanced since motorized routes would be provided in the Spokane Hills. More emphasis would be placed on maintaining undeveloped open space areas for dispersed recreation. Given the increasing development pressures on adjoining private lands throughout the Missouri River

corridor, it is anticipated that these open areas will be more important with time. Use levels within the North Hills are expected to increase while conflicts between non-motorized and motorized users should be reduced. Although available travel routes and motorized riding opportunities would be limited, access to higher elevation lands and quality walk-in areas would be retained to help disperse users and ensure natural settings. Cumulative impacts on developed recreation sites and water based activities would be similar to Alternative A.

Alternative C would impose the greatest impacts on motorized travel opportunities while opportunities for non-motorized experiences would be the most benefited. Recreation Opportunity Spectrum management and big game hunting opportunities within the TPA would be similar to Alternative B with the exception that no motorized routes would be provided for big game retrieval or handicapped hunting in the Spokane Hills. Cumulative impacts on developed recreation sites and water based activities would be similar to Alternative A.

Under Alternative D, cumulative effects of the travel management actions coupled with all other existing and reasonably foreseeable actions would be similar to Alternative A.

## TRAVEL MANAGEMENT AND ACCESS

### Effects of Alternative A

Under Alternative A in the East Helena TPA, there would be 36.6 miles of BLM road open yearlong, 7.7 miles open with seasonal restrictions, and 26.4 miles of closed roads (Table 4-65). Alternative A would provide for the greatest degree of motorized opportunities, and the lowest degree of non-motorized opportunities of all alternatives. With the exception of the Ward Ranch, McMasters, and Spokane Hills temporary area closures, the remainder of the TPA would remain available to cross-country area snowmobile use, as well as travel on all existing routes during the season of use (12/2-5/15), conditions permitting.

The extent of management activities and costs under Alternative A would be mixed. Less personnel time would be required to monitor travel compliance than

under any alternative. However, more effort would be required for initial implementation (signing designated routes, installing bulletin boards) than under any other alternative. Estimated costs for road/trail maintenance would be highest of all alternatives.

The need for BLM and members of the public to obtain travel variances for temporary specific uses of specific closed roads would be minimal under this alternative, given the availability of motorized access.

### Effects of Alternative B

Alternative B in the East Helena TPA would help provide separate use areas for wheeled motorized and non-motorized recreational opportunities. Motorized access in the North Hills area would decrease compared to Alternative A (Table 4-65). Other than route 516, the primary access route to a non-motorized trailhead in the North Hills, the remaining road network would be seasonally restricted to prevent soil erosion. The result of these management actions would increase opportunities for non-motorized users and enhance their enjoyment through the increase in trails exclusively for hiking, mountain biking, horseback riding, and other non-motorized activities.

Under Alternative B, cross-country snowmobile travel would be allowed, as well as travel on all existing routes during the season of use (12/2-5/15), for the North Hills, Dana's Bar, and the area located to the west of Prickly Pear Creek. The remaining areas (McMasters Hills, Ward Ranch, and Spokane Hills) would be closed to all cross-country snowmobile use, including travel on existing roads and trails. Conflicts between non-motorized users (cross-country skiers, snowshoers) and snowmobilers would be expected to continue or increase in areas with shared use.

Motorized access for the McMasters area would be reduced compared to Alternative A.

One additional non-motorized trailhead would be established in the Big Bend area, increasing opportunities for hiking, horseback riding, and other non-motorized pursuits.

Opportunities for disabled hunters would increase compared to the other alternatives. Motorized access to the southern portion of the Spokane Hills would be allowed for hunters with a disability for a two-week period each year. These same motorized routes would be available during the general hunting season for game retrieval opportunities.

Route closures across 60 percent of the area would reduce unauthorized travel (illegal off-road use by ATVs and motorcycles) and illegal activities (underage alcohol use, drug use, vandalism, dumping) in the North Hills and elsewhere.

The reduction in motorized use under Alternative B would enhance safety among users of the East Helena

Proposed Management	Total Miles			
	Alt A	Alt B	Alt C	Alt D
<b>Wheeled motorized routes</b>				
Open Yearlong	36.6	13.7	12.0	36.0
Seasonally Restricted	7.7	3.3	0	1.9
Closed	26.4	41.9	54.6	29.7
Decommissioned	0	4.7	4.0	3.1
Non-motorized trails <sup>1</sup>	26.4	47.1	59.1	32.6

<sup>1</sup> Non-motorized trails include all existing trails, closed roads, and decommissioned roads.

TPA, compared to Alternatives A and D, and to a similar extent as under Alternative C.

Trailhead development costs would be greater under Alternative B than under Alternative A due to the development of new non-motorized trailheads in the North Hills and Big Bend areas.

The extent of management activities and costs under Alternative B would be mixed. Less personnel time would be required for initial implementation (signing designated routes, installing bulletin boards) than under Alternative A. However, more effort would be required for public education and compliance than under Alternative A. Estimated costs for road/trail maintenance would be less than under Alternative A.

The need for BLM and members of the public to obtain travel variances for temporary specific uses of specific closed roads would be greater under Alternative B than under Alternative A.

### Effects of Alternative C

Alternative C would provide the least amount of wheeled motorized access in the East Helena TPA of all alternatives. The area would feature only 12.0 miles of motorized access under Alternative C, which is about 73 percent less than under Alternative A, and 29 percent less than Alternative B (**Table 4-65**).

Closure and decommissioning of routes in the East Helena TPA would result in an increase in non-motorized opportunities with a corresponding decrease in motorized opportunities. Alternative C would provide 55 percent more miles of non-motorized trails than Alternative A, and 20 percent more than Alternative B.

No cross-country snowmobile use would be allowed. Use would be restricted to designated routes only during the season of use (12/2-5/15), snow conditions permitting. This would likely reduce conflicts between snowmobilers and non-motorized winter users (cross-country skiing, snowshoeing).

Having routes 0516A and 0516 provide the only motorized access to the North Hills would result in decreased motorized opportunities but increased opportunities for non-motorized recreation (and low levels of conflict).

Keeping route 050133A closed at its current location (regardless if the Ward Ranch is vacated in the future) would result in fewer motorized opportunities in the Ward Ranch area than under Alternative B. However, non-motorized opportunities would increase under Alternative C because visitors could park at the current motorized closure area, and walk approximately 0.25 mile to the ranch complex.

Motorized access to the McMasters area would be the same under Alternatives B and C, representing a reduction in motorized use to the area compared to Alternative A.

Allowing motorized access to only the primary residential access routes in the Prickly Pear Creek area (south of Black Sandy) and no motorized access in the Big Bend area would result in an increase in non-motorized recreational opportunities in both these areas. Motorized access for these areas would be more restricted under Alternative C than under all other alternatives.

Restricting motorized access in the Spokane Hills area to a non-motorized trailhead at the end of route EH07A would result in an increase in non-motorized opportunities in this area. Alternative C would be more restrictive than the other alternatives and would result in a decrease in motorized opportunities in this area.

Not developing a non-motorized trailhead in the Big Bend area would result in a decrease in travel management costs under Alternative C compared to Alternative B.

The extent of management activities (and costs) under Alternative C would be mixed. Less personnel time would be required for initial implementation (signing designated routes, installing bulletin boards) than under any other alternative. However, more effort would be required for public education and compliance than under any other alternative. Estimated costs for road/trail maintenance would be the lowest of the alternatives.

The need for BLM and members of the public to obtain travel variances for temporary specific uses of specific closed roads would be greater under Alternative C than under any other alternative.

### Effects of Alternative D

Alternative D would provide the highest level of motorized access in the East Helena TPA of the action alternatives, featuring approximately 33 percent more open routes than under Alternatives B and C (**Table 4-65**). All of the designated routes would be available for motorized use in the North Hills compared to the seasonally restricted closures under Alternatives A, B, and C. Snowmobile management under Alternative D would be as follows: cross-country travel would be allowed, as well as travel on all existing routes during the season of use (12/2-5/15), for the North Hills, Dana's Bar, and the area located to the west of Prickly Pear Creek. The Ward Ranch and the Big Bend areas would be closed to all cross-country snowmobile use as well as travel on designated routes. Opportunities for snowmobile use would be less than under Alternative A, but greater than under Alternatives B and C.

Alternative D would not minimize or reduce conflicts between motorized and non-motorized recreation in the North Hills, where conflicts are most evident within the East Helena TPA, because dispersed recreational opportunities would not be provided. User conflict would be greater under Alternatives A and D than Alternatives B and C.

Increasing motorized access in the McMasters area by adding a new loop route would result in increased opportunities for motorized vehicle users. Reducing the number of non-motorized trailheads would result in a decrease in non-motorized opportunities in this area.

Increasing motorized access west of Prickly Pear Creek, in the Big Bend area, the Spokane Hills, and in the Townsend area would result in increased motorized opportunities. Conflict between motorized and non-motorized users would increase as well.

Relocating the trailhead in the Spokane Hills would result in increased travel management costs compared to Alternative A.

The extent of management activities and costs under Alternative D would be mixed. Less personnel time would be required to monitor travel compliance than under Alternatives B and C, but slightly more would be needed than under Alternative A. However, more effort would be required for initial implementation (signing designated routes, installing bulletin boards) than under Alternatives B and C, but less would be needed than under Alternative A. Estimated costs for road/trail maintenance would be higher than under the other action alternatives.

The need for the BLM and members of the public to obtain travel variances for temporary specific uses of specific closed roads would be greater under Alternative D than under Alternative A, but less than under Alternatives B and C.

## Cumulative Effects on Travel Management and Access

Under all alternatives, there are a number of past, present, and reasonably foreseeable future BLM and non-BLM actions and activities affecting travel management and access in the East Helena TPA.

East Helena Valley has been experiencing steady human population growth. This trend is expected to continue, along with increased recreational use of this travel planning area. These factors could lead to increased public pressure to alter travel planning to accommodate either more, or less motorized use.

The majority of BLM managed routes for the East Helena Travel Planning area are located in or adjacent to the McMaster Hills/Spokane Bay, Mt. Bend, and North Hills sub-planning areas. As with the Scratchgravel Hills (Helena TPA), these areas are surrounded by residential development, and have experienced steady residential development over the past 15-20 years. This combination of rapid urbanization and increased recreational use has led to increased social conflict; between area residents and recreation users, and among recreational users themselves (motorized/non-motorized). As a result, there have been public demands to alter the existing travel management for these areas, to accommodate either

more, or less motorized use. The remaining routes for the TPA are located in the Spokane Hills and Townsend sub-travel planning areas. The Spokane Hills and Townsend sub-travel planning areas are more rural in character, but also have potential for urbanization.

Recreation use is well established in the TPA. Primary recreation activities include water based activities, big game hunting, non-motorized uses (hiking, jogging, horseback riding, mountain biking, etc.), and OHV uses (ATV, motorcycle). As recreation use grows, conflicts between non-motorized and motorized recreation users could lead to increased public demands for either more, or less motorized use.

Spokane Creek (Hauser Lake) is an important habitat for spawning fish. Portions of the TPA (North Hills, areas adjacent to Canyon Ferry and Hauser Lakes) provide winter range for mule deer and elk. Concerns could lead to demands to restrict motorized use in these areas.

The Lewis and Clark National Historic Trail, proposed Spokane Creek ACEC, and Missouri River eligible WSR segment (3 mile portion located below Hauser Dam) being considered in the RMP revision are located within the TPA. These special designations could influence (restrict) travel management for existing roads and trails as well as for new proposed roads and trails.

In some site specific cases, visual resource management may affect or restrict new road/trail construction.

Urban development may lead to an increase in right-of-way permits to accommodate private property/development access. As a result, public access to BLM lands, via these rights-of-ways, could increase as well.

Limits or reductions in the BLM's funding and ability to maintain designated routes could lead to an overall reduction in open road miles.

A variety of resource management projects, such as BLM initiated vegetation treatments, or wildland fire fuels reduction projects, could affect travel management. Forest management activities from 1984 to present include 250 acres of fire replanting and 250 acres of timber salvage. Future wildland fire management activities include a 500-1,500 acre mechanical and/or prescribed fire treatment for the North Hills, focused on the urban interface areas. This project is anticipated to begin in 2009, and last several years. Depending on the type and scope of project, effects could vary from temporary, short-term area/route closures, to new opportunities (new routes) for motorized or non-motorized access.

Active claims are common in the areas with high potential and there are active notices in the travel planning area as well. Increases in mineral prices could lead to increased or renewed mining activity. Depending on the type and scope of mining activity, effects could vary from temporary, short-term area/route closures, to in-

creased opportunities (new routes) for motorized or non-motorized access.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the area. Motorized activities play a large role in the distribution of noxious weeds. Concerns over the spread of noxious weeds could influence travel management, and lead to fewer motorized opportunities.

Motorized use on dirt roads and trails is a major contributor to soil erosion and stream sedimentation. These concerns may influence travel management, and result in fewer motorized opportunities. This is an important consideration in the East Helena area as the Montana Department of Environmental Quality is working on water quality restoration plans in the area.

Trash dumping, drug use, underage alcohol use, unattended camp fires, and vandalism occur throughout the travel planning area, but especially in the rural/urban interface areas. Most of these activities are directly associated with motorized use. Continuing concerns with illegal activities may influence travel management and lead to fewer motorized opportunities.

The Bureau of Reclamation (BOR) manages approximately 11,500 acres of land surrounding Canyon Ferry Reservoir. BOR actions (such as new recreation site developments) could influence travel management on adjacent BLM lands as well, exerting pressure for either more or less motorized access.

For perspective, BLM managed lands represent approximately 10 percent of the total travel planning area (200,991 total acres, 20,039 BLM acres); while BLM managed routes represent approximately 8 percent of the total routes available (892.2 total miles, 70.7 miles BLM roads/trails). Future travel management (for all agencies, nationwide) is likely to lead to fewer opportunities for motorized recreational use than under current management (particularly for OHV use).

As a result, BLM routes available to motorized use could experience increased use from displaced users, leading to more concentrated use, increased resource impacts, user conflicts, and pressure to reduce motorized use.

Under all alternatives, overall increases in human population, urbanization, recreation use, user conflicts; and concerns for wildlife, noxious weed spread, soil erosion/water quality, and illegal activities are likely to lead to increased demands to restrict motorized travel, particularly in areas with urban development, such as the McMaster Hills/Spokane Bay, Mt. Bend, and North Hills areas. Under Alternative A, as urbanization continues and both motorized (wheeled and snowmobile) and non-motorized use increases, user conflict would increase in the East Helena TPA. Under the action alternatives, separate use areas and decreased road density would reduce user conflicts. Under Alternative B, these

pressures would have less impact on travel management than under Alternatives A and D, due to the overall reduction in motorized opportunities and separation of uses. Under Alternative C, these pressures would have the least impact on travel management than under the other alternatives, due to the reduction in motorized opportunities. Under Alternative D, these pressures may lead to increased demands to restrict motorized travel, particularly in areas with urban development, such as the McMaster Hills/Spokane Bay, Mt. Bend, and the North Hills areas.

## TRANSPORTATION FACILITIES

For the sake of this discussion, “open” roads include roads that are open yearlong as well as those that are open with seasonal restrictions.

### Effects of Alternative A

Under Alternative A, the East Helena TPA would have 44.3 miles of open roads and no motorized trails (**Table 4-66**). Estimated costs for annual maintenance and stabilization of roads under Alternative A would be similar to Alternative D and much less than under Alternatives B and C. Estimated annual costs for monitoring, compliance and weed control would be higher than under the action alternatives, but close to the same as under Alternative D.

### Effects of Alternative B

Under Alternative B, the East Helena TPA would have 17 miles of open roads and no motorized trails (**Table 4-66**). Estimated costs for annual maintenance and stabilization of roads under Alternative B would be less than under Alternatives A and D but more than under Alternative C. Estimated annual costs for monitoring, compliance and weed control would also be less than under Alternatives A and D but more than under Alternative C.

The addition of a non-motorized trailhead at the end of route 50108 in the North Hills and on the ridge top near the end of EH 037 in the Big Bend area would result in an increase in transportation facility costs for trailhead development and maintenance. Designation of the “hunters with a disability” access in the South Hills would also represent an increase in transportation facility costs for signage and sign maintenance. These increases would be offset by reduced costs associated with having fewer open road miles to maintain in the long-term.

### Effects of Alternative C

Under Alternative C, the East Helena TPA would have 12 miles of open roads and no motorized trails (**Table 4-66**). Estimated costs for annual maintenance and stabilization of roads under Alternative C would be the least of all the alternatives due to the least number of motorized routes. Estimated annual costs for monitoring,

compliance, and weed control would also be less than under the other alternatives.

There would be a short-term increase in transportation facility costs under Alternative C resulting from the increase in signage required to mark closed and restricted routes. Indirect costs associated with sign maintenance and replacement would be greater under Alternative C than under the other alternatives; however, this effect would be short term because the public would become accustomed to the route changes over time.

### Effects of Alternative D

Under Alternative D, the East Helena TPA would have 37.9 miles of open roads and no motorized trails (**Table 4-66**). Estimated costs for annual maintenance and periodic stabilization of roads under Alternative D would be similar to Alternative A, and less than under Alternatives B and C. Estimated annual costs for monitoring, compliance and weed control would be less under Alternative D than Alternative A and more than under Alternatives B and C.

Constructing several new designated routes under Alternative D would result in a short-term increase in transportation facility costs for the signage and potentially for more culverts, and a long-term increase for route maintenance associated with new routes. These costs would be offset in the long-term by reduced costs associated

with having fewer road miles to maintain than under Alternative A.

Relocation of the trailhead in the Spokane Hills area would result in a short-term increase in transportation facility costs for trailhead development and signage.

## LANDS AND REALTY

### Effects Common to All Alternatives

The Butte Field Office administers approximately 62 rights-of-way (ROW) and 3 non-commercial occupancy leases within the boundaries of the East Helena TPA, which encumber approximately 1,609 acres of BLM land (**Table 4-67**). Various types of road rights-of-way are the most common type of grant, accounting for 34 percent, or about one third of the total. Other types of authorized uses include: oil and gas pipelines, lines for electrical distribution and telephone facilities, communication sites, ditches, railroads, and mineral material sites.

Approximately two right-of-way applications for new facilities as well as amendments, assignments, renewals, or relinquishments of existing right-of-way grants are processed annually in the TPA. This would not vary by alternative.

The general trend of granting rights-of-way is expected to increase through the planning period as a result of increasing public demands. From a cumulative effects

**Table 4-66**  
**East Helena TPA Route/Trail/Maintenance Costs**

Classification/Cost	Alt A	Alt B	Alt C	Alt D
Miles of Open/Restricted Roads	44.3	17	12	37.9
Motorized Trails	0	0	0	0
Annual Roads Maintenance	\$3,544	\$1,360	\$960	\$3,032
Annual Trails Maintenance	\$0	\$0	\$0	\$0
Periodic Road Stabilization	\$1,418	\$544	\$384	\$1,213
Periodic Trails Stabilization	\$0	\$0	\$0	\$0
Monitoring/Compliance	\$2,215	\$850	\$600	\$1,895
Weed Control	\$665	\$255	\$180	\$569

**Table 4-67**  
**East Helena TPA ROWs/Leases**

Type	Approximate Number	Approximate Acres
Roads	21	746
Power	16	257
Telephone	12	45
O&G Pipelines	3	84
Comm. Sites	4	8
2920 Leases	3	1
Other	6	468
<b>Totals</b>	<b>65</b>	<b>1,609</b>

standpoint, development of adjacent federal, state, and private land, increased recreational use and the trend of homeownership away from urban areas, coupled with traditional on-going uses, are all expected to require more guaranteed access involving public land.

## SPECIAL DESIGNATIONS

There would be no effects to any special designation areas such as Wild and Scenic Rivers, Wilderness Study Areas, or Areas of Critical Environmental Concern under any of the travel plan alternatives for the East Helena TPA.

## LEWIS AND CLARK COUNTY NW TPA

The 406,700-acre Lewis and Clark County Northwest TPA contains approximately 17,037 acres of BLM lands. There are approximately 68 miles of BLM roads, making up about 4.7 percent of the approximate total of 1,448 road miles in the TPA. The majority of roads (819 miles) lie on private lands.

## AIR QUALITY

### Effects Common to All Alternatives

Motorized recreation use is expected to continue to increase, resulting in higher levels of vehicle emissions.

Motorized travel across dry unpaved routes or trails would continue to produce airborne dust.

There could be areas with localized air pollution as a result of higher use numbers, and more concentrated use on fewer miles of available routes.

Drier climate conditions could make soils more susceptible to the effects of motorized travel, resulting in higher levels of airborne dust.

Impacts to air quality vary by alternative and travel plan area. In general, alternatives that reduce the level of motorized use (have fewer available miles) could have a positive impact on air quality; while alternatives that maintain or increase the level of motorized use, could lead to increased air quality impacts. This would not necessarily be a direct relationship, however, because reduction in available road miles for motorized use could redistribute use or focus more use on remaining open routes.

Under all alternatives, impacts from airborne dust could be reduced through mitigation such as hardening native surface roads with gravel or periodically spraying them with water trucks during the dry season. During BLM project work, in addition to watering native surface roadbeds, speed limits could be reduced to further minimize dust emissions.

## Effects of the Alternatives

Under Alternative A (present management), adverse impacts to air quality would be expected to continue, and likely increase, concurrent with higher levels of motorized recreational use. Each of the action alternatives, however, would provide fewer available motorized routes. Alternatives B and C would provide 56 percent and 69 percent fewer motorized routes, respectively, than Alternative A, while Alternative D would provide 47 percent fewer routes than Alternative A. As a result, airborne dust and vehicle emissions would be taking place on fewer BLM routes and could be reduced.

It should be noted that even without motorized use, airborne dust, resulting from wind erosion of exposed native surface roads will continue. Therefore, travel plans with more miles of dirt roads would result in more airborne dust.

Under all alternatives, mitigation measures, such as graveling and/or watering native surface roads, could reduce dust emissions even further, and/or help offset the effects of increased or concentrated use on the remaining open routes.

## Cumulative Effects on Air Quality

Under all alternatives, the cumulative effects to air quality from travel management in the Lewis and Clark County NW TPA would arise from a number of past, present, and reasonably foreseeable future actions on BLM lands as well as non-BLM lands.

For perspective, BLM managed lands in the Lewis and Clark County NW TPA area represent approximately 4.2 percent of the total travel planning area (406,700 total acres; 17,037 BLM acres). Under present management (Alternative A) BLM managed routes represent a small portion, approximately 4.7 percent, of the total routes available (1,447.7 total miles; 67.6 miles BLM roads/trails). Potential air quality impacts associated with activities on non-BLM lands and roads would be a greater contributor to cumulative effects to air quality than activities on BLM lands and roads.

In the past, prior to the 2003 Statewide OHV ROD, BLM management allowed unrestricted cross country travel by all forms of wheeled motorized use. Under present management, in the absence of other existing travel plan direction, all motorized wheeled travel is restricted to existing roads and trails. Under current management, approximately 64.2 of the 67.6 miles of existing BLM routes are available for motorized use. This mileage available for use would be reduced under the action alternatives as described above with associated potential differences in effects to air quality.

Under all alternatives, cumulative increases in human population, urbanization, recreation use, user conflicts; and concerns for wildlife, noxious weed spread, soil

erosion, air/water quality, and illegal activities may lead to increased demands to restrict motorized travel.

## SOILS

### Effects Common to All Alternatives

Road construction, use, and maintenance affect soils in a number of ways. Soils are often compacted by these activities. Soil compaction can lessen the amount of precipitation that can infiltrate into soil and increase runoff, erosion, and sedimentation – in turn decreasing soil/site stability and hydrologic function, as well as soil productivity and plant vigor and diversity.

Ground disturbance associated with road construction, use, and maintenance can result in erosion. Erosion affects soil/site stability and hydrologic function. Erosion and sedimentation can destabilize the surface and sub-surface cohesion of the soil, resulting in soil loss from erosion sites. Loss of soil can impede or prevent establishment and development of vegetation communities.

Closing or decommissioning roads often leads to beneficial effects to soils through decreased site disturbance and re-establishment of vegetative cover on road surfaces. This tends to reduce soil erosion and stabilize soils. Decommissioning roads may in some cases entail ripping road surfaces to de-compact them, thus improving water infiltration, hydrologic function, and the ability of the treated area to revegetate more successfully.

Impacts to soils associated with site-specific travel plan alternatives were assessed based on the potential for soil erosion using the following erosion risk criteria:

- High – the area a route travels through has slopes greater than 30 percent gradient.

- Moderate – the area a route travels through has slopes ranging from 15 to 30 percent gradient; or, for granitic soils, slopes ranging from 0 to 30 percent gradient.
- Low – the area a route travels through has slopes ranging from zero to 15 percent gradient and soils are not granitic in origin.
- Unrated – road mapping not available at time of erosion impact rating.

### Effects of the Alternatives

The distribution of road miles by erosion impact category and by proposed road management category for all the alternatives is shown for the Lewis and Clark County NW TPA in **Table 4-68**. Roads in the “unrated” category were excluded from detailed consideration and are shown for the purpose of displaying the extent of lacking information.

Most roads in this TPA are in either the high or moderate erosion impact category. Under current conditions (Alternative A) approximately 45.6 miles of open BLM roads are located in areas with high erosion risk, and 16 miles are in moderate erosion areas. Soil erosion would be reduced under Alternative B because this alternative would reduce those mileages in the high and moderate erosion categories to 20.1 miles and 5.9 miles, respectively. Approximately 26.6 miles of road in the high and moderate categories combined would be closed under Alternative B with an additional 10.4 miles in these categories being decommissioned. Vegetative recovery should occur to varying degrees on closed and decommissioned roads, with a beneficial effect on soils of reducing erosion from these areas.

Proposed Road Management	Erosion Risk Category	Alternative A	Alternative B	Alternative C	Alternative D
<b>Open Road Miles</b> (incl. Open w/restrictions)	High	45.6	20.1	12.6	24.6
	Moderate	16.0	5.9	6.1	7.9
	Low	0.2	0.2	0.2	0.2
	Unrated	2.4	1.9	0.9	1.8
<b>Closed Road Miles</b>	High	3.1	19.7	31.4	14.6
	Moderate	0.3	6.9	8.8	5.6
	Low	0	0	0	0
	Unrated	0.1	0.2	1.3	0.1
<b>Decommissioned Road Miles</b>	High	0	8.6	4.2	6.8
	Moderate	0	1.8	0.8	1.5
	Low	0	0	0	0
	Unrated	0	0	0	0.5

Note: Open roads include seasonally open roads as well as roads open yearlong.

Soil erosion would be reduced more under Alternative C than under any other alternative because the lowest mileage of roads in the high and moderate erosion categories would be left open (18.7 miles combined), while the greatest mileage in these categories would be closed (40.2 miles combined) of all alternatives. An additional 5 miles in these categories would be decommissioned under Alternative C.

Soil erosion associated with roads would be reduced under Alternative D compared to Alternative A, but would still be higher than under either Alternative B or C. Approximately 32.5 miles of BLM road in the moderate and high erosion categories combined would remain open under Alternative D, while about 20.2 miles in these categories would be closed and 8.3 miles would be decommissioned under this alternative.

### Cumulative Effects on Soils

Cumulative effects to soils in the Lewis and Clark County NW TPA would arise from a number of past, present, and reasonably foreseeable future actions on BLM lands as well as non-BLM lands. Within this 406,700-acre TPA, BLM lands comprise about 17,037 acres or 4 percent of total lands. The approximately 68 miles of BLM roads make up about 4.7 percent of the approximately 1,448 road miles in the TPA. Therefore road-related effects to soils described by alternative for BLM roads would affect about 4.7 percent of all roads in the TPA. The majority of lands and roads (over 50 percent of each) within the TPA boundary are private property. Non-BLM roads are managed by the county, Forest Service, state, and private landowners.

The Bald Butte Mine is located within this TPA. Currently this is a small scale open cut molybdenum mine of less than 5 acres in size on private land. It is anticipated to expand into approximately 5 acres of BLM land in the future and may occupy up to 30 acres of open area collectively at any one time in the future. Impacts to soils from this activity will include complete soil removal and displacement, erosion, compaction, and covering by facilities. Reclamation work would provide for stabilization of soils in the aftermath of mining activity.

Approximately 1,961 BLM acres are permitted for various rights-of-way and leases. About 558 of these acres are for specific road rights-of-way. An additional approximately 1,050 acres are associated with the Great Divide Ski Area. The remaining 353 acres are associated with powerlines, waterlines, communication sites, oil and gas pipelines, and other utility facilities. Impacts to soils range from compaction and occupation of ground with buildings, roadbeds, and other facilities, to revegetation and ground cover being re-established to stabilize soils. Much of the Great Divide Ski Area is a mosaic of ski runs and chair lifts nestled within forested or otherwise naturally vegetated areas. Impacts to soils from these features are minor.

From 1984 to 1995 timber harvest took place on about 82 acres of BLM land in this TPA (including timber salvage on 42 acres). From 1995 to the present timber harvest (predominantly selective harvest) has occurred on about 116 acres of BLM land in the TPA. Adverse effects on soils were generally minor with treated areas having undergone revegetation and soil stabilization since treatment. Timber harvest has also occurred on private and Forest Service lands and will likely continue for the foreseeable future, having localized compaction and erosion effects on soils.

From 1981 to 2004, wildland fire has burned across approximately 83 acres in the Lewis and Clark County NW TPA, creating a range of soil effects with more severely burned areas experiencing localized erosion and with other areas being relatively little affected.

There have been no fuels reduction treatments on BLM lands in the TPA in the last 10 years. While treatments of 1,500 to 3,000 acres (combination of mechanical and prescribed fire) may occur on BLM lands in the future, these treatments are not yet planned or designed. They would be designed to minimize effects to soils by minimizing compaction/disturbance from mechanical equipment and designing prescribed burns to be cool enough so as not to release nutrients from fuels but not scorch soils. Fuels treatments conducted on private and Forest Service lands will likely occur for the foreseeable future with variable effects to soils. Reducing fuels under the controlled conditions of deliberate treatments may benefit soils in the long-term by reducing the risk of high severity fires in treated areas.

Livestock grazing on public and private lands throughout much of the TPA has created areas of localized soil erosion and compaction, particularly in grassland and shrubland areas. This will continue to occur for the foreseeable future.

Increasing residential development will likely continue for the foreseeable future to variable degrees within the TPA. Erosion, compaction, and covering of soils would occur due to additional road construction, clearing/leveling for home sites, and establishment of utility infrastructure for residential developments.

Under Alternative A, the contribution to cumulative effects on soils from BLM road management would continue as it occurs today. Retaining approximately 58 miles of road open yearlong and an additional 7 miles open with seasonal restrictions would allow for the same level of compaction and erosion impacts that currently exist.

From a BLM road management perspective, all action alternatives would benefit soil resources compared to Alternative A. Alternative B would benefit soils by providing for a reduced contribution to adverse cumulative effects than would Alternative A because about 55 percent of BLM roads would be closed or decommissioned under Alternative B (compared to 5 percent under Alter-

native A). Erosion should be reduced on these closed/decommissioned roads as disturbance is eliminated and revegetation occurs and stabilizes soils. Of the approximately 28 miles of open road under Alternative B, about 14 miles would be seasonally restricted from motorized vehicle use from 12/2 to 5/15. This would prevent erosion associated with motorized use during the wet snowmelt/runoff period.

Alternative C would benefit soils the most and provide for the least contribution to adverse cumulative effects on soils of all alternatives. This alternative would provide for closure or decommissioning of about 69 percent of BLM roads in the TPA, thus allowing these areas to vegetatively recover and stabilize soils. Of the approximately 20 miles of open road in this alternative, about 12 of those miles would be seasonally restricted (12/2 to 5/15) to exclude motorized use during the wet snowmelt/runoff period. This would prevent erosion associated with this wet season use.

Alternative D would provide for the greatest contribution to adverse cumulative effects on soils of the action alternatives, but would still provide for greater long-term benefits to soils than Alternative A. Alternative D would provide for closure or decommissioning (and subsequent vegetative recovery and/or soil stabilization) of about 43 percent of BLM roads in the TPA, compared to 5 percent for Alternative A, 55 percent for Alternative B, and 69 percent for Alternative C.

Due to the scattered distribution and relatively small proportion of BLM lands (4 percent) and roads (4.7 percent) relative to the total quantities of lands and roads in the TPA, none of the BLM alternatives would substantially contribute to cumulative effects on soils at the scale of the Lewis and Clark County NW TPA.

## WATER RESOURCES

### Effects Common to All Alternatives

There are a number of key concepts that are critical to understanding road effects to water resources.

Hydrologic function is an interaction between soil, water, and vegetation and reflects the capacity of a site to:

- Capture, store, and safely release water from rainfall, runoff, and snowmelt;
- Resist a reduction in this capacity; and
- Recover this capacity following degradation.

Interception of precipitation results when precipitation falls on vegetation. When vegetation is removed, precipitation falls directly on the soil. This can increase surface erosion and sedimentation, and decrease the amount of time between initial precipitation arrival and peak surface runoff – in turn decreasing soil/site stability and hydrologic function. Roads remove vegetation and therefore decrease interception of precipitation.

Infiltration is the process of precipitation entering and traveling through soil. Infiltration reduces the peak runoff during precipitation events by extending the period of runoff after a precipitation event. Infiltration also filters precipitation and reduces erosion and sedimentation. If infiltration is reduced, runoff and erosion will increase and hydrologic function will decrease. Generally, roads are compacted surfaces that have decreased infiltration, thus increasing runoff and potentially increasing erosion.

Runoff can affect the amount of erosion and sedimentation, as well as flooding – both onsite and offsite. If runoff is increased, all of these effects can increase with a result that water quality and hydrologic function will decrease.

Increased sediment entering waterbodies increases turbidity, increases width-to-depth ratios, and consequently increases temperature and dissolved oxygen saturation levels, and creates an adverse habitat for aquatic animals and plants.

Alteration of flow routing can also affect water resources. For example, roadcuts into areas with relatively shallow groundwater can intercept groundwater, bring it to the surface, and transport it some distance (i.e. in a roadside ditch) before delivering it to a stream. This can lead to erosion of road ditchlines and subsequent sedimentation of streams during runoff periods, or increased thermal loading of water before delivery to streams during summer periods.

Closure and decommissioning of roads tend to reduce erosion and sedimentation effects stemming from roads on water quality. On an equivalent road mile basis, decommissioning roads would benefit water quality to a greater degree than closing roads because the decommissioning process would often entail implementing measures to restore hydrologic function. During road decommissioning items such as compaction, drainage, stream crossing culverts, and ground cover are often addressed in a manner that markedly improves hydrologic function. These features are not fully addressed on roads that are merely “closed”. However, the reduced disturbance on newly closed roads combined with the tendency for revegetation to re-establish ground cover on them would reduce erosion and subsequent sedimentation effects to water quality.

### Effects of the Alternatives

Generally, road density is an indicator of overall watershed health and function. Watersheds with higher road densities tend to have lower water quality due to greater disruption of hydrologic function (described above), and potential for erosion and subsequent sedimentation. Road density also is related to the distribution and spread of noxious weeds.

**Table 4-69** shows acres of BLM land in three road density categories by alternative for the Lewis and Clark County NW TPA. These data reflect differences between alternatives based on roads proposed for “de-

TPA Alternative	Road Density Category		
	Low ( <1 mi/mi <sup>2</sup> )	Moderate ( 1 to 2 mi/mi <sup>2</sup> )	High ( > 2 mi/mi <sup>2</sup> )
<b>Alternative A</b>	2,614	3,444	10,979
<b>Alternative B</b>	3,075	4,526	9,436
<b>Alternative C</b>	2,693	4,076	10,268
<b>Alternative D</b>	2,935	4,446	9,655

commissioning” by alternative. While many “closed” roads would gradually contribute to increased hydrologic function over time, decommissioned roads would more directly contribute to hydrologic function because measures aimed at restoring hydrologic function would likely be part of the treatment during decommissioning. Alternative A would have the greatest amount of BLM land with “high” road densities of greater than 2 mi/mi<sup>2</sup>. Alternative B would have the lowest acreage in the high category with the greatest acreage in the low category of all alternatives. Alternative D would benefit hydrologic function more than Alternative C but less than Alternative B by virtue of its greater acreage in the low and moderate road density categories than Alternative C. Alternative C would have the highest acreage in the high road density category of the action alternatives. Overall, all the action alternatives would improve hydrologic function but by this measure Alternative B would make the greatest contribution to improved hydrologic function of all the alternatives, followed by Alternative D, Alternative C, then Alternative A.

Motorized routes within 300 feet of streams generally have greater potential to directly impact water quality through erosion and sedimentation, increased water temperatures (due to loss of shading vegetation), and direct alteration of stream channel morphology than those farther away. **Table 4-70** shows the miles of open and closed roads on BLM lands within 300 feet of streams by alternative. Under Alternative A there are about 7.4 miles of open road within 300 feet of fish bearing streams and an additional 5 miles within 300 feet of perennial non-fish bearing streams. All action alternatives

would improve water quality by closing or decommissioning roads in close proximity to streams but Alternative C would provide for the greatest mileage. By this measure, Alternative C (total of 6.2 miles closed or decommissioned) would create the most benefit to water resources followed by Alternative B (5.4 miles), then Alternative D (4.6 miles).

### Cumulative Effects on Water Resources

Cumulative effects to water resources in the East Helena TPA would arise from many past, present, and reasonably foreseeable future actions on BLM lands as well as non-BLM lands. Within this 406,700-acre TPA, BLM lands comprise about 17,037 acres or 4 percent of total lands. The approximately 68 miles of BLM roads make up about 4.7 percent of the approximately 1,448 road miles in the TPA. Therefore road-related effects to water resources described by alternative for BLM roads would be associated with management of about 4.7 percent of all roads in the TPA. There are approximately 292 miles of fish bearing stream and an additional 238 miles of perennial non-fish bearing stream in the TPA. On BLM lands there are about 11 miles of fish bearing stream and an additional 11 miles of perennial non-fish bearing stream. The majority of lands and roads (over 50 percent of each) within the TPA boundary are private property. Non-BLM roads are managed by the county, Forest Service, state, and private landowners.

Many of the main access roads (non-BLM) follow valley bottoms and parallel streams. Many of these roads are directly affecting stream channel and floodplain function by filling or impinging on stream channels or flood-

TPA Alternative	Perennial Fish-Bearing Streams		Perennial Non-Fish-Bearing Streams	
	# Open Road Miles	# Closed Road Miles	# Open Road Miles	# Closed Road Miles
<b>Alt. A</b>	7.4	0	5.0	0
<b>Alt. B</b>	5.3	2.1	1.7	3.3
<b>Alt. C</b>	4.8	2.6	1.4	3.6
<b>Alt. D</b>	5.3	2.1	2.5	2.5

Note: Open roads include seasonally open roads as well as roads open yearlong. Closed roads include decommissioned roads.

plains, precluding the presence of riparian vegetation (including large woody material in forested locations), producing sedimentation in streams (from road surfaces, ditchlines, winter “road sanding” operations) and potentially increasing thermal loading by lessening streamside shade. These effects are dominant in shaping stream channel and water quality conditions in many areas and will continue into the foreseeable future.

Approximately 1,961 BLM acres are permitted for various rights-of-way and leases. About 558 of these acres are for specific road rights-of-way. An additional approximately 1,050 acres are associated with the Great Divide Ski Area. The remaining 353 acres are associated with powerlines, waterlines, communication sites, oil and gas pipelines, and other utility facilities. Much of the Great Divide Ski Area is a mosaic of ski runs and chairlifts nestled within forested or otherwise naturally vegetated areas. Impacts to water resources are generally minor with some localized erosion and sedimentation and some contribution to decreased hydrologic function (decreased infiltration, increased runoff) due to compaction.

From 1984 to 1995 timber harvest took place on about 82 acres of BLM land in this TPA (including timber salvage on 42 acres). From 1995 to the present timber harvest (predominantly selective harvest) has occurred on about 116 acres of BLM land in the TPA. Adverse effects on water resources were minor from this activity. Timber harvest has also occurred on private and Forest Service lands and will likely continue for the foreseeable future. Ground disturbance from these activities will have localized impacts to water resources including some sedimentation, loss of woody material recruitment for streams, and potential water temperature increases due to riparian shade loss.

From 1981 to 2004, wildland fire has burned across approximately 83 acres in the Lewis and Clark County NW TPA, having negligible effects on water resources.

There have been no fuels reduction treatments on BLM lands in the TPA in the last 10 years. While treatments of 1,500 to 3,000 acres (combination of mechanical and prescribed fire) may occur on BLM lands in the future, these treatments are not yet planned or designed. They would be designed to minimize effects to water quality by minimizing compaction/disturbance from mechanical equipment and designing prescribed burns to be cool enough so as not to scorch soils and facilitate severe erosion. Fuels treatments conducted on private and Forest Service lands will likely occur for the foreseeable future with variable effects to soils. Reducing fuels under the controlled conditions of deliberate treatments may benefit water resources in the long-term by reducing the risk of high severity fires that could have severe adverse water quality effects in treated areas.

Livestock grazing on public and private lands throughout much of the Lewis and Clark County NW TPA has

created areas of localized streambank trampling, soil erosion and sedimentation, and nutrient inputs to streams. In severe cases stream channel morphology may be altered due to severe loss of riparian vegetation, loss of streambank integrity, channel widening and shallowing, and substantial sediment inputs. These effects to water quality will continue to occur for the foreseeable future. Agricultural water withdrawals occur on private lands in this TPA. These withdrawals reduce stream flows in the TPA, including within Little Prickly Pear Creek, one of several streams that flow through BLM lands and is listed as an impaired water body by MDEQ on the 303(d) list.

Several other streams listed as impaired by MDEQ flow through BLM lands in this TPA. Heavy metal contamination from abandoned mine lands has affected Virginia Creek, about 2 miles of which flows through BLM lands. The Blackfoot River (1.9 miles on BLM lands) is impaired by heavy metal contamination, sedimentation, and alteration of riparian vegetation. Probable sources of impairment include hard rock mining, agriculture, and timber harvest. Jennies Fork (0.2 miles on BLM lands) is impaired by lead contamination, nutrient inputs, and sedimentation. Probable sources of impairment are hard rock mining, riparian grazing, and roads. In the case of each of these impaired streams, BLM roads are not located in such a manner and are not a great enough proportion of ongoing activities as to play a substantial role in affecting water resource conditions.

Increasing residential development will likely continue for the foreseeable future to variable degrees within the TPA. Erosion, soil compaction, and runoff would likely increase due to additional road construction, clearing/leveling for home sites, and establishment of utility infrastructure for residential developments. Nutrient, chemical pollutant, and pathogen inputs to streams would also likely increase due to leaching from septic systems, urban runoff (fertilizer, chemicals, and petroleum pollutants), and waste from livestock.

Under Alternative A, the contribution to cumulative effects on water resources from BLM road management would continue as it occurs today. Retaining approximately 58 miles of road open yearlong and an additional approximately 7 miles open with seasonal restrictions would allow for the same level of effects to water resources that currently exists.

From a BLM road management perspective, all action alternatives would benefit water resources compared to Alternative A. Alternative B would benefit water resources by providing for a reduced contribution to adverse cumulative effects than would Alternative A because about 56 percent of BLM roads would be closed or decommissioned under Alternative B (compared to 5 percent closed under Alternative A). Of the approximately 28 miles of open road under Alternative B, nearly one half of them would be seasonally restricted to exclude motorized vehicle use in the wet spring runoff

period each year. This would reduce erosion from these roads and further benefit water resources.

Overall, Alternative B would likely benefit water resources the most and provide for the least contribution to adverse cumulative effects on water resources of all alternatives. Under this alternative the greatest mileage of BLM roads would be decommissioned (10.9 miles), benefiting hydrologic function to the greatest degree. Alternative C would provide for the greatest quantity of closed roads, but would only provide for 5.2 miles of decommissioning and would therefore have less benefit to hydrologic function. Alternative D would provide for 8.8 miles of decommissioning and would therefore have less benefits to hydrologic function than Alternative B, but more than Alternative C. Overall, Alternative D would provide for closure or decommissioning on about 43 percent of BLM roads in the TPA, compared to 5 percent for Alternative A, 56 percent for Alternative B, and 69 percent for Alternative C.

Due to the scattered distribution and relatively small proportion of BLM lands (4 percent) and roads (4.7 percent) relative to the total quantities of lands and roads in the TPA, none of the BLM alternatives would substantially contribute to cumulative effects on water resources in the Lewis and Clark County NW TPA.

## **VEGETATIVE COMMUNITIES – FOREST RESOURCES AND FOREST AND WOODLAND PRODUCTS**

### **Effects of the Alternatives**

Under all alternatives, existing roads and roads built to access timber and forest product sales on BLM lands may encourage timber harvest and forest product sales on adjacent lands, particularly where landowners and other agencies are looking to improve economic efficiency or opportunities in the management on their lands.

In general, vegetative treatment contractors tend to bid more readily on projects in areas with vehicle access or valuable products. BLM often prioritizes forest vegetation management activities such as forest products and forest protection activities (e.g. wildfire suppression and forest insect and disease control) in similar areas.

Rehabilitation of roads (decommissioning and in some cases road closure) would revegetate currently unvegetated roadbeds, which would increase vegetation biomass production on the landscape through colonization of sites with grasses, forbs, shrubs, and trees. Increases in revegetated area would occur at a rate of approximately 1.5 to 3 acres per mile of rehabilitated road. Eventually rehabilitated roads would support plant communities consistent with site potentials which would help resist weed invasions. However, road closures and removals could make vegetation management treatments more

difficult and costly, thereby inhibiting proposed treatments, reducing public access for product use and removal, and potentially slowing fire detection and suppression.

Under Alternative A there would be no increase in project analysis and implementation costs. However, under Alternative B approximately 55 percent of roads into forested areas would be closed. Under Alternative C about 69 percent of roads into forested areas would be closed, while under Alternative D about 43 percent of these roads would be closed. These closures would result in commensurate potential increases in vegetative analysis and treatment costs by alternative. These potential cost increases would be considered on a case by case basis by the BLM during project feasibility determinations, and additional funding may be needed to analyze and implement the projects that would remain feasible. Road closures could also result in potential decreases in quantities of forest products removed. The extent of the effects described above would be minimized because BLM would likely still be able to plan and implement projects in many areas on closed roads through the variance process for temporary road use. Road-related effects would be greatest under Alternative C, followed in sequence by Alternative B, then Alternative D.

Treatment projects that are small in nature or limited in scope such as vegetative manipulations of 50 acres or less, or restoration treatments removing only small proportions of stands (i.e. low intensity burns, selective thinning, interplanting), would have the greatest risk of becoming unfeasible in areas of closed roads under the action alternatives. However the higher productivity of the stands and higher value of the available products in most treatment areas in this TPA would be able of absorb the anticipated higher costs of treatments incurred by the BLM, and would increase the likelihood of successful project implementation.

Roaded access to forested areas would also affect the gathering of firewood and other forest products by the general public. The forested areas in the Marysville area are relatively heavily roaded and have received the highest public demand for forest products in the TPA due to their moderately productive forest and road accessibility. The smaller blocks of public land in the Stemple Pass area and the Sieben Ranch locality tend to be away from the main travel routes in their areas and thus being isolated, tend to have low demand for products. Most public parties prefer to drive close to areas of product removal so they do not have to carry products over long distances to their vehicles. With the low demand for products from the smaller blocks, implementation of alternatives B, C, and D would have little if any effect on product removal in those areas. However, Alternatives B, C and D would close roads in many forested portions of the Marysville area, generally restricting public searching for and removal of personal use and small products to motorized travel corridors along the

main roads. For the Lewis and Clark County NW TPA, Alternative A would retain the most public opportunities for these activities, followed in sequence of decreasing opportunities by Alternative D, Alternative B, then Alternative C. Alternatives B and D would have similar effects to public access for forest product gathering.

### **Cumulative Effects on Forest and Woodland Resources and Products**

The western spruce budworm is present and heavily affecting forests within the TPA at higher levels than experienced in the last twenty years, with high levels of defoliation occurring around Marysville and in the Virginia Creek area. This insect is currently reducing the health of Douglas-fir stands, such that other pests such as the Douglas-fir beetle can take advantage of the low vigor and reduced resistance in the trees, and become entrenched and kill trees in the infested stands. Current insect levels are expected to remain high in the future. This insect moves freely between Douglas-fir on all ownerships and open roads can assist with control. Alternative A would provide the highest opportunity for control on BLM lands and adjacent lands under other ownerships in the TPA. Alternative D would provide the next greatest degree of opportunity, followed in sequence by Alternative B, then Alternative C.

Forested vegetation will also be affected by approximately 1,961 acres of rights-of-way and leases on BLM land. Forested vegetation located in these areas usually is harvested and/or removed to accommodate the necessary access or facilities. Forest vegetation removal will occur on new authorizations in the future and will occur as necessary to maintain sight distances and safety clearances associated with roads and facilities.

Urbanization is expected to continue on the 213,847 acres of private lands (53 percent of all lands) within this TPA. Forest products are commonly removed from these areas prior to permanent construction. Urbanization is likely to continue in the future and will affect forested vegetation at an unknown rate. As private construction increases, miles of road on private will most likely increase from the current 819 miles (57 percent of all roads in TPA).

Risk to forests from human-caused wildfires is commonly associated with open roads. Risk to forests from wild-fire would be greatest under Alternative A with 64.2 miles of road open during the summer (and yearlong). Alternative B would have less risk of human-caused fire starts with about 28 miles of open road during summer. Alternative C would have the least risk to public forests with only 19.7 miles of road open during summer months. Alternative D (34.1 miles of open road during summer) would have more risk than either Alternative B or C, but less risk than Alternative A. Given that the majority of roads in the TPA (95.3 percent) are non-BLM roads, this contribution to reduced fire risk from

BLM roads in the action alternatives is relatively small in the context of the entire TPA.

Since BLM roads constitute only 4.7 percent of all roads in this TPA, and BLM lands make up only 4.2 percent of all lands in the TPA, urbanization and activities on open non-BLM roads in the vicinity may have more cumulative effects on forested vegetation in the TPA than BLM decisions regarding miles of open and closed road.

### **VEGETATIVE COMMUNITIES – NOXIOUS WEEDS**

Under all alternatives, any snowmobile use would have negligible effects on noxious weed spread and populations. Invasive noxious weeds and non-native species are degrading wildland health. These are aggressive plants that can outcompete many native plants, as they have few natural enemies to keep them from dominating an ecosystem. These plant species are spread by many means. However, any land disturbing activity in the TPA has the most potential to introduce and spread weed species. Motorized vehicles are one vector for noxious weed spread as weed seed and plant parts become attached to vehicles and their tires, and are transported from one area to another where seeds become detached and germinate to inhabit new areas.

#### **Effects of Alternative A**

Under Alternative A, the majority of routes in the Lewis and Clark County NW TPA would be available for wheeled motorized use (57.5 miles open yearlong, 6.7 miles seasonally restricted, 3.4 miles closed). Area wide snowmobile (cross-country travel) use would be available on 16,997 acres. Under Alternative A the open BLM roads would represent about 4.7 percent of all open roads in the Lewis and Clark County NW TPA.

Alternative A would have the most roads open and in turn would promote the greatest amount of weeds and other undesirable plant spread and production. More herbicide control would be needed to control weeds under Alternative A than under the other alternatives.

#### **Effects of Alternative B**

Under Alternative B, a total of 28.1 miles of routes would be available for motorized wheeled use (13.8 miles open yearlong, 14.3 miles seasonally restricted). The majority of routes located in the Stemple Pass and Lincoln areas would be closed. This alternative would close 26.8 miles of road leaving 13.8 miles open yearlong as compared to 57.5 miles of road open yearlong for Alternative A. This would prevent weed spread caused by motorized vehicles on these closed routes, but would increase spread on the open routes because of the more concentrated use of these routes. Overall Alternative B would reduce weed spread, but would increase weed treatment costs per road mile on the remaining open roads compared to Alternative A. Under Alterna-

tive B the 28.1 miles of open BLM road (including seasonally restricted miles) would constitute about 2 percent of all open road miles in the Lewis and Clark County NW TPA.

### Effects of Alternative C

Alternative C would provide the least amount of wheeled motorized opportunities: 8.0 miles of routes open yearlong, and 11.7 miles seasonally restricted. Closure of the routes located in the northwest corner of the Marysville area would result in an enhancement of non-motorized opportunities and reduced weed spread there. Opportunities for cross-country snowmobile travel would be eliminated. Snowmobiles would be restricted to designated routes during the season of use (12/2-5/15), snow conditions permitting. This alternative would close 41.6 miles of road leaving 8.0 miles open yearlong as compared to 57.5 miles of road open yearlong for Alternative A. This would prevent weed spread caused by motorized vehicles on these closed routes, but would increase weed spread on the open routes because of the more concentrated use of these routes. Overall Alternative C would reduce weed spread more than any other alternative, but would increase weed treatment costs per road mile on the remaining open road miles compared to Alternative A. Under Alternative C the 19.7 miles of open BLM road (including seasonally restricted miles) would make up about 1.4 percent of all open roads in the TPA.

### Effects of Alternative D

Under this alternative, a total of 34.1 miles of routes (19.6 miles open yearlong, 14.5 miles seasonally restricted) would be available for motorized use. Opportunities for ATV riders and hunters would be enhanced through the addition of a yearlong ATV-Only route and a game retrieval route. Motorized users would also have more opportunities in the Lincoln and Stemple Pass areas than under Alternatives B and C, facilitating continued weed spread via roads in these areas. Cross-country snowmobile travel would be allowed throughout the TPA with two exceptions, the Great Divide Ski area, and the northwest portion of the TPA. Travel in these areas would be restricted to existing routes only during the season of use (12/2-5/15), providing some dispersed recreation opportunities for non-motorized users. This alternative would close 20.3 miles of road leaving 19.6 miles open yearlong as compared to 57.5 miles of road open yearlong for Alternative A. This would prevent weed spread caused by motorized vehicles on these closed routes, but would increase weed treatment costs per road mile on the remaining open road miles compared to Alternative A. The 34.1 miles of open BLM road (including seasonally restricted routes) would Alternative D would make up about 2.4 percent of all open travel routes in the Lewis and Clark Northwest TPA.

### Cumulative Effects on Noxious Weeds

Under all the alternatives, other past, present, and reasonably foreseeable future BLM and non-BLM actions affect noxious weeds.

Recreation use is well established in the TPA, especially for winter sports. Winter sport activities include: snowmobiling, downhill skiing, backcountry skiing, ski racing, snowboarding, and snowshoeing. An extensive network of roads and trails support a wide range of off-season activities. Non-winter motorized activities are also common in the TPA. Motorized recreation uses are one of the leading causes of introduction and spread of noxious weeds and non native species. Weed seeds are transported by many recreational vectors i.e. motorized vehicles including their tires, non-motorized vehicles including their tires, pack animals, and humans.

Urban development may lead to an increase in right-of-Way permits to accommodate private property/development access. As a result, soil disturbing activities (i.e. roads, powerlines, telephone lines, etc.), will increase causing weeds to increase.

A variety of resource management projects, such as BLM initiated vegetation treatments, or wildland fire fuels reduction projects, could affect weeds in the TPA. There have been no fuels treatments in this area in the last 10 years. There are fuels treatments scheduled for planning for this area in the next five years, mainly in the general area around Marysville. These treatments would consist of mechanical and/or prescribed burning from 1,500 to 3,000 acres focused on the urban interface areas. Any project creating soil disturbance has the capability to increase weedy plant species. Prescribed burning projects give the ground surface a fertilization effect and eliminate some plant competition for weedy species giving them a niche for establishment and expansion in some areas. Ground-disturbing equipment could also transport noxious weed seed to these project sites. BLM implements weed control measures in the aftermath of such ground-disturbing activities so as to minimize noxious weed spread.

Wildland fires create good seed beds and supply nutrients for weed species introduction and production. From 1981 to 2004 there have been 14 wildland fires that burned approximately 83 acres. These areas likely experienced an increase in weed spread.

Historical information indicates that since 1977, 3,357 claims have been made throughout the Marysville area. Today only 40 claims remain active, including the Bald Butte Mine, an open cut molybdenum mine. While currently a small scale operation (5 acres), there is a strong likelihood that Bald Butte will expand onto approximately 5 acres of BLM land in the future, and as many as 30 acres of open area collectively at one time. Activity began in 2006, and is anticipated to continue until at least 2015. Mining is a land disturbing activity and the

activity itself and weed seed contaminated equipment that is used could promote weeds in the area.

Noxious weeds and non-native invasive species are well established and spreading in the area. Weed control activities by BLM and other entities, while often effective at reducing or minimizing weed spread and weed populations, can also lead to some weed spread. Herbicide spray equipment is driven through weed infestations and weed seeds as well as other weed vegetative parts are spread to other lands during and following treatment. Herbicide and biological control treatments in recent years have been accomplished on approximately 20 to 30 acres in the Marysville area of the TPA. These weed treatments have varying success in killing undesirable plants, depending on many environmental parameters.

Timber sales have built-in stipulations for mitigating weed production and spread. However, with ground disturbance the potential exists for weed introduction to occur on these sites. Vehicular access for tree plantings could contribute to the spread of existing weeds on site. Since 1995 there have been 24 acres of timber salvage, 92 acres of timber harvest, and 48 acres of forest planting (replanted in 1998). Herbicide treatment of existing weeds is coordinated with tree seedling planting locations and timing, so as to minimize potential exacerbation of weed spread.

Future travel management (for all agencies, nationwide) is likely to lead to fewer opportunities for motorized recreational use than under current management (particularly for OHV use). As a result, BLM routes available to motorized use could experience increased use from displaced users, leading to more concentrated use and the potential for increased weed spread.

The TPA includes important wildlife habitat. The western half of the TPA is a wildlife movement corridor between the Northern Continental Divide Ecosystem and the Greater Yellowstone Ecosystem. Portions of the TPA are in the occupied range of grizzly bear range. Mule deer winter range is located along the eastern half of the TPA (158,140 acres) as well as near Lincoln (21,500 acres). Elk winter range is also located in the lower elevations along the eastern half of the TPA (193,800 acres) as well as around Lincoln (55,500 acres). Noxious weed seeds are transported and spread by wildlife through their digestive system and by attaching to the animals themselves and then being released at a later time.

Livestock grazing on and off BLM lands also contributes to weed spread either through seed being introduced/spread by livestock themselves, or through vehicular uses needed to manage grazing operations.

The majority of BLM routes in the Lewis and Clark County NW TPA are located in and around the town of Marysville, located approximately 25 miles northwest of Helena, Montana. Much of the use in the Marysville area (especially winter use) comes from Helena Valley resi-

dents. The Helena Valley has been experiencing steady human population growth. This trend is expected to continue, along with increased recreational use of this TPA. These factors could lead to increased public pressure to alter travel planning. The remaining BLM managed routes are located in three sub-planning areas: Stemple Pass, Sieben Ranch, and Lincoln (west of the small town of Lincoln, Montana). There is some residential development adjacent to the Lincoln sub-planning area that could influence travel management. The increasing population in the Helena area will in turn lead to an increase in use of this TPA creating more opportunities for weed spread and production.

The Marysville area is experiencing increased residential development, but to a lesser extent than the central Helena Valley area. This development/increase in population has led to an increase in use of the TPA by residents living adjacent to or within this area which in turn leads to an increase in weed spread and propagation. About 4.7 percent of all the open travel routes in the Lewis and Clark county NW TPA are located on BLM managed lands (under Alternative A). Lands near roads and away from roads in the TPA are infested with weeds. The travel on these roads is spreading weeds and weeds off these roads are being spread by the weed plants themselves and other natural means. Because the majority of roads (95.3 percent) and lands (95.8 percent) in the TPA are non-BLM, activities in these areas play a stronger role than activities on BLM lands in determining the status of weed spread and weed populations in the TPA overall.

## **VEGETATIVE COMMUNITIES – RIPARIAN VEGETATION**

### **Effects Common to All Alternatives**

This section focuses on effects to riparian vegetation. For additional discussion of effects to water quality and stream channels, see the Water Resources and Fish sections.

Roads in riparian areas constitute ground disturbance that can eliminate or preclude presence of native riparian vegetation. This ground disturbance and loss of riparian vegetation may facilitate erosion and sedimentation of streams. Roads may also interfere with natural stream channel functions by occupying floodplains or active stream channel margins (see Water Resources section for more discussion). Noxious weeds may dominate riparian vegetation communities after some type of disturbance (such as roads, livestock grazing, mining, etc.) has reduced native vegetation. Noxious weed seed can be spread into riparian areas by motor vehicles via open roads. Closure of roads and trails can improve or maintain riparian condition by reducing avenues of noxious weed spread, as well as allowing for bare area revegetation which filters sediment in addition to stabilizing banks in some areas. Road and trail restrictions have

the same effects but to a lesser degree, because some traffic will inhibit vegetation growth and recovery.

### Effects of the Alternatives

As a means of comparing alternatives, **Table 4-71** depicts the miles of wheeled motorized routes that cross or are within 300 feet of streams or wet areas on BLM lands for the Lewis and Clark County NW TPA.

<b>Miles of Wheeled Motorized Routes</b>	<b>ALT A</b>	<b>ALT B</b>	<b>ALT C</b>	<b>ALT D</b>
Open	19.6	5.1	4.1	7.8
Restricted	0.4	3.4	2.8	3.4
Closed	0	11.5	13.2	8.8

Under Alternative A, 19.6 miles of BLM roads and trails would remain open that cross or are within 300 feet of streams or wet areas, and 0.4 miles of roads and trails would have seasonal restrictions. The noxious weed spread, streambank, and sediment delivery effects would continue as described in the Effects Common to All Alternatives section for the open roads. The BLM roads and trails most affecting riparian conditions along Ottawa Gulch, Woodchopper Gulch, Empire Creek, and Towsley Gulch would remain open. Alternative A would have the greatest adverse effects on riparian vegetation of all alternatives.

Under Alternative B, 5.1 miles of BLM roads and trails would remain open that cross or are within 300 feet of streams or wet areas; 3.4 miles of roads and trails would have seasonal restrictions; and 11.5 miles of roads and trails near riparian areas would be closed. The noxious weed spread, streambank, and sediment delivery effects would continue as described in the Effects Common to All Alternatives section for the open roads. The BLM trail that travels up Woodchopper Gulch would be closed which would allow the serious erosion problem there to re-vegetate. Additionally, a number of smaller riparian areas would improve in condition from road and trail closures. Roads and trails most affecting riparian conditions along Ottawa Gulch, Empire Creek, and Towsley Gulch would remain open for access purposes. Alternative B would benefit riparian vegetation greater than Alternative A as the closed riparian roads would have some opportunity to revegetate and stabilize.

Under Alternative C, 4.1 miles of BLM roads and trails would remain open that cross or are within 300 feet of streams or wet areas, 2.8 miles of roads and trails would have seasonal restrictions, and 13.2 miles of roads and trails near riparian areas would be closed. The noxious weed spread, streambank, and sediment delivery effects

would continue as described in the Effects Common to All Alternatives section for the open roads. As under Alternative B, the BLM trail that travels up Woodchopper Gulch would be closed which would allow the serious erosion problem there to re-vegetate. Additionally, a number of smaller riparian areas would improve in condition from road and trail closures. Roads and trails most affecting riparian conditions along Ottawa Gulch, Empire Creek, and Towsley Gulch would remain open for access purposes. Alternative C would provide the most benefit to riparian vegetation than all other alternatives.

Under Alternative D, 7.8 miles of BLM roads and trails would remain open that cross or are within 300 feet of streams or wet areas, 3.4 miles of roads and trails would have seasonal restrictions, and 8.8 miles of roads and trails near riparian areas would be closed. The noxious weed spread, streambank, and sediment delivery effects would continue as described in the Effects Common to All Alternatives section for the open roads. As under Alternatives B and C, the BLM trail that travels up Woodchopper Gulch would be closed which would allow the serious erosion problem there to re-vegetate. Additionally, a number of smaller riparian areas would improve in condition from road and trail closures. Roads and trails most affecting riparian conditions along Ottawa Gulch, Empire Creek, and Towsley Gulch would remain open for access purposes. Alternative D would provide greater benefits to riparian vegetation than Alternative A, but less than either Alternatives B or C.

### Cumulative Effects on Riparian Vegetation

Noxious weed spread, mining, roads and trails, logging operations, and livestock grazing have affected riparian resource conditions in all TPAs, including the Lewis and Clark County NW TPA. Some of these factors continue to cause riparian area degradation primarily through direct disturbance or loss of riparian vegetation. Ground disturbance and loss of riparian vegetation facilitate erosion and sedimentation of streams. In the case of noxious weeds, they usually dominate riparian vegetation communities after some type of disturbance (such as roads, livestock grazing, mining, etc.) has reduced native vegetation.

Anticipated subdivision growth on private lands will lead to more road construction and maintenance. More roads and development will increase severity of runoff events which in turn will cause more sediment delivery to creeks and streams. The additional sediment is likely to affect the functioning condition of some riparian areas by causing streambeds to aggrade at unnatural rates. Streambanks may also be affected if road placements do not allow for natural stream movements or meanders.

Logging and forestry practices on public and private lands are subject to streamside management zone (SMZ) requirements designed to maintain water quality and

riparian vegetation. The proposed Riparian Management Zones under Butte RMP Alternatives B and C would be wider than SMZs and activities in these areas would be designed to benefit riparian resources, thus providing more riparian protection and more targeted management of riparian vegetation in both forested and non-forested areas than under RMP Alternatives A and D. The disturbance associated with timber activities does have the potential to increase noxious weed spread which degrades riparian area function and health. On public lands noxious weed control is a standard feature of any ground disturbing activities whereas on private lands noxious weed control is variable.

Livestock grazing will continue in the area and has the potential to impact riparian resource conditions. On BLM lands, ongoing rangeland health assessments and implementation of livestock grazing guidelines would continue to improve or maintain riparian vegetation health and vigor. On private lands, livestock grazing is expected to decline slowly as more ranch and farmland is subdivided. Riparian conditions may improve or degrade as management changes.

Noxious weed control will continue on both public and private lands with varying degrees of success. To the extent that these efforts are successful, riparian conditions would improve because of the streambank protection gained from shrubby root systems and filtering capability of native riparian sedge and rush species.

A molybdenum mine was started on private land above Bald Butte. The mine may expand on other private and public lands in the future. The mine is at the headwaters of American Gulch and Dog Creek. Mine road traffic and maintenance has the potential to add extra sediment into the Ottawa Gulch and Dog Creek drainages. Abandoned mine lands were reclaimed in the Empire Creek and Piegan Creek watersheds in the 1990's. Riparian vegetation has recovered and improved in both drainages.

A number of privately owned blocks of land in the Dog Creek and Ottawa Creek drainages were logged within the past 20 years. Riparian vegetation was impacted at that time but has recovered to some degree.

Cumulatively the positive effects of Alternative B would be more than Alternative A. The closure and restrictions on 14.9 miles of roads would improve riparian conditions on several reaches. This may mitigate some of the predicted subdivision and potential mine road impacts.

Cumulatively the positive effects of Alternative C would be more than under either Alternatives A or B. The closure and restrictions on 16 miles of roads would improve riparian conditions on several reaches. This may mitigate some of the predicted subdivision and potential mine road impacts.

Cumulatively the positive effects of alternative D would be more than under Alternative A, but less than under either Alternatives B or C. The closure and restrictions on 11.4 miles of roads would improve riparian conditions on several reaches. This may mitigate some of the predicted subdivision and potential mine road impacts.

Overall, because BLM roads make up only 4.7 percent of all roads in the TPA (under Alternative A), and BLM lands make up 4.2 percent of all lands in the TPA, the contributions to riparian vegetation benefits associated with closing riparian roads on BLM lands would be relatively minor at the scale of the entire Lewis and Clark County NW TPA. Activities on private lands (53 percent of total acreage in TPA) and USFS lands (35 percent of total acreage in TPA) would play a dominant role in determining riparian conditions at the scale of the entire TPA.

## WILDLIFE

### Effects of Alternative A

Under Alternative A, the Lewis and Clark TPA would have considerably more open roads (64 miles) compared to the action alternatives and would have the highest actual road density in elk winter range, 2.6 mi/mi<sup>2</sup> (Table 4-72) compared to the action alternatives. Open roads typically increase the level of recreation adjacent to roads. This can result in additional disturbance and displacement of wildlife species. Roads can also encourage the public to recreate in areas that had formerly been secluded. Roads can cause direct mortality to wildlife through road kill, prevent wildlife movement, create

**Table 4-72**  
**Decision Area Road Densities (mi/mi<sup>2</sup>) within Elk Winter Range in the Lewis and Clark County NW Travel Planning Area by Alternative**

	<b>Actual Road Density</b>	<b>Acres of Low Road Density</b>	<b>Acres of Moderate Road Density</b>	<b>Acres of High Road Density</b>
<b>Alt. A</b>	2.6	2,241	3,424	10,263
<b>Alt. B</b>	0.9	4,945	4,283	7,060
<b>Alt. C</b>	0.7	6,245	4,722	5,321
<b>Alt. D</b>	1.2	3,828	4,597	7,862

Low Density = 0-1 mi/mi<sup>2</sup>, Moderate Density = 1-2 mi/mi<sup>2</sup>,  
High Density = >2 mi/mi<sup>2</sup>

disturbance to wildlife via vehicular use, cause the spread of noxious weeds, reduce habitat and cause habitat fragmentation on the landscape (Joslin et al. 1999). Open road miles that are greater than 2.5 mi/mi<sup>2</sup> have also been found to provide less than 45 percent of functional habitat for elk (Christensen et al. 1993). Permanent and temporary roads could negatively impact wildlife including special status species, particularly if roads are open during critical periods such as in lynx winter habitat and during the summer months within occupied grizzly bear habitat.

High open road densities under Alternative A could result in the loss of year-round habitat and migration corridors, disturbance and displacement of wildlife, road kill and fragmentation of habitat. Wildlife, including special status species, that are especially sensitive to roads in the TPA include (but are not limited to) elk, grizzly bear, lynx, wolverine and some raptors. The detrimental effects of open road densities to wildlife under Alternative A could be minor to major and long-term. This alternative would have the greatest negative impacts to wildlife including special status species from open roads.

Under Alternative A, this TPA would have substantially fewer acres of functional winter range (2,241 acres with low road density) compared to the action alternatives (Table 4-72). Alternative A would cause more disturbance and displacement of big game in winter range than all other alternatives.

Under Alternative A, approximately 900 acres of the Lewis and Clark TPA would be closed to snowmobile use with the remaining 17,000 acres open for cross country snowmobile use. Snowmobiling occurs in both the Decision and Planning Areas and the use of snowmobiles could have substantial negative effects to wintering big game, lynx, wolverine, and other wildlife species. Cross-country snowmobile use could cause harassment of wildlife during the high stress winter season, which could lead to individuals leaving an area (temporarily or permanently) and/or an increase in stress that could lead to mortality. Alternative A would have more detrimental effects to wildlife from cross-country snowmobile use than the action alternatives.

In evaluating impacts of travel planning on elk and other big game species, it is important to consider impacts on security habitat. Elk security is the inherent protection allowing elk to remain in an area despite increases in stress or disturbance associated with the hunting season or other human activities. Security habitat includes blocks of nonlinear forested habitats greater than 250 acres in size that are at least 0.5 mile from an open road (Hillis et al. 1991). Security habitat should also consist of larger trees (greater than 8 inches DBH) with vegetation dense enough to hide an adult elk (Thomas et al. 2002). Under Alternative A, there would be no functional security habitat for big game species on BLM lands

(Table 4-73). All of the action alternatives provide at least some security habitat on BLM lands.

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
<b>Lewis and Clark County NW TPA</b>	0	1,510	2,183	701

Core areas are areas large enough for wildlife (especially animals with large home ranges such as carnivores and big game) to forage and reproduce. Subcore areas are areas that could act as stepping stones for wildlife as they move through the region (Craighead et al. 2002). Within all lands of the Lewis and Clark TPA there are approximately 236,024 acres identified as “core/subcore” habitat. In core/subcore habitat under Alternative A, there would be 65,283 acres with low road density, 37,754 acres with moderate road density and 132,987 acres with high road density in the TPA for all land ownerships. Alternative A would provide the lowest quality core and subcore habitat across the landscape of all the alternatives due to open roads.

On BLM lands, there are approximately 12,349 acres in core/subcore habitat. Under Alternative A, there would be 1,244 acres with low road density, 2,419 acres with moderate road density, but the majority of acres have high road density (8,685 acres), within core and subcore habitat. On BLM lands, Alternative A would provide substantially lower quality habitat in core and subcore habitat due to open roads of all alternatives.

Wildlife corridors are areas of predicted movement within or between core and subcore areas. Within the Lewis and Clark TPA there are no areas in the TPA mapped as high quality wildlife movement corridors. There are 20,184 acres mapped as moderate quality movement corridors throughout the entire TPA. In moderate quality movement corridors under Alternatives A, B and D there would be 13,715 acres with low road density, 4,674 acres with moderate road density, and 1,795 acres would have high road densities. These alternatives would have fewer acres with low road density and more acres with high road density compared to Alternative C at the landscape level.

On BLM lands in the TPA there are only 831 acres mapped as moderate quality movement corridors. Under Alternatives A, B and D there would be 360 acres with low road density, 89 with moderate density, and 381 with high road density in moderate quality movement corridors. These alternatives would have fewer acres with low road density and more acres with high road density compared to Alternative C on BLM lands.

Riparian areas provide crucial habitat and critical travel corridors for wildlife including special status species. Riparian areas also provide a refuge for native plants and animals in times of stress such as drought or fire. Roads in riparian areas can prevent use of these crucial areas by wildlife, limit use or cause loss of habitat (Wisdom et al. 2000). Under Alternative A there would be 19.6 miles of open road (roads within 300 feet of streams) in riparian areas.

Road densities within occupied grizzly bear habitat were analyzed using a moving windows analysis, which can more accurately evaluate road density. **Table 4-74** displays the results of the moving windows analysis within the Lewis and Clark TPA in both the Planning and Decision Areas. The moving windows analysis displays the acres in low, moderate and high road densities. Higher densities of open roads can impact the quality and quantity of grizzly bear habitat. Research has indicated that grizzly bears underutilize habitat near roads and other human activities (Mace et al. 1996; Mace et al. 1998, McLellan and Shackleton 1989). Restricting motorized access can aid in minimizing negative impacts on bears related to disturbance and interactions with humans.

As shown in **Table 4-74**, occupied grizzly bear habitat in the Lewis and Clark TPA is dominated by acres with high road density in both the Planning and Decision Areas. However, the percentage of acres with low road densities is greater in the Planning Area (21 percent) compared to the Decision Area (6 percent). Alternative A would have substantially fewer acres with low road density compared to the action alternatives and would have the greatest negative effects to grizzly bears and other special status species from open roads.

The actual road density on BLM lands within occupied grizzly bear habitat overlaying the Lewis and Clark TPA would be 2.4 mi/mi<sup>2</sup> under Alternative A. Alternative A would have the highest road density in occupied grizzly bear habitat of all the alternatives and would have road densities above those recommended by MFWP. Montana Fish, Wildlife and Parks recommends that land management agencies manage for an open road density of 1 mi/mi<sup>2</sup> or less in grizzly bear habitat (this is consistent with MFWP's statewide Elk Management Plan guidelines as well).

Because Alternative A would have the least amount of closed roads compared to the action alternatives, this alternative would have higher road densities within occupied grizzly bear habitat of the Lewis and Clark TPA in both the Planning and Decision Areas than the action alternatives and would result in more negative effects to grizzly bears from open roads.

### Effects of Alternative B

Under Alternative B, the Lewis and Clark TPA would have substantially fewer open roads (28 miles) compared to Alternative A (64 miles). Of the 28 miles of open roads, only 13.8 miles would be open year-round and the remaining 14.3 miles would be seasonally restricted. Alternative B would have more open roads than Alternative C (20 miles) but less than Alternative D (34 miles). Alternative B would decrease harassment to wildlife during all seasons of use but especially during the winter and spring compared to Alternatives A and D. This alternative would also improve habitat and reduce fragmentation more than Alternatives A and D, but less than Alternative C.

Under Alternative B, the actual road density in elk winter range in the Lewis and Clark TPA would be 0.9 mi/mi<sup>2</sup>, less than the maximum of 1 mi/mi<sup>2</sup> recommended by FWP in big game winter range. This is substantially lower than the road density under Alternative A, 2.6 mi/mi<sup>2</sup>, slightly higher than Alternative C (0.7 mi/mi<sup>2</sup>) and higher than Alternative D (1.2 mi/mi<sup>2</sup>) (**Table 4-72**). Open road miles that are 1 mi/mi<sup>2</sup> have been found to provide roughly 60 percent of functional habitat for elk (Christensen et al. 1993).

Under Alternative B, this TPA would have more BLM acres of functional winter range (4,945 acres in the low road density category) compared to Alternative A (2,241 acres), less than Alternative C (6,245 acres) and more than Alternative D (3,828 acres) (**Table 4-72**). Alternative B would improve the quality and quantity of winter range in the Lewis and Clark TPA compared to Alternatives A and D but would have substantially fewer beneficial effects to winter range than Alternative C.

All alternatives would have 888 acres closed to cross country snowmobile use. Alternatives B and D would have 12,650 acres open to cross country snowmobile use which would be lower than the acres open under Alter-

**Table 4-74**  
**Road Density within the Northern Continental Divide Ecosystem Distribution Zone of Grizzly Bear**

Travel Plan Area	Low Density (0-1 mi/mi <sup>2</sup> )				Moderate Density (1-2 mi/mi <sup>2</sup> )				High Density (2-3 mi/mi <sup>2</sup> )			
	A	B	C	D	A	B	C	D	A	B	C	D
Lewis and Clark TPA Planning Area	64,231	67,482	68,256	66,028	82,972	84,436	84,370	84,878	158,291	148,752	146,901	150,781
Lewis and Clark TPA Decision Area	665	3,097	3,781	1,976	2,348	3,563	3,650	3,696	9,059	3,390	2,660	4,635

native A (16,111 acres) but substantially more than would be open under Alternative C (0). Alternatives B and D would limit snowmobile use on 3,460 acres to open roads (49 miles). Alternatives B and D would have fewer negative effects to big game and other wildlife species than Alternatives A, but could have considerably more negative effects compared to Alternative C.

The amount of big game security habitat would be low, but still greater under Alternative B (1,510 acres) than Alternative A which would have no functional security habitat, and Alternative D which would have only 701 acres (**Table 4-73**). Alternative B would increase security habitat for big game more than Alternatives A and D.

For all land ownerships, Alternative B would increase the amount of core and subcore habitat with low road density to 68,109 acres, compared to 65,283 acres under Alternative A. Alternative B would also increase the acreage with moderate road density (38,719 acres) over Alternative A (37,754 acres), but would decrease acreage with high road density (129,195 acres) compared to Alternative A (132,987 acres). Alternative B would substantially improve core and subcore habitat across the landscape more than Alternatives A and D but less than Alternative C.

On BLM lands in core/subcore habitat, Alternative B would substantially increase the acreage with low road density (3,608 acres) compared to Alternative A (1,244 acres). Alternative B would also increase the acreage with moderate road density to 3,022 acres compared to Alternative A (2,419 acres) and would reduce the acreage with high road density to 5,719 acres compared to the 8,685 acres found under Alternative A. Alternative B would substantially improve core and subcore habitat on BLM lands in the TPA more than Alternatives A and D but less than Alternative C.

Effects of Alternative B on wildlife movement corridors would be the same as under Alternative A.

Alternative B would protect and restore more riparian habitat than Alternative A by reducing the miles of open roads in riparian areas to 5.1 miles (from 19.6 under Alternative A). Alternative B would allow for more breeding, foraging, and hiding habitat as well as improve more movement corridors for a wide variety of species than Alternatives A and D but less than Alternative C.

Under Alternative B, the actual road density within occupied grizzly bear habitat of the Lewis and Clark TPA and the Decision Area would be lower than under Alternatives A and D, but higher than under Alternative C. Under Alternative B, road densities in occupied grizzly bear habitat within the Lewis and Clark TPA would be 0.8 mi/mi<sup>2</sup> within the Decision Area. This would be below MFWP's maximum recommended road density in grizzly bear habitat of 1 mi/mi<sup>2</sup>.

Road densities and open roads can impact the quality and quantity of grizzly bear habitat. Research has indi-

cated that grizzly bears underutilize habitat near roads and other human activities (Mace et al. 1996; McLellan and Shackleton 1989). Restricting motorized access can aid in minimizing negative impacts on bears related to disturbance and interactions with humans.

Under Alternative B, grizzly bear habitat with acres of low road density within the Decision Area of the Lewis and Clark County NW TPA would be 26 percent (3,097 acres) of the total available habitat (**Table 4-74**). This would be a higher percentage of acres with low road densities compared to those available at the Planning Area scale within the Lewis and Clark TPA (22 percent). This would be substantially more acres in low road densities than Alternative A (665 acres). Grizzly bears generally adjust to disturbance associated with roads by avoiding the area. This results in a reduction in the amount of habitat available to the bears in heavily roaded areas. Roads also provide increased access into remote areas and encourage human settlement, recreational use, and other land uses. These activities can increase the frequency of human-bear conflicts and ultimately reduce habitat availability and grizzly populations. By increasing low road density areas, Alternative B would provide more suitable habitat for grizzly bears than Alternatives A and D but less suitable habitat compared to Alternative C (**Table 4-74**).

## Effects of Alternative C

Under Alternative C, the Lewis and Clark TPA would have substantially fewer open roads (20 miles) compared to Alternative A (64 miles). Of the 20 miles of open roads, only 8.0 miles would be open year-round and the remaining 12 miles would be seasonally restricted. Alternative C would also have fewer open roads than Alternative B (28 miles) and Alternative D (34 miles). Alternative C would decrease harassment to wildlife during all seasons of use but especially during the winter and spring more than all other alternatives. This alternative would also improve habitat and reduce fragmentation more than all other alternatives.

Under Alternative C, the actual road density in elk winter range in the Lewis and Clark TPA would be 0.7 mi/mi<sup>2</sup>, less than the maximum of 1 mi/mi<sup>2</sup> recommended by FWP in big game winter range. This is substantially lower than the road density under Alternative A (2.6 mi/mi<sup>2</sup>), slightly lower than Alternative B (0.9 mi/mi<sup>2</sup>), and higher than Alternative D (1.2 mi/mi<sup>2</sup>) (**Table 4-72**).

Under Alternative C, this TPA would have substantially more BLM acres of functional elk winter range (6,245 acres in low road density) compared to Alternative A (2,241 acres) and Alternative D (3,828 acres). This alternative would also have more acres of functional winter range than Alternative B (4,945 acres) (**Table 4-72**). Alternative C would improve the quality and quantity of winter range in the Lewis and Clark TPA more than all other alternatives.

As with Alternatives A, B and D, this alternative would have 888 acres closed to cross country snowmobile use. The remaining 16,111 acres would be limited to use on open routes (8 miles). This would greatly reduce the negative effects associated with snowmobile use to big game and other wildlife species more than all other alternatives because there would be no acreage open to cross country use.

Under Alternative C, the amount of big game security habitat on BLM lands (2,183 acres) would be greater than under any other alternative (**Table 4-73**).

For all land ownerships, Alternative C would increase the acreage of core and subcore habitat with low road density to 69,476 acres, compared to 68,109 acres under Alternative B and 65,283 acres under Alternative A. The acreage with moderate road densities would be similar under both Alternatives C and B (38,924 and 38,719 acres, respectively), but would be an increase over Alternative A (37,754 acres). Alternative C would decrease the acreage in high road density to 127,624 acres, which would be lower than Alternative B (129,195 acres) and Alternative A (132,987 acres). Alternative C would substantially improve core and subcore habitat across the landscape more than all other alternatives.

On BLM lands in core/subcore habitat, Alternative C would substantially increase the acreage with low road density (4,640 acres) compared to Alternative A (1,244 acres) and Alternative B (3,608 acres). Alternatives C and B would have similar acreages with moderate road density (3,079 acres and 3,022 acres, respectively), which would be more than Alternative A (2,419 acres). Alternative C would also decrease the acreage with high road density to 4,631 acres, which would be lower than both Alternative A (8,685 acres) and Alternative B (5,719 acres). Alternative C would substantially improve core and subcore habitat on BLM lands in the TPA more than all other alternatives.

For all land ownerships in moderate quality movement corridors, Alternative C would increase the acreage with low road density to 13,812 acres, increase the acreage with moderate road density to 5,009 acres, and decrease the acreage with high road density to 1,363 acres. Alternatives A, B and D would have the same acreages with low (13,715 acres), moderate (4,674 acres), and high (1,795 acres) road densities.

Under Alternative C, BLM lands in moderate quality movement corridors would have more acreage with low road density (444 acres), more acreage with moderate road density (383 acres), and less acreage with high road density (3 acres) compared to Alternatives A, B and D. Alternatives A, B and D would have the same acreages in low (360 acres), moderate (89 acres), and high (381 acres) road densities. Alternative C would improve the quality of movement corridors more than all other alternatives.

Alternative C would protect and restore more riparian habitat than Alternative A by reducing the mileage of open roads in riparian areas to 4.1 miles (from 19.6 under Alternative A). Alternative C would also have fewer open roads in riparian areas than Alternative B (5.1 miles) and Alternative D (7.8 miles). Alternative C would allow for more breeding, foraging and hiding habitat as well as improve more movement corridors for a wide variety of species than all other alternatives.

Under Alternative C, the actual road density within occupied grizzly bear habitat of the Lewis and Clark TPA and the Decision Area would be lower than with all other alternatives. Under Alternative C, road densities in occupied grizzly bear habitat within the Lewis and Clark TPA would be 0.6 mi/mi<sup>2</sup> within the Decision Area. This would be well below the maximum road densities recommended by MFWP of 1 mi/mi<sup>2</sup> or less in grizzly bear habitat.

Within occupied grizzly bear habitat, the number of acres with low road density in the Lewis and Clark TPA would be 31 percent (3,781 acres) of total available habitat (**Table 4-74**). This would be higher than the percent of habitat available at the Planning Area scale (22 percent). Alternative C would have substantially more BLM acres with low road density in occupied grizzly bear habitat than Alternative A (665 acres) and moderately more than Alternative D (1,976 acres). Alternative C would provide slightly more acres with low road density compared to Alternative B (3,097 acres).

Through travel management, Alternative C would provide the greatest benefit to grizzly bears and other special status species by reducing fragmentation of habitats, protecting larger blocks of habitat and reducing disturbance in occupied grizzly bear habitat.

## Effects of Alternative D

Under Alternative D, the Lewis and Clark TPA would have considerably fewer open roads (34 miles) compared to Alternative A (64 miles). Of the 34 miles of open roads, 19.6 miles would be open year-round and the remaining 14.5 miles would be seasonally restricted. Alternative D would have more open roads than Alternative B (28 miles) and Alternative C (20 miles). Alternative D would allow more harassment to wildlife during all seasons of use, especially during the winter and spring, than Alternatives B and C but less than Alternative A. This alternative would also improve habitat and reduce fragmentation more than Alternative A but less than Alternatives B and C.

Under Alternative D, the actual road density in elk winter range in the Lewis and Clark TPA would be 1.2 mi/mi<sup>2</sup>, more than the 1 mi/mi<sup>2</sup> recommended by MFWP in big game winter range. This is lower than the road density under Alternative A (2.6 mi/mi<sup>2</sup>), but higher than Alternative B (0.9 mi/mi<sup>2</sup>) and Alternative C (0.7 mi/mi<sup>2</sup>) (**Table 4-72**).

Under Alternative D, this TPA would have more BLM acres of functional winter range (3,828 acres in low road density) compared to Alternative A (2,241 acres) but considerably less than Alternative B (4,945 acres) and Alternative C (6,245 acres) (**Table 4-72**). Alternative D would improve the quality and quantity of winter range in the Lewis and Clark TPA more than Alternative A but would have substantially fewer beneficial effects to winter range than Alternatives B and C.

Effects associated with snowmobile use under Alternative D would be the same as under Alternative B.

The amount of big game security habitat on BLM lands would be low under Alternative D with 701 acres, but more than under Alternative A which would have no functional acres of security habitat. Alternative D would have fewer acres of security habitat than any other action alternative (**Table 4-73**).

For all land ownerships in core and subcore habitat, Alternative D would have more acreage with low road density (66,988 acres) compared to Alternative A (65,283 acres). Alternative D, however, would have fewer acres with low road density compared to Alternative B (68,109 acres) and Alternative C (69,476). The acreage with moderate road density under Alternative D (39,136 acres) would be more than with Alternative A (37,754 acres), Alternative B (38,719 acres) and Alternative C (38,924 acres). Alternative D would have fewer acres (129,900) with high road density than Alternative A (132,987 acres) but would have more acres with high road density than Alternatives B (129,195) and Alternative C (127,624). Alternative D would improve core and subcore habitat across the landscape more than Alternative A but less than Alternatives B and C.

On BLM lands in core/subcore habitat, Alternative D would increase the acreage with low road density (2,706 acres) compared to Alternative A (1,244 acres), but would have considerably fewer acres with low road density than Alternative B (3,608 acres) and Alternative C (4,640 acres). Alternative D would have more acreage with moderate road density (3,192 acres) than Alternative A (2,419 acres), but less than either Alternative B or Alternative C. Alternative D would decrease the acreage with high road density to 6,452 acres compared to Alternative A (8,685 acres), but would have more acres with high road density than Alternative B (5,719 acres) and Alternative C (4,631 acres). Alternative D would improve core and subcore habitat on BLM lands in the TPA more than Alternative A but less than Alternatives B and C.

Effects of Alternative D on wildlife movement corridors would be the same as under Alternatives A and B.

Alternative D would protect and restore more riparian habitat than Alternative A by reducing the miles of open roads in riparian areas to 7.8 miles (from 19.6 under Alternative A). Alternative D would have more open roads in riparian areas than Alternative B (5.1 miles) and

Alternative C (4.1 miles). Alternative D would allow for more breeding, foraging and hiding habitat as well as improve more movement corridors for a wide variety of species than Alternative A but less than Alternatives B and C.

The actual road density, under Alternative D, in occupied grizzly bear habitat within the Lewis and Clark TPA would be 1.3 mi/mi<sup>2</sup> within the Decision Area. This would be above the maximum MFWP recommended road density in occupied grizzly bear habitat of 1 mi/mi<sup>2</sup>.

Under Alternative D, the percent of total available grizzly bear habitat with low road density in the Lewis and Clark TPA would be 19 percent (1,976 acres) (**Table 4-74**). This would be a lower percentage compared to the percentage available at Planning Area scale (22 percent). Alternative D would have more acres in low road density in occupied grizzly bear habitat than Alternative A (665 acres), but substantially fewer acres than Alternative B (3,097 acres) and Alternative C (3,781 acres).

Alternative D would provide more acres of suitable habitat for grizzly bears than Alternative A but fewer acres of suitable habitat compared to Alternatives B and C.

## Cumulative Effects on Wildlife

Wildlife habitat in the Lewis and Clark TPA has been affected by roads, historic and current mining, timber harvest, weed infestations, urbanization and development, recreation, powerline corridor development, and communication sites.

The majority of BLM managed routes for the Lewis and Clark TPA are located in and around the town of Marysville, located approximately 25 miles northwest of Helena. The Marysville area is experiencing increased residential development, but to a lesser extent than the central Helena Valley area. Much of the use in the Marysville area (especially winter use) comes from Helena Valley residents. The Helena Valley has been experiencing steady population growth. This trend is expected to continue, along with increased recreational use of this travel planning area. The remaining BLM-managed routes are located in 3 sub-planning areas: Stemple Pass, Sieben Ranch, and Lincoln.

Land that was traditionally used for ranching, forest products, or mining is now being converted to home sites around Marysville and throughout the rest of the TPA. Although these lands had historic human uses, they also provided quality wildlife habitat. These areas historically provided a diversity of habitats that contributed to; big game winter range, travel corridors, habitat for resident and migrating wildlife, as well as foraging, breeding and hiding habitat. Many of the areas currently experiencing residential development are in big game winter range. Because of the loss of winter range on private lands, it is critical that public and state lands maintain quality and secure winter range or improve the habitat in these areas.

For many plant and animal communities, native species richness decreases as housing density increases. Non-native species, however, tend to increase with development (Hansen et al. 2005). Wildlife populations, including carnivores, may be reduced even at very low levels of residential development due to; loss of habitat, an increase in human access (from roads) in areas that previously had low levels of disturbance, and an increase in hunting pressure. Residential development can also lead to an increase in noxious weed infestations that can reduce the quality and quantity of wildlife habitat.

Pets can also have a negative impact to native wildlife. Cats hunt and kill bird and small mammals. Dogs that are allowed to roam can chase, injure, or kill wildlife. This can result in areas becoming unavailable to wildlife.

Recreation use is well established in the TPA, especially for winter sports. Winter sport activities include: snowmobiling, downhill skiing (Great Divide Ski Area), backcountry skiing, ski racing, snowboarding, and snowshoeing. An extensive network of roads and trails support a wide range of off-season activities, including: camping, hunting, target practice, hiking, jogging, horseback riding, mountain bike riding, and motorized use (motorcyclists, OHV riders, and 4-wheel drive enthusiasts). As recreation use grows, conflicts between non-motorized and motorized recreation users could lead to increased public demands for either more, or less motorized use.

Since 1977, approximately 3,360 mining claims have been active throughout the Marysville area. Currently, only 40 claims are active, including the Bald Butte Mine, an open cut molybdenum mine. While currently a small scale operation (5 acres), there is a strong likelihood that Bald Butte will expand to approximately 30 acres in the future with roughly 5 acres on BLM lands. Activity began in 2006, and is anticipated to continue until at least 2015. Increases in mineral prices could lead to additional increased or renewed mining activity.

In the TPA, there are 17 powerlines and 4 pipelines. There are eight existing communication sites in the TPA but, in the future, communication sites on BLM lands will be restricted to existing sites. No future communication sites are expected in the TPA on BLM lands but they could occur on private or other public lands. There is the potential for future powerlines and pipelines to be built in this TPA.

There are approximately 44 rights-of-way (ROW) in the TPA and applications for ROW permits to access private property or for commercial development are likely to increase in the future. As a result, public access to BLM lands could increase. Fewer ROWs would be expected under Alternative A because more BLM roads would remain open under this alternative. Alternative B would be expected to have fewer ROWs than Alternative C but more than Alternatives A and D. Alternative C would be

expected to have the most ROWs and, of the action alternatives, Alternative D would have the fewest.

From 1981-2004 there have been 14 wildland fires that burned 83 acres of BLM lands (it is unknown how many acres burned in the entire TPA). Seven of the fires were identified as human-caused and these fires burned the majority of the BLM acres (75). Fuels reduction activities could occur around the town of Marysville. Timber harvest has occurred on approximately 130 acres of BLM lands in the TPA over the last 23 years and there have been approximately 70 acres of timber salvage. Vegetative treatments on BLM lands have had minor effects to wildlife habitat in the TPA. However, timber harvest, salvage, past mining activities and development on private lands have altered the landscape and may have caused a decline in the quality and quantity of wildlife habitat in the TPA.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the TPA. Motorized activities play a large role in the distribution of noxious weeds. The cumulative effects of the spread of noxious weeds from open roads would be greater under Alternative A than all other alternatives. Alternative A would result in more wildlife habitat being lost or degraded due to noxious weed infestations compared to the action alternatives. Alternative B would have fewer open roads than Alternatives A and D resulting in fewer infestations of noxious weeds. Alternative C would close the most roads and would have the fewest cumulative effects from loss of habitat due to noxious weeds of all alternatives. Open roads and development adjacent to BLM lands and the substantial amount of public use this area receives would still allow for the spread of noxious weeds.

Fragmentation of BLM lands in the TPA (only 4 percent in BLM ownership); open roads on BLM lands (about 68 miles), on private lands (about 900 miles) and other public lands (about 480 miles); as well as adjacent development has reduced the quality of wildlife habitat within the TPA. Large blocks of Forest Service lands (35 percent of TPA) are found in the TPA and do provide high quality wildlife habitat. However, open Forest Service roads as well as roads and development throughout the rest of the TPA cause disturbance to wildlife along with fragmentation and loss of habitat in the TPA. Roads are associated with nearly every type of activity that has the potential to occur in the TPA including vegetation treatments, timber salvage, mining, access to private lands (ROWs), fire suppression, powerline corridors, and recreation. Open roads in the Planning Area would likely increase due to development and management of private lands. Alternative A would have the greatest negative cumulative effects to wildlife and wildlife habitat from open roads with 64 miles of open roads. Alternative B would have fewer negative cumulative effects with 28 miles of open road than Alternatives

A and D (34 miles) but more than Alternative C (20 miles).

Of the action alternatives, Alternative C would have the most beneficial cumulative effects by reducing habitat fragmentation, restoring habitat and reducing disturbance. Alternative B would be more beneficial than Alternatives A and D but less than Alternative C.

Historic and recent timber cutting (mostly on private lands), timber salvage, past and present mining activity and firewood gathering in the TPA have reduced the amount of suitable snag habitat for cavity nesting species. Alternative A would allow a substantial amount of access to the area for firewood cutting. This could continue to prevent snag recruitment for snag dependant species and minimize the amount of down woody material. Alternative B would protect more snag and down wood habitat from loss due to firewood cutting than Alternatives A and D, but would protect less of this habitat type than Alternative C.

In the Lewis and Clark TPA high road densities in both the Decision and Planning Areas have prevented BLM lands from providing suitable security habitat for big game during the hunting seasons under Alternative A. Alternatives B and C would provide the most security habitat for big game on BLM lands (1,510 and 2,183 acres, respectively) and Alternative D would provide 701 acres. Security habitat would still be limited on private (unless closed to hunting) and other public lands. The reduction of open roads during the hunting season would help mitigate for the loss of security habitat on adjacent lands under Alternatives B and C.

Approximately 58 percent of the TPA is mapped as core and subcore habitat. All of the core and subcore habitat is in the western half of the TPA and is predominately Forest Service lands. Fragmentation of habitat due to development of private lands, open roads, and disturbance, has impacted the quality of core/subcore habitat and wildlife movement corridors in the TPA.

Habitat mapped as core and subcore habitat and wildlife movement corridors having high road densities would continue to be of lower value to wildlife under Alternative A. An increase in open roads in both the Decision and Planning Areas could result in a loss of core and subcore habitat under all alternatives but, especially, Alternative A. Although core/subcore habitat and wildlife movement corridors would continue to be impacted by development on private lands, Alternatives B and C would allow more BLM lands to function as core/subcore habitat and wildlife movement corridors. Alternatives B and C would have fewer negative cumulative effects to core/subcore and wildlife habitat than Alternatives A and D.

The cumulative effects of high road densities would continue to negatively affect wildlife species during the breeding season more under Alternative A than under the action alternatives. Alternatives B and C would have

the most beneficial cumulative effects to wildlife during the breeding season compared to Alternative D and, especially, Alternative A.

## FISH

For the sake of this discussion, “open” roads include roads that are open with seasonal restrictions as well as roads that are open yearlong. Roads identified as “closed” within 300 feet of streams also include roads that would be “decommissioned” in these areas by alternative. Effects to water quality described in the Water Resources section would affect fish populations and fish habitat quality. Analyses described and tabulated in the Water Resources section are referred to in the context of effects to fish in the discussion below.

### Effects of Alternative A

Under Alternative A, the Lewis and Clark TPA would have considerably more open roads (64 miles) compared to the action alternatives. Roads can have a wide range of effects on fish and fish habitat. These effects would include, but are not limited to, increased sedimentation from road construction and vehicle use, increased runoff, changes in surface water and drainage patterns from stream crossings, conduits for noxious weeds, loss of riparian vegetation, potential decreases in stream shading that could lead to water temperature increases, and changes in local fish populations when culverts are impassable and limit fish migration.

Watershed (or hydrologic) function can be used as an indicator of relative risk or impacts to fish habitat. Generally, watersheds with high road densities often have the largest negative effects on fish and aquatic resources. To determine the effects on watershed function, a moving windows analysis was conducted on BLM lands to look at the miles of roads that would be decommissioned and removed from the landscape for each alternative. During this analysis, it was assumed that even though closing roads would improve watershed function, closed roads would remain on the landscape and could still have negative impacts to water quality and prevent or impede the restoration of riparian vegetation. Under Alternative A, there would be 2,614 acres with low road density, 3,444 acres with moderate road density and 10,979 acres with high road density on BLM lands in the TPA (**Table 4-69**). Alternative A would have fewer acres with low road density and more acres with high road density than the action alternatives. This alternative would be expected to have greater overall negative effects to watershed function due to roads than the action alternatives.

For this discussion, road miles within 300 feet of fish bearing streams would be considered an indicator of direct effects to fish habitat and fish populations. Under Alternative A, there would be 0 miles of closed road and 7.4 miles of open road within 300 feet of fish bearing streams on BLM lands. Alternative A would have 2.1-

2.6 fewer miles of closed roads (and the same number more of open road miles) adjacent to fish bearing streams than the action alternatives. Of the 7.4 miles of open road adjacent to fish bearing streams under Alternative A, 4.6 miles are along streams with BLM special status fish species (bull trout and/or westslope cutthroat trout). Alternative A would have more long-term negative impacts to westslope cutthroat trout (the effects to bull trout would be the same for all alternatives) as well as to other fish species than the action alternatives.

Perennial non-fish bearing streams contribute to fish habitat indirectly by serving as conduits for watershed products (water, sediment, nutrients, contaminants, and in some cases woody material) to fish bearing streams. Under Alternative A, there would be 0.1 miles of closed road and 5.1 miles of open road within 300 feet of perennial non-fish bearing streams on BLM lands in the TPA. Alternative A would have substantially more miles of open road adjacent to perennial streams than Alternatives B (1.7 miles), C (1.4 miles) and D (2.5 miles).

This alternative would have the greatest negative impacts to fish and aquatic resources from open roads.

### Effects of Alternative B

Under Alternative B, the Lewis and Clark TPA would have substantially fewer open roads (28 miles) compared to Alternative A (64 miles). Alternative B would have more open roads than Alternative C (20 miles) but less than Alternative D (34 miles).

In the context of watershed function, Alternative B would have approximately 461 more acres in the low road density category, 1,082 more acres in the moderate road density category, and 1,543 fewer acres in the high road density category on BLM lands than Alternative A (**Table 4-69**). Alternative B would contribute to improved watershed function more than Alternative A. This analysis does consider “decommissioned” roads, but does not consider “closed” roads as contributing to watershed function. Even though closed roads could still have adverse effects to aquatic habitats, these roads have more potential to become revegetated and lessen sedimentation and runoff, and restore riparian vegetation (thus contributing to improved fish habitat conditions) than open roads. Under Alternative B, there would be approximately 23 more miles of closed roads than under Alternative A, an additional indication that Alternative B would pose less of an impact to fish habitat than Alternative A. Alternatives B and D would have 2.1 miles of closed road and 5.3 miles of open road within 300 feet of fish bearing streams on BLM lands. Of the 5.3 miles of open roads, 3.2 miles would be adjacent to streams with special status species (westslope cutthroat trout and/or bull trout). Alternative B would reduce effects to fish bearing streams (including streams with special status species) more than Alternative A because all of these riparian roads would remain open under Alternative A. Alternative B would contribute fewer indirect effects to

fish habitat associated with roads within 300 feet of perennial non-fish bearing streams than Alternative A. Under Alternative B there would be 3.3 miles of closed road and 1.7 miles of open road in these riparian areas on BLM lands. This would pose less impact to these areas than under Alternative A where all 5.0 miles would be open.

Alternatives B would have fewer road-related adverse effects to fish and aquatic habitats than Alternative A.

### Effects of Alternative C

Under Alternative C, the Lewis and Clark TPA would have substantially fewer open roads (20 miles) compared to Alternative A (64 miles). Alternative C would also have fewer open roads than Alternative B (28 miles) and Alternative D (34 miles).

In the context of watershed function, Alternative C would result in approximately 79 more acres in the low road density category, 632 more acres in the moderate road density category, and 711 fewer acres in the high road density category on BLM lands than Alternative A (**Table 4-69**). This alternative would have 382 fewer acres in the low road density category, 450 more acres in the moderate road density category, and 832 more acres in the high road density category than Alternative B. Under Alternative C there would be approximately 38 more miles of closed roads than under Alternative A, and about 15 more miles of closed roads than under Alternative B. Alternative C would lessen effects to fish habitat through improved watershed function more than Alternative A, but less than Alternative B.

Alternative C would have the most miles of closed roads (2.6) and the fewest miles of open roads (4.8) within 300 feet of fish bearing streams on BLM lands of all alternatives. Of the 4.8 miles of open roads, 2.9 miles would be adjacent to streams with special status species (westslope cutthroat trout and/or bull trout). In terms of direct effects from roads adjacent to fish bearing streams, Alternative C would have the most benefits to fish habitat of all alternatives.

Alternative C would contribute fewer indirect effects to fish habitat associated with roads within 300 feet of perennial non-fish bearing streams on BLM lands than all other alternatives. Under Alternative C there would be 3.6 miles of closed road and 1.4 miles of open road within 300 feet of perennial non-fish bearing streams on BLM lands in the TPA. This is a range of 0.3-3.6 more closed road miles in these areas than under the other alternatives.

Alternative C would provide more benefits to fish and aquatic habitats associated with roads in close proximity to streams than any other alternative. This alternative would provide less benefit to aquatic resources from improvements to hydrologic function than Alternative B, but more than Alternative A.

## Effects of Alternative D

Under Alternative D, the Lewis and Clark TPA would have considerably fewer open roads (34 miles) compared to Alternative A (64 miles). Alternative D would have more open roads than Alternative B (28 miles) and Alternative C (20 miles).

In the context of watershed function, Alternative D would result in approximately 321 more acres in the low road density category, 1,002 more acres in the moderate road density category, and 1,324 fewer acres in the high road density category on BLM lands than Alternative A (Table 4-69). This alternative would have 140 fewer acres in the low road density category, 80 fewer acres in the moderate road density category, and 219 more acres in the high road density category than Alternative B. Under Alternative D there would be approximately 17 more miles of closed roads than under Alternative A, approximately 6 fewer miles of closed roads than under Alternative B, and approximately 21 fewer miles of closed roads than under Alternative C. Alternative D would lessen effects to fish habitat through improved watershed function more than Alternatives A and C, and to a similar degree as Alternative B.

Alternative D would have fewer miles of closed road (2.1) and more miles of open road (5.3) within 300 feet of fish bearing streams on BLM lands than Alternatives B and C. Of the 5.3 miles of open roads, 3.2 miles would be adjacent to streams with special status species (westslope cutthroat trout and/or bull trout). Alternative D would reduce direct effects to fish bearing streams (including streams with special status species) more than Alternative A but less than Alternatives B and C.

Alternative D would contribute more indirect effects to fish habitat associated with roads within 300 feet of perennial non-fish bearing streams on BLM lands than Alternatives B and C but less than Alternative A. Under Alternative D there would be 2.5 miles of closed road and 2.5 miles of open road within 300 feet of perennial non-fish bearing streams on BLM lands in the TPA. Alternative D would contribute fewer direct effects to aquatic habitats (fish bearing and non-fish bearing) from roads than Alternative A but more than Alternatives B and C.

Although Alternative D would contribute to improved fish habitat conditions from a hydrologic function standpoint to a similar degree as Alternative B, overall this alternative would have more adverse effects to fish and aquatic habitats than Alternatives B and C, but less than Alternative A.

## Cumulative Effects on Fish

The Lewis and Clark TPA supports a variety of native and introduced fish species. One of the major human influences to fish in the TPA has been the introduction of non-native trout species including rainbow trout, brook trout, and brown trout throughout the TPA. Rain-

bow trout have hybridized with the native westslope cutthroat trout in many streams. Brook trout and brown trout have displaced the native cutthroats in other streams, especially those altered by sedimentation and increased water temperatures brought on by human activities.

Due to their life history requirements, bull trout are more sensitive to increased water temperatures, poor water quality, and low flow conditions than many other salmonids. Past and continuing land management activities have degraded stream habitat, especially along larger river systems and stream areas located in valley bottoms, to the point where bull trout can no longer survive or reproduce successfully across their range. Brook trout easily hybridize with bull trout producing sterile offspring. Brook trout also reproduce earlier and at a higher rate than bull trout. Hybridization with brown trout may also be a problem in some areas of the TPA.

The majority of BLM managed routes for the Lewis and Clark TPA are located in and around the town of Marysville. The Marysville area is experiencing increased residential development, but to a lesser extent than the central Helena Valley area. The remaining BLM managed routes are located in three sub-planning areas: Stemple Pass, Sieben Ranch, and Lincoln. Bull trout are only found in the Blackfoot watershed that would be impacted by travel planning in the Lincoln Area.

Recreation use is well established in the TPA, especially for winter sports. Winter sport activities include: snowmobiling, downhill skiing (Great Divide Ski Area), backcountry skiing, ski racing, snowboarding, and snowshoeing. An extensive network of roads and trails support a wide range of off-season activities, including: camping, hunting, target practice, hiking, jogging, horseback riding, mountain bike riding, and motorized use.

Agricultural activities from farming and ranching contribute increases in nutrients, sedimentation, and loss of aquatic habitats through direct stream channel alterations. Many streams in the TPA have been impacted by historic and ongoing livestock grazing that breaks down streambanks, widens channels, removes vegetative cover and causes an increase in fine sediment and nutrients.

Since 1977, approximately 3,357 mining claims have been active throughout the Marysville area. Today 40 claims remain active, including the Bald Butte Mine, an open cut molybdenum mine. Increases in mineral prices could lead to increased or renewed mining activity. Many watersheds in the TPA have been degraded by historic mining activities.

Aquatic habitats have been affected by stream channel alteration and heavy metal contamination associated with historic mining and abandoned mine lands in some portions of this TPA. See the Water Resources section for this TPA for more details.

Fires, floods, and drought have historically affected fish habitat in the TPA. These disturbances can cause a pulse of sediment or may temporarily reduce the quality of fish habitat in some watersheds while leaving other streams largely unaffected. Population recovery in disturbed streams may be facilitated by fish immigration from nearby drainages less affected by the catastrophic event. Some natural disturbances may have short-term adverse effects but long-term beneficial effects to fish habitat such as increasing large wood recruitment to streams and floodplains. From 1981-2004 there have been 14 wildland fires that burned 83 acres. Seven of the fires were identified as human-caused and these fires burned the majority of the acres (75). Fuels reduction activities could occur around the town of Marysville in the future. Effects to fish habitat from these activities would likely be minimal.

Timber harvest can alter the recruitment of large woody debris, reduce canopy closures and result in an increase in fine sediment to streams. Timber harvest along with associated roads can contribute substantially to the overall cumulative effects in forested watersheds. Timber harvest has occurred on approximately 130 acres of BLM lands in the TPA over the last 23 years and there have been approximately 70 acres of timber salvage. Vegetative treatments on BLM lands have had minor effects to aquatic habitats in the TPA. However, timber harvest, salvage and past mining activities on private lands have altered the landscape and may have caused a decline in the quality and quantity of aquatic habitat in the TPA. Roads are another major contributor of sediment to streams and a major problem with regards to cumulative watershed effects. Roads and trails can have localized effects on nearby stream segments or at stream crossing sites, especially fords. Cumulatively, roads degrade aquatic habitat due to sedimentation from road construction and vehicle use, increased runoff, changes in surface water and drainage patterns from stream crossings, loss of riparian vegetation, loss of large woody material and roads can cause changes in local fish populations when culverts are impassable and limit fish migration. Alternative A would have more negative cumulative effects to watersheds and individual streams due to roads than the action alternatives. Alternative B would have fewer negative cumulative effects than Alternatives A and D but more than Alternative C. Alternative B would improve overall watershed function as well as improve habitat in individual streams more than Alternatives A and D but less than C. Alternative C would have the greatest beneficial effects overall.

## **SPECIAL STATUS PLANTS**

### **Effects Common to All Alternatives**

Ground-disturbing activities from road construction and maintenance, as well as road use by vehicles can affect special status plant populations and habitat. These activities can reduce sensitive plant species through distur-

bance to individual populations, increasing competition from invasive species, and reducing habitat connectivity. Closure of roads and trails can improve or maintain sensitive plant populations or habitat by reducing avenues of noxious weed spread, maintaining habitat connectivity, and improving pollinator habitat. Road and trail restrictions have the same effects but to a lesser degree.

### **Effects of the Alternatives**

Under Alternative A, 57.5 miles of BLM roads and trails would remain open, 6.7 miles of roads and trails would be open with seasonal restrictions, and 3.4 miles of roads and trails would be closed. On the open roads, effects would continue as described in the Effects Common to All Alternatives section. On the closed routes, vectors of noxious weed spread would be reduced and habitat connectivity and health would be improved for sensitive plants and their pollinators.

Under Alternative B, 13.8 miles of BLM roads and trails would remain open, 14.3 miles of roads and trails would be open with seasonal restrictions, 26.8 miles of roads and trails would be closed, and 10.9 miles would be decommissioned. On the closed routes, vectors of noxious weed spread would be reduced and habitat connectivity and health would be improved for sensitive plants and their pollinators. The restricted roads would reduce weed spread a limited amount. Because more road miles would be closed under this alternative, Alternative B would benefit and reduce risk to special status plants more than Alternative A.

Under Alternative C, 8 miles of BLM roads and trails would remain open, 11.7 miles of roads and trails would be open with seasonal restrictions, 41.6 miles of roads and trails would be closed, and 5.2 miles would be decommissioned. On the closed routes, vectors of noxious weed spread would be reduced and habitat connectivity and health would be improved for sensitive plants and their pollinators. The restricted roads would reduce weed spread a limited amount. Alternative C would benefit and reduce risk to special status plants more than any other alternative because it would eliminate disturbance, vehicular use, and spread of noxious weeds on the most road miles.

Under Alternative D, 19.6 miles of BLM roads and trails would remain open, 14.5 miles of roads and trails would be open with seasonal restrictions, 20.3 miles of roads and trails would be closed, and 8.8 miles would be decommissioned. On the open roads, effects would continue as described in the Effects Common to All Alternatives section. On the closed routes, vectors of noxious weed spread would be reduced and habitat connectivity and health would be improved for sensitive plants and their pollinators. The restricted roads would reduce weed spread a limited amount. Alternative D would benefit and reduce risk to special status plants more than Alternative A, but would pose more risk compared to Alternatives B and C.

## Cumulative Effects on Special Status Plants

Under all alternatives there are a number of past, present, and reasonably foreseeable future actions that affect special status plant populations.

Livestock grazing will continue in the area and has the potential to impact sensitive plant populations and habitat. On public lands, ongoing rangeland health assessments and implementation of livestock grazing guidelines would continue to improve or maintain sensitive species populations and habitat. On private lands, livestock grazing is expected to decline slowly as more ranch and farmland is subdivided. Conditions may improve or degrade as management changes.

Noxious weed control will continue on both public and private lands with varying degrees of success. To the extent that these efforts are successful, sensitive plants would benefit from the reduced competition. Use of herbicides for noxious weed control could cause mortality to special status plants if individual plants are inadvertently sprayed.

Recent and anticipated subdivision growth on private lands will lead to more road construction and maintenance. More roads and development will reduce sensitive plant species habitat and in some cases individual populations. Additionally, subdivisions have the potential to disrupt the connectivity of plant habitat and populations as well as disturbing or eliminating pollinators needed by sensitive species. Some sensitive species that require soil disturbance may benefit.

Timber sale activity disturbance can destroy or degrade sensitive plant habitat. On public lands, projects would be designed to avoid, mitigate, or enhance sensitive plant habitats. The disturbance associated with timber harvest activities does have the potential to increase noxious weed spread which degrades sensitive species habitat and individual plant populations.

A molybdenum mine was started on private land above Bald Butte. The mine may expand on other private and public lands in the future. Impacts are not expected from this activity, because no sensitive plant species or habitat have been identified in the area at this time. A survey would be conducted prior to any disturbance on public land.

At the scale of the entire Lewis and Clark County NW TPA (all land ownerships), the BLM travel plan alternatives would have slightly variable contributions to cumulative effects on special status plants. Under Alternative A less than 1 percent of all roads in the TPA would be closed. Under Alternative B adverse effects on special status plants would be slightly reduced compared to Alternative A because 2.6 percent of all roads in the TPA would be closed or decommissioned. Alternative C would provide the most benefits of all alternatives as 3.2 percent of all roads in the TPA would be closed or de-

commissioned. Alternative D would provide slightly more benefits than Alternative A but slightly fewer benefits than either Alternatives B or C as 2 percent of all roads in the TPA would be closed or decommissioned. Because BLM lands make up only 4.2 percent of all lands in the TPA, activities on non-BLM lands would play a greater role in determining the status of special status plants.

## WILDLAND FIRE MANAGEMENT

Travel planning alternatives were analyzed to determine whether they could result in impact on wildland fire management, causing change to any of the following indicators:

- Fire regime condition class (FRCC)
- Firefighter and public safety
- Reducing threat to Wildland Urban Interface (WUI)

## Effects Common to All Alternatives

Public road access during the fire season provides opportunities for human-caused fires either due to catalytic converters on vehicles igniting dry vegetation, or due to some types of human activities. Roads that are closed to public access reduce the risk of human-caused fire starts in those areas.

Decommissioned roads and roads that are closed and not regularly maintained for navigability reduce access for fire suppression. Closed roads may become impassible due to vegetation regrowth, downfall of trees, or severe erosion. Some roads may be closed with earthen berms or fallen trees and would need to be physically manipulated to make them useable for vehicles again. These roads would extend firefighting response time and have negative impacts on efforts to reduce wildland fire threat to WUI areas and firefighter and public safety. In an emergency fire suppression situation, any navigable closed roads needed for fire suppression would be used immediately. Non-navigable closed roads could also be used if deemed to be needed for fire suppression, after needed improvements are made to make those roads useable. Planning and implementation of fuels reduction treatments could occur in association with closed roads if variances for temporary road use were to be allowed. Variances would be subject to internal BLM review.

In the context of fuels reduction projects, availability of open roads is important to facilitating fuels project location as well as increasing project feasibility and decreasing costs. Open roads also facilitate spread of noxious weeds by transporting weed seed on vehicles and their tires. Presence of large noxious weed populations could delay or cause fuels projects to be cost-prohibitive due to the fact that the weeds may have to be treated before and/or after the fuels treatment. Also, some applications of fuel treatments (e.g., prescribed fire) may promote the

spread of some weeds. The presence of weeds and non-native species are indicators that FRCC has departed from historical conditions.

Noxious weeds and non-native invasive species are well established and spreading in the Lewis and Clark County NW TPA.

### Effects of Alternative A

Under Alternative A, the majority of routes in the Lewis and Clark County NW TPA would be available for wheeled motorized use (57.5 miles open yearlong, 6.7 miles seasonally restricted), while 3.4 miles would continue to be closed. Alternative A would allow for the greatest flexibility between alternatives for access for suppression purposes. Fuels project feasibility would be highest under this alternative. However, public access during the fire season would be the greatest under this alternative and would provide the most opportunities for human-caused fire starts.

The distribution of noxious weeds could be the greatest in alternative A with the most open roads and noxious weeds already well established. This would contribute to reduced feasibility of fuels reduction projects more than under any other alternative.

### Effects of Alternative B

Alternative B provides for separate use areas for wheeled motorized and non-motorized recreational opportunities. Under Alternative B, a total of 28.1 miles of routes would be available for motorized wheeled use (13.8 miles open yearlong, 14.3 miles seasonally restricted). The majority of routes located in the Stemple Pass and Lincoln areas would be closed, providing additional non-motorized opportunities. Alternative B would limit the flexibility for access for suppression purposes and fuels project feasibility would go down compared to Alternative A due to the fact that access would be limited to 28.1 miles of road. Of the 36.7 miles of closed roads, 10.9 miles would be decommissioned and would likely be unusable for fire suppression. The risk of human-caused fires associated with motorized use would be limited compared to Alternative A, due to a 49 percent decrease in miles of road open to motorized public travel compared to Alternative A.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the area. Because more roads would be closed under this alternative, Alternative B should help reduce the spread of noxious weeds and may make fuels treatments more feasible than under Alternative A, reducing FRCC departure.

### Effects of Alternative C

Alternative C would provide the least amount of wheeled motorized opportunities with 8 miles of routes open yearlong, and an additional 11.7 miles seasonally restricted.

Alternative C would limit the flexibility for access for suppression purposes, and fuels project feasibility would go down compared to both Alternatives A and B, due to the fact that access would be limited to 19.7 miles of road. Of the 46.8 miles of closed roads, 5.2 miles would be decommissioned and would likely be unusable for fire suppression. The risk of human-caused fires associated with motorized use would be the lowest of all alternatives, due to a 64 percent decrease in miles of road open to public travel compared to Alternative A. However, this degree of reduced motorized access may promote more non motorized users to a concentrated area, increasing the chances for a human-caused fire to occur.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the area. Because more roads would be closed than under any other alternative, Alternative C should help reduce the spread of noxious weeds more than any other alternative, and may make fuels treatment more feasible, reducing FRCC departure.

### Effects of Alternative D

Under Alternative D, 19.6 miles of open routes would be available yearlong for wheeled motorized use and an additional 14.5 miles would be seasonally restricted routes. Of the 29.1 miles of closed roads, 8.8 miles would be decommissioned and would likely be unusable for fire suppression. Alternative D would be more flexible than Alternatives B and C but would limit flexibility for access for suppression purposes, and fuels project feasibility would go down compared to Alternative A. The risk of human-caused fires associated with motorized vehicle use would be reduced compared to Alternative A, but would be greater than under Alternatives B and C, due to a 38 percent decrease in miles of road open to public travel compared to Alternative A.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the area. Because an intermediate number of road miles would be closed under this alternative, Alternative D should help reduce the spread of noxious weeds compared to Alternative A and may make fuels treatment more feasible, but would promote more weed spread and potentially make projects less feasible than Alternatives B and C.

## Cumulative Effects on Wildland Fire Management

Effects on wildland fire management associated with any of the BLM travel plan alternatives would be overshadowed by reasonably foreseeable uncharacteristic fire, continued fire suppression made necessary by WUI and intermingled landownership, and large-scale forest insect infestations and disease outbreaks that would continue for the planning period. BLM lands make up about 4.2 percent of all lands while BLM roads make up about

4.7 percent of all roads in the Lewis and Clark County NW TPA.

Revision of the Helena National Forest Plan could result in more or less treatment of adjacent areas. Because no decision has been made, the effects are not known. Wildland fire management, particularly where wildland fire use (management of naturally ignited wildland fires to achieve resource objectives) may occur on USFS lands, will be determined in the plan decision. BLM would need to coordinate with USFS on all wildland fire use actions and events. Wildland fire use on USFS lands could affect FRCC on BLM lands. USFS lands make up 35 percent of all lands in the Lewis and Clark County NW TPA so activities there would likely have more influence on future fire characteristics than activities on BLM lands (4.2 percent of all lands in TPA).

Additionally, decisions to increase the level of wildland fire use, prescribed fire, or open burning by the public could impact the BLM's ability to use wildland fire and prescribed fire due to air quality concerns and requirements. This could postpone or eliminate BLM fuel reductions or treatments to improve FRCC.

Access is a critical component of wildland fire suppression. In some cases, access to public lands is being reduced by adjacent landowners gating or closing roads, which could hamper wildland fire suppression efforts and pose a risk to public and firefighter safety. Reducing access would also increase the potential for larger fires to occur due to an increase in time needed to access a fire and control it. Time needed to move in crews would be extended, and the ability to effectively apply and place resources (e.g., engines, water tenders, etc.) would be limited.

Effects on wildland fire management, including FRCC and firefighter and public safety due to management accomplished by other landowners may affect wildland fire management on public lands. When activity fuels (such as logging slash) are not treated adequately, fuel hazard could increase on adjacent lands which could affect fire intensity and severity on public lands. When adjacent owners treat fuels or implement fire mitigation plans in the WUI, fires are easier to suppress and firefighter safety is increased. In the Lewis and Clark County NW TPA, activities on private lands (53 percent of all lands in TPA) would have more influence on future fire characteristics in the area overall than activities on BLM lands (4.2 percent of all lands in TPA).

Human population increases and subsequent residential development are likely to expand the WUI and could alter forest management, taking the emphasis off restoring historic composition and structure and focusing more on fuel reduction.

## CULTURAL AND PALEONTOLOGICAL

### Effects Common to All Alternatives

Alternative-specific risks or impacts to cultural and paleontological resources are difficult to discern due to a lack of extensive site-specific knowledge about the presence of these resources in a given TPA. By designating open routes, limiting open-country travel, and closing some routes, inadvertent discovery of cultural and paleontological resources and vandalism to them is reduced. Higher road densities in a given area would allow greater access to more land on the average, but that does not imply greater amounts of vandalism, since the vehicles would remain on designated routes.

## VISUAL RESOURCES

### Effects Common to All Alternatives

Roads (temporary or permanent) may affect visual quality. Roads that remain open for public use may impact visual qualities where noticeable. The quantity of open roads would also influence sensitivity levels since with more open roads, more areas would generally be viewed by more members of the public. Closing or decommissioning roads would generally reduce effects to visual resources and reduce sensitivity levels because fewer members of the public would generally be accessing and viewing areas with closed roads.

### Effects of the Alternatives

Under Alternative A, there would be 64.2 miles of open road (including roads open with seasonal restrictions), and 3.4 miles of closed roads. This alternative would have the greatest impacts to visual resources of all alternatives.

Under Alternative B there would be 28.1 miles of open road (including roads open with seasonal restrictions), 26.8 miles of closed road, and 10.9 miles of decommissioned road. Road closures and decommissioning under this alternative would reduce effects on visual resources compared to Alternative A.

Under Alternative C there would be 19.7 miles of open road (including roads open with seasonal restrictions), 41.6 miles of closed road, and 5.2 miles of decommissioned roads. Alternative C would have fewer adverse effects and would improve visual resources the most of all alternatives.

Under Alternative D there would be 35.1 miles of open road (including roads open with seasonal restrictions), 20.3 miles of closed road, and 8.8 miles of decommissioned road. Alternative D would improve visual resources compared to Alternative A, but would have more adverse effects than Alternatives B and C.

## Cumulative Effects on Visual Resources

Under all alternatives, most activities on BLM lands would generally not adversely affect visual resources to unacceptable degrees because discretionary activities on BLM lands would be required to meet Visual Resource Management objectives within individual project areas. The Bald Butte Mine will continue to impact visual resources for the foreseeable future as the mine expands on both private and public lands. The Great Divide Ski Area reduces visual quality in some portions of the Marysville area and will continue to do so for the foreseeable future.

Activities on non-BLM lands, particularly activities near BLM lands associated with residential development, urbanization, or vegetation management, could have adverse cumulative effects on visual resources on BLM lands because BLM VRM objectives would obviously not apply to non-BLM activities.

## LIVESTOCK GRAZING

### Effects Common to All Alternatives

Roads and trails can potentially affect livestock grazing management. Roads and trails often act as avenues of noxious weed spread. Noxious and invasive weeds can reduce the quantity and quality of forage for livestock. Users of roads and trails can cause management problems for livestock permittees when they leave gates open at fences, vandalize range improvements, or harass livestock either purposely or unintentionally.

Closure of roads and trails can improve or maintain the forage base by reducing vectors of noxious weed spread. Additionally, road and trail closures can reduce management conflicts. On the other hand, closures may increase permittees' time requirements if and when work has to be conducted with horses or afoot. Permittees could minimize effects of closed roads on grazing management time by seeking variances from the BLM for temporary use of specific closed roads.

### Effects of the Alternatives

Under Alternative A, 64.2 miles of roads and trails would remain open during grazing season, and 3.4 miles of roads and trails would be closed. The effects would continue as described in the Effects Common to All Alternatives section. All action alternatives would close or decommission more roads and trails than Alternative A. As more roads and trails are closed, noxious and invasive weed spread along with multiple user conflicts would be reduced. On the other hand, permittee management time may increase. Consequently, more effects as described under the Effects Common to All Alternatives section would occur under Alternative C (19.7 miles open during grazing season, 46.8 miles closed or decommissioned) than under any other alternative. Alternative B (28.1 miles open during grazing season, 37.7

miles closed or decommissioned) would produce fewer effects than Alternative C, but more than Alternative A or Alternative D (34.1 miles open during grazing season, 29.1 miles closed or decommissioned). Alternative D would have fewer effects than Alternatives B or C, but more than Alternative A.

## Cumulative Effects on Livestock Grazing

A number of past, present, and reasonably foreseeable future actions affect livestock grazing at the scale of the entire Lewis and Clark County NW TPA. Livestock grazing will continue in the area and has the potential to impact forage quality and quantity. On public lands, ongoing rangeland health assessments and implementation of livestock grazing guidelines would continue to improve or maintain forage quality and quantity. On private lands, livestock grazing is expected to decline slowly as more ranch and farmland is subdivided.

Noxious weed control will continue on both public and private lands with varying degrees of success. To the extent that these efforts are successful, forage conditions would benefit.

A molybdenum mine was started on private land above Bald Butte. The mine may expand on other private and public lands in the future. Some forage base may be reduced in the Drumlummon-Skelly and Empire Creek allotments.

Because BLM lands make up only 4.2 percent of all lands in the Lewis and Clark County NW TPA, all of the BLM travel plan alternatives would have a minimal contribution to cumulative effects on livestock grazing at the scale of the entire TPA.

## MINERALS

### Effects Common to All Alternatives

Road closures and decommissioning could affect access to locatable minerals in areas of moderate or high mineral potential. Operators would be required to seek travel variances from the BLM to use motor vehicles to conduct mineral exploration on closed roads, or to conduct exploration on seasonally restricted routes during the season of closure. Decommissioned roads could not be used for motorized exploration. Travel management provisions that require a permit or variance could result in reducing access to mining claims or interfere with the ability to conduct exploration work for some operators. Historic knowledge of mineralized areas associated with "closed" roads may be lost after long periods of time if no exploration occurs there. Additional costs and time could be required for exploration and development of mining projects associated with closed or decommissioned roads. Impacts of road closures or decommissioning in areas with low mineral potential would not be substantial to mineral development.

## Effects of the Alternatives

Effects of the alternatives for the Lewis and Clark County NW TPA on access to mineralized areas are summarized in **Table 4-75**. Alternative A would seasonally restrict access on 10 percent of the roads and would close an additional 5 percent of roads in high mineral potential areas; roads in moderate mineral potential areas would be left open.

Alternative B would seasonally restrict 17 percent of the roads, close 20 percent, and decommission 8 percent of the roads in high mineral potential areas. This same alternative would close 15 percent and decommission 8 percent of roads in the moderate mineral potential areas

<b>Table 4-75</b>				
<b>Analysis of Access to Mineral Potential Areas Lewis and Clark County NW TPA</b>				
<b>Mineral Potential</b>	<b>Open Miles (%)</b>	<b>Seasonally Restricted Miles (%)</b>	<b>Closed Miles (%)</b>	<b>Decom Miles (%)</b>
<b>Alternative A</b>				
High	30.0 (44%)	6.7 (10%)	3.4 (5%)	0.0 (0%)
Moderate	19.6 (29%)	0.0 (0%)	0.0 (0%)	0.0 (0%)
Low	8.0 (12%)	0.0 (0%)	0.0 (0%)	0.0 (0%)
Total Miles = 67.6				
<b>Alternative B</b>				
High	9.7 (14%)	11.2 (17%)	13.5 (20%)	5.6 (8%)
Moderate	4.1 (6%)	0.2 (0%)	9.9 (15%)	5.3 (8%)
Low to none	0.0 (0%)	4.6 (7%)	3.4 (5%)	0.0 (0%)
<b>Total Miles = 67.6</b>				
<b>Alternative C</b>				
High	5.6 (8%)	9.9 (15%)	22.6 (33%)	1.9 (3%)
Moderate	2.4 (4%)	0.4 (0%)	13.5 (20%)	3.3 (5%)
Low to none	0.0 (0%)	2.5 (4%)	5.5 (8%)	0.0 (0%)
Total Miles = 67.6				
<b>Alternative D</b>				
High	12.5 (18%)	12.6 (19%)	11.2 (17%)	4.0 (6%)
Moderate	5.8 (8%)	2.0 (3%)	7.0 (10%)	4.8 (7%)
Low to none	1.3 (2%)	4.6 (7%)	2.0 (3%)	0.0 (0%)
Total Miles = 67.9 (Includes Proposed New Construction)				

Mineral Potential areas have been delineated by the Montana Bureau of Mines and Geology (MBMG)

(**Table 4-75**). A total of 51 percent of the roads accessing mineralized areas in the Lewis and Clark County NW TPA would have either a seasonal restriction or closure on it under Alternative B.

Alternative C would close 33 percent and decommission 3 percent of the roads in high mineral potential areas. This same alternative would close 20 percent and decommission 5 percent of roads in areas with moderate mineral potential in this TPA (**Table 4-75**). A total of 61 percent of the roads accessing mineralized areas would be closed or decommissioned under Alternative C.

Alternative D would seasonally restrict 19 percent, close 17 percent, and decommission 6 percent of the roads in high mineral potential areas. This same alternative would seasonally restrict 3 percent, close 10 percent, and decommission 7 percent of roads in areas with moderate mineral potential. A total of 40 percent of the roads accessing mineralized areas would be either closed or decommissioned under Alternative D in the Lewis and Clark County NW TPA (**Table 4-75**).

## Cumulative Effects on Access to Mineralized Areas

No other past, present, or reasonably foreseeable future actions in the Lewis and Clark County NW TPA would adversely affect mineral availability or access.

Overall, there is low potential for leasable fluid mineral development throughout federal mineral estate lands in the Butte Field Office. However, in this context, the Reasonably Foreseeable Development Scenario for the Butte RMP identified approximately 20,640 acres of federal mineral estate lands in this TPA where oil and gas development potential is slightly higher (low to moderate) and may potentially occur. Potential contribution of this activity to cumulative effects for other resources would be unknown until this activity is site-specifically planned.

## RECREATION

Effects of travel plan alternatives on Recreation in the Lewis and Clark County NW TPA are described qualitatively below.

### Effects of Alternative A

Alternative A would provide more motorized opportunities than non-motorized opportunities. Under Alternative A, the majority of routes in the Lewis and Clark County NW TPA would be available for wheeled motorized use (57.5 miles open yearlong, 6.7 miles seasonally restricted). Area wide snowmobile (cross-country travel) use would be available on 16,997 acres. The Continental Divide Trail would continue to be managed for both motorized and non-motorized uses which would result in user conflicts.

## Effects of Alternative B

Alternative B would provide for separate use areas for wheeled motorized and non-motorized recreational opportunities. Under Alternative B, a total of 28.1 miles of routes would be available for motorized wheeled use (13.8 miles open yearlong, 14.3 seasonally restricted). The majority of routes located in the Stemple Pass and Lincoln areas would be closed, providing additional non-motorized opportunities. Opportunities for cross-country snowmobile travel would be reduced with the area identified in the northwest portion of the TPA (Marysville area) being restricted to designated routes only, during the season of use (12/2-5/15), conditions permitting. Winter use conflicts would be reduced under Alternative B, as cross-country skiers could use the area in the upper northwest portion of the Marysville area for non-motorized use as well as the Great Divide Ski Area.

## Effects of Alternative C

Alternative C would provide the least amount of wheeled motorized opportunities: 8.0 miles of routes managed open yearlong, and 11.7 miles managed as seasonally restricted. Closure of the routes located in the northwest corner of the Marysville area would result in an enhancement of non-motorized opportunities. Opportunities for cross-country snowmobile travel would be eliminated. Snowmobiles would be restricted to designated routes only during the season of use (12/2-5/15), snow conditions permitting.

## Effects of Alternative D

Alternative D would provide the highest level of wheeled motorized access of the action alternatives. Under this alternative, a total of 34.1 miles of routes (19.6 miles open yearlong, 14.5 miles seasonally restricted) would be available for motorized use. Opportunities for ATV riders and hunters would be enhanced through the addition of a yearlong ATV-Only route and a game retrieval route. Motorized users would also have more opportunities in the Lincoln and Stemple Pass areas. Cross-country snowmobile travel would be allowed throughout the TPA with 2 exceptions, the Great Divide Ski area and the northwest portion of the TPA. Travel in these areas would be restricted to existing routes only during the season of use (12/2-5/15), providing some dispersed recreation opportunities for non-motorized users.

## Cumulative Effects on Recreation

Alternative A would provide the greatest opportunities for motorized uses especially in the Marysville area. Given the population growth trends in the nearby Helena Valley it is expected that visitation levels on BLM lands in the Marysville area will increase along with conflicts between non-motorized and motorized users, especially during the big game hunting season. In addition, poten-

tial impacts to the natural settings within this area are expected to increase given increasing mineral values, vegetative treatments, road improvements, noxious weed spread, residential home building, prescribed fires, and additional rights-of-way requests for access. Under this alternative no Recreation Opportunity Spectrum designations would be made to guide discretionary developments and impacts to non-motorized users would be most likely to increase at the greatest rate.

Under Alternative B about 55 percent of the BLM roads within the TPA would be closed. This action coupled with other existing and potential actions would enhance non-motorized Recreation Opportunity Spectrum settings and user opportunities, reduce conflicts between non-motorized and motorized users, and promote more retention of big-game species on BLM thus improving walk-in hunting opportunities. Designating Recreation Opportunity Spectrum settings would help to ensure that varied opportunities are provided throughout the TPA and that expected experiences are provided to the public.

Alternative C would impose the greatest impacts on motorized travel opportunities while opportunities for non-motorized experiences would be the most benefited. Recreation Opportunity Spectrum management and big game hunting opportunities within the TPA would be similar to Alternative B with the exception that no motorized routes would be open in the northwest extremity of the Marysville area and thus a Semi-Primitive Non-motorized setting would be a management objective.

Under Alternative D, cumulative effects of the travel management actions coupled with all other existing and reasonably foreseeable actions would be similar to Alternative A with the exception that fewer roads would be open to public use.

## TRAVEL MANAGEMENT AND ACCESS

### Effects of Alternative A

Most roads in the Lewis and Clark County NW TPA would continue to be managed as open yearlong (57.5 miles) (**Table-4-76**). This would be about 66 percent more routes open yearlong than under the action alternatives. When considering both open routes and routes with seasonal restrictions, 47 percent more routes would be open to motorized use than under the action alternatives. Non-motorized users would have a lower quality recreation experience compared to under the action alternatives.

Alternative A would allow the greatest snowmobile use of all alternatives, with area-wide cross-country use available on 16,997 acres. Outside the Great Divide Ski Area, cross-country snowmobile access would be allowed on approximately 25 percent more acres than under any of the action alternatives. Separate use areas for non-motorized winter sports enthusiasts would be less under Alternative A.

<b>Proposed Management</b>	<b>Total Miles</b>			
	<b>Alt A</b>	<b>Alt B</b>	<b>Alt C</b>	<b>Alt D</b>
<b>Wheeled motorized routes</b>				
Open Yearlong	57.5	13.8	8.0	19.6
Seasonally Restricted	6.7	14.3	11.7	14.5
Closed	3.4	26.8	41.6	20.3
Decommissioned	0	10.9	5.2	8.8
Non-motorized trails <sup>1</sup>	5.27	37.7	46.7	29.1

<sup>1</sup> Non-motorized trails include all existing trails, closed roads, and decommissioned roads.

User conflicts would be evident during the winter in the Lewis and Clark County NW TPA since cross-country snowmobile use would be allowed in all areas (except the Great Divide Ski Area), leaving no areas for dispersed cross-country ski opportunities.

The Continental Divide Trail would continue to be managed for both motorized and non-motorized uses which would result in user conflicts.

The extent of management activities and costs under Alternative A would be mixed. Less personnel time would be required to monitor travel compliance than under the action alternatives. However, more effort would be required for initial implementation (signing designated routes, installing bulletin boards) than under the action alternatives. Estimated costs for road/trail maintenance would be highest of all alternatives.

The need for BLM and members of the public to obtain travel variances for temporary specific uses of specific closed roads would be minimal under this alternative, given the availability of motorized access.

### **Effects Common to Action Alternatives**

Re-routing the motorized portion of the Continental Divide Trail in the Lewis and Clark County NW TPA would enhance non-motorized opportunities and remove motorized conflicts.

### **Effects of Alternative B**

Under Alternative B, the Lewis and Clark County NW TPA would provide four times fewer routes open yearlong to motorized access than under Alternative A (Table-4-76). Opportunities for motorized users would be less under Alternative B, than under Alternative A.

With 37.7 miles of non-motorized trails, there would be more opportunities for non-motorized users than under Alternative A. Closing most of the routes located in the Stemple Pass and Lincoln areas would provide additional non-motorized opportunities in these areas.

Compared to Alternative A, opportunities for cross-country snowmobile travel would be reduced with the area identified in the northwest portion of the TPA (Marysville area) restricted to designated routes only, during the season of use (12/2-5/15), conditions permitting.

Dispersed recreational opportunities would be created that allow motorized and non-motorized users to recreate separately. Winter use conflicts would also be reduced under Alternative B compared to Alternatives A and D, as cross-country skiers could use the area in the upper northwest portion of the Marysville area for non-motorized use as well as the Great Divide Ski Area.

The extent of management activities and costs under Alternative B would be mixed. Less personnel time would be required for initial implementation (signing designated routes, installing bulletin boards) than under Alternative A. However, more effort would be required for public education and compliance than under Alternative A. Estimated costs for road/trail maintenance would be less than under Alternative A.

The need for the BLM and members of the public to obtain travel variances for temporary specific uses of specific closed roads would increase under Alternative B compared to Alternative A.

### **Effects of Alternative C**

Alternative C would provide the least amount of wheeled motorized access in the Lewis and Clark County NW TPA of all the alternatives (19.7 miles) (Table-4-76) and therefore, fewer opportunities for motorized users would be available. Alternative C would provide 70 percent fewer motorized miles than Alternative A, and 30 percent fewer than Alternative B. Closure of routes in the northwest corner of the Marysville area under Alternative C would result in an enhancement of non-motorized opportunities in that area.

Closure and decommissioning of routes in the Lewis and Clark County NW TPA would result in an increase in non-motorized opportunities. Alternative C would have 43 percent more miles of non-motorized trails than Alternative A, and 19 percent more than Alternative B.

Opportunities for cross-country snowmobile travel would be eliminated. Snowmobiles would be restricted to designated routes only during the season of use (12/2-5/15), snow conditions permitting. Non-motorized winter sports opportunities would increase because of the restrictions.

The extent of management activities and costs under Alternative C would be mixed. Less personnel time would be required for initial implementation (signing designated routes, installing bulletin boards) than under any other alternative. However, more effort would be required for public education and compliance than under the other alternatives. Estimated costs for road/trail maintenance would be the lowest of the alternatives.

The need for the BLM and members of the public to obtain travel variances for temporary specific uses of specific closed roads would be the greatest under Alternative C than under any of the other alternatives.

## Effects of Alternative D

Alternative D would have 34.1 miles of motorized routes (open and seasonally restricted) (**Table-4-76**) and would provide more motorized access than any of the other action alternatives. Motorized access under Alternative D would be about 47 percent less than under Alternative A, but 18 and 42 percent more than under Alternatives B and C, respectively.

Opportunities for ATV riders and hunters would be enhanced above all other alternatives through the addition of a yearlong ATV-Only route and a game retrieval route, respectively. Motorized users would also have more opportunities under Alternative D in the Lincoln and Stemple Pass area than under Alternatives B or C.

Allowing snowmobile access on closed routes would result in an increase in motorized winter opportunities compared to Alternatives B and C; however, cross-country snowmobile travel would be restricted to existing routes in the northwest portion of the TPA and Great Divide Ski Area during the season of use (12/2-5/15), similar to Alternative B. Snowmobile management would result in fewer dispersed opportunities for non-motorized winter user compared to Alternative C.

Restricting snowmobile access in the northwest portion of the TPA and Great Divide Ski Area would provide dispersed recreation opportunities and result in a decrease in winter use conflicts. These effects would be similar under Alternatives D and B, greater than under Alternative A, but less under Alternatives C.

The extent of management activities and costs under Alternative D would be mixed. Less personnel time would be required to monitor travel compliance than under Alternatives B and C, but more would be needed than under Alternative A. However, more effort would be required for initial implementation (signing designated routes, installing bulletin boards) than under the other action alternatives. Estimated costs for road/trail maintenance would be higher than under the other action alternatives, but less than under Alternative A.

## Cumulative Effects on Travel Management and Access

Under all alternatives, there are a number of past, present, and reasonably foreseeable BLM and non-BLM actions and activities affecting travel management and access in the Lewis and Clark County NW TPA.

The majority of BLM-managed routes in the Lewis and Clark Northwest travel planning area is located in and around the town of Marysville, located approximately 25 miles northwest of Helena. Much of the use in the Ma-

rysville area (especially winter use) comes from Helena Valley residents. The Helena Valley has been experiencing steady population growth. This trend is expected to continue, along with increased recreational use of this travel planning area. These factors could lead to increased public pressure to accommodate either more, or less motorized use.

The remaining BLM managed routes are located in 3 sub-planning areas: Stemple Pass, Sieben Ranch, and Lincoln (west of the small town of Lincoln, Montana). There is some residential development adjacent to the Lincoln sub-planning area that could influence travel management as well.

The Marysville area is experiencing increased residential development, but to a lesser extent than the central Helena Valley area. Urbanization and increased recreational use may lead to increased social conflict; between area residents and recreation users, and among recreational users themselves (motorized/non-motorized). As a result, there may be increased public demands to alter the existing travel management to accommodate either more, or less motorized use.

Recreation use is well established in the TPA, especially for winter sports. Winter sport activities include: snowmobiling, downhill skiing, backcountry skiing, ski racing, snowboarding, and snowshoeing. An extensive network of roads and trails support a wide range of off-season activities, including: camping, hunting, target practice, hiking, jogging, horseback riding, mountain bike riding, and motorized use (motorcyclists, OHV riders, and 4-wheel drive enthusiasts). As recreation use grows, conflicts between non-motorized and motorized recreation users could lead to increased public demands for either more, or less motorized use.

The TPA (all land ownerships) includes a number of wildlife and aquatics/fisheries concerns. The western half of the TPA is a wildlife movement corridor between the Northern Continental Divide Ecosystem and the Greater Yellowstone Ecosystem, portions of the TPA are in the occupied range of grizzly bear range, and the entire TPA is within the former Northwest Montana Recovery Area for the gray wolf. Mule deer winter range is located along the eastern half of the TPA (158,140 acres) as well as near Lincoln (21,500 acres). Elk winter range is also located in the lower elevations along the eastern half of the TPA (193,800 acres) as well as around Lincoln (55,500 acres). Approximately 112,250 acres of cool, moist forest in the TPA provide habitat for the Canada lynx. Two BLM sensitive amphibians have been found within the Lewis and Clark County NW TPA, the boreal toad and the Northern leopard frog. Another BLM sensitive species, the wolverine, has also been documented west of the Continental Divide in the TPA. Over 66 fish-bearing streams are located in the Lewis and Clark County NW TPA with 61 providing habitat for westslope cutthroat trout, as well as for river

otter, beaver, and moose. Concerns could lead to demands to restrict motorized use.

The TPA contains a 3 mile long section of the Continental Divide Trail (road) that is currently shared by motorized vehicles and hikers. Rerouting the trail off this road would reduce use conflicts between motorized and non-motorized users.

In some site specific cases, visual resource management may affect or restrict new road construction.

Continuing residential development may lead to an increase in right-of-way permits to accommodate private property/development access. As a result, public access to BLM lands, via these rights-of-way, could increase as well.

Limits or reductions in the BLM's funding and ability to maintain designated routes could lead to an overall reduction of maintained motorized routes.

A variety of resource management projects, such as BLM initiated vegetation treatments, or wildland fire fuels reduction projects, could affect travel management. BLM forest management activities from 1984 to present include 48 acres of forest planting, 66 acres of timber salvage, and 132 acres of timber harvest. Future activities may include approximately 1,200 acres of forest and woodland treatment (thinning, selective harvest), although no planning is underway on these activities. Wildland fire management activities may include a future 1,500-3,000 acre mechanical and/or prescribed fire treatment for the Marysville area, focused on the urban interface areas. Depending on the type and scope of project, effects could vary from temporary, short-term area/route closures, to new opportunities (new routes) for motorized or non-motorized access.

Historical information indicates that since 1977, 3,357 claims have been active throughout the Marysville area. Today only 40 claims remain active, including the Bald Butte Mine, an open cut molybdenum mine. Increases in other mineral prices could lead to additional increased or renewed mining activity. Depending on the type and scope of mining activity, effects could vary from temporary, short-term area/route closures, to increased opportunities (new routes) for motorized or non-motorized access.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the area. Motorized activities play a large role in the distribution of noxious weeds. Concerns over the spread of noxious weeds could influence travel management, and lead to fewer motorized opportunities.

Motorized use on dirt roads and trails is a major contributor to soil erosion and stream sedimentation. These concerns may influence travel management, and result in fewer motorized opportunities.

Most illegal activities (trash dumping, drug use, underage alcohol use, unattended camp fires, vandalism, etc.) are directly associated with motorized use. At present, illegal activities in this TPA pose less of an issue than for the Helena and East Helena TPAs. However, increased future motorized use activity is likely to lead to increased illegal activity, and could lead to fewer motorized opportunities.

For perspective, BLM managed lands represent approximately 4.2 percent of the total travel planning area (406,700 total acres, 17,037 BLM acres); while BLM managed routes represent approximately 4.7 percent of the total routes available (1,447.7 total miles, 67.6 miles BLM roads/trails). Future travel management (for all agencies, nationwide) is likely to lead to fewer opportunities for motorized recreational use than under current management (particularly for OHV use).

As a result, BLM routes available to motorized use (especially in the Marysville area) could experience increased use from displaced users, leading to more concentrated use, increased resource impacts, user conflicts, and pressure to reduce or increase motorized use.

Under Alternative A, overall increases in human population, urbanization, recreation use, user conflicts; and concerns for wildlife, fisheries, noxious weed spread, soil erosion/water quality, and illegal activities are likely to lead to increased demands to restrict motorized travel. Under Alternative B, these pressures would have less impact on travel management than under Alternatives A and D, due to the overall reduction in motorized opportunities and separation of motorized and non-motorized uses. Under Alternative C, these pressures would have the least impact on travel management than under the other alternatives, due to the reduction in motorized opportunities. Under Alternative D, these pressures may lead to increased demands to restrict motorized travel.

## TRANSPORTATION FACILITIES

For the sake of this discussion, "open" roads include roads that are open yearlong as well as those that are open with seasonal restrictions.

### Effects of Alternative A

Under Alternative A, the Lewis and Clark County NW TPA would have 64.2 miles of open roads and no motorized trails (**Table 4-77**). Estimated costs for annual maintenance and stabilization of roads under Alternative A would be much greater than under any of the action alternatives because of the highest level of open roads. Estimated annual costs for monitoring and compliance, and weed control would be higher for Alternative A than under the action alternatives.

## Effects of Alternative B

Under Alternative B, the Lewis and Clark County NW TPA would have 28.1 miles of open roads and no motorized trails (**Table 4-77**).

Estimated costs for annual maintenance and stabilization of roads under Alternative B would be similar but slightly lower than under Alternative D, less than under Alternative A and more than under Alternative C. Estimated annual costs for monitoring, compliance, and weed control would also be less than under Alternative A, more than under Alternative C, and similar but slightly less than under Alternative D.

Closing the upper northwest portion of the Marysville area to motorized vehicles and to cross-country snowmobile travel would result in a slight increase in transportation facility costs for additional signage and sign maintenance.

## Effects of Alternative C

Under Alternative C, the Lewis and Clark County NW TPA would have 19.7 miles of open roads and no motorized trails (**Table 4-77**). Estimated costs for annual maintenance and stabilization of roads under Alternative C would be the least of all the alternatives due to the least number of motorized routes. Estimated annual costs for monitoring, compliance and weed control would also be less than under the other alternatives.

Closing the entire northwest portion of the Marysville area to motorized vehicles and to cross-country snowmobile travel would result in a slight increase in transportation facility costs for additional signage and sign maintenance.

## Effects of Alternative D

Under Alternative D, the Lewis and Clark County NW TPA would have 34.1 miles of open roads and one motorized trail (**Table 4-77**). Estimated costs for annual maintenance and periodic stabilization of roads under Alternative D would be greater than under Alternatives B and C, but less than under Alternative A. Alternative D is the only alternative with a motorized trail that would receive annual and periodic stabilization. Estimated annual costs for monitoring, compliance, and

weed control would be less under Alternative D than under Alternative A and more than under Alternatives B and C.

The addition of several routes in the Marysville area including an ATV-Only route and a game retrieval route would result in an increase in transportation facility costs due to new signage and sign maintenance.

Closing the northwest portion of the Marysville area to cross-country snowmobile travel would also result in an increase in transportation facility costs for additional signage and sign maintenance.

## LANDS AND REALTY

### Effects Common to All Alternatives

The Butte Field Office administers approximately 96 rights-of-way (ROW), 1 non-commercial occupancy lease, and 2 commercial occupancy leases within the boundaries of the Lewis and Clark TPA, which encumber approximately 1,961 acres of BLM land (**Table 4-78**). Various types of road rights-of-way are the most common type of grant, accounting for 46 percent, or just under half of the total. Other types of authorized uses include: oil and gas pipelines, lines for electrical distribution and telephone facilities, communication sites, ditches, railroads, and mineral material sites.

Type	Approximate Number	Approximate Acres
Roads	44	558
Power	17	101
Telephone	12	21
O&G Pipelines	4	59
Comm. Sites	8	4
2920 Leases	3	1,050
Other	11	168
<b>Totals</b>	<b>99</b>	<b>1,961</b>

Approximately four right-of-way applications for new facilities as well as amendments, assignments, renewals, or relinquishments of existing right-of-way grants are

Classification/Cost	Alt A	Alt B	Alt C	Alt D
Miles of Open/Restricted Roads	64.2	28.1	19.7	34.1
Motorized Trails	0	0	0	2.2
Annual Roads Maintenance	\$5,136	\$2,248	\$1,576	\$2,728
Annual Trails Maintenance	\$0	\$0	\$0	\$147
Periodic Road Stabilization	\$2,054	\$899	\$630	\$1,091
Periodic Trails Stabilization	\$0	\$0	\$0	\$29
Monitoring/Compliance	\$3,210	\$1,405	\$985	\$1,705
Weed Control	\$963	\$422	\$296	\$512

processed annually in the TPA. This would not vary by alternative.

The general trend of granting rights-of-way is expected to increase through the planning period as a result of increasing public demands. From a cumulative effects standpoint, development of adjacent federal, state, and private land, increased recreational use and the trend of homeownership away from urban areas, coupled with traditional on-going uses, are all expected to require more guaranteed access involving public land, including BLM lands.

## SPECIAL DESIGNATIONS

### Effects of the Alternatives

BLM currently manages a three-mile segment of the Continental Divide Scenic Trail in cooperation with the Forest Service in this TPA. This trail segment is subject to increasing impacts from numerous resource uses including motorized travel, rights-of ways, private home developments, and grazing improvements. Under Alternative A, current travel management direction is not providing protection of the trail corridor and user experience levels are impacted by conflicting intrusions. The Continental Divide Trail would continue to be managed for both motorized and non-motorized uses which would result in continued user conflicts.

Under Alternative B, travel management prescriptions would not remove motorized conflicts on the Continental Divide Scenic Trails as the trail would continue to follow an open motorized travel route. Under this alternative, alternate trail routes would be evaluated with the Forest Service to minimize conflicts, enhance hiker experiences, reduce human intrusions, and decrease the need for easement acquisitions.

Under Alternative C, effects would be similar to Alternative B although some additional secondary roads in close proximity to the Continental Divide Scenic Trails would be closed.

Under Alternative D, effects on the Continental Divide Trail would be similar to Alternative B although more intersecting secondary roads would remain open to public use and therefore motorized use conflicts would be slightly higher.

### Cumulative Effects on Special Designations

No other past, present, or reasonably foreseeable future actions in the Lewis and Clark County NW TPA would adversely affect Special Designations.

## BOULDER/JEFFERSON CITY TPA

The 60,418-acre Boulder/Jefferson City TPA contains approximately 14,487 acres of BLM lands. There are approximately 61 miles of BLM roads, making up about 15.6 percent of the approximate total of 392 road miles

in the TPA. The majority of roads (212 miles) lie on private lands.

## AIR QUALITY

### Effects Common to All Alternatives

Motorized recreation use is expected to continue to increase, resulting in higher levels of vehicle emissions.

Motorized travel across dry unpaved routes or trails would continue to produce airborne dust.

There could be areas with localized air pollution as a result of higher use numbers, and more concentrated use on fewer miles of available routes.

Drier climate conditions could make soils more susceptible to the effects of motorized travel, resulting in higher levels of airborne dust.

Impacts to air quality vary by alternative and travel plan area. In general, alternatives that reduce the level of motorized use (have fewer available miles) could have a positive impact on air quality; while alternatives that maintain or increase the level of motorized use, could lead to increased air quality impacts. This would not necessarily be a direct relationship, however, because reduction in available road miles for motorized use could redistribute use or focus more use on remaining open routes.

Under all alternatives, impacts from airborne dust could be reduced through mitigation such as hardening native surface roads with gravel or periodically spraying them with water trucks during the dry season. During BLM project work, in addition to watering native surface roadbeds, speed limits could be reduced to further minimize dust emissions.

### Effects of the Alternatives

Under Alternative A (present management), adverse impacts to air quality would be expected to continue, and likely increase, concurrent with higher levels of motorized recreational use. Each of the proposed Action Alternatives, however, would provide fewer available motorized routes. Alternatives B and C would provide 52 percent and 61 percent fewer open motorized routes, respectively, than Alternative A, while Alternative D would provide 37 percent fewer routes than Alternative A. As a result, airborne dust and vehicle emissions would be taking place on fewer BLM routes and could be reduced.

It should be noted that even without motorized use, airborne dust, resulting from wind erosion of exposed native surface roads will continue. Therefore, travel plans with more miles of native surface roads will result in more airborne dust.

Under all alternatives, mitigation measures, such as graveling and/or watering native surface roads, could reduce dust emissions even further, and/or help offset

the effects of increased or concentrated use on the remaining open routes.

## Cumulative Effects on Air Quality

Under all alternatives, the cumulative effects to air quality from travel management in the Boulder Jefferson City TPA would arise from a number of past, present, and reasonably foreseeable future actions on BLM lands as well as non-BLM lands.

For perspective, BLM managed lands in the Boulder Jefferson City TPA area represent approximately 24 percent of the total travel planning area (60,418 total acres; 14,487 BLM acres). Under present management (Alternative A) BLM managed routes represent approximately 15.4 percent, of the total routes available (392 total miles; 60.5 miles BLM roads/trails under Alternative A). Potential air quality impacts associated with activities on non-BLM lands and roads would be a greater contributor to cumulative effects to air quality than activities on BLM lands and roads.

In the past, prior to the 2003 Statewide OHV ROD, BLM management allowed unrestricted cross country travel by all forms of wheeled motorized use. Under present management, in the absence of other existing travel plan direction, all motorized wheeled travel is restricted to existing roads and trails. Under current management, all existing BLM routes are available for motorized use yearlong. This mileage available for use would be reduced under the action alternatives as described above with associated potential differences in effects to air quality.

Under all alternatives, cumulative increases in human population, urbanization, recreation use, user conflicts; and concerns for wildlife, noxious weed spread, soil erosion, air/water quality, and illegal activities may lead to increased demands to restrict motorized travel.

## SOILS

### Effects Common to All Alternatives

Road construction, use, and maintenance affect soils in a number of ways. Soils are often compacted by these activities. Soil compaction can lessen the amount of precipitation that can infiltrate into soil and increase runoff, erosion, and sedimentation – in turn decreasing soil/site stability and hydrologic function, as well as soil productivity and plant vigor and diversity.

Ground disturbance associated with road construction, use, and maintenance can result in erosion. Erosion affects soil/site stability and hydrologic function. Erosion and sedimentation can destabilize the surface and sub-surface cohesion of the soil, resulting in soil loss from erosion sites. Loss of soil can impede or prevent establishment and development of vegetation communities.

Closing or decommissioning roads often leads to beneficial effects to soils through decreased site disturbance

and re-establishment of vegetative cover on road surfaces. This tends to reduce soil erosion and stabilize soils. Decommissioning roads may in some cases entail ripping road surfaces to de-compact them, thus improving water infiltration, hydrologic function, and the ability of the treated area to revegetate more successfully.

Impacts to soils associated with site-specific travel plan alternatives were assessed based on the potential for soil erosion using the following erosion risk criteria:

- High – the area a route travels through has slopes greater than 30 percent gradient.
- Moderate – the area a route travels through has slopes ranging from 15 to 30 percent gradient; or, for granitic soils, slopes ranging from 0 to 30 percent gradient.
- Low – the area a route travels through has slopes ranging from zero to 15 percent gradient and soils are not granitic in origin.
- Unrated – road mapping not available at time of erosion impact rating.

## Effects of the Alternatives

The distribution of road miles by erosion risk category and by proposed road management category for all alternatives is shown for the Boulder/Jefferson City TPA in **Table 4-79**. Roads in the “unrated” category were excluded from detailed consideration and are shown for the purpose of displaying the extent of lacking information.

The table shows that under current conditions (Alternative A) approximately 27.7 miles of BLM roads are located in areas with high erosion risk, and 23.1 miles are in moderate erosion areas. Soil erosion would be reduced under Alternative B because this alternative would reduce those mileages to 13.7 miles and 12 miles, respectively. Approximately 23.2 miles of road in the high and moderate classes would be closed under Alternative B. This should allow soil stabilization and/or vegetative recovery on these areas and further reduce soil erosion.

Soil erosion from roads would be reduced more under Alternative C than under any other alternative because the lowest mileage of roads in the high and moderate erosion risk categories would be left open (21.1 miles combined), while the greatest mileage in these categories would be closed (27.5 miles) of all alternatives.

Soil erosion associated with roads would be reduced under Alternative D compared to Alternative A, but would still be higher than under either Alternative B or C. This is because 34.9 miles of road in the moderate and high erosion risk categories combined would be open under Alternative D, while only about 11.8 miles in these categories would be closed under this alternative.

<b>Proposed Road Management</b>	<b>Erosion Risk Category</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Open Road Miles (including Open w/restrictions)</b>	High	27.7	13.7	11.9	19.9
	Moderate	23.1	12.0	9.2	15.0
	Low	0.3	0.6	0.6	0.6
	Unrated	8.7	0.8	1.0	2.4
<b>Closed Road Miles</b>	High	0	12.6	14.3	6.3
	Moderate	0	10.6	13.2	5.5
	Low	0	0.7	0.7	0.7
	Unrated	0	7.1	6.7	7.3
<b>Decommissioned Road Miles</b>	High	0	1.4	1.4	1.4
	Moderate	0	0.6	0.6	0.6
	Low	0	0	0	0
	Unrated	0	0.7	0.7	0.7

Note: Open roads include seasonally open roads as well as roads open yearlong.

## Cumulative Effects on Soils

Cumulative effects to soils in the Boulder/Jefferson City TPA would arise from many past, present, and foreseeable future actions on BLM lands as well as non-BLM lands. Within this 60,418-acre TPA, BLM lands make up 14,487 acres or 24 percent of lands. The approximately 60 miles of BLM roads make up about 15 percent of the approximately 392 road miles in the entire TPA. Therefore road-related effects to soils described by alternative above would affect about 15 percent of all roads in the TPA. Remaining roads are managed by Jefferson County, the Forest Service, state, and private landowners.

Reclamation of abandoned mine lands has contributed to improved revegetation and subsequent stabilization of soils at a number of locations throughout this TPA. Riparian areas along about 3.7 miles of High Ore Creek underwent removal of contaminated tailings and waste rock and subsequent revegetation in 1999-2000. Riparian areas along Big Limber Gulch (tributary to Cataract Creek) and Spring Creek (tributary to Prickly Pear Creek in Upper Missouri River watershed) have also undergone recent reclamation and revegetation work that has improved soil stability and reduced erosion.

Ongoing ground disturbing activity associated with mining for lead, zinc, gold, and silver from an open pit mine (Montana Tunnels Mine) near Jefferson City is likely to continue through approximately 2008. The permitted mine area is approximately 1,500 acres in size with 130 of those acres on BLM land. Varying degrees of soil stability exist at the site with some removal of topsoil, erosion, and compaction mixed with undisturbed, vegetated areas within the permitted boundary.

Approximately 2,051 acres of BLM lands are permitted for various rights-of-way and leases. Approximately 1,256 of these acres are for road rights-of-way. The remaining 795 acres are associated with powerlines, communication sites, and other utility facilities. Impacts to soils range from compaction and occupation of ground with buildings and facilities to revegetation and ground cover being re-established to stabilize soils. Of this total area, approximately 682 acres are associated with powerlines and have substantial vegetative ground cover over much of the ground to stabilize soils.

Selective timber harvest has occurred on approximately 259 acres of BLM lands in the TPA from 1984 to 1995. From 1995 to the present timber harvest occurred on 7 BLM acres while post-wildland fire timber salvage occurred on about 559 BLM acres as well as an unknown amount of private land. These activities have generally had relatively minor adverse effects on soils causing some localized erosion and compaction but generally allowing for revegetation post-timber harvest. Timber harvest has also occurred on private and Forest Service lands, will likely continue, and will have localized impacts on soils for the foreseeable future.

In 2000, a wildland fire burned approximately 10,800 acres in this TPA, approximately 4,670 of which were BLM lands. The fire burned with variable severity creating a mosaic of effects to soils. More severely burned areas underwent more severe erosion than areas burned less severely. Fire rehabilitation activities such as re-seeding with grasses/herbaceous species, waterbarring of firelines, and post-fire noxious weed treatments helped minimize soil loss due to post-fire erosion. Tree planting on approximately 690 BLM acres of this burned area have contributed to longer term soil stabilization.

Deliberate fuels treatments conducted on private and Forest Service lands will also likely occur for the foreseeable future with variable effects to soils. Reducing fuels under the controlled conditions of deliberate treatments may benefit soils in the long-term by reducing the risk of high severity fires in treated areas.

Livestock grazing on public and private lands throughout much of the TPA has created areas of localized soil erosion and compaction throughout the TPA. This will continue to occur for the foreseeable future.

Increasing residential development will likely continue for the foreseeable future. Erosion, compaction, and covering of soils would occur due to additional road construction, clearing/leveling for home sites, and establishment of utility infrastructure for residential developments.

Under Alternative A, the contribution to cumulative effects on soils from BLM road management would continue as it occurs today. Retaining approximately 60 miles of road open yearlong would allow for the same level of compaction and erosion impacts that currently exist.

From a BLM road management perspective, all action alternatives would benefit soil resources compared to Alternative A. Alternative B would provide for a reduced contribution to adverse cumulative effects on soils than would Alternative A because about 55 percent of BLM roads would be closed or decommissioned under Alternative B. Of the remaining approximately 27 miles of open road, most of them (about 23 miles) would be seasonally restricted to exclude motorized vehicle use between 12/2 to 5/15 each year. This would prevent motorized use during the wet spring snowmelt/runoff period and would therefore reduce erosion from BLM roads.

Alternative C would provide for the least contribution to adverse cumulative effects on soils of all alternatives. This alternative would provide for closure or decommissioning of about 62 percent of BLM roads in the TPA, thus allowing these areas to vegetatively recover and stabilize soils. The majority of open roads under this alternative (approximately 20 out of 23 miles) would be seasonally restricted to exclude motorized use between 12/2 to 5/15 each year. As with Alternative B, this seasonal closure would prevent motorized use during the wet spring snowmelt/runoff period and would therefore reduce soil erosion.

Alternative D would provide for the greatest contribution to adverse cumulative effects on soils of the action alternatives, but would still provide for greater long-term benefits to soils than Alternative A. Alternative D would provide for closure or decommissioning (and therefore vegetative recovery and soil stabilization) of about 40 percent of BLM roads in the TPA. As with Alternatives B and C, the majority of open BLM roads (about 33 out of 38 miles) would be seasonally restricted to exclude motorized use between 12/2 to 5/15 each year. This

would allow for the same types of beneficial effects to soils described above for Alternatives B and C.

Due to the scattered distribution and relatively small proportion of BLM lands (24 percent) and roads (15 percent) relative to the total quantities of lands and roads in the TPA, none of the BLM alternatives would substantially contribute to cumulative effects on soils at the scale of the Boulder/Jefferson City TPA.

## WATER RESOURCES

### Effects Common to All Alternatives

There are a number of key concepts that are critical to understanding road effects to water resources.

Hydrologic function is an interaction between soil, water, and vegetation and reflects the capacity of a site to:

- Capture, store, and safely release water from rainfall, runoff, and snowmelt;
- Resist a reduction in this capacity; and
- Recover this capacity following degradation.

Interception of precipitation results when precipitation falls on vegetation. When vegetation is removed, precipitation falls directly on the soil. This can increase surface erosion and sedimentation, and decrease the amount of time between initial precipitation arrival and peak surface runoff – in turn decreasing soil/site stability and hydrologic function. Roads remove vegetation and therefore decrease interception of precipitation.

Infiltration is the process of precipitation entering and traveling through soil. Infiltration reduces the peak runoff during precipitation events by extending the period of runoff after a precipitation event. Infiltration also filters precipitation and reduces erosion and sedimentation. If infiltration is reduced, runoff and erosion will increase and hydrologic function will decrease. Generally, roads are compacted surfaces that have decreased infiltration, thus increasing runoff and potentially increasing erosion.

Runoff can affect the amount of erosion and sedimentation, as well as flooding – both onsite and offsite. If runoff is increased, all of these effects can increase with a result that water quality and hydrologic function will decrease.

Increased sediment entering waterbodies increases turbidity, increases width-to-depth ratios, and consequently increases temperature and dissolved oxygen saturation levels, and creates adverse habitat for aquatic animals and plants.

Alteration of flow routing can also affect water resources. For example, roadcuts into areas with relatively shallow groundwater can intercept groundwater, bring it to the surface, and transport it some distance (i.e. in a roadside ditch) before delivering it to a stream. This can lead to erosion of road ditchlines and subsequent sedimentation of streams during runoff periods, or increased

thermal loading of water before delivery to a stream during summer periods.

Closure and decommissioning of roads tend to reduce erosion and sedimentation effects stemming from roads on water quality. On an equivalent road mile basis, decommissioning roads would benefit water quality to a greater degree than closing roads because the decommissioning process would often entail implementing measures to restore hydrologic function. During road decommissioning items such as compaction, drainage, stream crossing culverts, and ground cover are often addressed in a manner that markedly improves hydrologic function. These features are not fully addressed on roads that are merely “closed”. However, the reduced disturbance on newly closed roads combined with the tendency for revegetation to re-establish ground cover on them would reduce erosion and subsequent sedimentation effects to water quality.

### Effects of the Alternatives

Generally, road density is an indicator of overall watershed health and function. Watersheds with higher road densities tend to have lower water quality due to greater disruption of hydrologic function (described above), and potential for erosion and subsequent sedimentation. Road density also is related to the distribution and spread of noxious weeds. **Table 4-80** shows acres of BLM land in three road density categories by alternative for the Boulder/Jefferson City TPA. These data reflect any differences between alternatives based on roads proposed for “decommissioning” by alternative. While many “closed” roads would gradually contribute to increased hydrologic function over time, decommissioned roads would more directly contribute to hydrologic function because measures aimed at restoring hydrologic function would likely be part of the treatment during decommissioning.

Alternative A would have the greatest amount of BLM land with “high” road densities of greater than 2 mi/mi<sup>2</sup>. Alternatives B, C, and D would all have the same acreage in each road density category, reflecting that each of these alternatives provides for the same mileage (2.7 miles) of road decommissioning. By this measure, each of the action alternatives would benefit hydrologic

TPA Alternative	Road Density Category		
	Low (<1 mi/mi <sup>2</sup> )	Moderate (1 to 2 mi/mi <sup>2</sup> )	High (> 2 mi/mi <sup>2</sup> )
Alt. A	472	2,353	11,662
Alt. B	863	2,377	11,247
Alt. C	863	2,377	11,247
Alt. D	863	2,377	11,247

function equally. All action alternatives would improve hydrologic function compared to Alternative A.

Motorized routes within 300 feet of streams generally have greater potential to directly impact water quality through erosion and sedimentation, increased water temperatures (due to loss of shading vegetation), and direct alteration of stream channel morphology than those farther away. **Table 4-81** shows the miles of open and closed roads on BLM lands within 300 feet of streams by alternative. Under Alternative A there are about 2.5 miles of open road within 300 feet of fish bearing streams and 7.7 road miles within 300 feet of perennial non-fish bearing streams. Alternatives B and C would improve water quality to the same degree by closing or decommissioning the same mileage of roads in close proximity to perennial streams (total of 3.7 miles).

Alternative D would close or decommission 2.9 road miles in these areas and would therefore have greater improvements to water resources than Alternative A, but fewer improvements than Alternatives B and C. Each action alternative would improve water resources to some degree compared to Alternative A.

### Cumulative Effects on Water Resources

Cumulative effects to water resources in the Boulder/Jefferson City TPA would arise from many past, present, and reasonably foreseeable future actions on BLM lands as well as non-BLM lands. Within this 60,418-acre TPA, BLM lands make up 14,487 acres or 24 percent of lands. The approximately 60 miles of BLM roads make up about 15 percent of the approx-

	Perennial Fish-Bearing Streams		Perennial Non-Fish-Bearing Streams	
	# Open Road Miles	# Closed Road Miles	# Open Road Miles	# Closed Road Miles
Alt. A	2.5	0	7.7	0
Alt. B	2.0	0.5	4.5	3.2
Alt. C	2.0	0.5	4.5	3.2
Alt. D	2.0	0.5	5.3	2.4

Note: Open roads include seasonally open roads as well as roads open yearlong. Closed roads include decommissioned roads.

imately 392 road miles in the entire TPA. Therefore road-related effects to water resources described by alternative would be related to about 15 percent of all roads in the TPA. There are about 32 miles of fish bearing stream and an additional 81 miles of perennial non-fish bearing stream in the TPA. On BLM lands there are about 4 miles of fish bearing stream and an additional 13.5 miles of perennial non-fish bearing stream. The majority of lands and roads (about 50 percent of each) within the TPA boundary are private property. Remaining roads are managed by Jefferson County, the Forest Service, state, and private landowners.

Some of the main access roads (non-BLM) follow valley bottoms and parallel streams. Many of these roads are directly affecting stream channel or floodplain function by filling or impinging on stream channels or floodplains, precluding the presence of riparian vegetation (including large woody material in forested locations), producing sedimentation in streams (from road surfaces, ditchlines, winter "road sanding" operations) and potentially increasing thermal loading by lessening streamside shade. These effects are dominant in shaping stream channel and water quality conditions in many areas and will continue into the foreseeable future.

Reclamation of abandoned mine lands has contributed to improved water quality at a number of locations throughout this TPA. Riparian areas along about 3.7 miles of High Ore Creek underwent removal of contaminated tailings and waste rock and subsequent revegetation in 1999-2000. Big Limber Gulch (tributary to Cataract Creek) and Spring Creek (tributary to Prickly Pear Creek in Upper Missouri River watershed) have also undergone recent reclamation to reduce heavy metal contamination from mine waste dumps and a smelter site near the community of Wickes. Another site near Wickes is also being reclaimed to address potential acid mine drainage that could lead to heavy metal and other water quality concerns.

Ongoing ground disturbing activity associated with mining for lead, zinc, gold, and silver from an open pit mine (Montana Tunnels Mine) near Jefferson City is likely to continue through approximately 2008. The permitted mine is approximately 1,500 acres in size with 130 of those acres on BLM land. This mine is likely to be expanded in the near future in a manner that will eliminate approximately 0.5 mile of fish-bearing aquatic habitat in Clancy Creek.

Approximately 2,051 acres of BLM lands are permitted for various rights-of-way and leases. Approximately 1,256 of these acres are for road rights-of-way. The remaining 795 acres are associated with powerlines, communication sites, and other utility facilities. Of these acres, approximately 682 acres are associated with powerlines and have substantial vegetative ground cover over most areas to prevent erosion/sedimentation effects to water resources. Impacts to water resources are generally minor with some localized erosion and sedimenta-

tion and some contribution to decreased hydrologic function (decreased infiltration, increased runoff) due to compaction.

Selective timber harvest has occurred on approximately 259 acres of BLM lands in the TPA from 1984 to 1995. From 1995 to the present timber harvest occurred on 7 BLM acres while post-wildland fire timber salvage occurred on about 559 BLM acres as well as an unknown amount of private land. Adverse effects on water resources were minor from this activity. Timber harvest has also occurred on private and Forest Service lands and will likely continue to have variable effects on water resources for the foreseeable future. Ground disturbance from these activities will have localized impacts to water resources including some sedimentation, loss of woody material recruitment for streams, and potential water temperature increases due to shade loss.

In 2000, a wildland fire burned approximately 10,800 acres in this TPA, approximately 4,670 of which were BLM lands. Tree planting on approximately 690 BLM acres of this burned area have contributed to longer term soil stabilization. The fire burned with variable intensity and severity creating a range of effects to water resources. In burned areas, nutrient inputs to streams increased, perhaps for several years. Streams in more severely burned areas underwent more severe erosion and sedimentation than those in areas burned less severely. Water temperatures in some streams may have increased due to loss of stream-side shade from the fires. Wood recruitment to streams in areas of high burn intensity may be increasing due to riparian tree mortality from fires. Stream flows may increase in some streams for several years. Peak flows may increase due to reduced snow interception by vegetation resulting in greater snow accumulations available for snowmelt in warmer periods. Summer flows may increase due a lack of live vegetation to conduct evapotranspiration of water so more groundwater may reach stream channels. Fire rehabilitation activities such as reseeding burnt ground with grasses/herbaceous species, waterbarring of firelines, and post-fire noxious weed treatments helped stabilize soils and minimize sedimentation effects to streams due to post-fire erosion. Tree planting on approximately 690 BLM acres of this burned area have contributed to longer term soil stabilization and subsequent reduction of stream sedimentation.

Fuels treatments conducted on private and Forest Service lands will likely occur for the foreseeable future with variable effects to soils. Reducing fuels under the controlled conditions of deliberate treatments may benefit water resources in the long-term by reducing the risk of high severity fires that could have severe adverse water quality effects in treated areas.

Increasing residential development will likely continue for the foreseeable future to variable degrees within the TPA. Erosion, soil compaction, and runoff would likely increase due to additional road construction, clear-

ing/leveling for home sites, and establishment of utility infrastructure for residential developments. Nutrient, chemical pollutant, and pathogen inputs to streams would also likely increase due to leaching from septic systems, urban runoff (fertilizer, chemicals, and petroleum pollutants), and waste from livestock.

Livestock grazing on public and private lands throughout much of the Boulder/Jefferson City TPA has created areas of localized streambank trampling, soil erosion and compaction, and nutrient inputs to streams. In severe cases stream channel morphology may be altered due to severe loss of riparian vegetation, loss of streambank integrity, channel widening and shallowing, and substantial sediment inputs. These effects to water quality will continue to occur for the foreseeable future.

Several streams listed as impaired by MDEQ flow through BLM lands in this TPA. Boulder River (0.9 mile on BLM lands) is affected by heavy metal contamination due to acid mine drainage and abandoned mine lands, as well as direct habitat alteration due to highways, bridges, and impacts from historic mining. Big Limber Gulch (1.6 miles on BLM) is still listed as impaired due to heavy metal contamination from acid mine drainage and abandoned mine lands. High Ore Creek (2.1 miles on BLM) remains listed as impaired for heavy metal contamination, sedimentation, alteration of aquatic habitat, water temperature, and total suspended solids impairments. Probable causes of impairments include acid mine drainage, abandoned mine lands, rangeland grazing, roads (most notably a non-BLM valley bottom road), and timber harvest. Cataract Creek (0.4 mile on BLM) is impaired by heavy metal contamination from acid mine drainage and abandoned mine lands. Clancy Creek (0.2 mile on BLM) is impaired by aquatic habitat alteration, sedimentation, and heavy metal contamination. Probable causes of impairments include abandoned mine lands, acid mine drainage, animal feeding operations, riparian grazing, and road impacts (a non-BLM valley bottom road). These impairments will continue for the foreseeable future. In the case of each of these impaired streams, BLM roads are not located in such a manner and are not a great enough proportion of ongoing activities as to play a substantial role in affecting water resource conditions. In each case where roads are listed as probable causes of impairment, there is a non-BLM valley bottom road paralleling the stream.

Under Alternative A for the Boulder/Jefferson City TPA, the contribution to cumulative effects on water resources from BLM road management would continue as it occurs today. Retaining approximately 60 miles of road open yearlong would allow for the same level of effects to water resources that currently exists.

From a BLM road management perspective, all action alternatives would benefit water resources compared to Alternative A. Alternative B would benefit water resources by providing for a reduced contribution to adverse cumulative effects than would Alternative A be-

cause about 55 percent of BLM roads would be closed or decommissioned under Alternative B. Of the approximately 27 miles of open road under Alternative B, most of them (23 miles) would be seasonally restricted to exclude motorized vehicle use in the wet spring runoff period each year. This would reduce erosion from these roads and further benefit water resources.

Although the action alternatives provide for the same degree of road decommissioning overall and road closure/decommissioning within 300 feet of streams, Alternative C would provide for the least contribution to adverse cumulative effects (greatest benefits) on water resources of all alternatives. This alternative would provide for closure or decommissioning of about 62 percent of BLM roads in the TPA, thus allowing these areas to vegetatively recover, stabilize soils, and reduce erosional outputs to streams. The majority of open roads under this alternative (approximately 20 out of 23 miles) would be seasonally restricted to exclude motorized use between 12/2 to 5/15 each year. As with Alternative B, this seasonal closure would prevent motorized use during the wet spring snowmelt/runoff period and would therefore reduce soil erosion and subsequent sedimentation effects to streams.

Of the action alternatives, Alternative D would provide for the greatest contribution to adverse cumulative effects on water resources, but would still provide for greater long-term benefits than Alternative A. Alternative D would provide for closure or decommissioning of about 40 percent of BLM roads in the TPA. As with Alternatives B and C, the majority of open BLM roads (about 33 out of 38 miles) would be seasonally restricted to exclude motorized use between 12/2 to 5/15 each year. This would allow for the same type of beneficial effects to soils described above for Alternatives B and C though to a slightly lesser degree because more roads would remain open under Alternative D.

Due to the scattered distribution and relatively small proportion of BLM lands (24 percent) and roads (15 percent) relative to the total quantities of land and roads in the TPA, none of the BLM alternatives would substantially contribute to cumulative effects on water resources in the Boulder/Jefferson City TPA.

## **VEGETATIVE COMMUNITIES – FOREST RESOURCES AND FOREST AND WOODLAND PRODUCTS**

### **Effects of the Alternatives**

Under all alternatives, existing roads and roads built to access timber and forest product sales on BLM lands may encourage timber harvest and forest product sales on adjacent lands, particularly where landowners and other agencies are looking to improve economic efficiency or opportunities in the management on their lands.

In general, vegetative treatment contractors tend to bid more readily on projects in areas with vehicle access or valuable products. BLM often prioritizes forest vegetation management activities such as forest products and forest protection activities (e.g. wildfire suppression and forest insect and disease control) in similar areas.

Rehabilitation of roads (decommissioning and in some cases road closure) would revegetate currently unvegetated roadbeds, which would increase vegetation biomass production on the landscape through colonization of sites with grasses, forbs, shrubs, and trees. Increases in revegetated area would occur at a rate of approximately 1.5 to 3 acres per mile of rehabilitated road. Eventually rehabilitated roads would support plant communities consistent with site potentials which would help resist weed invasions. However, road closures and removals could make vegetation management treatments more difficult and costly, thereby inhibiting proposed treatments, reducing public access for product use and removal, and potentially slowing fire detection and suppression.

Under Alternative A there would be no increase in project analysis and implementation costs. However, under Alternative B approximately 55 percent of BLM roads would be closed. Under Alternative C about 61 percent of roads would be closed, while under Alternative D about 38 percent of these roads would be closed. These closures would result in commensurate potential increases in vegetative analysis and treatment costs by alternative. These potential cost increases would be considered on a case by case basis by the BLM during project feasibility determinations, and additional funding may be needed to analyze and implement the projects that would remain feasible. Road closures could also result in potential decreases in quantities of forest products removed. Temporary roads have been commonly built in the Boulder/Jefferson TPA to access forest treatment areas and probably will continue to be used in the future. In the Boulder/Jefferson TPA forest product values are typically low, contributing to reduced feasibility of some projects in areas with closed roads. The extent of the effects described above would be minimized because BLM would likely still be able to plan and implement projects in many areas on closed roads through the variance process for temporary road use. Road-related effects would be greatest under Alternative C, followed in sequence by Alternative B, then Alternative D.

Roaded access to forested areas would also affect the gathering of firewood and other forest products by the general public. Most public parties prefer to drive close to areas of product removal so they do not have to carry products over long distances to their vehicles. Alternative A would have the greatest opportunity for firewood and other product removal with 60.5 miles of BLM road open yearlong. Alternative B would provide fewer opportunities than Alternative A with 27.3 miles of open

road. Alternative C would provide the fewest opportunities of all alternatives with 23.5 miles of open road. Alternative D (38.1 open road miles) would provide more opportunities than Alternatives B and C, but fewer than Alternative A. Winter seasonal closures on many roads (closed 12/2-5/15) could affect firewood and Christmas tree harvest in the Boulder/Jefferson TPA under the action alternatives. Alternatives B, C, and D contain winter closures that affect from one third (20.6 miles) to more than one half (34.2 miles) of total open BLM roads in the TPA. For the Boulder/Jefferson City TPA, Alternative A would retain the most public opportunities for these activities, followed in sequence of decreasing opportunities by Alternative D, Alternative B, and then Alternative C.

## Cumulative Effects on Forest and Woodland Resources and Products

Forested vegetation in the Boulder/Jefferson TPA was greatly impacted by a large wildfire during the summer of 2000. The resulting forest condition includes widespread tree mortality with burned understory vegetation on 32 percent of BLM lands within the TPA. In the BLM burned area, 690 acres were salvage logged, followed by restoration tree planting. Adjacent areas of private ownership were also salvage logged following the wildfire. Since 1984, timber harvest has also occurred on 266 acres of green forest. These activities resulted in the removal of forest products and the associated forest restoration, resulting in open stands with more diverse understories. Approximately 500 forested acres have also been prescribe burned, resulting in some tree mortality, short-term erosion, and more open stand conditions in forested areas. Current planning includes additional treatment of 650 acres in the Boulder/Jefferson TPA.

Currently, western spruce budworm and Douglas-fir beetle are present in forests within the Boulder/Jefferson TPA. These insects have been present at similar levels in the past and are expected to remain in the future. These species can reduce forest health and individual tree vigor, sometimes resulting in mortality. Because 32 percent of BLM land in the TPA was burned with 690 acres subsequently replanted, many stands in the central portion of the TPA are in early successional stages and therefore are not at risk for insect infestation. Differences between travel planning alternatives would be negligible in regard to effects on or from the insect populations.

Road decommissioning (2.7 road miles) and associated rehabilitation proposed under all action alternatives would not have major cumulative effects on forest resources or forest products in the Boulder/Jefferson TPA. Approximately 6 acres of road could be colonized by trees under the action alternatives, while no roads would be decommissioned under Alternative A.

Forested vegetation in the Boulder/Jefferson TPA will also be affected by approximately 2,051 acres of rights-of-way and leases on BLM land. Large trees in these areas will generally be harvested for product to accommodate the necessary access or facilities. Forest vegetation removal would occur on new authorizations in the future and would occur as necessary to maintain sight distances and safety clearances associated with roads and facilities.

Urbanization is expected to continue on the 31,705 acres of private land (52 percent of all lands) within the Boulder/Jefferson TPA. Forest products are commonly removed from these areas prior to permanent construction. Urbanization is likely to continue in the future and will affect forested vegetation at an unknown rate. Due to the preponderance of private lands in the TPA, urbanization and activities on open roads in the vicinity may have more cumulative effects on forested vegetation in the TPA than BLM decisions regarding miles of open and closed road.

Risk to forests from human-caused wildfires is commonly associated with open roads. Risk to forests from wildfire is greatest under Alternative A with 60.5 miles of road open during the summer (and yearlong). Alternative B would have less risk of human-caused fire starts with 27.3 miles of road open during summer. Alternative C would have the least risk to forests with only 23.5 miles of road open during summer months. Alternative D (38.1 miles of open road during summer) would have more risk than either Alternatives B or C, but less risk than Alternative A. Since a high percentage of the forested acreage in the central portion of this TPA has already burned, fewer acres are anticipated to be affected by wildfire in the foreseeable future. Given that the majority of roads in the TPA (84.6 percent) are non-BLM roads, this contribution to reduced fire risk from BLM roads in the action alternatives is relatively small in the context of the entire TPA.

Since BLM roads constitute only 15.4 percent of all roads in this TPA, and BLM lands make up only 24 percent of all lands in the TPA, urbanization and activities on open non-BLM roads in the vicinity may have more cumulative effects on forested vegetation in the TPA than BLM decisions regarding miles of open and closed road.

## VEGETATIVE COMMUNITIES -NOXIOUS WEEDS

Under all alternatives, any snowmobile use would have negligible effects on noxious weed spread and populations. Invasive noxious weeds and non-native species are degrading wildland health. These are aggressive plants that can outcompete many native plants, as they have few natural enemies to keep them from dominating an ecosystem. These plant species are spread by many means. However, any land disturbing activity in the TPA has the most potential to introduce and spread weed spe-

cies. Motorized vehicles are one vector for noxious weed spread as weed seed becomes attached to vehicles and their tires, and are transported from one area to another where seeds become detached and germinate to inhabit new areas.

### Effects of Alternative A

Under Alternative A all BLM managed routes in the Boulder/Jefferson City TPA would continue to be managed as open yearlong (60.5 miles, 0 miles seasonally restricted or closed). No non-motorized routes or trails are available under this alternative. Snowmobile use would continue to be managed as open to area-wide cross country travel as well as travel on all existing routes (during the season of use, 12/2-5/15, conditions permitting). Alternative A would have the most roads open and in turn would promote the greatest amount of weeds and other undesirable plant spread and production. More herbicide control would be needed to control weeds in Alternative A than the other alternatives. Under Alternative A the open BLM roads would represent about 15.4 percent of all open roads in the Boulder/Jefferson City TPA.

### Effects of Alternative B

Under Alternative B, 28.8 miles of routes would be available for wheeled motorized use (3.7 miles open yearlong, 25.1 miles seasonally restricted). Closure and decommissioning of routes in the southwest corner of the TPA would help create a non-motorized use area and reduce weed spread related to motorized use. This alternative would close 29.0 miles of road leaving 3.7 miles open yearlong as compared to 60.5 miles of road open yearlong for Alternative A. This would prevent weed spread caused by motorized vehicles on these closed routes, but would increase weed spread on the open routes because of the more concentrated use of these routes. Overall Alternative B would reduce weed spread, but would increase weed treatment costs per road mile on the remaining open roads compared to Alternative A. Under Alternative B, the 28.8 open road miles (including seasonally restricted routes) would make up about 7 percent of all open roads in the Boulder/Jefferson City TPA.

### Effects of Alternative C

Under Alternative C, 23.5 miles of routes would be available for wheeled motorized use (3.0 miles open yearlong, 20.5 miles seasonally restricted). Closure and decommissioning of routes in the southwest corner of the TPA would help create a non-motorized use area and reduce weed spread related to motorized use in this area. This alternative would close 34.2 miles of road leaving 3.0 miles open yearlong as compared to 60.5 miles of road open yearlong for Alternative A. This would prevent weed spread caused by motorized vehicles on these closed routes, but would increase spread on the open routes because of the more concentrated use of these

routes. Overall Alternative C would reduce weed spread more than any other alternative, but would increase weed treatment costs per road mile on the remaining open road miles compared to Alternative A. Under Alternative C the 23.5 miles of open BLM road would make up about 6 percent of all open roads in the TPA.

### Effects of Alternative D

Under Alternative D, 38.1 miles of routes would be available for wheeled motorized use (5.3 miles open yearlong, 20.5 miles seasonally restricted). This alternative would close 20.6 miles of road leaving 5.3 miles open yearlong as compared to 60.5 miles of road open yearlong for Alternative A. This would prevent weed spread caused by motorized vehicles on the closed routes, but would increase spread on the open routes because of the more concentrated use of these routes. Over Alternative D would reduce weed spread more than Alternative A but less than Alternatives B and C, but would increase weed treatment costs per road miles on the remaining open roads miles compared to Alternative A. Under Alternative D, the 38.1 miles of open BLM road would make up about 9.7 percent of all open road miles in the Boulder/Jefferson TPA.

### Cumulative Effects on Noxious Weeds

Under all alternatives, other past, present and reasonably foreseeable future BLM and non-BLM actions affect noxious weeds.

Recreational activities for this TPA include big game hunting, motorized OHV travel (motorcycles, ATVs, snowmobiles), and to a lesser extent, non-motorized uses (hiking, horseback riding, and mountain biking). Motorized recreation uses are one of the leading causes of introduction and spread of noxious weeds and non native species. Weed seeds are transported by many recreational vectors i.e. motorized vehicles including their tires, non-motorized vehicles including their tires, pack animals, and humans. Applications for right-of-way permits on public lands to access private property or for commercial development are likely to increase in the future as urban development increases. As a result, soil disturbing activities (i.e. roads, powerlines, telephone lines, etc.), will likely increase, causing weeds to increase.

A variety of resource management projects, such as BLM initiated vegetation treatments, or wildland fire fuel reduction projects, could affect the TPA. There have been no fuels treatments in this area in the last 10 years and there are none planned on BLM lands for the foreseeable future. Any project creating soil disturbance has the capability to increase weedy plant species. Prescribed burning projects give the ground surface a fertilization effect and eliminate some plant competition for weedy species giving them a niche for establishment and expansion in some areas. Ground disturbing equipment could also transport noxious weed seed to these project sites. BLM implements weed control measures in the

aftermath of such ground-disturbing activities so as to minimize noxious weed spread.

Wildland fires create good seed beds and supply nutrients for weed species introduction and production. From 1981 to 2004 there has been one wildland fire (the 2000 High Ore Fire) that burned approximately 4,600 acres of BLM land. This fire has promoted and increased noxious weed production in this TPA. BLM implemented weed control measures as part of the fire rehabilitation work associated with this fire.

The TPA has a rich history of mining for lead, zinc, gold, copper, and silver. With the exception of the Montana Tunnels Mine, the remaining mines are no longer active; many have been reclaimed by either the BLM or state of Montana. The Montana Tunnels Mine continues to produce lead and zinc with associated gold and silver from an open pit. The mine is located near Jefferson City, and is approx. 1,500 acres in size (including 130 acres of BLM land). Increases in mineral prices could lead to additional increased or renewed mining activity. Mining is a land disturbing activity and the activity itself and weed seed contaminated equipment that is used could promote weeds in the area. Abandoned mine reclamation work conducted by BLM can also contribute to increased weed spread. BLM implements weed control measures associated with these projects to minimize this impact.

Noxious weeds and non-native invasive species are well established and spreading in the area. Weed control activities by BLM and other entities, while often effective at reducing or minimizing weed spread and weed populations, can also lead to some weed spread. Herbicide spray equipment is driven through weed infestations and weed seeds as well as other weed vegetative parts are spread to other lands during and following treatment. The High Ore Wildfire area received ground and aerial herbicide treatments of about 300 to 400 acres in size following the fire. In recent years, treatments using herbicide (ground) and biological controls have been accomplished on approximately 250 acres. These weed treatments have varying success in killing undesirable plants, depending on many environmental parameters. Timber sales have built-in stipulations for mitigating weed production and spread. However, with ground disturbance the potential exists for weed introduction to occur on these sites. Since 1995 there have been 559 acres of timber salvage and 7 acres of timber harvest and 690 acres of forest planting (replanted in 2002). Vehicular access for tree plantings could contribute to the spread of existing weeds on site. Herbicide treatment of existing weeds is coordinated with tree seedling planting locations and timing, so as to minimize potential exacerbation of weed spread.

Future travel management (for all agencies, nationwide) is likely to lead to fewer opportunities for motorized recreational use than under current management (particularly for OHV use). As a result, BLM routes available

to motorized use could experience increased use from displaced users, leading to more concentrated use, increased resource impacts, and user conflicts.

The TPA mainly provides habitat for big game. The entire area is considered winter range for elk while the lower elevations along the eastern half of the travel plan are winter range for mule deer. Noxious weed seeds are transported and spread by wildlife through their digestive system and by attaching to the animals themselves and then being released at a later time.

Livestock grazing on and off BLM lands also contributes to weed spread either through seed being spread or introduced by livestock themselves, or through vehicular uses needed to manage grazing operations.

The Boulder-Jefferson City TPA is located adjacent to the upper Boulder Valley. Human population growth for the upper Boulder Valley (Boulder town statistics) is approximately 2 percent per year. This rate of growth is expected to continue, along with increased recreational use from local residents and area users (residents of Helena and Butte). The increasing population in the Butte and Helena area will in turn lead to an increase in use of this TPA creating more opportunities for weed spread and production.

The small towns of Boulder (population 1,436) and Jefferson City (population 295) are located adjacent to the TPA. The present rate of growth is approximately 2 percent per year, but could increase as Helena Valley area development begins to branch out. The residential development between Jefferson City and Boulder is increasing. Use of the TPA by the residents living adjacent to or within this area will lead to an increase in weed spread and propagation.

About 15.4 percent of all the travel routes in the Boulder/Jefferson City TPA are located on BLM managed lands (under Alternative A). Lands near roads and away from roads in the TPA are infested with weeds. The travel on these roads is spreading weeds and weeds off these roads are being spread by the weed plants themselves and other natural means. Because the majority of roads (85 percent) and lands (76 percent) in the TPA are non-BLM, activities in these areas play a stronger role than activities on BLM lands in determining the status of weed spread and weed populations overall at the scale of the entire TPA.

## VEGETATIVE COMMUNITIES -RIPARIAN VEGETATION

### Effects Common to All Alternatives

This section focuses on effects to riparian vegetation. For additional discussion of effects to water quality and stream channels, see the Water Resources and Fish sections.

Roads in riparian areas constitute ground disturbance that can eliminate or preclude presence of native riparian vegetation. This ground disturbance and loss of riparian vegetation may facilitate erosion and sedimentation of streams. Roads may also interfere with natural stream channel functions by occupying floodplains or active stream channel margins (see Water Resources section for more discussion). Noxious weeds may dominate riparian vegetation communities after some type of disturbance (such as roads, livestock grazing, mining, etc.) has reduced native vegetation. Noxious weed seed can be spread into riparian areas by motor vehicles via open roads. Closure of roads and trails can improve or maintain riparian condition by reducing avenues of noxious weed spread, as well as allowing for bare area revegetation which filters sediment in addition to stabilizing banks in some areas. Road and trail restrictions have the same effects but to a lesser degree, because some traffic will inhibit vegetation growth and recovery.

### Effects of the Alternatives

As a means of comparing alternatives, **Table 4-82** depicts the miles of wheeled motorized routes that cross or are within 300 feet of streams or wet areas on BLM lands in the Boulder/Jefferson City TPA.

<b>Miles of Wheeled Motorized Routes</b>	<b>ALT A</b>	<b>ALT B</b>	<b>ALT C</b>	<b>ALT D</b>
Open	21.7	9.4	9.4	9.5
Restricted	0	4.6	4.5	7.7
Closed	0	7.7	7.8	4.5

Under Alternative A, 21.7 miles of BLM roads and trails would remain open that cross or are within 300 feet of streams or wet areas on BLM lands. The noxious weed spread, streambank, and sediment delivery effects would continue as described in the Effects Common to All Alternatives section. The BLM roads and trails most affecting riparian conditions along Kady Gulch, Boomerang Gulch, Black Jim Gulch, Stagecoach Gulch, and Big Limber Gulch would remain open. Alternative A would pose the greatest adverse effects to riparian vegetation of all alternatives.

Under Alternative B, 9.4 miles of roads and trails would remain open that cross or are within 300 feet of streams or wet areas, 4.6 miles of roads and trails would have seasonal restrictions, and 7.7 miles of roads and trails would be closed. The noxious weed spread, streambank, and sediment delivery effects would be reduced in comparison to Alternative A. Big Limber Gulch, High Ore Creek and Spring Creek roads and trails which impact

riparian areas would remain open because these roads provide access to private lands. Riparian impacted roads and trails along Spencer Creek, Stagecoach Gulch, Black Jim Gulch, and Lower Boomerang Gulch would be closed. Roads and trails along Peters Gulch, the west fork of Boomerang Gulch, and Kady Gulch would have seasonal restrictions on use (closed 12/2-5/15).

Under Alternative C, 9.4 miles of roads and trails would remain open that cross or are within 300 feet of riparian areas, 4.5 miles of roads and trails would have restrictions, and 7.8 miles of roads and trails would be closed. The noxious weed spread, streambank, and sediment delivery effects would be reduced in comparison to Alternative A to the same degree as under Alternative B. Big Limber Gulch, High Ore Creek and Spring Creek roads and trails which impact riparian areas would remain open because these roads provide access to private lands. Riparian impacted roads and trails along Spencer Creek, Stagecoach Gulch, Black Jim Gulch, and Lower Boomerang Gulch would be closed. Roads and trails along Peters Gulch, the west fork of Boomerang Gulch, and Kady Gulch would have seasonal restrictions on use (closed 12/2-5/15).

Under Alternative D, 9.5 miles of roads and trails would remain open that cross or are within 300 feet of riparian areas, 7.7 miles of roads and trails would have restrictions, and 4.5 miles of roads and trails would be closed. The noxious weed spread, streambank, and sediment delivery effects would be reduced in comparison to Alternative A, but would be greater than under Alternatives B or C. As with all other alternatives, Big Limber Gulch, High Ore Creek and Spring Creek roads and trails which impact riparian areas would remain open because these roads provide access to private lands. Riparian impacted trails along Stagecoach Gulch, Black Jim Gulch, and Lower Boomerang Gulch would be closed. Also as with Alternatives B and C, roads and trails along Peters Gulch, Spencer Creek, the west fork of Boomerang Gulch, and Kady Gulch would have seasonal restrictions on use (closed 12/2-5/15).

## **Cumulative Effects on Riparian Vegetation**

Noxious weed spread, mining, roads and trails, logging operations, and livestock grazing have affected riparian resource conditions in all TPAs, including the Boulder/Jefferson City TPA. Some of these factors continue to cause riparian area degradation primarily through direct disturbance or loss of riparian vegetation. Ground disturbance and loss of riparian vegetation facilitate erosion and sedimentation of streams. In the case of noxious weeds, they usually dominate riparian vegetation communities after some type of disturbance (such as roads, livestock grazing, mining, etc.) has reduced native vegetation.

Anticipated subdivision growth on private lands will lead to more road construction and maintenance. More

roads and development will increase severity of runoff events which in turn will cause more sediment delivery to creeks and streams. The additional sediment is likely to affect the functioning condition of some riparian areas by causing streambeds to aggrade at unnatural rates. Streambanks may also be affected if road placements do not allow for natural stream movements or meanders.

Logging and forestry practices on public and private lands are subject to streamside management zone (SMZ) requirements designed to maintain water quality and riparian vegetation. The proposed Riparian Management Zones under Butte RMP Alternatives B and C would be wider than SMZs and activities in these areas would be designed to benefit riparian resources, thus providing more riparian protection and more targeted management of riparian vegetation in both forested and non-forested areas than under RMP Alternatives A and D. The disturbance associated with timber activities does have the potential to increase noxious weed spread which degrades riparian area function and health. On public lands noxious weed control is a standard feature of any ground disturbing activities whereas on private lands noxious weed control is variable.

Livestock grazing will continue in the area and has the potential to impact riparian resource conditions. On BLM lands, ongoing rangeland health assessments and implementation of livestock grazing guidelines would continue to improve or maintain riparian vegetation health and vigor. On private lands, livestock grazing is expected to decline slowly as more ranch and farmland is subdivided. Riparian conditions may improve or degrade as management changes.

Noxious weed control will continue on both public and private lands with varying degrees of success. To the extent that these efforts are successful, riparian conditions would improve because of the streambank protection gained from shrubby root systems and filtering capability of native riparian sedge and rush species.

Reclamation of abandoned mine lands along Big Limber Gulch, High Ore Creek, Clancy Creek and Spring Creek near Wickes have improved riparian function and health in these watersheds. The removal of contaminated soil and improvement in water quality has caused riparian vegetation to recover and thrive. The future reclamation of the Montana Tunnels mine would ensure a consistent base flow of acceptable water quality to the headwaters of Clancy Creek.

The Boulder complex fires of 2000 burned parts of the High Ore, Boomerang, Spring Creek, and Amazon watersheds. Before the vegetation could recover, subsequent storm events caused streambank scouring to occur on parts of several streams in these watersheds. The fire was of sufficient size to allow several colonies of aspen along riparian reaches and uplands to regenerate. Because a large acreage burned, post-fire use by herbivores

and ungulates was dispersed enough that it did not suppress young aspen suckers.

Cumulative effects under all the action alternatives would be similar to Alternative A at the scale of the entire TPA. The additional road and trail closures and seasonal restrictions on BLM roads in the action alternatives may slightly offset the cumulative road and trail impacts associated with subdivision development and other lands uses as compared to Alternative A. Alternative D would contribute less to riparian vegetation benefits than Alternatives B and C, but would contribute more benefits than Alternative A.

Overall, because BLM roads make up only 15.4 percent of all roads in the TPA (under Alternative A), and BLM lands make up 24 percent of all lands in the TPA, the contributions to riparian vegetation benefits associated with closing riparian roads on BLM lands under the action alternatives, while potentially substantial at the site scale, could be masked by activities on other lands at the scale of the entire Boulder/Jefferson City TPA. Activities on private lands (52 percent of total acreage in TPA) and USFS lands (23 percent of total acreage in TPA) would play a substantial role in determining riparian conditions at the scale of the entire TPA.

## WILDLIFE

### Effects of Alternative A

Under Alternative A, the Boulder/Jefferson City TPA would have substantially more open roads (60.5 miles) compared to the action alternatives and would have the highest actual road density, 3.3 mi/mi<sup>2</sup> (Table 4-83) of all alternatives. Open roads typically increase the level of recreation adjacent to roads which can result in additional disturbance and displacement of wildlife species. Roads can also encourage the public to recreate in areas that had formerly been secluded. Roads can cause direct mortality to wildlife through road kill, prevent wildlife movement, create disturbance to wildlife via vehicular use, cause the spread of noxious weeds, reduce habitat and cause habitat fragmentation on the landscape (Joslin et al. 1999). Open road miles that are greater than 3.0 mi/mi<sup>2</sup> have also been found to provide less than 40 percent of functional habitat for elk (Christensen et al. 1993). Permanent and temporary roads could negatively impact wildlife including special status species, particularly if roads are open during critical periods such as wintering or during the breeding season.

High open road densities under Alternative A could result in the loss of year-round habitat and migration corridors, disturbance and displacement of wildlife, road kill and fragmentation of habitat. Wildlife, including special status species, that are especially sensitive to roads in the TPA include (but are not limited to) elk and northern goshawk. The detrimental effects of open road densities to all wildlife species found in this TPA under Alternative A could be minor to major and long-term.

This alternative would have the greatest negative impacts to wildlife including special status species from open roads.

This TPA would also have substantially fewer acres of functional big game winter range (approximately 483 acres with low road density) compared to the action alternatives (Table 4-83). Functional winter range is similar under the action alternatives with 3,985 acres under Alternative B, 4,035 acres under Alternative C and 3,938 acres under Alternative D.

	<b>Actual Road Density</b>	<b>Acres of Low Road Density</b>	<b>Acres of Moderate Road Density</b>	<b>Acres of High Road Density</b>
<b>Alt. A</b>	3.3	483	2,341	11,662
<b>Alt. B</b>	0.8	3,985	5,304	5,198
<b>Alt. C</b>	0.8	4,035	5,571	4,881
<b>Alt. D</b>	0.9	3,938	4,967	5,582

Low Density = 0-1 mi/mi<sup>2</sup>, Moderate Density = 1-2 mi/mi<sup>2</sup>, High Density = >2 mi/mi<sup>2</sup>

With Alternatives A, B and D, the TPA would be open to cross country snowmobile use. BLM lands in this TPA, however, do not often get favorable snow conditions for snowmobile use. Due to snow conditions, the use of snowmobiles would be limited and the effects to wintering big game and other wildlife species would be expected to be minimal the majority of the time. However, when snow conditions do become favorable, snowmobile use of the TPA could have considerable negative effects to big game and other wildlife species. The negative effects due to cross-country snowmobile use could include harassment of big game during the high stress winter season (Joslin et al. 1999). This could cause individuals to leave an area (temporarily or permanently) and/or increase stress that could lead to mortality.

In evaluating impacts of travel planning on elk and other big game species, it is important to consider impacts on security habitat. Elk security is the inherent protection allowing elk to remain in an area despite increases in stress or disturbance associated with the hunting season or other human activities. Security habitat includes blocks of nonlinear forested habitats greater than 250 acres in size that are at least 0.5 mile from an open road (Hillis et al. 1991). Security habitat should also consist of larger trees (greater than 8 inches DBH) with vegetation dense enough to hide an adult elk (Thomas et al. 2002). Due to the fragmentation of BLM lands and high road densities adjacent to BLM lands, none of the alter-

natives would provide big game security habitat in the Boulder/Jefferson TPA.

Core areas are areas large enough for wildlife (especially animals with large home ranges such as carnivores and big game) to forage and reproduce. Subcore areas are areas that could act as stepping stones for wildlife as they move through the region (Craighead et al. 2002). Within all lands of the Boulder/Jefferson City TPA there are approximately 20,631 acres identified as “core/subcore” habitat. Under Alternative A, there would be 1,113 acres of core/subcore habitat with low road density (less than the action alternatives), 4,015 acres with moderate road density and 15,503 acres with high road density (more than all action alternatives) for all land ownerships.

On BLM lands, there are 2,958 acres in core/subcore habitat. Within the Boulder/Jefferson City TPA, all but 20 acres would have high road densities in core and subcore habitat under Alternative A.

Wildlife corridors are areas of predicted movement within or between core and subcore areas. Within the TPA, there are approximately 13,180 acres identified as “high quality” wildlife movement corridors under all land ownerships. All alternatives would have a similar number of acres with low road densities (677 acres) in movement corridors. Alternative A, however, would have fewer acres with moderate road density (3,556 acres) than the action alternatives and the majority of acres under this alternative (8,948 acres) would have high road densities. Although these areas have been mapped as “high quality” movement corridors, the presence of high road densities could reduce or limit the quality of habitat available to wildlife.

On BLM lands in the TPA, there are 6,659 acres mapped as high quality movement corridors. Under Alternative A, the majority of habitat in mapped high quality movement corridors would have high road densities (4,264 acres) with 1,944 acres in moderate road densities and only 450 acres with low road densities. Alternative A would provide the lowest quality habitat in wildlife movement corridors compared to all other alternatives.

Riparian areas provide crucial habitat and critical travel corridors for wildlife including special status species. Riparian areas also provide a refuge for native plants and animals in times of stress such as drought or fire. Roads in riparian areas can prevent use of these crucial areas by wildlife, limit use, or cause loss of habitat (Wisdom et al. 2000). Under Alternative A, there would be 21.7 miles of open roads in riparian areas.

## Effects of Alternative B

Under Alternative B, the Boulder/Jefferson City TPA would have substantially fewer open roads (27 miles) compared to Alternative A (60.5 miles). Of the 27 miles of open roads, only 3.7 miles would be open year-round and the remaining 23.6 miles would be seasonally re-

stricted. Alternative B would have more open roads than Alternative C (23.5 miles) but less than Alternative D (38 miles). Alternative B would decrease harassment to wildlife during all seasons of use, especially during the winter and spring, over Alternatives A and D. This alternative would improve habitat and reduce fragmentation more than Alternatives A and D but less than Alternative C.

Under Alternative B, the actual road density in elk winter range would be 0.8 mi/mi<sup>2</sup>, below the maximum of 1 mi/mi<sup>2</sup> recommended by MFWP in big game winter range (Table 4-83). This is substantially lower than the road density under Alternative A (3.3 mi/mi<sup>2</sup>), the same as under Alternative C and similar to Alternative D (0.9 mi/mi<sup>2</sup>). Christensen et al. (1993) found that reducing open road miles to less than 1.0 mi/mi<sup>2</sup> increases the amount of functional elk habitat by over 60 percent.

Under Alternative B there would be substantially more acres of functional winter range (3,985 acres in low road density) compared to Alternative A (483 acres) but this alternative would have a similar number of acres compared to Alternatives C and D (4,035 and 3,938 acres respectively) (Table 4-83).

Like Alternatives A and D, the entire Boulder/Jefferson City TPA would be open for cross country snowmobile use with Alternative B. The effects would be the same as described under Alternative A.

Under all land ownerships in core and subcore habitat, Alternative B would have the same acres in low road densities as Alternatives C and D (1,704 acres) which would be more than under Alternative A (1,113 acres). Alternative B would also have the same or similar acres in moderate (5,685 acres) and high (13,242 acres) road densities as Alternatives C and D. These acreages are higher than the moderate road density acreage (4,015 acres), and lower than the high road density acreage (15,503 acres) of Alternative A.

On BLM lands, there are approximately 2,958 acres in core/subcore habitat. Under Alternative A, all but 20 acres would have high road densities in core and subcore habitat on BLM lands. Although core and subcore habitat on BLM lands under the action alternatives would still be primarily in high road density (1,550 acres) there would also be 440 acres in low road density areas and 966 acres in moderate road density areas. Although the amount of functional core and subcore habitat would remain extremely low in this TPA, the action alternatives would improve the quality of core and subcore habitat compared to Alternative A.

In high quality wildlife movement corridors for all land ownerships, Alternative B would substantially increase the acreage with low road density (approximately 3,770 acres) compared to Alternative A (677 acres). Alternatives B would also increase the acreage with moderate road density (5,235 acres) over Alternative A and would substantially lower the acreage with high road density to

4,170 acres compared to Alternative A (8,948 acres). All action alternatives would greatly improve habitat in high quality movement corridors over Alternative A but Alternatives B and C would have more beneficial effects than Alternative D. Even though the action alternatives would improve movement corridors, the amount of quality corridors would remain extremely low due to fragmentation of public lands and high road densities on adjacent lands.

The quality of BLM lands mapped as high quality movement corridors would improve under Alternative B compared to Alternative A. All action alternatives would increase the acreage in low road density to (approximately 3,200 acres) compared to Alternative A (450 acres). Alternatives B and C would also increase the acreage with moderate road densities to (about 2,550 acres) compared to Alternative A (1,944 acres), and decrease the number of acres in high road densities to approximately 865 acres compared to 4,170 acres under Alternative A. All action alternatives would improve habitat in high quality movement corridors on BLM lands over Alternative A but Alternatives B and C would have more beneficial effects than Alternative D.

All action alternatives would protect and restore more riparian habitat than Alternative A by reducing the miles of open roads in riparian areas to 9.5 miles (from 21.7 under Alternative A). Reducing roads in riparian habitats under the action alternatives would allow for more breeding, foraging, and hiding habitat as well as improved movement corridors for a wide variety of species.

### Effects of Alternative C

Under Alternative C, the Boulder/Jefferson City TPA would have substantially fewer open roads (23.5 miles) compared to Alternative A (60.5 miles). Of the 23.5 miles of open roads, only 3.0 miles would be open year-round and the remaining 20.5 miles would be seasonally restricted. Alternative C also would have fewer open roads than Alternative B (27.3 miles) and Alternative D (38 miles). Alternative C would decrease harassment to wildlife during all seasons of use, especially during the winter and spring, over all alternatives. This alternative would also improve habitat and reduce fragmentation more than all other alternatives.

Under Alternative C, the actual road density in elk winter range would be 0.8 mi/mi<sup>2</sup>, below the maximum of 1 mi/mi<sup>2</sup> recommended by MFWP in big game winter range. This is substantially lower than the road density under Alternative A (3.3 mi/mi<sup>2</sup>), the same as under Alternative B, and similar to Alternative D (0.9 mi/mi<sup>2</sup>) (Table 4-83).

Under Alternative C there would be substantially more acres of functional winter range (4,035 acres in low road density) compared to Alternative A (483 acres), but this alternative would have a similar amount of acres com-

pared to Alternatives B and D (3,985 and 3,938 acres, respectively) (Table 4-83).

Alternative C would limit snowmobile use in the entire Boulder/Jefferson City TPA to open roads only (3 miles). This would substantially reduce the negative effects to wildlife from snowmobile use and be the most protective of all alternatives.

There would be no big game security habitat provided on BLM lands under Alternative C.

Effects associated with core and subcore habitat under Alternative C would be the same as under Alternative B. In high quality movement corridors for all land ownerships, Alternative C would substantially increase the acreage with low road density (approximately 3,770 acres) compared to Alternative A (677 acres). Alternative C would also increase the acreage with moderate road density (5,282 acres) over Alternative A (3,556 acres), and would lower the acreage with high road density to 4,113 acres compared to 8,948 acres under Alternative A. All action alternatives would improve habitat in high quality movement corridors over Alternative A but Alternatives C and B would have more beneficial effects than Alternative D.

The quality of BLM lands mapped as high quality movement corridors would improve under Alternative C compared to Alternative A. All action alternatives would increase the acres in low road density (approximately 3,200) compared to Alternative A (450 acres). Alternatives C and B would also increase the acreage with moderate road density to about 2,550 acres, compared to Alternative A (1,944 acres). Alternative C would decrease the number of acres in high road density to approximately 865 acres, compared to 4,170 acres under Alternative A. All action alternatives would improve habitat in high quality movement corridors on BLM lands over Alternative A but Alternatives B and C would have more beneficial effects than Alternative D.

Effects associated with roads in riparian areas under Alternative C would be the same as under Alternative B.

### Effects of Alternative D

Under Alternative D, the Boulder/Jefferson City TPA would have substantially fewer open roads (38 miles) compared to Alternative A (60.5 miles). Of the 38 miles of open roads, 5.3 miles would be open year-round and the remaining 32.8 miles would be seasonally restricted. Alternative D would have considerably more open roads than Alternative B (27 miles) and Alternative C (23.5 miles). Alternative D would decrease harassment to wildlife during all seasons of use, especially during the winter and spring, more than Alternative A but less than Alternatives B and C. This alternative would also improve habitat and reduce fragmentation more than Alternative A but less than Alternatives B and C.

Under Alternative D, the actual road density in elk winter range would be 0.9 mi/mi<sup>2</sup>, below the maximum of 1

mi/mi<sup>2</sup> recommended by MFWP in big game winter range. This is substantially lower than the road density under Alternative A (3.3 mi/mi<sup>2</sup>) and slightly higher than Alternatives B and C (0.8 mi/mi<sup>2</sup>) (**Table 4-83**).

Under Alternative D, there would be substantially more acres of functional winter range (3,938 acres in low road density) compared to Alternative A (483 acres). This alternative would have a similar amount of acres in functional winter range compared to Alternatives B and C (3,985 and 4,035 acres, respectively) (**Table 4-83**).

Like Alternatives A and B, the entire Boulder/Jefferson City TPA would be open for cross country snowmobile use with Alternative D. The effects would be the same as described under Alternative A.

There would be no big game security habitat on BLM lands under Alternative D.

Under all land ownerships in core and subcore habitat, Alternative D would have the same acres in low road density as Alternatives B and C (1,704 acres) which would be more compared to Alternative A (1,113). Alternative D would also have nearly the same acreages in moderate (5,663 acres) and high (13,264) road densities as Alternatives B and C. These values would be more acres in moderate road density and fewer acres in high road density compared to Alternative A (4,015 and 15,503 acres, respectively).

Effects of Alternative D on core and subcore habitat on BLM lands would be the same as under Alternatives B and C.

In high quality movement corridors for all land ownerships, Alternative D would substantially increase the acreage with low road density to 3,772 acres compared to Alternative A (677 acres). This would be similar to Alternatives B and C. Alternative D would also increase the acreage with moderate road density to 4,966 acres, compared to Alternative A (3,556 acres), but this would be less than Alternatives B and C (5,282 acres). Alternative D would also have slightly more acres with high road density (4,443 acres) compared to Alternatives B and C (4,113 acres), but would have fewer acres with high road density than Alternative A (8,948 acres). All action alternatives would improve habitat in high quality movement corridors over Alternative A but Alternative D would have fewer beneficial effects than Alternatives B and C.

In high quality movement corridors on BLM lands, Alternative D would have a similar acreage (3,203 acres) in low road density as Alternatives B and C but would have more than Alternative A (450 acres). Alternative D would have slightly fewer acres in moderate road density compared to Alternatives B and C (2,532 acres) but would have more when compared to Alternative A (1,944 acres). Alternative D would decrease the number of acres with high road density to 1,019 compared to Alternative A (4,170 acres), but would have more acres

with high road density than Alternatives B and C (810 acres). All action alternatives would improve habitat in high quality movement corridors on BLM lands over Alternative A but Alternative D would have fewer beneficial effects than Alternatives B and C.

Effects associated with roads in riparian areas would be the same as under Alternatives B and C.

## Cumulative Effects on Wildlife

Wildlife habitat in the Boulder/Jefferson City TPA has been affected by roads, historic and current mining, timber harvest and salvage, weed infestations, urbanization and development, recreation, powerline corridor development and communication sites.

Human population growth for the upper Boulder Valley is approximately 2 percent per year. This rate of growth is expected to continue, along with increased recreational use from local residents and area users (residents of Helena and Butte). Recreational activities in the Boulder/Jefferson City TPA include hunting, motorized OHV travel (motorcycles, ATVs, snowmobiles), and to a lesser extent, non-motorized uses (hiking, horseback riding, and mountain biking).

Land that was traditionally used for ranching, forest products, or mining is now being converted to home sites in the Boulder/Jefferson City TPA. Although these lands had historic human uses, they also provided quality wildlife habitat. These areas historically provided a diversity of habitats that contributed to; big game winter range, travel corridors, habitat for resident and migrating wildlife, as well as foraging, breeding and hiding habitat.

For many plant and animal communities, native species richness decreases as housing density increases. Non-native species, however, tend to increase with development (Hansen et al. 2005). Wildlife populations, including carnivores, may be reduced even at very low levels of residential development due to; loss of habitat, an increase in human access (from roads) in areas that previously had low levels of disturbance, and an increase in hunting pressure. Residential development can also lead to an increase in noxious weed infestations that can reduce the quality and quantity of wildlife habitat.

Pets can also have a negative impact to native wildlife. Cats hunt and kill bird and small mammals. Dogs that are allowed to roam can chase, injure, or kill wildlife. This can result in areas becoming unavailable to wildlife.

The Boulder/Jefferson City TPA is within an area that was heavily affected by historic mining. There are five large mines which are no longer active and have had some level of reclamation by either the BLM or the State of Montana. Montana Tunnels is the only active mine and continues to produce lead and zinc with associated gold and silver from an open pit. The mine is located near Jefferson City, and is approximately 1,500 acres in size (including 130 acres of BLM land). It is expected

that exploration for minerals would continue in the future. Mineral activity along with associate road construction and development on both private and public lands could add substantially to the negative cumulative effects to wildlife and wildlife habitats in this TPA.

In the TPA, there are 11 powerlines, two pipelines and seven communication sites. In the future, communication sites on BLM lands will be restricted to existing sites. There is the potential for future powerlines and pipelines to be built in this TPA and for additional communication sites to be built on private and other public lands.

There are approximately 26 rights-of-way (ROW) in the TPA and applications for ROW permits to access private property or for commercial development are likely to increase in the future. As a result, public access to BLM lands could increase. Fewer ROWs would be expected under Alternative A because all BLM roads would remain open under this alternative. Alternative B would be expected to have fewer ROWs than Alternative C but more than Alternatives A and D. Alternative C would be expected to have the most ROWs and, of the action alternatives, Alternative D would have the fewest.

Between 1984 and 1995 only 260 acres of timber harvest occurred on BLM lands in the TPA although more occurred on adjacent private lands. In 2000, the Boulder Fire burned approximately 10,800 acres of the entire TPA and approximately 4,670 acres in the Decision Area. After the fire, approximately 560 acres of timber salvage occurred on BLM lands and a substantial amount of acres on private lands were also heavily salvaged. Approximately 700 acres of BLM lands have been replanted. Since private lands were heavily salvaged after the fire, it is not expected that timber harvest would occur on these lands for the next 20-40 years. Additional timber harvest or vegetation restoration may occur on BLM lands in the future, especially within meadows that were not burned and are experiencing conifer encroachment. Forest and fuels reduction treatments would be expected to be less under Alternatives A and C than under Alternatives B and D. Overall, vegetative treatments on BLM lands have had minor effects to wildlife habitat in the TPA. However, timber salvage on BLM lands has substantially reduced the distribution and amount of snag habitat for snag dependant species in the salvage units. Timber harvest and salvage on private lands has altered the landscape and caused a decline in the quality and quantity of wildlife habitat in the TPA.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the TPA. Motorized activities play a large role in the distribution of noxious weeds. The cumulative effects of the spread of noxious weeds from open roads would be greater under Alternative A than all other alternatives. Alternative A would result in more wildlife habitat being lost or degraded due to noxious weed infestations compared to the action alternatives. Alternative B would have fewer open roads

than Alternatives A and D resulting in fewer infestations of noxious weeds. Alternative C would close the most roads and would have the fewest cumulative effects from loss of habitat due to noxious weeds of all alternatives. Open roads adjacent to BLM land would still be a conduit for the spread of noxious weeds.

Fragmentation of BLM lands in the TPA (only 24 percent of the TPA is in BLM ownership) and open roads on BLM lands (about 60.5 miles), on private lands (about 283 miles), and other public lands (about 48 miles) have reduced the quality of wildlife habitat within the TPA. Roads within the TPA cause disturbance to wildlife along with fragmentation and loss of habitat. Roads are associated with nearly every type of activity that has the potential to occur in the TPA including vegetation treatments, timber salvage, mining, access to private lands (ROWs), fire suppression, powerline corridors, and recreation. Open roads in the Planning Area would likely increase due to development and management of private lands. Alternative A would have the greatest negative cumulative effects to wildlife and wildlife habitat from open roads with 60.5 miles of open roads. Alternative B would have fewer negative cumulative effects with 27 miles of open road than Alternatives A and D (38 open miles) but more than Alternative C (23.5 miles).

Alternative A would have the greatest negative cumulative effects from open roads to wildlife and wildlife habitat of all alternatives. Under Alternative A, habitat on BLM lands would not be restored and would continue to be degraded over time. Disturbance to wildlife from open roads would continue to impact the distribution and use of the TPA by wildlife under Alternative A. Alternatives B and C would have greater beneficial cumulative effects to wildlife and wildlife habitats from closing roads than Alternatives A and D.

Historic and recent timber cutting, salvage harvest, past mining activity and firewood gathering in the TPA may have reduced the amount of suitable snag habitat for cavity nesting species as well as down woody material. Alternative A would allow continued access to the area for firewood cutting. This could continue to prevent snag recruitment for snag dependant species and minimize the amount of down woody material. Alternative B would protect more snag and down wood habitat from loss due to firewood cutting than Alternatives A and D but would protect less of this habitat type than Alternative C.

High road densities in both the Decision and Planning Areas have prevented BLM lands from providing suitable security habitat for big game during the hunting seasons under any alternative. Lack of security habitat in this TPA would continue to be an issue with all alternatives although Alternatives B and C would slightly increase the amount of security habitat.

Habitat mapped as core and subcore habitat, and wildlife movement corridors having high road densities would

continue to be of low value to wildlife under Alternative A. An increase in open roads in both the Decision and Planning Areas could result in a loss of core and subcore habitat under all alternatives but, especially, Alternative A. However, the cumulative effects to core and subcore habitat and wildlife movement corridors would be beneficial under the action alternatives, especially Alternatives B and C.

The cumulative effects of high road densities would continue to negatively affect wildlife species during the breeding season more with Alternative A than under the action alternatives. Alternatives B and C would have the most beneficial cumulative effects to wildlife during the breeding season compared to Alternative D and Alternative A.

## FISH

For the sake of this discussion, “open” roads include roads that are open with seasonal restrictions as well as roads that are open yearlong. Roads identified as “closed” within 300 feet of streams also include roads that would be “decommissioned” in these areas by alternative. Effects to water quality described in the Water Resources section would affect fish populations and fish habitat quality. Analyses described and tabulated in the Water Resources section are referred to in the context of effects to fish in the discussion below.

### Effects of Alternative A

Under Alternative A, the Boulder/Jefferson City TPA would have substantially more open roads (60.5 miles) compared to the action alternatives. Generally, watersheds with high road densities often have the largest negative effects on fish and aquatic resources. Roads can have a wide range of effects on fish and fish habitat. These effects would include, but are not limited to, increased sedimentation from road construction and vehicle use, increased runoff, changes in surface water and drainage patterns from stream crossings, conduits for noxious weeds, loss of riparian vegetation, potential decreases in stream shading that could lead to water temperature increases, loss of instream habitats and changes in local fish populations when culverts are impassable and limit fish migration.

Watershed (or hydrologic) function can be used as an indicator of relative risk or impacts to fish habitat. To determine the effects on watershed functions, a moving windows analysis was conducted on BLM lands to look at the miles of roads that would be decommissioned and removed from the landscape for each alternative. During this analysis, it was assumed that even though closing roads would improve watershed function, closed roads would remain on the landscape and could still have negative impacts to water quality and prevent or impede the restoration of riparian vegetation. Under Alternative A, there would be 472 acres with low road density (based on open and closed roads), 2,353 acres with moderate

road density and 11,662 acres with high road density on BLM lands in this TPA (**Table 4-80**). Alternative A would have fewer acres with low road density and more acres with high road density than the action alternatives and this alternative would be expected to have more overall negative effects to watershed function due to roads than the other alternatives.

For this discussion, road miles within 300 feet of fish bearing streams would be considered an indicator of direct effects to fish habitat and fish populations. Under Alternative A, there would be 0 miles of closed road and 2.5 miles of open road within 300 feet of fish bearing streams on BLM lands. Under the action alternatives, there would be 0.5 mile of closed road and 2 miles of open road adjacent to fish bearing streams. Of the 2.5 miles of open roads adjacent to fish bearing streams under Alternative A, 2.1 miles would be adjacent to streams with westslope cutthroat trout (BLM sensitive species). In this context, Alternative A would have more potential long-term negative impacts to westslope cutthroat trout as well as to all fish species compared to the action alternatives.

Perennial non-fish bearing streams contribute to fish habitat indirectly by serving as conduits for watershed products (water, sediment, nutrients, contaminants, and in some cases woody material) to fish bearing streams. Under Alternative A, there would be 0 miles of closed road and 7.7 miles of open road within 300 feet of non-fish bearing streams on BLM lands in the TPA. Under all action alternatives there would be 3.2 miles of closed road and 4.5 miles of open road in these areas. Alternative A would have more miles of open roads adjacent to perennial streams and would have more adverse effects to fish and aquatic habitat than the action alternatives.

This alternative would have the greatest negative impacts to fish and aquatic resources from open roads.

### Effects of Alternative B

Under Alternative B, the Boulder/Jefferson City TPA would have substantially fewer open roads (27 miles) compared to Alternative A (60.5 miles). Alternative B would have more open roads than Alternative C (23.5 open miles) but less than Alternative D (38 open miles). In the context of watershed function, Alternative B would have approximately 863 acres in the low road density category, 2,377 acres in the moderate road density category, and 11,247 acres in the high road density category on BLM lands (**Table 4-80**). This would be 391 more acres in low road density, 24 acres more in moderate road density, and 415 acres less in high road density than Alternative A. These acreages would be the same for Alternatives C and D. This analysis does consider “decommissioned” roads, but does not consider “closed” roads as contributing to watershed function. Even though closed roads could still have adverse effects to aquatic habitats, these roads have more potential to become revegetated and lessen sedimentation and

runoff, and restore riparian vegetation (thus contributing to improved fish habitat conditions) than open roads. Under Alternative B there would be approximately 30 miles of closed roads that would remain open under Alternative A, an additional indication that Alternative B would pose less of an impact to fish habitat than Alternative A. Under Alternative B (and all action alternatives), there would be 0.5 mile of closed road and 2 miles of open road adjacent to fish bearing streams on BLM lands. Of the 2 miles of open roads adjacent to fish bearing streams, 1.6 miles would be adjacent to streams with westslope cutthroat trout (BLM sensitive species). Alternative B would have 0.5 fewer miles of open road adjacent to fish bearing streams including streams with westslope cutthroat trout than Alternative A. This alternative would have fewer direct and indirect long-term negative effects to westslope cutthroat trout as well as other fish species than Alternative A.

Alternative B would also have fewer indirect effects to fish habitat associated with roads within 300 feet of perennial non-fish bearing streams compared to Alternative A. Under Alternative B there would be 3.2 miles of closed road and 4.5 miles of open road within 300 feet of perennial non-fish bearing streams on BLM lands in the TPA. All 7.7 of these road miles would remain open under Alternative A so Alternative B would have fewer impacts to fish and aquatic habitat than Alternative A from these roads.

This alternative would have fewer negative effects to fish (including special status species) and aquatic resources from open roads than Alternative A.

### Effects of Alternative C

Under Alternative C, the Boulder/Jefferson City TPA would have substantially fewer open roads (23.5 miles) compared to Alternative A (60.5 miles) and Alternative D (38 miles). Alternative C also would have fewer miles of open roads than Alternative B (27.3 open miles).

In the context of watershed function, Alternative C would have the same acreages in the low, moderate and high road density categories on BLM lands as Alternative B (Table 4-80). This analysis does consider “decommissioned” roads, but does not consider “closed” roads as contributing to watershed function. Even though closed roads could still have adverse effects to aquatic habitats, these roads have more potential to become revegetated and lessen sedimentation and runoff, and restore riparian vegetation (thus contributing to improved fish habitat conditions) than open roads. Under Alternative C there would be approximately 34 miles of closed roads that would remain open under Alternative A, and approximately 4 more miles of closed road than under Alternative B. Alternative C **could have** slightly less impact to fish habitat than Alternative B, and would provide the greatest improvement to watershed function of all the alternatives. Effects associated with roads within 300 feet of fish bearing streams on BLM lands

under Alternative C would be the same as under Alternative B. Effects associated with roads within 300 feet of perennial non-fish bearing streams on BLM lands would be the same under Alternative C as under Alternative B. Alternative C would provide the greatest benefit to fish and aquatic habitats of all alternatives, having slightly greater benefits than Alternative B.

### Effects of Alternative D

Under Alternative D, the Boulder/Jefferson City TPA would have substantially fewer open roads (38 miles) compared to Alternative A (60.5 miles). Alternative D, however, would have considerably more open road than Alternative B (27 open miles) and Alternative C (23.5 open miles).

In the context of watershed function, Alternative D would have the same acreages in the low, moderate and high road density categories on BLM lands as Alternatives B and C (Table 4-80). This analysis does consider “decommissioned” roads, but does not consider “closed” roads as contributing to watershed function. Even though closed roads could still have adverse effects to aquatic habitats, these roads have more potential to become revegetated and lessen sedimentation and runoff, and restore riparian vegetation (thus contributing to improved fish habitat conditions) than open roads. Under Alternative D there would be approximately 21 miles of closed roads that would remain open under Alternative A.

All action alternatives would have more acres with low road density (863) (based on open and closed roads), slightly more acres with moderate road density (2,377) and fewer acres with high road density (11,247) than Alternative A. The action alternatives would be expected to have fewer overall negative effects to watershed function due to roads than Alternative A. Because Alternative D would close fewer roads, this alternative would be expected to have more negative watershed effects than Alternatives B and C. Alternative D would have more negative effects from roads on overall watershed function than Alternatives B and C but less than Alternative A.

Effects associated with roads within 300 feet of fish bearing streams on BLM lands under Alternative D would be the same as under Alternatives B and C. Alternative D would have more indirect effects to fish habitat associated with roads within 300 feet of perennial non-fish bearing streams on BLM lands than Alternatives B and C, but less than Alternative A. Under Alternative D, there would be 2.4 miles of closed road and 5.3 miles of open road in these areas.

This alternative would have more negative direct and indirect effects to fish and aquatic habitats and overall watershed function from open roads than Alternatives B and C. Alternative D would provide more benefits to fish and aquatic habitats than Alternative A.

## Cumulative Effects on Fish

The Boulder/Jefferson City TPA supports a variety of native and introduced fish species. One of the major human influences to fish in the TPA has been the introduction of non-native trout species including rainbow trout, brook trout, and brown trout throughout the TPA and also Yellowstone cutthroat trout into Cataract Creek. Rainbow trout have hybridized with the native westslope cutthroat trout in many streams, and brook trout and brown trout have displaced the native cutthroats in other streams, especially those altered by sedimentation and increased water temperatures brought on by human activities.

Human population growth for the upper Boulder Valley is approximately 2 percent per year. This rate of growth is expected to continue, along with increased recreational use from local residents and area users (residents of Helena and Butte). Recreational activities in the Boulder/Jefferson City TPA include hunting, motorized OHV travel (motorcycles, ATVs, snowmobiles), and to a lesser extent, non-motorized uses (hiking, horseback riding, and mountain biking).

Development and urbanization can have substantial impacts to fish habitat and may pose the greatest threats to watershed function.

Agricultural activities from farming and ranching also contribute increases in nutrients, sedimentation and cause loss of aquatic habitats. Many streams in the TPA have been impacted by historic and on-going livestock grazing that breaks down streambanks, widens channels, removes vegetative cover, and causes an increase in fine sediment and nutrients.

The Boulder/Jefferson City TPA is within an area that was heavily impacted by historic mining and numerous drainages have been degraded by historic mining activities. See the Cumulative Effects discussion in the Water Resources section for a description of streams impacted by heavy metal contamination related to historic mining. There are five large mines which are no longer active and have had some level of reclamation by either the BLM or the State of Montana. These activities should gradually improve water quality and allow further recovery of fish populations, but full restoration could take decades to achieve. Montana Tunnels is the only active mine and continues to produce lead and zinc with associated gold and silver from an open pit. The mine is located near Jefferson City, and is approximately 1,500 acres in size (including 130 acres of BLM land). It is expected that exploration for minerals would continue in the future. Montana Tunnels is currently planning an expansion of the mine which would remove or degrade approximately 0.5 mile of Clancy Creek, a westslope cutthroat trout stream. Expansion of Montana Tunnels would create a barrier to westslope cutthroat trout in Clancy Creek as well as result in the loss of aquatic habitat.

Fires, floods, and drought have historically affected fish habitat in the TPA. These disturbances can cause a pulse of sediment or may temporarily reduce the quality of fish habitat in some watersheds while leaving other streams largely unaffected. Natural disturbances are typically followed by periods of stability during which fish habitats and populations recover. Population recovery in disturbed streams may be facilitated by fish immigration from nearby drainages less affected by the catastrophic event. In 2000, the Boulder Fire burned approximately 10,800 acres of the entire TPA and approximately 4,670 acres in the Decision Area. The fire did cause runoff and sedimentation as well as the loss of riparian vegetation to some streams.

After the 2000 Boulder Fire, approximately 560 acres of timber salvage occurred on BLM lands and a substantial amount of acres on private lands were also heavily salvaged. This may have had substantial negative effects on riparian and aquatic habitats in the TPA. Additional timber harvest or vegetation restoration may occur on BLM lands in the future, especially within meadows that were not burned and are experiencing conifer encroachment. Vegetative treatments would be expected to be less under Alternatives A and C than Alternatives B and D.

Timber harvest can alter the recruitment of large woody debris, reduce canopy closures, and result in an increase in fine sediment to streams. Timber harvest along with associated roads can contribute substantially to the overall cumulative effects in forested watersheds. Between 1984 and 1995 only 260 acres of timber harvest occurred on BLM lands in the TPA although more occurred on adjacent private lands.

Roads are another major contributor of sediment to streams and a major problem with regards to cumulative watershed effects. Roads and trails can have localized effects on nearby stream segments or at stream crossing sites, especially fords. In some cases, effects are more extensive and may impair fish habitat for longer reaches of streams. Cumulatively, roads degrade aquatic habitat due to sedimentation from road construction and vehicle use, increased runoff, changes in surface water and drainage patterns from stream crossings, loss of riparian vegetation, loss of large woody material and roads can cause changes in local fish populations when culverts are impassable and limit fish migration. Alternative A would have more negative cumulative effects to watersheds and individual streams due to roads than the action alternatives. Alternative B would have fewer negative cumulative effects than Alternatives A and D but more than Alternative C. Alternative B would improve overall watershed functions as well as improve habitat in individual streams more than Alternatives A and D but less than C. Alternative C would have the greatest beneficial cumulative effects.

## SPECIAL STATUS PLANTS

### Effects Common to All Alternatives

Ground-disturbing activities from road construction and maintenance, as well as road use by vehicles can affect special status plant populations and habitat. These activities can reduce sensitive plant species through disturbance to individual populations, increasing competition from invasive species, and reducing habitat connectivity. Closure of roads and trails can improve or maintain sensitive plant populations or habitat by reducing avenues of noxious weed spread, maintaining habitat connectivity, and improving pollinator habitat. Road and trail restrictions have the same effects but to a lesser degree.

### Effects of the Alternatives

Under Alternative A, 60.5 miles of BLM roads and trails would remain open. The effects of these open routes would continue as described above in the Effects Common to All Alternatives section.

Under Alternative B, 3.7 miles of BLM roads and trails would remain open, 25.1 miles of roads and trails would be open with seasonal restrictions, 29.0 miles of roads and trails would be closed, and 2.7 miles of roads would be decommissioned. On the closed and decommissioned routes, vectors of noxious weed spread would be reduced and habitat connectivity and health would be improved for sensitive plants and their pollinators. The restricted roads would reduce weed spread a limited amount. Alternative B would benefit and reduce risk to special status plants compared to Alternative A.

Under Alternative C, 3.0 miles of BLM roads and trails would remain open, 20.5 miles of roads and trails would be open with seasonal restrictions, 34.2 miles of roads and trails would be closed, and 2.7 miles of roads would be decommissioned. On the closed and decommissioned routes, vectors of noxious weed spread would be reduced and habitat connectivity and health would be improved for sensitive plants and their pollinators. The restricted roads would reduce weed spread a limited amount. Alternative C would benefit and reduce risk to special status plants more than any other alternative because it would eliminate disturbance, vehicular use, and spread of noxious weeds on the most road miles.

Under Alternative D, 5.3 miles of BLM roads and trails would remain open, 32.8 miles of roads and trails would be open with seasonal restrictions, 20.6 miles of roads and trails would be closed, and 2.7 miles of roads would be decommissioned. On the open roads, effects would continue as described in the Effects Common to All Alternatives section above. On the closed and decommissioned routes, vectors of noxious weed spread would be reduced and habitat connectivity and health would be improved for sensitive plants and their pollinators. The restricted roads would reduce weed spread a limited amount. Alternative D would benefit and reduce risk to

special status plants more than Alternative A, but would pose more risk than Alternatives B and C.

### Cumulative Effects on Special Status Plants

Under all alternatives there are a number of past, present, and reasonably foreseeable future actions that affect special status plant populations.

Livestock grazing will continue in the area and has the potential to impact sensitive plant populations and habitat. On public lands, ongoing rangeland health assessments and implementation of livestock grazing guidelines would continue to improve or maintain sensitive species populations and habitat. On private lands, livestock grazing is expected to decline slowly as more ranch and farmland is subdivided. Conditions may improve or degrade as management changes.

Noxious weed control will continue on both public and private lands with varying degrees of success. To the extent that these efforts are successful, sensitive plants would benefit from the reduced competition. Use of herbicides for noxious weed control could cause mortality to special status plants if individual plants are inadvertently sprayed.

Recent and anticipated subdivision growth on private lands will lead to more road construction and maintenance. More roads and development will reduce sensitive plant species habitat and in some cases individual populations. Additionally, subdivisions have the potential to disrupt the connectivity of plant habitat and populations as well as disturbing or eliminating pollinators needed by sensitive species. Some sensitive species that require soil disturbance may benefit.

Timber sale activity disturbance can destroy or degrade sensitive plant habitat. On public lands, projects would be designed to avoid, mitigate, or enhance sensitive plant habitats. The disturbance associated with timber harvest activities does have the potential to increase noxious weed spread which degrades sensitive species habitat and individual plant populations.

The Boulder complex fires of 2000 burned parts of the High Ore, Boomerang, Spring Creek, and Amazon watersheds. The burn encouraged noxious and invasive weed spread in some areas. On the other hand, potential habitat for special status plants that was being overtopped by conifers was opened up and improved by the fire.

At the scale of the entire Boulder/Jefferson City TPA (all land ownerships), the BLM travel plan alternatives would have slightly variable contributions to cumulative effects on special status plants. Under Alternative A none of the roads in the TPA would be closed. Under Alternative B adverse effects on special status plants would be slightly reduced compared to Alternative A because 8.5 percent of all roads in the TPA would be

closed or decommissioned. Alternative C would provide the most benefits of all alternatives as 9.4 percent of all roads in the TPA would be closed or decommissioned. Alternative D would provide slightly more benefits than Alternative A but slightly fewer benefits than either Alternatives B or C as 5.9 percent of all roads in the TPA would be closed or decommissioned. Because BLM lands make up only 24 percent of all lands in the TPA, activities on non-BLM lands would play a dominant role in determining status of special status plants.

## WILDLAND FIRE MANAGEMENT

Travel planning alternatives were analyzed to determine whether they could result in impact on wildland fire management, causing change to any of the following indicators:

- Fire regime condition class (FRCC)
- Firefighter and public safety
- Reducing threat to Wildland Urban Interface (WUI)

### Effects Common to All Alternatives

Public road access during the fire season provides opportunities for human-caused fires either due to catalytic converters on vehicles igniting dry vegetation, or due to some types of human activities. Roads that are closed to public access reduce the risk of human-caused fire starts in those areas.

Decommissioned roads and roads that are closed and not regularly maintained for navigability reduce access for fire suppression. Closed roads may become impassible due to vegetation regrowth, downfall of trees, or severe erosion. Some roads may be closed with earthen berms or fallen trees and would need to be physically manipulated to make them useable for vehicles again. These roads would extend firefighting response time and have negative impacts on efforts to reduce wildland fire threat to WUI areas and firefighter and public safety. In an emergency fire suppression situation, any navigable closed roads needed for fire suppression would be used immediately. Non-navigable closed roads could also be used if deemed to be needed for fire suppression, after needed improvements are made to make those roads useable. Planning and implementation of fuels reduction treatments could occur in association with closed roads if variances for temporary road use were to be allowed. Variances would be subject to internal BLM review.

In the context of fuels reduction projects, availability of open roads is important to facilitating fuels project location as well as increasing project feasibility and decreasing costs. Open roads also facilitate spread of noxious weeds by transporting weed seed on vehicles and their tires. Presence of large noxious weed populations could delay or cause fuels projects to be cost-prohibitive due to the fact that the weeds may have to be treated before and/or after the fuels treatment. Also, some applications

of fuel treatments (e.g., prescribed fire) may promote the spread of some weeds. The presence of weeds and non-native species are indicators that FRCC has departed from historical conditions.

Noxious weeds and non-native invasive species are well established and spreading in the Boulder/Jefferson City TPA.

### Effects of Alternative A

Under Alternative A, all BLM managed routes in the Boulder-Jefferson City travel planning area would continue to be managed as open yearlong (60.5 miles). Alternative A would allow for the greatest flexibility between alternatives for access for suppression purposes. Fuels project feasibility would be highest under this alternative. However, public access during the fire season would be the greatest under this alternative and would provide the most opportunities for human-caused fire starts.

The distribution of noxious weeds could be the greatest under Alternative A with the most open roads and noxious weeds already well established. This would contribute to reduced feasibility of fuels reduction projects more than under any other alternative.

### Effects of Alternative B

Alternative B provides a more balanced approach towards travel management and should help reduce user conflicts. Under Alternative B, 27.3 miles of routes (3.7 miles open yearlong, 23.6 miles seasonally restricted) would be available for wheeled motorized use. Alternative B would limit the flexibility for access for suppression purposes, and fuels project feasibility would go down compared to Alternative A due to the fact that access would be limited to 27.3 miles of road. Of the 33.2 miles of closed roads, 2.7 miles would be decommissioned and would likely be unusable for fire suppression. The risk of human-caused fires associated with motorized use would be limited compared to Alternative A, due to a 55 percent decrease in miles of road open to motorized public travel.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the area. Because more roads would be closed under this alternative, Alternative B should help reduce the spread of noxious weeds and may make fuels treatment more feasible than under Alternative A, reducing FRCC departure.

### Effects of Alternative C

Alternative C would provide the least amount of motorized wheeled access among the action alternatives. Under Alternative C, 23.5 miles of routes would be available for wheeled motorized use (3.0 miles open yearlong, 20.5 miles seasonally restricted).

Alternative C would limit the flexibility for access for suppression purposes, and fuels project feasibility would

go down compared to both Alternatives A and B, due to the fact that access would be limited to 23.5 miles of road. Of the 37 miles of closed roads, 2.7 miles would be decommissioned and would likely be unusable for fire suppression. The risk of human-caused fires associated with motorized use would be the lowest of all alternatives, due to a 61 percent decrease in miles of road open to motorized public travel compared to Alternative A. Noxious weeds and non-native invasive species are well established and spreading rapidly in the area. Because more roads would be closed than under any other alternative, Alternative C should help reduce the spread of noxious weeds more than any other alternative, and may make fuels treatment more feasible, reducing FRCC departure.

### Effects of Alternative D

Under alternative D, 5.3 miles of open routes would be available yearlong for wheeled motorized use and an additional 32.8 miles would be seasonally restricted routes. Of the 22.4 miles of closed roads, 2.7 miles would be decommissioned and would likely be unusable for fire suppression. Alternative D would be more flexible than Alternatives B and C, but would limit flexibility for access for suppression purposes, and fuels project feasibility would go down compared to Alternative A. The risk of human-caused fires associated with motorized vehicle use would be reduced compared to Alternative A, but would be greater than under Alternatives B and C, due to a 37 percent decrease in open roads compared to Alternative A.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the area. Because an intermediate number of road miles would be closed under this alternative, Alternative D should help reduce the spread of noxious weeds and may make fuels treatments more feasible than Alternative A, but would promote more weed spread and potentially make projects less feasible than Alternatives B and C.

### Cumulative Effects on Wildland Fire Management

Effects on wildland fire management associated with any of the BLM travel plan alternatives would be overshadowed by reasonably foreseeable uncharacteristic fire, continued fire suppression made necessary by WUI and intermingled landownership, and large-scale forest insect infestations and disease outbreaks that would continue for the planning period. BLM lands make up about 24 percent of all lands while BLM roads make up about 15.4 percent of all roads in the Boulder/Jefferson City TPA.

Revision of the Helena and Beaverhead-Deerlodge National Forest Plans could result in more or less treatment of adjacent areas. Because no decision has been made, the effects are not known. Wildland fire management, particularly where wildland fire use (management of

naturally ignited wildland fires to achieve resource objectives) may occur on USFS lands, will be determined in the plan decision. BLM would need to coordinate with USFS on all wildland fire use actions and events. Wildland fire use on USFS lands could affect FRCC on BLM lands. USFS lands make up 23 percent of all lands in the Boulder/Jefferson City TPA so activities there would likely have a similar degree of influence on future fire characteristics as activities on BLM lands (24 percent of all lands in TPA).

Decisions to increase the level of wildland fire use, prescribed fire, or open burning by the public could impact the BLM's ability to use wildland fire and prescribed fire due to air quality concerns and requirements. This could postpone or eliminate BLM fuel reductions or treatments to improve FRCC.

Access is a critical component of wildland fire suppression. In some cases, access to public lands is being reduced by adjacent landowners gating or closing roads, which could hamper wildland fire suppression efforts and pose a risk to public and firefighter safety. Reducing access would also increase the potential for larger fires to occur due to an increase in time needed to access a fire and control it. Time needed to move in crews would be extended, and the ability to effectively apply and place resources (e.g., engines, water tenders, etc.) would be limited.

Effects on wildland fire management, including FRCC and firefighter and public safety due to management accomplished by other landowners may affect wildland fire management on public lands. When activity fuels (such as logging slash) are not treated adequately, fuel hazard could increase on adjacent lands which could affect fire intensity and severity on public lands. When adjacent owners treat fuels or implement fire mitigation plans in the WUI, fires are easier to suppress and firefighter safety is increased. In the Boulder/Jefferson City TPA, activities on private lands (53 percent of all lands in TPA) would have more influence on future fire characteristics in the area overall than activities on BLM lands (24 percent of all lands in TPA).

Human population increases and subsequent residential development are likely to expand the WUI and could alter forest management, taking the emphasis off restoring historic composition and structure and focusing more on fuel reduction.

## CULTURAL AND PALEONTOLOGICAL RESOURCES

### Effects Common to All Alternatives

Alternative-specific risks or impacts to cultural and paleontological resources are difficult to discern due to a lack of extensive site-specific knowledge about the presence of these resources in a given TPA. By designating open routes, limiting open-country travel, and closing

some routes, inadvertent discovery of cultural and paleontological resources and vandalism to them is reduced. Higher road densities in a given area would allow greater access to more land on the average, but that does not imply greater amounts of vandalism, since the vehicles would remain on designated routes.

## VISUAL RESOURCES

### Effects Common to All Alternatives

Roads (temporary or permanent) may affect visual quality. Roads that remain open for public use may impact visual qualities where noticeable. The quantity of open roads would also influence sensitivity levels since with more open roads, more areas would generally be viewed by more members of the public. Closing or decommissioning roads would generally reduce effects to visual resources and reduce sensitivity levels because fewer members of the public would generally be accessing and viewing areas with closed roads.

### Effects of the Alternatives

Under Alternative A, all 60.5 miles of BLM road would remain open, thereby providing for the greatest level of impact to visual resources of all alternatives.

Under Alternative B, there would be 28.8 miles of open road (including open with seasonal restrictions), 29.0 miles of closed road, and 2.7 miles of decommissioned road. Road closures and decommissioning under this alternative would reduce effects on visual resources compared to Alternative A.

Under Alternative C there would be 23.5 miles of open road, 34.2 miles of closed road, and 2.7 miles of decommissioned road. Alternative C would have fewer adverse effects and would improve visual resources the most of all alternatives.

Under Alternative D, there would be 38.1 miles of open road, 20.6 miles of closed road, and 2.7 miles of decommissioned road. Alternative D would improve visual resources compared to Alternative A, but would have more adverse effects than Alternatives B and C.

### Cumulative Effects on Visual Resources

Under all alternatives, most activities on BLM lands would generally not adversely affect visual resources to unacceptable degrees because discretionary activities on BLM lands would be required to meet Visual Resource Management objectives within individual project areas.

As the entire Boulder/Jefferson City TPA is highly mineralized and has seen extensive mining activity in the past, this activity is likely to continue for the foreseeable future. Mining activity often has visually intrusive effects on the landscape. On BLM lands, the Montana Tunnels Mine near Jefferson City has adversely affected visual resources and will continue to do so for the foreseeable future. The permitted area for this mine is ap-

proximately 1,500 acres with 130 of those acres on BLM lands, but intrusive modification of the landscape has only occurred on a subset of these acres.

Activities on non-BLM lands, particularly activities near BLM lands associated with residential development, urbanization, additional mining, or vegetation management, could have adverse cumulative effects on visual resources on BLM lands because BLM VRM objectives would obviously not apply to non-BLM activities.

## LIVESTOCK GRAZING

### Effects Common to All Alternatives

Roads and trails can potentially affect livestock grazing management. Roads and trails often act as avenues of noxious weed spread. Noxious and invasive weeds can reduce the quantity and quality of forage. Users of roads and trails can cause management problems for livestock permittees when they leave gates open at fences, vandalize range improvements, or harass livestock, either purposely or unintentionally.

Closure of roads and trails can improve or maintain the forage base by reducing vectors of noxious weed spread. Additionally, road and trail closures can reduce management conflicts. On the other hand, closures may increase permittees' time requirements if and when work has to be conducted with horses or afoot. Permittees could minimize effects of closed roads on grazing management time by seeking variances from the BLM for temporary use of specific closed roads.

### Effects of the Alternatives

Under Alternative A, 60.5 miles of roads and trails would remain open. The effects would continue as described above.

All action alternatives would close or decommission more roads and trails than Alternative A. As more roads and trails are closed, noxious and invasive weed spread along with multiple user conflicts would be reduced. On the other hand, permittee management time may increase. Consequently, more effects as described under the Effects Common to All Alternatives section would occur under Alternative C (23.5 miles open during grazing season, 36.9 miles closed or decommissioned) than under any other alternative. Alternative B (28.8 miles open during grazing season, 31.7 miles closed or decommissioned) would produce fewer effects than Alternative C, but more than Alternative A or Alternative D (38.1 miles open during grazing season, 23.3 miles closed or decommissioned). Alternative D would have fewer effects than Alternatives B or C, but more than Alternative A.

## Cumulative Effects on Livestock Grazing

Livestock grazing will continue in the area and has the potential to impact forage quality and quantity. On public lands, ongoing rangeland health assessments and implementation of livestock grazing guidelines would continue to improve or maintain forage quality and quantity. On private lands, livestock grazing is expected to decline slowly as more ranch and farmland is subdivided.

Noxious weed control will continue on both public and private lands with varying degrees of success. To the extent that these efforts are successful, forage conditions would benefit.

The Boulder complex fires of 2000 burned parts of the High Ore, Boomerang, Spring Creek, and Amazon watersheds. The burn encouraged noxious and invasive weed spread in some areas. On the other hand, many grasslands were improved with the reduction of conifers. Forage production (for livestock and wildlife) increased substantially.

Because BLM lands make up only 24 percent of all lands in the Boulder/Jefferson City TPA, all of the BLM travel plan alternatives would have a minor contribution to cumulative effects on livestock grazing at the scale of the entire TPA.

## MINERALS

### Effects Common to All Alternatives

Road closures and decommissioning could affect access to locatable minerals in areas of moderate or high mineral potential. Operators would be required to seek travel variances from the BLM to use motor vehicles to conduct mineral exploration on closed roads, or to conduct exploration on seasonally restricted routes during the season of closure. Decommissioned roads could not be used for motorized exploration. Travel management provisions that require a permit or variance could result in reducing access to mining claims or interfere with the ability to conduct exploration work for some operators. Historic knowledge of mineralized areas associated with “closed” roads may be lost after long periods of time if no exploration occurs there. Additional costs and time could be required for exploration and development of mining projects associated with closed or decommissioned roads. Impacts of road closures or decommissioning in areas with low mineral potential would not be substantial to mineral development.

### Effects of the Alternatives

All of the roads in the Boulder/Jefferson City TPA are located in areas rated as having high mineral potential by the Montana Bureau of Mines and Geology.

Effects of the alternatives for the Boulder/Jefferson City TPA on access to mineralized areas are summarized in

**Table 4-84.** Alternative A for the Boulder/Jefferson City TPA would not impact roads in mineralized areas as all roads would remain open yearlong under this alternative.

<b>Table 4-84 Analysis of Access to Mineral Potential Areas Boulder/Jefferson City TPA</b>				
<b>Mineral Potential</b>	<b>Open Miles (%)</b>	<b>Seasonally Restricted Miles (%)</b>	<b>Closed Miles (%)</b>	<b>Decom Miles (%)</b>
<b>Alternative A</b>				
High	60.5 (100%)	0.0 (0%)	0.0 (0%)	0.0 (0%)
Moderate	0.0 (0%)	0.0 (0%)	0.0 (0%)	0.0 (0%)
Low	0.0 (0%)	0.0 (0%)	0.0 (0%)	0.0 (0%)
Total Miles = 60.5				
<b>Alternative B</b>				
High	3.7 (6%)	25.1 (41%)	29.0 (48%)	2.7 (5%)
Moderate	0.0 (0%)	0.0 (0%)	0.0 (0%)	0.0 (0%)
Low to none	0.0 (0%)	0.0 (0%)	0.0 (0%)	0.0 (0%)
Total Miles = 60.5				
<b>Alternative C</b>				
High	3.0 (5%)	20.5 (34%)	34.2 (56%)	2.7 (5%)
Moderate	0.0 (0%)	0.0 (0%)	0.0 (0%)	0.0 (0%)
Low to none	0.0 (0%)	0.0 (0%)	0.0 (0%)	0.0 (0%)
Total Miles = 60.5				
<b>Alternative D</b>				
High	5.3 (9%)	31.8 (53%)	20.6 (34%)	2.7 (4%)
Moderate	0.0 (0%)	0.0 (0%)	0.0 (0%)	0.0 (0%)
Low to none	0.0 (0%)	0.0 (0%)	0.0 (0%)	0.0 (0%)
Total Miles = 60.5				
Mineral Potential areas have been delineated by the Montana Bureau of Mines and Geology (MBMG)				

Alternative B would seasonally restrict access to 39 percent of these roads, close 50 percent of them, and decommission an additional 5 percent (**Table 4-84**). Alternative B would have more impacts than Alternative A.

Alternative C would seasonally restrict access to 34 percent of these roads, close 56 percent of them, and decommission an additional 5 percent (**Table 4-84**). Alternative C would have the most potential to affect access to mineralized areas than any of the other alternatives.

Alternative D would seasonally restrict access to 53 percent of these roads, close 34 percent of them, and de-

commission an additional 4 percent (**Table 4-84**). Alternative D would have more impacts than Alternative A, but less than Alternatives B and C.

## Cumulative Effects on Access to Mineralized Areas

No other past, present, or reasonably foreseeable future actions in the Boulder/Jefferson City TPA would adversely affect mineral availability or access.

## RECREATION

Effects of travel plan alternatives on Recreation in the Boulder/Jefferson City TPA are described qualitatively below.

### Effects of Alternative A

Under Alternative A, all BLM managed routes in the Boulder-Jefferson City travel planning area would continue to be managed as open yearlong (60.5 miles). No non-motorized routes or trails would be available under this alternative. Snowmobile use would continue to be managed as open to area-wide cross country travel as well as travel on all existing routes (during the season of use, 12/2-5/15, conditions permitting).

### Effects of Alternative B

Alternative B would provide a more balanced approach towards travel management, and should help reduce user conflicts compared to Alternative A. Under Alternative B, 28.8 miles of routes (3.7 miles open yearlong, 25.1 miles seasonally restricted) would be available for wheeled motorized use.

Area-wide cross-country snowmobile use would be allowed, as well as travel on all existing routes during the season of use, 12/2-5/15, conditions permitting. Conflicts between cross-country skiers, snowshoers, and snowmobilers would be expected to continue or increase as a result.

### Effects of Alternative C

Alternative C would provide the least amount of motorized wheeled access among the action alternatives. Under Alternative C, 23.5 miles of routes would be available for wheeled motorized use (3.0 open yearlong, 20.5 miles seasonally restricted). Closure and decommissioning of routes in the southwest corner of the TPA would help create a non-motorized use area. Snowmobile use would be restricted to designated routes only, during the season of use (12/2-5/15), snow conditions permitting; reducing conflicts between motorized and non-motorized winter users.

### Effects of Alternative D

Alternative D would provide the highest level of motorized wheeled access among the action alternatives. Under Alternative D, 38.1 miles of routes would be availa-

ble for wheeled motorized use (5.3 open yearlong, 20.5 miles seasonally restricted). Area wide cross-country snowmobile use would continue to be allowed, as well as travel on all existing routes during the season of use (12/2-5/15), snow conditions permitting.

## Cumulative Effects on Recreation

This area presents management challenges given the fragmented BLM ownership pattern and the lack legal access roads. Many of the currently open roads result from historic mining activities and are dead-end segments that do not provide loop riding opportunities. Alternative A would provide the greatest opportunities for motorized recreation given the miles of routes available to wheeled vehicles and that the entire area would remain open to snowmobile use during the winter season. Conflicts between motorized and non-motorized users especially during the hunting season would continue.

Alternative B would reduce wheeled motorized riding opportunities on BLM lands by about 55 percent while snowmobile uses would continue unaffected. These additional travel plan restrictions would help reduce recreation use conflicts and should improve non-motorized opportunities for hunting, horseback riding, mountain biking and hiking. Many of the roads proposed for closure under this alternative are primitive, not maintained, have no legal access through private lands, and are duplicative of other roads left open. Increased trends in resource uses such as greater mining activities and vegetative treatments would increase impacts on the natural qualities of the Recreation Opportunity Spectrum settings which are primarily roaded natural and roaded modified.

Alternative C would promote non-motorized opportunities to the greatest extent of all alternatives given the added road closures from travel management, Recreation Opportunity Spectrum settings, and mineral related stipulations. Big-game hunting opportunities for non-motorized users could be enhanced as conditions would be more favorable for elk retention on public lands.

Alternative D would provide the highest level of motorized wheeled access among the action alternatives. Potential for conflicts between motorized and non-motorized users especially during the hunting season would be higher than under Alternatives B and C.

## TRAVEL MANAGEMENT AND ACCESS

### Effects of Alternative A

Under Alternative A all BLM roads in the Boulder-Jefferson City TPA would continue to be managed as open yearlong (60.5 miles) (**Table 4-85**). This is about 90 percent more routes open yearlong than under the action alternatives and 37 percent more routes open to motorized use when considering both open routes and routes with seasonally restricted access. Non-motorized

trails are not available, which would result in fewer recreation opportunities for non-motorized users.

Snowmobile use would continue to be managed as open to area-wide cross country use as well as use on all existing routes (during the season of use, 12/2-5/15, conditions permitting); providing the greatest opportunity for motorized winter use while providing the fewest opportunities for non-motorized winter recreation of all alternatives.

The extent of management activities and costs under Alternative A would be mixed. Less personnel time would be required to monitor travel compliance than under the action alternatives. However, more effort would be required for initial implementation (signing designated routes, installing bulletin boards) than under the action alternatives. Estimated costs for road/trail maintenance would be highest of all alternatives.

The need for the BLM and members of the public to obtain travel variances for temporary specific uses of specific closed roads would be minimal under this alternative, given the availability of motorized access.

### Effects of Alternative B

Less than half the wheeled motorized routes would be open yearlong or seasonally restricted than are currently available in the Boulder-Jefferson City TPA (Table 4-85). With 31.7 miles of non-motorized trails, Alternative B would provide more opportunities for non-motorized users than Alternative A. The majority of open routes under Alternative B would be seasonally restricted with a 12/2-5/15 closure.

Table 4-85 Boulder-Jefferson City TPA Route Management Summary				
Proposed Management	Total Miles			
	Alt A	Alt B	Alt C	Alt D
<b>Wheeled motorized routes</b>				
Open Yearlong	60.5	3.7	3.0	5.3
Seasonally Restricted	0	25.1	20.5	32.8
Closed	0	29.0	34.2	20.6
Decommissioned	0	2.7	2.7	2.7
Non-motorized trails <sup>1</sup>	0	31.7	36.9	2.4

<sup>1</sup> Non-motorized trails include all existing trails, closed roads, and decommissioned roads.

Area-wide cross-country snowmobile use, as well as travel on all existing routes during the season of use (12/2-5/15), conditions permitting would continue to be allowed in all the action alternatives. Conflicts between non-motorized users (cross-country skiers, snowshoers) and snowmobilers would be expected to continue or increase as a result.

The extent of management activities and costs under Alternative B would be mixed. Less personnel time would be required for initial implementation (signing designated routes, installing bulletin boards) than under Alternative A. However, more effort would be required for public education and compliance than under Alternative A. Estimated costs for road/trail maintenance would be less than under Alternative A.

The need for the BLM and members of the public to obtain travel variances for temporary specific uses of specific closed roads would increase under Alternative B compared to Alternative A.

### Effects of Alternative C

Alternative C would have the least number of wheeled motorized routes open yearlong or seasonally restricted of all alternatives in the Boulder-Jefferson City TPA (Table 4-85) which would result in fewer opportunities for motorized users. Alternative C would have 61 percent fewer motorized miles than Alternative A, and 18 percent fewer miles than Alternative B.

Snowmobile use would be restricted to designated routes only, during the season of use (12/2-5/15), snow conditions permitting. This would likely reduce conflicts with non-motorized winter users (cross-country skiing, snowshoeing).

Closure and decommissioning of routes in the southwest corner of the Boulder-Jefferson City TPA would result in an increase in non-motorized opportunities under Alternative C. Alternative C would have 12 percent more miles of non-motorized trails than Alternative B. No non-motorized trails would exist under Alternative A.

The extent of management activities and costs under Alternative C would be mixed. Less personnel time would be required for initial implementation (signing designated routes, installing bulletin boards) than under any other alternative. However, more effort would be required for public education and compliance than under the other alternatives. Estimated costs for road/trail maintenance would be the lowest of the alternatives.

The need for the BLM and members of the public to obtain travel variances for temporary specific uses of specific closed roads would be the greatest under Alternative C of all the alternatives.

### Effects of Alternative D

Alternative D would provide the highest level of motorized access of the action alternatives with 38.1 miles of open and seasonally restricted routes (Table 4-85). This would be 61 percent less than under Alternative A, but 24 and 38 percent more than under Alternatives B and C, respectively. Opportunities for motorized users in the Boulder-Jefferson City TPA would be greater under Alternative D than under Alternatives B and C, but less than under Alternative A.

Area-wide cross-country snowmobile use would continue to be allowed, as well as travel on all existing routes during the season of use (12/2-5/15) conditions permitting.

The extent of management activities and costs under Alternative D would be mixed. Less personnel time would be required to monitor travel compliance than under Alternatives B and D, but more would be needed than under Alternative A. However, more effort would be required for initial implementation (signing designated routes, installing bulletin boards) than under Alternatives B and D, but less effort would be needed than under Alternative A. Estimated costs for road/trail maintenance would be higher than under the other action alternatives, but less than under Alternative A.

The need for the BLM and members of the public to obtain travel variances for temporary specific uses of specific closed roads would be greater under Alternative D than under Alternative A, but less than under Alternatives B and C.

## Cumulative Effects on Travel Management and Access

Under all alternatives, there are a number of past, present, and reasonably foreseeable future BLM and non-BLM actions that could affect travel management and access in the Boulder/Jefferson City TPA.

The Boulder-Jefferson City TPA is located adjacent to the upper Boulder Valley. Human population growth for the upper Boulder Valley (Boulder town statistics) is approximately 2 percent per year. This rate of growth is expected to continue, along with increased recreational use from local residents as well as area users (residents of Helena, Townsend, Butte, etc.).

The small towns of Boulder (population 1,436) and Jefferson City (population 295) are located adjacent to the TPA. Although the rate of growth is low, increased urbanization and recreational use could lead to increased social conflict; between area residents and recreation users, and among recreational users themselves (motorized/non-motorized). These factors could lead to increased public demands to alter travel management to accommodate more, or less motorized use.

Recreational activities for this TPA include big game hunting, motorized OHV travel (motorcycles, ATVs, snowmobiles), and to a lesser extent, non-motorized uses (hiking, horseback riding, and mountain biking). Conflicts between non-motorized and motorized users could lead to increased public demands for either more, or less motorized use.

The TPA mainly provides habitat for big game. The entire area is considered winter range for elk while the lower elevations along the eastern half of the travel plan are winter range for mule deer. Concerns could lead to the need to restrict motorized use.

In some site specific cases, visual resource management may affect or restrict new road/trail construction.

Applications for right-of-way permits to access private property or for commercial development are likely to increase in the future. As a result, public access to BLM lands, via the rights-of-way, could increase as well.

Limits or reductions in the BLM's funding and ability to maintain designated routes could lead to an overall reduction in maintained open road miles.

A variety of resource management projects, such as BLM initiated vegetation treatments, or wildland fire fuels reduction projects, could affect travel management. BLM forest management activities from 1984 to present include 690 acres of fire replanting, 559 acres of timber salvage, and 266 acres of timber harvest. Future activities may include approximately 650 acres of forest and woodland treatment (thinning, selective harvest). There are no wildland fire fuels reduction activities planned for this area at this time. Depending on the type and scope of project, effects could vary from temporary, short-term area/route closures, to new opportunities (new routes) for motorized or non-motorized access.

The TPA has a rich history of mining for lead, zinc, gold, copper, and silver. With the exception of the Montana Tunnels Mine, the remaining mines are no longer active. The Montana Tunnels Mine (located near Jefferson City) continues to produce lead and zinc with associated gold and silver from an open pit. Increases in mineral prices could lead to additional increased or renewed mining activity. Depending on the type and scope of mining activity, effects could vary from temporary, short-term area/route closures, to increased opportunities (new routes) for motorized or non-motorized access.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the TPA. Motorized activities play a large role in the distribution of noxious weeds. Concerns over the spread of noxious weeds may lead to public demands to impose motorized travel restrictions.

Motorized use on dirt roads and trails is a major contributor to soil erosion and stream sedimentation. These concerns may influence travel management, and result in fewer motorized opportunities.

Most illegal activities (trash dumping, drug use, underage alcohol use, unattended camp fires, vandalism, etc.) are directly associated with motorized use. Increases in illegal activity may lead to public demands to alter travel management and impose motorized travel or other restrictions (site specific management).

For perspective, BLM managed lands represent approximately 24 percent of the total travel planning area (60,418 total acres, 14,487 BLM acres); while BLM managed routes represent approximately 15.4 percent of the total routes available (392 total miles, 60.5 miles BLM roads/trails under Alternative A). Future travel

management (for all agencies, nationwide) is likely to lead to fewer opportunities for motorized recreational use than under current management (particularly for OHV use). As a result, BLM routes available to motorized use in this TPA could experience increased use from displaced users, eventually leading to more concentrated use, increased resource impacts, and user conflicts. These impacts could lead to demands from motorized users for additional routes, and conversely, demands from non-motorized users for fewer routes.

Under all alternatives, increases in human population, urbanization, recreation use, user conflicts; and concerns for wildlife, noxious weed spread, soil erosion/water quality, and illegal activities may lead to increased demands to restrict motorized travel, particularly in the areas adjacent to Boulder and Jefferson City. Under Alternative A, these conflicts would likely increase. Under Alternative B these pressures would have less impact on travel management than under Alternatives A and D, due to the overall reduction in motorized opportunities and separation of motorized and non-motorized uses. Under Alternative C these pressures would have the least impact on travel management than under the other alternatives, due to the reduction in motorized opportunities. Alternative D would lessen conflicts associated with these pressures compared to Alternative A, but not as much as Alternatives B and C.

**TRANSPORTATION FACILITIES**

For the sake of this discussion, “open” roads include roads that are open yearlong as well as those that are open with seasonal restrictions.

**Effects of Alternative A**

Under Alternative A, the Boulder/Jefferson City TPA would have 60.5 miles of open roads and no motorized trails (see **Table 4-86** on page 624).

Estimated costs for annual maintenance and stabilization of roads under Alternative A would be higher than under the action alternatives because of the increased number of roads. Estimated annual costs for monitoring and compliance, and weed control would also be higher under Alternative A than under the action alternatives.

**Effects of Alternative B**

Under Alternative B, the Boulder/Jefferson City TPA would have 28.5 miles of open roads and no motorized trails (**Table 4-86**). Estimated costs for annual maintenance and stabilization of roads under Alternative B would be less than under Alternatives A and D and more than under Alternative C due to the reduction in motorized access. Estimated annual costs for monitoring, compliance, and weed control would also be less than under Alternative A, and similar to Alternatives C and D.

<b>Table 4-86 Boulder-Jefferson City TPA Route/Trail/Maintenance Costs</b>				
<b>Classification/ Cost</b>	<b>Alt A</b>	<b>Alt B</b>	<b>Alt C</b>	<b>Alt D</b>
Miles of Open/ Restricted Roads	60.5	28.5	23.5	38.1
Motorized Trails	0	0	0	0
Annual Roads Maintenance	\$4,840	\$2,184	\$1,880	\$3,048
Annual Trails Maintenance	\$0	\$0	\$0	\$0
Periodic Road Stabilization	\$1,936	\$874	\$752	\$1,219
Periodic Trails Stabilization	\$0	\$0	\$0	\$0
Monitoring/ Compliance	\$3,025	\$1,365	\$1,175	\$1,905
Weed Control	\$908	\$410	\$353	\$572

**Effects of Alternative C**

Under Alternative C, the Boulder/Jefferson City TPA would have 23.5 miles of open roads and no motorized trails (**Table 4-86**). Estimated costs for annual maintenance and stabilization of roads under Alternative C would be the least of all the alternatives due to the least number of motorized routes. Estimated annual costs for monitoring, compliance, and weed control would also be less than under the other alternatives.

Closing the southwest corner of the Boulder/Jefferson City TPA to motorized use and the entire TPA to cross-country snowmobile travel would result in an increase in transportation facility costs for additional signage and sign maintenance.

**Effects of Alternative D**

Under Alternative D, the Boulder/Jefferson City TPA would have 38.1 miles of open roads and no motorized trails (**Table 4-86**). Estimated costs for annual maintenance and periodic stabilization of roads under Alternative D would be greater than under Alternatives B and C, but less than under Alternative A. Estimated annual costs for monitoring, compliance and weed control would also be less under Alternative D than under Alternative A and more than under Alternatives B and C.

**LANDS AND REALTY**

**Effects Common to All Alternatives**

The Butte Field Office administers approximately 62 rights-of-way (ROW), and one Recreation and Public Purpose (R&PP) Lease within the boundaries of the Boulder/Jefferson City TPA, which encumber approximately 2,036 acres of BLM land (**Table 4-87**). Various types of road rights-of-way are the most common type of grant, accounting for 42 percent, or just under half of the

total. Other types of authorized uses include: oil and gas pipelines, lines for electrical distribution and telephone facilities, communication sites, ditches, railroads, and mineral material sites.

Type	Approximate Number	Approximate Acres
Roads	26	1,256
Power	11	682
Telephone	9	40
O&G Pipelines	2	7
Comm. Sites	7	5
R&PP Lease	1	39
Other	7	7
<b>Totals</b>	<b>63</b>	<b>2,036</b>

Approximately three right-of-way applications for new facilities as well as amendments, assignments, renewals, or relinquishments of existing right-of-way grants are processed annually in the TPA. This would not vary by alternative.

The general trend of granting rights-of-way is expected to increase through the planning period as a result of increasing public demands. From a cumulative effects standpoint, development of adjacent federal, state and private land, increased recreational use and the trend of homeownership away from urban areas, coupled with traditional on-going uses, are all expected to require more guaranteed access involving public land, including BLM lands.

## SPECIAL DESIGNATIONS

There would be no effects to any special designation areas such as Wild and Scenic Rivers, Wilderness Study Areas, or Areas of Critical Environmental Concern under any of the travel plan alternatives for the Boulder/Jefferson TPA.

## UPPER BIG HOLE RIVER TPA

The Upper Big Hole River TPA is a relatively long, narrow shaped area (approximately 60 by 18 miles) located in the southwest portion of the Butte Field Office. This 357,275-acre TPA contains approximately 63,108 acres of BLM land. It includes BLM lands located along the north and south banks of the Upper Big Hole River as well as a large contiguous section located east of Interstate-15, near the town of Divide. A large contiguous section extends south from Divide to the town of Melrose and includes the Humbug Spires Primitive Area. There are approximately 165 miles of BLM roads, making up about 12.6 percent of the approximate total of 1,309 road miles in the TPA. The majority of roads lie on private (540 miles) and Forest Service (459 miles) lands.

## AIR QUALITY

### Effects Common to All Alternatives

Motorized recreation use is expected to continue to increase, resulting in higher levels of vehicle emissions.

Motorized travel across dry unpaved routes or trails would continue to produce airborne dust.

There could be areas with localized air pollution as a result of higher use numbers, and more concentrated use on fewer miles of available routes.

Drier climate conditions could make soils more susceptible to the effects of motorized travel, resulting in higher levels of airborne dust.

Impacts to air quality vary by alternative and travel plan area. In general, alternatives that reduce the level of motorized use (have fewer available miles) could have a positive impact on air quality; while alternatives that maintain or increase the level of motorized use, could lead to increased air quality impacts. This would not necessarily be a direct relationship, however, because reduction in available road miles for motorized use could redistribute use or focus more use on remaining open routes.

Under all alternatives, impacts from airborne dust could be reduced through mitigation such as hardening native surface roads with gravel or periodically spraying them with water trucks during the dry season. During BLM project work, in addition to watering native surface roadbeds, speed limits could be reduced to further minimize dust emissions.

### Effects of the Alternatives

Under Alternative A (present management), adverse impacts to air quality would be expected to continue, and likely increase, concurrent with higher levels of motorized recreational use. Each of the action alternatives, however, would provide fewer available motorized routes. Alternatives B and C would provide 47 percent and 62 percent fewer motorized routes, respectively, than Alternative A, while Alternative D would provide 39 percent fewer routes than Alternative A. As a result, airborne dust and vehicle emissions would be taking place on fewer BLM routes and could be reduced.

It should be noted that even without motorized use, airborne dust, resulting from wind erosion of exposed dirt surface roads will continue. Therefore, travel plans with more miles of native surface roads will result in more airborne dust.

Under all alternatives, mitigation measures, such as graveling and/or watering native surface roads, could reduce dust emissions even further, and/or help offset the effects of increased or concentrated use on the remaining open routes.

## Cumulative Effects on Air Quality

Under all alternatives, the cumulative effects to air quality from travel management in the Upper Big Hole TPA would arise from a number of past, present, and reasonably foreseeable future actions on BLM lands as well as non-BLM lands.

For perspective, BLM managed lands in the Upper Big Hole TPA area represent approximately 17.7 percent of the total travel planning area (357,275 total acres; 63,108 BLM acres). Under present management (Alternative A) BLM managed routes represent approximately 17.7 percent, of the total routes available (1,309 total miles; 165 miles of BLM roads/trails). Potential air quality impacts associated with activities on non-BLM lands and roads would be a greater contributor to cumulative effects to air quality than activities on BLM lands and roads.

In the past, prior to the 2003 Statewide OHV ROD, BLM management allowed unrestricted cross country travel by all forms of wheeled motorized use. Under present management, in the absence of other existing travel plan direction, all motorized wheeled travel is restricted to existing roads and trails. Under current management, approximately 158 miles of the existing BLM routes are available for motorized use. This mileage available for use would be reduced under the action alternatives as described above with associated potential differences in effects to air quality.

Under all alternatives, cumulative increases in human population, urbanization, recreation use, user conflicts; and concerns for wildlife, noxious weed spread, soil erosion, air/water quality, and illegal activities may lead to increased demands to restrict motorized travel.

## SOILS

### Effects Common to All Alternatives

Road construction, use, and maintenance affect soils in a number of ways. Soils are often compacted by these activities. Soil compaction can lessen the amount of precipitation that can infiltrate into soil and increase runoff, erosion, and sedimentation – in turn decreasing soil/site stability and hydrologic function, as well as soil productivity and plant vigor and diversity.

Ground disturbance associated with road construction, use, and maintenance can result in erosion. Erosion affects soil/site stability and hydrologic function. Erosion and sedimentation can destabilize the surface and sub-surface cohesion of the soil, resulting in soil loss from erosion sites. Loss of soil can impede or prevent establishment and development of vegetation communities.

Closing or decommissioning roads often leads to beneficial effects to soils through decreased site disturbance and re-establishment of vegetative cover on road surfaces. This tends to reduce soil erosion and stabilize soils.

Decommissioning roads may in some cases entail ripping road surfaces to de-compact them, thus improving water infiltration, hydrologic function, and the ability of the treated area to revegetate more successfully.

Impacts to soils associated with site-specific travel plan alternatives were assessed based on the potential for soil erosion using the following erosion risk criteria:

- High – the area a route travels through has slopes greater than 30 percent gradient.
- Moderate – the area a route travels through has slopes ranging from 15 to 30 percent gradient; or, for granitic soils, slopes ranging from 0 to 30 percent gradient.
- Low – the area a route travels through has slopes ranging from zero to 15 percent gradient and soils are not granitic in origin.
- Unrated – road mapping not available at time of erosion impact rating.

### Effects of the Alternatives

The distribution of road miles by erosion risk category and by proposed road management category for all the alternatives is shown for the Upper Big Hole River TPA in **Table 4-88**. Roads in the “unrated” category were excluded from detailed consideration and are shown for the purpose of displaying the extent of lacking information.

Because much of the terrain in this TPA is gentle to moderate in slope, most of the BLM roads are in either the low or moderate erosion categories. Under current conditions (Alternative A) approximately 5.6 miles of open BLM roads are located in areas with high erosion risk, and 60.7 miles are in moderate erosion areas. Soil erosion would be reduced under Alternative B because this alternative would reduce those mileages in the high and moderate erosion categories to 2.4 miles and 25.2 miles, respectively. Approximately 26.7 miles of road in the high and moderate classes combined would be closed under Alternative B with an additional 14.4 miles in these categories being decommissioned. Vegetative recovery should occur to varying degrees on closed and decommissioned roads, with a beneficial effect on soils of reducing erosion from these areas.

Soil erosion would be reduced under Alternative C more than under any other alternative because the lowest mileage of roads in the high and moderate erosion categories would be left open (17.0 miles combined), while the greatest mileage in these categories would be closed (32.9 miles combined) of all alternatives. An additional 16.9 miles in these categories would be decommissioned under Alternative C, more than under any other alternative.

Soil erosion associated with roads would be reduced under Alternative D compared to Alternative A, but

**Table 4-88**  
**BLM Road Miles in Soil Erosion Impact Categories by Alternative for the Upper Big Hole River TPA**  
(mileages are GIS-generated estimates)

Proposed Road Management	Erosion Risk Category	Alternative A	Alternative B	Alternative C	Alternative D
Open Road Miles (incl. Open w/restrictions)	High	5.6	2.4	2.4	2.4
	Moderate	60.7	25.2	14.6	38.1
	Low	81.4	50.2	40.8	60.3
	Other	10.2	3.1	3.2	3.0
Closed Road Miles	High	0	2.9	2.9	2.9
	Moderate	3.3	23.8	30.0	13.0
	Low	1.2	14.9	25.7	7.5
	Other	2.9	9.9	10.6	9.8
Decommissioned Road Miles	High	0	0.2	0.2	0.2
	Moderate	0	14.2	16.7	12.9
	Low	0	14.0	16.5	12.4
	Other	0	0.1	0.1	0.1

Note: Open roads include seasonally open roads as well as roads open yearlong.

would still be higher than under either Alternative B or C. Approximately 40.5 miles of BLM road in the moderate and high erosion categories combined would remain open under Alternative D, while about 15.9 miles in these categories would be closed and 13.1 miles would be decommissioned under this alternative.

### Cumulative Effects on Soils

Cumulative effects to soils in the Upper Big Hole River TPA would arise from a number of past, present, and reasonably foreseeable future actions on BLM lands as well as non-BLM lands. Within this 357,275-acre TPA, BLM lands comprise about 63,108 acres or 18 percent of total lands. The approximately 165 miles of BLM roads make up about 13 percent of the approximately 1,309 road miles in the TPA. Therefore road-related effects to soils described by alternative for BLM roads would affect about 13 percent of all roads in the TPA. The majority of lands (and roads) within the TPA boundary are either private property or public lands administered by the Forest Service. Non-BLM roads are managed by the county, Forest Service, state, and private landowners.

Approximately 6,805 BLM acres are permitted for various rights-of-way and leases. About 2,907 of these acres are for specific road rights-of-way primarily to private landowners. An additional 2,986 acres are associated with railroads and road rights-of-way to the Forest Service. The remainders are associated with powerlines, waterlines, communication sites, oil and gas pipelines, and other utility facilities. Impacts to soils range from compaction and occupation of ground with buildings, roadbeds, and other facilities, to revegetation and ground cover being re-established to stabilize soils.

From 1984 to 1995, timber harvest occurred on approximately 57 acres of BLM lands in this TPA. An addition

189 BLM acres have undergone timber harvest from 1995 to the present. Most of this activity has been selective harvest. Adverse effects on soils from these treatments were generally minor with treated areas having undergone revegetation and soil stabilization since treatment.

Approximately 430 acres of selective timber harvest is foreseeable on BLM lands over the next several years. This harvest would be located in Wildland Urban Interface areas where a mountain pine beetle epidemic is killing many lodgepole pine trees. Effects to soils from this project would likely be minor, possibly with localized areas of erosion or compaction. Timber harvest has also occurred on private and Forest Service lands and will likely continue for the foreseeable future, having localized compaction and erosion effects on soils.

From 1981 to 2004, wildland fire has burned across approximately 230 acres in the Upper Big Hole River TPA, having a range of soil effects with more severely burned areas experiencing localized erosion while less severely burned areas underwent relatively little effect to soils.

Over the past 10 years, approximately 474 acres of BLM land have undergone prescribed fire treatments while an additional 141 acres have undergone mechanical treatments. These treatments occurred in the Jerry Creek and Dickie Hills areas. Overall these projects generally had minor adverse effects on soils as treatment areas have revegetated and soils have stabilized. Within the next several years, BLM plans to implement 2,087 acres of mechanical treatment and 2,659 acres of prescribed fire with the Highland Mountain project in this TPA. BLM is currently planning an additional project to reduce fuels and restore vegetation communities on 500 to 2,000 acres with a combination of mechanical treatments and

prescribed fire. These treatments would generally have minor adverse effects on soils. Prescribed burning would occur under conditions where fire severity and intensity would be low, thereby minimizing adverse effects to soils. All treatments would minimize compaction so as to promote vegetative recovery. Fuels treatments conducted on private and Forest Service lands will likely occur for the foreseeable future with variable effects to soils. Reducing fuels under the controlled conditions of deliberate treatments may benefit soils in the long-term by reducing the risk of high severity fires in treated areas.

Livestock grazing on public and private lands throughout much of the TPA has created areas of localized soil erosion and compaction, particularly in grassland and shrubland areas. This will continue to occur for the foreseeable future.

Increasing residential development will likely continue for the foreseeable future to variable degrees within the TPA. Erosion, compaction, and covering of soils would occur due to additional road construction, clearing/leveling for home sites, and establishment of utility infrastructure for residential developments.

Under Alternative A, the contribution to cumulative effects on soils from BLM road management would continue as it occurs today. Retaining approximately 70 miles of road open yearlong and an additional 88 miles open with various seasonal restrictions would allow for the same level of compaction and erosion impacts that currently exist.

From a BLM road management perspective, all action alternatives would benefit soil resources compared to Alternative A. Alternative B would benefit soils by providing for a reduced contribution to adverse cumulative effects than would Alternative A because about 48 percent of BLM roads would be closed or decommissioned under Alternative B (compared to about 4 percent under Alternative A). Erosion should be reduced on these closed/decommissioned roads as disturbance is eliminated and soils stabilize.

Alternative C would benefit soils the most and provide for the least contribution to adverse cumulative effects on soils of all alternatives. This alternative would provide for closure or decommissioning of about 62 percent of BLM roads in the TPA, thus allowing these areas to vegetatively recover and stabilize soils.

Alternative D would provide for the greatest contribution to adverse cumulative effects on soils of the action alternatives, but would still provide for greater long-term benefits to soils than Alternative A. Alternative D would provide for closure or decommissioning (and therefore vegetative recovery and soil stabilization) of about 36 percent of BLM roads in the TPA, compared to 4 percent for Alternative A, 48 percent for Alternative B, and 62 percent for Alternative C.

Overall, due to the scattered distribution and relatively small proportion of BLM lands (18 percent) and roads (13 percent) relative to the total quantities of lands and roads in the TPA, none of the BLM alternatives would substantially contribute to cumulative effects on soils at the scale of the Upper Big Hole River TPA.

## WATER RESOURCES

### Effects Common to All Alternatives

There are a number of key concepts that are critical to understanding road effects to water resources.

Hydrologic function is an interaction between soil, water, and vegetation, and reflects the capacity of a site to:

- Capture, store, and safely release water from rainfall, runoff, and snowmelt;
- Resist a reduction in this capacity; and
- Recover this capacity following degradation.

Interception of precipitation results when precipitation falls on vegetation. When vegetation is removed, precipitation falls directly on the soil. This can increase surface erosion and sedimentation, and decrease the amount of time between initial precipitation arrival and peak surface runoff – in turn decreasing soil/site stability and hydrologic function. Roads remove vegetation and therefore decrease interception of precipitation.

Infiltration is the process of precipitation entering and traveling through soil. Infiltration reduces the peak runoff during precipitation events by extending the period of runoff after a precipitation event. Infiltration also filters precipitation and reduces erosion and sedimentation. If infiltration is reduced, runoff and erosion will increase and hydrologic function will decrease. Generally, roads are compacted surfaces that have decreased infiltration, thus increasing runoff and potentially increasing erosion.

Runoff can affect the amount of erosion and sedimentation, as well as flooding – both onsite and offsite. If runoff is increased, all of these effects can increase with a result that water quality and hydrologic function will decrease.

Increased sediment entering waterbodies increases turbidity, increases width-to-depth ratios, and consequently increases temperature and dissolved oxygen saturation levels, and creates adverse habitat for aquatic animals and plants.

Alteration of flow routing can also affect water resources. For example, roadcuts into areas with relatively shallow groundwater can intercept groundwater, bring it to the surface, and transport it some distance (i.e. in a roadside ditch) before delivering it to a stream. This can lead to erosion of road ditchlines and subsequent sedimentation of streams during runoff periods, or increased thermal loading of water before delivery to streams during summer periods.

Closure and decommissioning of roads tend to reduce erosion and sedimentation effects stemming from roads on water quality. During road decommissioning, items such as compaction, drainage, stream crossing culverts, and ground cover are often addressed in a manner that markedly improves hydrologic function. These features are not fully addressed on roads that are merely “closed”, but closed roads often gradually revegetate so as to reduce erosion and sedimentation effects to water quality.

### Effects of the Alternatives

Generally, road density is an indicator of overall watershed health and function. Watersheds with higher road densities tend to have lower water quality due to greater disruption of hydrologic function (described above), and potential for erosion and subsequent sedimentation. Road density also is related to the distribution and spread of noxious weeds. **Table 4-89** shows acres of BLM land in three road density categories by alternative for the Upper Big Hole River TPA.

TPA Alternative	Road Density Category		
	Low (<1 mi/mi <sup>2</sup> )	Moderate (1 - 2 mi/mi <sup>2</sup> )	High (> 2 mi/mi <sup>2</sup> )
Alternative A	19,646	18,204	25,357
Alternative B	20,592	19,534	23,080
Alternative C	21,461	19,506	22,245
Alternative D	20,579	19,353	23,276

These data reflect any differences between alternatives based on roads proposed for “decommissioning” by alternative. While many “closed” roads would gradually contribute to increased hydrologic function over time, decommissioned roads would more directly contribute to hydrologic function because measures aimed at restoring hydrologic function would likely be part of the treatment during decommissioning. Alternative A would have the greatest amount of BLM land (25,357 acres) with “high” road densities of greater than 2 mi/mi<sup>2</sup>. Alternative C

would provide for the lowest acreage in the “high” category and the highest acreage in the “low” category of all alternatives. By this measure, Alternative C would benefit hydrologic function more than any other alternative, followed in sequence by Alternative B, then Alternative D. All action alternatives would improve hydrologic function compared to Alternative A.

Motorized routes within 300 feet of streams generally have greater potential to directly impact water quality through erosion and sedimentation, increased water temperatures (due to loss of shading vegetation), and direct alteration of stream channel morphology than those farther away. **Table 4-90** shows the miles of open and closed roads on BLM lands within 300 feet of streams by alternative. Under Alternative A there are about 7.9 miles of open road within 300 feet of fish bearing streams and 29.6 road miles within 300 feet of perennial non-fish bearing streams. Alternative C would provide for the greatest number of closed or decommissioned roads within 300 feet of streams of all the alternatives (total of 10.7 miles). Alternative B would provide for the next greatest mileage (8.5 miles), followed by Alternative D (6.7 miles). By this measure, Alternative C would provide the greatest benefit to water resources of all the alternatives followed by Alternative B, then Alternative D. Each action alternative would reduce effects from roads in close proximity to streams and improve water resources compared to Alternative A.

There is a specific route that fords the Big Hole River to access the Sawlog Gulch area. Under Alternative A, continual unrestricted year-long motorized use of this route would cause the most water quality impacts of erosion and disturbance to the river bed at this site relative to any other alternative. These effects would be localized to tens to feet of river length. Under Alternative B this route would only be open for game retrieval during hunting season. This would reduce its usage and would reduce water quality and river bed disturbance effects at that site. Under Alternative C, this route would be closed yearlong thus eliminating water resource effects altogether. Under Alternative D the route would be closed from 12/2 to 7/15 to avoid use during winter and subsequent spring runoff periods. Alternative D would pose the greatest effects to water resources at this site of any of the action alternatives.

	Perennial Fish-Bearing Streams		Perennial Non-Fish-Bearing Streams	
	Number of Open Road Miles	Number of Closed Road Miles	Number of Open Road Miles	Number of Closed Road Miles
Alternative A	7.9	0.1	29.6	0.8
Alternative B	7.6	0.4	21.6	8.1
Alternative C	6.7	1.3	21.0	9.4
Alternative D	7.6	0.4	24.1	6.3

Note: Open roads include seasonally open roads as well as roads open yearlong. Closed roads include decommissioned roads.

## Cumulative Effects on Water Resources

Cumulative effects to soils in the Upper Big Hole River TPA would arise from a number of past, present, and reasonably foreseeable future actions on BLM lands as well as non-BLM lands. Within this 357,275-acre TPA, BLM lands comprise about 63,108 acres or 18 percent of total lands. The approximately 165 miles of BLM roads make up about 13 percent of the approximately 1,309 road miles in the TPA. Therefore road-related effects to water resources described by alternative for BLM roads would relate to effects associated with about 13 percent of all roads in the TPA. There are approximately 276 miles of fish bearing stream and an additional 223 miles of perennial non-fish bearing stream in the TPA. On BLM lands there are about 19 miles of fish bearing stream and 41 miles of perennial non-fish bearing stream. The majority of lands (and roads) within the TPA boundary are either private property or public lands administered by the Forest Service. Non-BLM roads are managed by the county, Forest Service, state, and private landowners.

A number of the main access roads (non-BLM) in the TPA follow valley bottoms and parallel streams. State Highway 43 along the Big Hole River proper is among these valley bottom roads. Many of these roads are directly affecting stream channel or floodplain function by filling or impinging on stream channels or floodplains, precluding the presence of riparian vegetation (including large woody material in forested locations), producing sedimentation in streams (from road surfaces, ditchlines, winter "road sanding" operations) and potentially increasing thermal loading by lessening streamside shade. In smaller streams these effects are dominant in shaping stream channel and water quality conditions in many areas and will continue into the foreseeable future. Effects of Highway 43 on the Big Hole River are more localized and generally less severe than effects of valley bottom roads on smaller streams.

Approximately 6,805 BLM acres are permitted for various rights-of-way and leases. About 2,907 of these acres are for specific road rights-of-way primarily to private landowners. An additional 2,986 acres are associated with railroads and road rights-of-way to the Forest Service. The remainders are associated with powerlines, waterlines, communication sites, oil and gas pipelines, and other utility facilities. Impacts to water resources are generally minor with some localized erosion and sedimentation and some contribution to decreased hydrologic function (decreased infiltration, increased runoff) due to compaction.

From 1984 to 1995, timber harvest occurred on approximately 57 acres of BLM lands in this TPA. An additional 189 BLM acres have undergone timber harvest from 1995 to the present. Most of this activity has been selective harvest. Adverse effects on water resources were minor from this activity. Approximately 430 acres of selective timber harvest is foreseeable on BLM lands

over the next several years. This harvest would be located in Wildland Urban Interface areas where a mountain pine beetle epidemic is killing many lodgepole pine trees. Effects to water resources from this project would likely be minor, possibly with localized areas of erosion and sedimentation.

Timber harvest has also occurred on private and Forest Service lands and will likely continue to have variable effects on water resources for the foreseeable future. Ground disturbance from these activities will have localized impacts to water resources including some sedimentation, loss of woody material recruitment for streams, and potential water temperature increases due to riparian shade loss.

From 1981 to 2004, wildland fire has burned across approximately 230 acres in the Upper Big Hole River TPA, having minor sedimentation effects on water resources.

Over the past 10 years, approximately 474 acres of BLM land have undergone prescribed fire treatments while an additional 141 acres have undergone mechanical treatments. These treatments occurred in the Jerry Creek and Dickie Hills areas. Overall these projects generally had minor adverse effects (erosion/sedimentation) on water resources. Within the next several years, BLM plans to implement 2,087 acres of mechanical treatment and 2,659 acres of prescribed fire with the Highland Mountain project in this TPA. BLM is currently planning an additional project to reduce fuels and restore vegetation communities on 500 to 2,000 acres with a combination of mechanical treatments and prescribed fire. These treatments would likely have minor adverse effects on water resources. Prescribed burning would occur under conditions where fire severity and intensity would be low so as to prevent scorching of soils and mortality of desirable vegetation. This should minimize erosion and sedimentation of water resources. All treatments would minimize compaction so as to retain hydrologic function. Fuels treatments conducted on private and Forest Service lands will also likely occur for the foreseeable future with variable effects to water resources. Effects of these treatments could be similar to timber harvest effects on these lands. Reducing fuels under the controlled conditions of deliberate treatments may benefit water resources in the long-term by reducing the risk of high severity fires that could have severe adverse water quality effects.

Increasing residential development will likely continue for the foreseeable future to some degree within the TPA, most notably in the Big Hole River valley bottom. Erosion, soil compaction, and runoff would likely increase due to additional road construction, clearing/leveling for home sites, and establishment of utility infrastructure for residential developments. Nutrient, chemical pollutant, and pathogen inputs to streams would also likely increase due to leaching from septic

systems, urban runoff (fertilizer, chemicals, and petroleum pollutants), and waste from livestock.

Livestock grazing on public and private lands throughout much of the Upper Big Hole River TPA has created areas of localized streambank trampling, soil erosion and compaction, and nutrient inputs to streams. In severe cases stream channel morphology may be altered due to severe loss of riparian vegetation, loss of streambank integrity, channel widening and shallowing, and substantial sediment inputs. These effects to water quality will continue to occur for the foreseeable future. Agricultural water withdrawals are a substantial impact to water resources in the Big Hole River itself. Government agencies and local entities regularly work with ranchers to minimize their agricultural withdrawals during summer low flow periods so as to minimize low flow effects on fish populations in the Big Hole River.

There are a number of streams identified as impaired on the MDEQ 303(d) list in the Upper Big Hole TPA. The Big Hole River itself (6.5 miles on BLM) is listed as impaired for heavy metal contamination, low flow alterations, physical habitat alterations, water temperature, and riparian vegetation alteration. Probable sources of impairment include irrigated crop production, mine tailings, abandoned mine lands, acid mine drainage, highways, channelization, riparian grazing, and streambank modification. These impacts will continue for the foreseeable future regardless of BLM road management in this TPA.

Camp Creek (1.8 miles on BLM) is listed as impaired for heavy metal contamination, sedimentation, low flow alterations and nutrient inputs with probable sources being riparian grazing, irrigated crop production, roads (valley bottom non-BLM road), and abandoned mine lands. Soap Gulch (5 miles on BLM) is impaired due to nutrient inputs, sedimentation, alteration of riparian vegetation with probable causes listed as riparian grazing, roads (valley bottom non-BLM road), and irrigated crop production. Though BLM does not manage the most impactive (valley bottom) road along Camp Creek, BLM does manage a considerable portion of the watersheds of both Soap Gulch and Camp Creek. BLM road management could make a considerable contribution to water resource conditions in these two streams. All three action alternatives (B, C, and D) would provide for the closure or decommissioning of some roads in each of these two drainages that would benefit water resources primarily by reducing sediment inputs. Alternative C would provide the most benefit, followed in sequence by Alternative B, then Alternative D.

Charcoal Gulch (1.3 miles on BLM) is impaired for nutrients and sedimentation with probable causes listed as riparian grazing and roads. Moose Creek (6 miles on BLM) is listed as impaired for low flow alterations due to irrigated crop production. Jerry Creek (0.4 mile on BLM) is impaired for alteration of riparian vegetation, excess algal growth, heavy metals, low flow alterations,

and physical habitat alterations. Probable causes of impairment are listed as riparian grazing, abandoned mine lands, timber harvest, agriculture, irrigated crop production, septic systems, and site clearance for land development. Deep Creek (0.9 mile on BLM) is listed as impaired for alteration of riparian vegetation, low flow alterations, and sedimentation. Probable causes are listed as streambank modification, irrigated crop production, and rangeland grazing. These impacts will continue for the foreseeable future. Impacts in these streams (except for Charcoal Gulch which has a valley bottom BLM road maintained in all alternatives), will continue for the foreseeable future regardless of BLM road management.

Overall, due to the scattered distribution and relatively small proportion of BLM lands (18 percent) and roads (13 percent) relative to the total quantities of lands and roads in the TPA, none of the BLM alternatives would substantially contribute to cumulative effects on water resources at the scale of the Upper Big Hole River TPA.

## **VEGETATIVE COMMUNITIES – FOREST RESOURCES AND FOREST AND WOODLAND PRODUCTS**

### **Effects of the Alternatives**

Under all alternatives, existing roads and roads built to access timber and forest product sales on BLM lands may encourage timber harvest and forest product sales on adjacent lands, particularly where landowners and other agencies looking to improve economic efficiency or opportunities in the management on their lands.

In general, vegetative treatment contractors tend to bid more readily on projects in areas with vehicle access or valuable products. BLM often prioritizes forest vegetation management activities such as forest products and forest protection actions (e.g. wildfire suppression and forest insect and disease control) in similar areas.

Rehabilitation of roads (decommissioning and in some cases road closure) would revegetate currently unvegetated roadbeds, which would increase vegetation biomass production on the landscape through colonization of sites with grasses, forbs, shrubs, and trees. Increases in revegetated area would occur at a rate of approximately 1.5 to 3 acres per mile of rehabilitated road. Eventually rehabilitated roads would support plant communities consistent with site potentials which would help resist weed invasions. However, road closures and removals (decommissioning) could make vegetation management treatments more difficult and costly, thereby inhibiting proposed treatments, reducing public access for product use and removal, and potentially slowing fire detection and suppression.

Under Alternative A there would be no increase in project analysis and implementation costs. However, under Alternative B approximately 48 percent (79.9 miles) of BLM roads would be closed or decommis-

sioned. Under Alternative C about 62 percent (102.8 miles) of roads would be closed or decommissioned, while under Alternative D about 36 percent (58.9 miles) of these roads would be closed or decommissioned. These closures would result in commensurate potential increases in vegetative analysis and treatment costs by alternative. These potential cost increases would be considered on a case by case basis by the BLM during project feasibility determinations, and additional funding may be needed to analyze and implement the projects that would remain feasible. Road closures could also result in potential decreases in quantities of forest products removed. Lack of road access could make small projects cost-prohibitive. Although temporary road building is still an option for access, slopes are generally steeper in the Upper Big Hole TPA as compared to other TPAs and may preclude road building. These limitations may increase the occurrence of helicopter logging and other non-traditional forms of product removal. Helicopters are a feasible access alternative in the Upper Big Hole TPA because forest products generally have higher value in this watershed and could absorb the increased cost of access. The extent of the road-related effects described above would be minimized because BLM would likely still be able to plan and implement projects in many areas on closed roads through the variance process for temporary road use. Road-related effects would be greatest under Alternative C, followed in sequence of decreasing effects by Alternative B, then Alternative D.

Roaded access to forested areas would also affect the gathering of firewood and other forest products by the general public. Most public parties prefer to drive close to areas of product removal so they do not have to carry products over long distances to their vehicles. Alternative A would have the greatest opportunity for firewood and other product removal with 70.6 miles of BLM road open yearlong and 88 additional miles open during summer. Alternative B would provide fewer opportunities than Alternative A with 26.9 miles of road open yearlong and 57.9 additional miles open during summer. Alternative C would provide the fewest opportunities of all alternatives with 19.2 miles of road open yearlong and an additional 40.8 miles open during summer. Alternative D (26.8 miles open yearlong, additional 70.6 miles open during summer) would provide more opportunities than Alternatives B and C, but fewer opportunities than Alternative A.

## Cumulative Effects on Forest and Woodland Resources and Products

Forested vegetation in the Upper Big Hole TPA has been affected by past management on all land ownerships. Of the 63,108 acres of BLM owned land in the TPA, 246 were harvested since 1984. One hundred and twenty-six acres were also reforested. Currently, 430 acres are scheduled for insect control harvest in the Upper Big Hole TPA. Planning is also occurring on an additional approximately 1,000 BLM acres to implement forest

restoration harvests and burning. Treatments will result in more open, healthier forest stands. Some temporary roads and travel variances (to temporarily use closed roads) could be associated with these projects.

The Forest Service, with 143,778 acres in the TPA, also manages its forested resources through restoration projects including product removal and prescribed burning. These activities will likely continue in the future and promote healthier forest ecosystems in the planning area. Timber harvest will also continue on state and private ownerships, totaling 149,516 acres in the TPA.

The action alternatives could increase potential forested acreage by decommissioning roads and reclaiming approximately 64 acres under Alternative B, 75 acres under Alternative C, and 58 acres under Alternative D.

Although miles of access would be decreased with road decommissioning, trees have the potential to colonize these areas and provide for forest products in the future.

Currently western spruce budworm, mountain pine beetle, and Douglas-fir Beetle are present in forests within the Upper Big Hole TPA. These species are currently present at higher levels than experienced in the last twenty years and are resulting in widespread tree mortality. Endemic insect levels are expected to remain high in the future, with the bark beetle (mountain pine beetle and Douglas-fir Beetle) infestations peaking in the next several years. Even at lower population levels, these species can reduce forest health and individual tree vigor, sometimes resulting in tree mortality.

Forested vegetation in the Upper Big Hole TPA will also be affected by approximately 6,805 acres of rights-of-way and leases on BLM land. Forested vegetation located in these areas usually is harvested to accommodate the necessary access or facilities. Forest vegetation removal would occur on new authorizations in the future as necessary to maintain sight distances and safety clearances associated with roads and facilities.

Urbanization is expected to continue on the 115,567 acres of private land (28 percent of total acres) within the Upper Big Hole TPA. Forest products are commonly removed from these areas prior to permanent construction. Urbanization is likely to continue in the future and will affect forested vegetation at an unknown rate. As private construction increases, miles of road on private will most likely increase from the current 540 miles (41 percent of total in TPA).

Risk to forests from human-caused wildfires is commonly associated with open roads. Risk to forests from wildfire is greatest under Alternative A with 159 miles of BLM road open during the summer. Alternative B would have less risk of human-caused fire starts with about 81 miles of road open during summer. Alternative C would have the least risk to public forests with only 60 miles of road open during summer months. Alternative D (about 97 miles of road open during summer) would have more

risk than either Alternatives B or C, but less risk than Alternative A. Given that the majority of roads in the TPA (87.4 percent) are non-BLM roads, this contribution to reduced fire risk from BLM roads under the action alternatives is relatively small in the context of the entire TPA.

Since BLM roads constitute only 12.6 percent of all roads in this TPA, and BLM lands make up only 17.7 percent of all lands in the TPA, urbanization and activities on open non-BLM roads in the vicinity may have more cumulative effects on forested vegetation in the TPA than BLM decisions regarding miles of open and closed road.

## VEGETATIVE COMMUNITIES – NOXIOUS WEEDS

Under all alternatives, any snowmobile use would have negligible effects on noxious weed spread and populations. Invasive noxious weeds and non-native species are degrading wildland health. These are aggressive plants that can outcompete many native plants, as they have few natural enemies to keep them from dominating an ecosystem. These plant species are spread by many means. However, any land disturbing activity in the TPA has the most potential to introduce and spread weed species. Motorized vehicles are one vector for noxious weed spread as weed seed becomes attached to vehicles and their tires, and are transported from one area to another where seeds become detached and germinate to inhabit new areas.

### Effects of Alternative A

Under Alternative A, all BLM routes located within the TPA would continue to be managed as indicated on the Southwest Montana Interagency Visitor/Travel Map (interagency cooperative mapping effort, 1996 revision). Alternative A would provide 158.6 miles of routes open to wheeled motorized use (70.6 miles open yearlong, 88.0 miles seasonally restricted and 7.4 miles closed). Where allowed, snowmobile use would continue to be open to area-wide cross-country use as well as use on existing routes, during the season of use, 12/2-5/15, conditions permitting. Alternative A would have the most roads open and in turn would promote the greatest amount of weeds and other undesirable plant spread and production. More herbicide control would be needed to control weeds under Alternative A than under the other alternatives. Under Alternative A the open BLM road miles would make up about 12.6 percent of all open roads in the Upper Big Hole River TPA.

### Effects of Alternative B

Under Alternative B, 84.8 miles of routes would be available for wheeled motorized use (26.9 miles open yearlong, 57.9 miles seasonally restricted). Snowmobile management would continue to remain substantially in effect as represented by the 1996 Southwest Interagency

Visitor/Travel Map. This alternative would close 49.2 miles of road leaving 26.9 miles open yearlong as compared to 69.9 miles of road open yearlong for Alternative A. This would prevent weed spread caused by motorized vehicles on these closed routes, but would increase spread on the open routes because of more concentrated use of these routes. Overall Alternative B would reduce weed spread, but would increase weed treatment costs per road mile on the remaining open roads compared to Alternative A. Under Alternative B, the 84.8 miles of open BLM road would make up about 6.5 percent of all open roads in the TPA.

### Effects of Alternative C

Under Alternative C, 60.0 miles of routes would be available for wheeled motorized use (19.2 miles open yearlong, 40.8 miles seasonally restricted). This alternative would close 69.3 miles of road leaving 19.2 miles open yearlong as compared to 69.9 miles of road open yearlong for Alternative A. This would prevent weed spread caused by motorized vehicles on the closed routes, but would increase spread on the open routes because of more concentrated use of these routes. Overall Alternative C would reduce weed spread more than any other alternative, but would increase weed treatment costs per road mile on the remaining open road miles compared to Alternative A. Under Alternative C, the 60 miles of open BLM road would make up about 4.6 percent of all open roads in the Upper Big Hole River TPA.

### Effects of Alternative D

Under Alternative D, 97.4 miles of routes would be available for wheeled motorized use (26.8 miles open yearlong, 70.6 miles seasonally restricted). This alternative would close 33.2 miles of road leaving 26.8 miles open yearlong as compared to 69.9 miles of road open yearlong for Alternative A. This would prevent weed spread caused by motorized vehicles on the closed routes, but would increase weed spread on the open routes because of more concentrated use of these routes. Overall Alternative D would reduce weed spread more than Alternative A but less than Alternatives B or C, but would increase weed treatment costs per road mile on the remaining open road miles compared to Alternative A. Under Alternative D, the 97.4 miles of open BLM road would make up about 7.4 percent of all open road miles in the TPA.

## Cumulative Effects on Noxious Weeds

Under all alternatives, other past, present, and reasonably foreseeable future actions on BLM and non-BLM lands will affect noxious weeds.

Recreation use is well established in the TPA, with fishing and big game hunting topping the list. The Big Hole River has a national reputation as a premiere fly fishing destination. Big game hunting attracts regional and national attention as well. Motorized recreation uses are

one of the leading causes of introduction and spread of noxious weeds and non native species. Weed seeds are transported by many recreational vectors i.e. water recreation uses, motorized vehicles including their tires, non-motorized vehicles including their tires, pack animals, and humans.

Applications for right-of-way permits on public lands to access private property or for commercial development are likely to increase in the future. As a result, soil disturbing activities (i.e. roads, powerlines, telephone lines, etc.), will likely increase, causing weeds to increase.

A variety of resource management projects, such as BLM initiated vegetation treatments, or wildland fire fuels reduction projects, could affect noxious weed management. There have been multiple fuels treatments in this area in the last 10 years. Treatments consisted of 474 acres of prescribed burning and 141 acres of mechanical treatments primarily in the Jerry Creek and Dickie Hills areas. There are fuels treatments planned by the BLM for this area, mainly in the general area south of Wise River and in the Highland Mountains area. The Highland Mountain project will consist of approximately 2,087 acres of mechanical treatment and 2,659 acres of prescribed fire treatment, implemented in 2007 through 2012. The Wise River project would consist of mechanical and/or prescribed burning treatments from 500 to 2,000 acres focused on the urban interface areas having the objective to restore ecosystem health and reduce fuels. Prescribed burning projects give the ground surface a fertilization effect and eliminate some plant competition for weedy species giving them a niche for establishment and expansion in some areas. Ground disturbing equipment could also transport noxious weed seed to these project sites. BLM implements weed control measures in the aftermath of such ground-disturbing activities so as to minimize noxious weed spread.

Wildland fires create good seed beds and supply nutrients for weed species introduction and production. From 1981 to 2004 there have been 18 wildland fires that burned approximately 230 acres. As with mechanical vegetation treatment projects, BLM implements weed control measures in the aftermath of wildland fires to minimize weed spread.

A portion of the TPA (especially the Soap Gulch and Camp Creek areas) is strongly mineralized and has undergone considerable mining in the past. Current activity is low. However, increases in mineral prices could lead to additional increased or renewed mining activity. Mining is a land disturbing activity and the activity itself and weed seed contaminated equipment that is used could promote weeds in the area. Reclamation of abandoned mine sites can disturb ground and promote weed spread as well. BLM implements weed control measures associated with this reclamation work to minimize weed spread.

Noxious weeds and non-native invasive species are well established and spreading in the area. Weed control activities by BLM and other entities, while often effective at reducing or minimizing weed spread and weed populations, can also lead to some weed spread. Herbicide spray equipment is driven through weed infestations and weed seeds as well as other weed vegetative parts are spread to other lands during and following treatment. This TPA has received about 150 to 200 acres of treatment over the last 6 years on BLM lands. Treatment has primarily been by herbicide. These weed treatments have varying success in killing undesirable plants, depending on many environmental parameters.

Timber sales have built-in stipulations for mitigating weed production and spread. However, with ground disturbance the potential exists for weed introduction to occur on these sites. Since 1995 there has been 189 acres of timber harvest and 126 acres of forest planting (replanted in 1998). Vehicular use associated with tree plantings could contribute to the spread of existing weeds on site. Herbicide treatment of existing weeds is coordinated with tree seedling planting locations and timing, so as to minimize the spread of noxious weeds. .

Future travel management (for all agencies, nationwide) is likely to lead to fewer opportunities for motorized recreational use than under current management (particularly for OHV use). As a result, BLM routes available to motorized use could experience increased use from displaced users, leading to more concentrated use and potentially increased weed spread.

The TPA includes important habitat for big game (elk, bighorn sheep). Noxious weed seeds are transported and spread by wildlife through their digestive system and by attaching to the animals themselves and then being released at a later time.

Livestock grazing on and off BLM lands also contributes to weed spread either through seed being spread or introduced by livestock themselves, or through vehicular uses needed to manage grazing operations.

The majority of the Upper Big Hole River TPA is characterized by undeveloped land (private homes/ranches; BLM, State, and USFS lands). Only about 2,000 people live in the area, many of them making their living by ranching and hay farming. Human population growth for the TPA is expected to remain relatively low. However, the area is experiencing some residential growth on land subdivided near the Big Hole River and as family ranches are sold to out-of-state investors/seasonal residents. Population growth and use of the TPA from the population centers of Butte and Dillon will in turn lead to more opportunities for weed spread and production.

The TPA is largely undeveloped. Several small communities (Divide, Dewey, and Wise River) are located within the TPA; while the communities of Melrose and Wisdom lie just outside. Urbanization is unlikely to become a major issue for many years. However, use of the

TPA by the residents living adjacent to or within this area is increasing and leads to an increase in weed spread and propagation.

About 12.6 percent of all the travel routes in the Upper Big Hole River TPA are located on BLM managed lands (under Alternative A). Because the majority of roads (87.4 percent) and lands (82.3 percent) in the TPA are non-BLM, activities in these areas play a stronger role than activities on BLM lands in determining the status of weed spread and weed populations overall.

## VEGETATIVE COMMUNITIES – RIPARIAN VEGETATION

### Effects Common to All Alternatives

This section focuses on effects to riparian vegetation. For additional discussion of effects to water quality and stream channels, see the Water Resources and Fish sections.

Roads in riparian areas constitute ground disturbance that can eliminate or preclude presence of native riparian vegetation. This ground disturbance and loss of riparian vegetation may facilitate erosion and sedimentation of streams. Roads may also interfere with natural stream channel functions by occupying floodplains or active stream channel margins (see Water Resources section for more discussion). Noxious weeds may dominate riparian vegetation communities after some type of disturbance (such as roads, livestock grazing, mining, etc.) has reduced native vegetation. Noxious weed seed can be spread into riparian areas by motor vehicles via open roads. Closure of roads and trails can improve or maintain riparian condition by reducing avenues of noxious weed spread, as well as allowing for bare area revegetation which filters sediment in addition to stabilizing banks in some areas. Road and trail restrictions have the same effects but to a lesser degree, because some traffic will inhibit vegetation growth and recovery.

As a means of comparing alternatives, **Table 4-91** depicts the miles of wheeled motorized routes that cross or are within 300 feet of streams or wet areas on BLM lands in the Upper Big Hole River TPA.

Under Alternative A, 38.6 miles of BLM roads and trails

would remain open that cross or are within 300 feet of riparian areas, 29.7 miles of roads and trails would have seasonal restrictions, and 3.3 miles would be closed. The noxious weed spread, streambank, and sediment delivery effects would continue as described in the Effects Common to All Alternatives section for the open roads. The BLM roads and trails most affecting riparian conditions are along Soap Gulch, McLean Creek, Moose Creek, Bear Creek, Sawlog Gulch and Charcoal Gulch and all would remain open, although McLean Creek and Charcoal Gulch are open with seasonal travel restrictions.

Under Alternative B, 25.9 miles of roads and trails would remain open that cross or are within 300 feet of riparian areas, 21.1 miles of roads and trails would have restrictions, and 23.7 miles would be closed. The noxious weed spread, streambank, and sediment delivery effects would continue as described in the Effects Common to All Alternatives section for the open roads. The BLM roads and trails most affecting riparian conditions are along Soap Gulch, McLean Creek, Moose Creek, Bear Creek, and Charcoal Gulch and all would remain open, although McLean Creek and Charcoal Gulch are open with seasonal travel restrictions. Sawlog Gulch travel use would be restricted by game retrieval rules, reducing the number of vehicular crossings of the Big Hole River at this location compared to Alternative A. A number of other streams would benefit from road and trail closures posed by this alternative. Alternative B would provide benefits to riparian vegetation compared to Alternative A.

Under Alternative C, 25.9 miles of BLM roads and trails would remain open that cross or are within 300 feet of streams or wet areas, 15.4 miles of roads and trails would have seasonal restrictions, and 29.4 miles would be closed. Effects would be similar to Alternative B with regard to the roads and trails most affecting riparian conditions in Soap Gulch, McLean Creek, Moose Creek, Bear Creek, and Charcoal Gulch. However the Sawlog Gulch and Big Hole River crossing would be closed under this alternative. Riparian condition would improve most under this alternative compared to all other alternatives.

Under Alternative D, 28.8 miles of roads and trails would remain open that cross or are within 300 feet of streams or wet areas, 23.8 miles of roads and trails would have seasonal restrictions, and 18.1 miles would be closed. Effects would be similar to Alternatives B and C with regard to roads along Soap Gulch, McLean Creek, Moose Creek, Bear Creek, and Charcoal Gulch. Travel use along Sawlog Gulch and the Big Hole River crossing would be seasonally restricted under this alternative. Under Alternative D, riparian condition would experience fewer road and trail effects than under Alternative A, but more than under Alternatives B or C.

<b>Miles of Wheeled Motorized Routes</b>	<b>ALT A</b>	<b>ALT B</b>	<b>ALT C</b>	<b>ALT D</b>
Open	38.6	25.9	25.9	28.8
Restricted	29.7	21.1	15.4	23.8
Closed	3.3	23.7	29.4	18.1

## Cumulative Effects on Riparian Vegetation

Noxious weed spread, mining, roads and trails, logging operations, and livestock grazing have affected riparian resource conditions in all TPAs, including the Upper Big Hole River TPA. Some of these factors continue to cause riparian area degradation primarily through direct disturbance or loss of riparian vegetation. Ground disturbance and loss of riparian vegetation facilitate erosion and sedimentation of streams. In the case of noxious weeds, they usually dominate riparian vegetation communities after some type of disturbance (such as roads, livestock grazing, mining, etc.) has reduced native vegetation.

Anticipated subdivision growth on private lands, though anticipated to occur at a lower rate in the Upper Big Hole River TPA than in other TPAs, will lead to more road construction and maintenance. More roads and development will increase severity of runoff events which in turn will cause more sediment delivery to creeks and streams. The additional sediment is likely to affect the functioning condition of some riparian areas by causing streambeds to aggrade at unnatural rates. Streambanks may also be affected if road placements do not allow for natural stream movements or meanders.

Logging and forestry practices on public and private lands are subject to streamside management zone (SMZ) requirements designed to maintain water quality and riparian vegetation. The proposed Riparian Management Zones under Butte RMP Alternatives B and C would be wider than SMZs and activities in these areas would be designed to benefit riparian resources, thus providing more riparian protection and more targeted management of riparian vegetation in both forested and non-forested areas than under RMP Alternatives A and D. The disturbance associated with timber activities does have the potential to increase noxious weed spread which degrades riparian area function and health. On public lands noxious weed control is a standard feature of any ground disturbing activities whereas on private lands noxious weed control is variable.

Livestock grazing will continue in the area and has the potential to impact riparian resource conditions. On BLM lands, ongoing rangeland health assessments and implementation of livestock grazing guidelines would continue to improve or maintain riparian vegetation health and vigor. On private lands, livestock grazing is expected to decline slowly as more ranch and farmland is subdivided. Riparian conditions may improve or degrade as management changes.

Noxious weed control will continue on both public and private lands with varying degrees of success. To the extent that these efforts are successful, riparian conditions would improve because of the streambank protection gained from shrubby root systems and filtering capability of native riparian sedge and rush species.

In recent years, mitigation work has been completed to harden crossings and reduce sediment production on the roads along Camp Creek, Soap Gulch, McLean Creek, Moose Creek, Sawlog Gulch, and Charcoal Gulch.

The LaMarche Creek fluvial Arctic grayling habitat enhancement project improved riparian condition along this stream by stabilizing banks and creating lateral bars.

The Big Hole Watershed group has completed a number of projects to improve livestock grazing, weed control, and irrigation practices on private land. Riparian conditions along the river have improved in a number of places as a result of increased flows later in the season.

A number of privately owned blocks of land were logged within the past 20 years. Riparian vegetation was removed at the time but has recovered to some degree since then.

Cumulative effects under all the action alternatives would be similar to Alternative A at the scale of the entire TPA. The additional road and trail closures and seasonal restrictions on BLM roads in the action alternatives may slightly offset the cumulative road and trail impacts associated with subdivision development and other lands uses taking place in the TPA as compared to Alternative A. Alternative D would contribute less to riparian vegetation benefits than Alternatives B and C, but would contribute more benefits than Alternative A. Alternative C would contribute the most benefits of all alternatives while Alternative B would contribute more benefits than either Alternatives A or B.

Overall, because BLM roads make up only 12.6 percent of all roads in the TPA (under Alternative A), and BLM lands make up 17.7 percent of all lands in the TPA, the contributions to riparian vegetation benefits associated with closing riparian roads on BLM lands under the action alternatives would be dominated by activities on other lands at the scale of the entire Upper Big Hole River TPA. Activities on private lands (32 percent of total acreage in TPA) and USFS lands (40 percent of total acreage in TPA) would play a substantial role in determining riparian conditions at the scale of the entire TPA.

## WILDLIFE

### Effects of Alternative A

Under Alternative A, the Upper Big Hole River TPA would have considerably more open roads (158 miles) compared to the action alternatives. Under Alternative A, elk winter range on BLM lands in the Upper Big Hole TPA would have a low road density (1.0 mi/mi<sup>2</sup>), but this would still be the highest actual road density compared to the action alternatives (**Table 4-92**). Roads can cause direct mortality to wildlife through road kill, prevent wildlife movement, create disturbance, cause the spread of noxious weeds, reduce habitat and cause habitat fragmentation on the landscape (Joslin et al. 1999).

	<b>Actual Road Density</b>	<b>Acres of Low Road Density</b>	<b>Acres of Moderate Road Density</b>	<b>Acres of High Road Density</b>
<b>Alt. A</b>	1.0	28,511	10,886	11,128
<b>Alt. B</b>	0.3	35,033	10,068	5,423
<b>Alt. C</b>	0.3	35,618	9,876	5,082
<b>Alt. D</b>	0.4	32,875	11,844	5,804

Low Density = 0-1 mi/mi<sup>2</sup>, Moderate Density = 1-2 mi/mi<sup>2</sup>, High Density = >2 mi/mi<sup>2</sup>

Open roads typically increase the level of recreation adjacent to roads which can result in additional disturbance and displacement of wildlife species. Roads can also encourage the public to recreate in areas that had formerly been secluded. Open road miles that are 1 mi/mi<sup>2</sup> have been found to provide roughly 60 percent of functional habitat for elk (Christensen et al. 1993). Permanent and temporary roads could negatively impact wildlife, including special status species, particularly if roads are open during critical periods such as in lynx winter habitat and during the summer months within grizzly bear habitat.

Wildlife, including special status species, that are especially sensitive to roads in the TPA include (but are not limited to) elk, grizzly bear, lynx, wolverine and some raptors. The detrimental effects of open roads to wildlife under Alternative A would be greater than under any of the action alternatives. Under Alternative A, this TPA would have fewer acres of functional winter range (28,511 acres in low road density areas) compared to the action alternatives (Table 4-92). Alternative B would provide 35,033 acres of functional winter range, Alternative C would provide 35,618 acres, and Alternative D would provide 32,875 acres.

Under Alternatives A and D, approximately 31,607 acres of the Upper Big Hole TPA would be closed to snowmobiles with the remaining 31,600 acres open for cross country snowmobile use. Snowmobiling occurs in both the Decision and Planning Areas and the use of snowmobiles could have substantial negative effects to wintering big game and other wildlife species. Cross-country snowmobile use could lead to harassment of wildlife during the high stress winter season (Joslin et al. 1999). This could cause individuals to leave an area (temporarily or permanently) and/or cause an increase in stress that could lead to mortality. Alternatives A and D would have more detrimental effects to wildlife from cross-country snowmobile use than Alternatives B and C.

In evaluating impacts of travel planning on elk and other big game species, it is important to consider impacts on security habitat. Elk security is the inherent protection allowing elk to remain in an area despite increases in stress or disturbance associated with the hunting season or other human activities. Security habitat includes

blocks of nonlinear forested habitats greater than 250 acres in size that are at least 0.5 mile from an open road (Hillis et al. 1991). Security habitat should also consist of larger trees (greater than 8 inches DBH) with vegetation dense enough to hide an adult elk (Thomas et al. 2002). Under Alternative A, there would be approximately 4,665 acres of functional security habitat for big game species. This is the fewest acres of security habitat of all alternatives. Alternative C would have the greatest acres of security habitat (6,813 acres) (Table 4-93).

	<b>ALT A</b>	<b>ALT B</b>	<b>ALT C</b>	<b>ALT D</b>
<b>Upper Big Hole River TPA</b>	4,665	5,296	6,813	5,258

Core areas are areas large enough for wildlife (especially animals with large home ranges such as carnivores and big game) to forage and reproduce. Subcore areas are areas that could act as stepping stones for wildlife as they move through the region (Craighead et al. 2002). Nearly all lands in the TPA are within core or subcore habitat (254,176 acres). Under Alternative A, there would be 79,300 acres with low road density, 60,765 with moderate road density, and 114,111 with high road density in the TPA for all land ownerships. Alternatives A and D would have fewer acres with low road densities in core and subcore habitat at the landscape level compared to Alternatives B and C.

There are also a substantial number of acres on BLM lands that are considered core/subcore habitat, approximately 42,250 acres. Under Alternative A, there would be 22,784 acres with low road density and 8,124 with moderate road density but the majority of acres would have high road density, 11,342 acres, for core and subcore habitat on BLM lands. Alternatives A and D would have considerable fewer acres with low road densities in core and subcore habitat on BLM lands compared to Alternatives B and C.

Wildlife corridors are areas of predicted movement within or between core and subcore areas. The Big Hole Valley provides a critical corridor link from north to south

and the east half of the TPA provides a corridor from the Highland Mountains to the Pintler/Pioneer Mountains. This corridor also provides local daily movements and seasonal movements between higher elevation summer range along the Continental Divide and lower elevation winter range.

Within the Upper Big Hole TPA there are approximately 16,803 acres identified as “high quality” wildlife movement corridors under all land ownerships. In high quality movement corridors under all alternatives there would be 4,981 acres with low road density, 5,009 acres with moderate road density and 6,813 acres of high road densities.

On BLM lands in the TPA there are 3,205 acres mapped as high quality movement corridors. BLM lands in high quality movement corridors under all alternatives would have 2,714 acres with low road density, 480 acres with moderate road density and only 11 acres with high road density.

Riparian areas provide crucial habitat and critical travel corridors for wildlife including special status species. Riparian areas also provide a refuge for native plants and animals in times of stress such as drought or fire. Roads in riparian areas can prevent use of these crucial areas by wildlife, limit use, or cause loss of habitat. Under Alternative A there would be 32 miles of open roads in riparian areas.

## Effects of Alternative B

Under Alternative B, the Upper Big Hole River TPA would have substantially fewer open roads (84.8 miles) compared to Alternative A (158 miles). Of the 84.8 miles of open roads, only 26.9 miles would be open year-round and the remaining 57.9 miles would be seasonally restricted. Alternative B would have more open roads than Alternative C (60 miles) but less than Alternative D (97 miles). Alternative B would decrease harassment to wildlife during all seasons of use, especially during the winter and spring, more than Alternatives A and D. This alternative would also improve habitat and reduce fragmentation more than Alternatives A and D but less than Alternative C.

Under Alternative B, the actual road density in elk winter range in the Upper Big Hole TPA would be 0.3 mi/mi<sup>2</sup>, below the maximum of 1 mi/mi<sup>2</sup> recommended by MFWP in big game winter range. This is lower than the road density under Alternative A (1.0 mi/mi<sup>2</sup>), the same as Alternative C, and slightly lower than Alternative D (0.4 mi/mi<sup>2</sup>) (Table 4-92). Open road miles that are < 0.5 mi/mi<sup>2</sup> have been found to provide greater than 70 percent of functional habitat for elk (Christensen et al. 1993).

Under Alternative B, this TPA would have more acres of functional winter range (35,033 acres with low road density) compared to Alternative A (28,511 acres), a similar amount to Alternative C (35,681 acres), and more acres

than Alternative D (32,875 acres) (Table 4-92). Alternative B would improve the quality and quantity of winter range in the Upper Big Hole TPA compared to Alternatives A and D but would have slightly fewer beneficial effects to winter range than Alternative C.

Alternative B would reduce the acres open to cross country snowmobile use to 13,240 compared to 31,600 acres under Alternatives A and D. Alternative B would have the most acres closed to cross country snowmobile use (46,930 acres) and would have more acres limited to snowmobile use on existing roads (3,030 acres) than Alternatives A and D (0 acres). Alternative B would have fewer negative effects to big game and other wildlife species than Alternatives A and D but could have considerably more effects than Alternative C since all snowmobile use under Alternative C would be limited to open roads.

The amount of big game security habitat would be greater under all action alternatives compared to Alternative A, which would have 4,665 acres. Alternatives B and D would be nearly identical with 5,296 acres and 5,258 acres, respectively. Alternatives B and D would have fewer acres of functional security habitat compared to Alternative C (6,813 acres) (Table 4-93).

For all land ownerships, Alternative B would increase the acreage of core and subcore habitat with low road density to 84,430 acres, compared to 79,300 acres under Alternative A. Alternative B would also increase the acreage with moderate road density to 63,221 acres over Alternative A (60,765 acres), and would decrease the acreage with high road density to 106,524 acres compared to the 114,111 acres under Alternative A. Alternative B would improve core and subcore habitat across the landscape more than Alternatives A and D but less than Alternative C.

On BLM lands acres in core/subcore habitat, Alternative B would increase the acreage with low road density to 26,759 acres compared to the 22,784 acres under Alternative A. Alternative B would also increase acreage with moderate road density to 9,140 acres compared to Alternative A (8,124 acres), and would substantially reduce the acreage in high road density to 6,351 acres compared to the 11,342 acres under Alternative A. Alternative B would improve core and subcore habitat on BLM lands more than Alternatives A and D but less than Alternative C.

Effects associated with high quality wildlife movement corridors under Alternative B would be the same as under Alternative A.

Alternatives B and C would protect and restore substantially more riparian habitat than Alternative A by reducing the miles of open roads in riparian areas to 19.3 miles (from 32 under Alternative A). Alternatives B and C would also have fewer open roads in riparian habitats than Alternative D (22.2 miles). Alternatives B and C would allow for more breeding, foraging and hiding

habitat as well as improve more movement corridors for a wide variety of species than Alternatives A and D.

### Effects of Alternative C

Under Alternative C, the Upper Big Hole River TPA would have substantially fewer open roads (60 miles) compared to Alternative A (158 miles). Of the 60 miles of open roads, only 19.2 miles would be open year-round and the remaining 40.8 miles would be seasonally restricted. Alternative C would also have fewer open roads than Alternative B (81 miles) and considerably less than Alternative D (97 miles). Alternative C would decrease harassment to wildlife during all seasons of use, especially during the winter and spring, more than all other alternatives. This alternative would also improve habitat and reduce fragmentation more than all other alternatives.

Effects associated with open road density in elk winter range under Alternative C would be the same as under Alternative B (**Table 4-92**). Under Alternative C, this TPA would have more acres of functional winter range (36,618 acres with low road density) compared to Alternative A (28,511 acres), a similar amount to Alternative B (35,033 acres), and more acres than Alternative D (32,875 acres) (**Table 4-92**). Alternative C would improve the quality and quantity of winter range in the Upper Big Hole TPA more than Alternatives A and D and would have slightly more beneficial effects to winter range than Alternative B.

Alternative C would have the fewest negative effects to big game and other wildlife species by closing the entire TPA to cross country snowmobile use. Snowmobile use on approximately 31,600 acres would be limited to use on open routes (14 miles).

The amount of big game security habitat would be greater under all action alternatives compared to Alternative A which would have 4,665 acres. Alternative C would have 6,813 acres of security habitat, more acres than any other alternative. Alternatives B and D would be nearly identical with 5,296 and 5,258 acres of security habitat, respectively (**Table 4-93**).

For all land ownerships, Alternative C would increase the acreage of core and subcore habitat with low road density to 85,004 acres, compared to 84,430 acres under Alternative B and 79,300 acres under Alternative A. Alternatives C and B would have similar acreage with moderate road density (63,030 acres and 63,221 acres, respectively), which would be an increase in acreage compared to Alternative A (60,765 acres). Alternative C would decrease the acreage with high road density to 106,142 acres, which would be slightly less than Alternative B (106,524 acres) and substantially less than Alternative A (114,111 acres). Alternative C would improve core and subcore habitat across the landscape more than all other alternatives.

In core and subcore habitat on BLM lands, Alternative C would increase the acreage with low road density to 27,302 acres compared to Alternative B (26,759 acres) and Alternative A (22,784 acres). Alternative C would decrease acreage with moderate road density to 8,947 acres compared to Alternative B (9,140 acres) but would slightly increase acreage with moderate road density compared to Alternative A (8,124 acres). Alternative C would substantially reduce the acreage in high road density to 6,000 acres, compared to the 11,342 acres found under Alternative A. Alternative C would improve core and subcore habitat on BLM lands more than all other alternatives.

Effects associated with high quality wildlife movement corridors would be the same under Alternative C as under Alternative B.

Effects associated with roads in riparian areas under Alternative C would be the same as under Alternative B.

### Effects of Alternative D

Under Alternative D, the Upper Big Hole River TPA would have substantially fewer open roads (97 miles) compared to Alternative A (158 miles). Of the 97 miles of open roads, 26.8 miles would be open year-round and the remaining 70.6 miles would be seasonally restricted. Alternative D would have substantially more open roads than Alternative B (81 miles) and Alternative C (60 miles). Alternative D would allow more harassment to wildlife during all seasons of use, especially during the winter and spring, than Alternative B and, especially, Alternative C. This alternative would also restore less habitat and allow more fragmentation than Alternatives B and C but would improve habitat and lessen fragmentation compared to Alternative A.

Under Alternative D, the actual road density in elk winter range in the Upper Big Hole TPA would be 0.4 mi/mi<sup>2</sup>, below the maximum of 1 mi/mi<sup>2</sup> recommended by FWP in big game winter range (**Table 4-92**). This is lower than the road density under Alternative A (1.0 mi/mi<sup>2</sup>) but slightly more than Alternatives B and C (0.3 mi/mi<sup>2</sup>).

Under Alternative D, this TPA would have more acres of functional winter range (32,875 acres with low road density) compared to Alternative A (28,511 acres) but less than Alternative B (35,033 acres) and Alternative C (35,618 acres) (**Table 4-92**). Alternative D would improve the quality and quantity of winter range in the Upper Big Hole TPA compared to Alternative but would have fewer beneficial effects to winter range than Alternatives B and C.

Under Alternatives D and A, approximately 31,607 acres of the Upper Big Hole TPA would be closed to snowmobile use with the remaining 31,600 acres open for cross country snowmobile use. Alternatives D and A would have **substantially** more detrimental effects to

wildlife from cross-country snowmobile use than Alternatives B and C.

The amount of big game security habitat would be greater under all action alternatives compared to Alternative A, which would have 4,665 acres. With 5,258 acres of security habitat, Alternative D would have fewer acres than Alternative C (6,813) and slightly fewer acres than Alternative B (5,296 acres) (**Table 4-93**).

For all land ownerships, Alternative D would increase the acreage of core and subcore habitat with low road density to 82,317 acres compared to Alternative A (79,300 acres). This alternative would have fewer acres with low road density compared to Alternative B (84,430 acres) and Alternative C (85,004 acres). All action alternatives would increase acreage with moderate road density compared to Alternative A. Alternative D would have 64,613 acres with moderate road density while Alternative A would have 60,765 acres. Alternative D would reduce the acreage with high road density to 107,246 acres compared to Alternative A (114,111 acres), but would have more acres with high road density compared to Alternative B (106,524 acres) and Alternative C (106,142 acres). Alternative D would improve core and subcore habitat across the landscape more than Alternative A but less than Alternatives B and C.

In core and subcore habitat on BLM lands, Alternative D would increase the acreage with low road density to 24,812 acres compared to Alternative A (22,784 acres), but would have fewer acres with low road density compared to Alternative B (26,759 acres) and Alternative C (27,302 acres). Alternative D would increase the acreage with moderate road density (10,587 acres) over Alternative A (8,124 acres) and would also increase the number of these acres compared to Alternative B (9,140 acres) and Alternative C (8,947 acres). Alternative D would reduce the acreage with high road density to 6,850 acres compared to Alternative A (11,342), but would have slightly more acres with high road density compared to Alternative B (6,351 acres) and Alternative C (6,000 acres). Alternative D would improve core and subcore habitat on BLM lands more than Alternative A but considerably less than Alternatives B and C.

Effects associated with high quality wildlife movement corridors would be the same under Alternative D as under the other alternatives.

Alternative D would protect and restore substantially more riparian habitat than Alternative A by reducing the miles of open roads in riparian areas to 22.2 miles (from 32 under Alternative A). Alternative D would have more open roads in riparian habitats than Alternatives B and C (19.3 miles). Alternative D would allow for more breeding, foraging and hiding habitat as well as improve more movement corridors for a wide variety of species than Alternative A but less than Alternatives B and C.

## Cumulative Effects on Wildlife

Wildlife habitat in the Upper Big Hole TPA has been affected by roads, historic and current mining, timber harvest, weed infestations, recreation, powerline corridor development, and communication sites.

The majority of the Upper Big Hole River TPA is characterized by undeveloped land (private homes/ranches, BLM, state, and USFS lands). Only about 2,000 people live in the area, many of them making their living by ranching and hay farming. Population growth for the TPA is expected to remain low. Several small communities (Divide, Dewey, and Wise River) are located within the TPA.

Recreation use is well established in the TPA, with fishing and big game hunting being the dominant recreational activities. The Big Hole River has a national reputation as a premiere fly fishing destination. Big game hunting attracts regional and national attention, as well.

The amount of historic mining varies throughout the TPA. From Divide to the northwest, there is little mineralization and minimal impacts from historic mining. From Divide to the southeast through the Soap Gulch and Camp Creek drainages, there is a substantial amount of mineralization and historic mining. Current activity, however, is low but increases in mineral prices could lead to renewed mining activity.

In the TPA, there are 20 powerlines and one pipeline. There are no existing communication sites in the TPA and, in the future, communication sites on BLM lands would be restricted to existing sites. No future communication sites are expected in the TPA on BLM lands but they could occur on other public or private lands. There is the potential for future powerlines and pipelines to be built in this TPA.

There are approximately 70 rights-of-way (ROW) in the TPA and applications for ROW permits to access private property or for commercial development are likely to increase in the future. As a result, public access to BLM lands could increase. Fewer ROWs would be expected under Alternative A because more BLM roads would remain open under this alternative. Alternative B would be expected to have fewer ROWs than Alternative C but more than Alternatives A and D. Alternative C would be expected to have the most ROWs and, of the action alternatives, Alternative D would have the fewest.

Approximately 63 bighorn sheep were relocated to the Camp Creek and Soap Gulch drainages between 2000 and 2004. These efforts have increased sheep populations in these areas.

From 1981-2004 there have been 18 wildland fires that burned 230 acres of BLM lands (it is unknown how many acres burned in the entire TPA). Nine of the fires were identified as human-caused and these fires burned the majority of the BLM acres (229). There have been several vegetative treatments in the TPA in the last 10

years. On BLM lands, approximately 474 acres were burned with prescribed fire and another 141 acres were mechanically treated in the Jerry Creek and Dickie Hills areas to remove conifer encroachment into meadow habitat. Timber was harvested on approximately 60 acres of BLM land between 1984 and 1995 and from 1995 to present there has been timber harvest on approximately 200 acres of BLM lands. Timber harvest has also occurred on private and Forest Service lands.

Additional vegetative treatments on BLM lands, consisting of thinning dry Douglas fir and removing conifer encroachment from sagebrush and grasslands, are planned for the Highlands and Wise River areas. Approximately 2,660 acres are planned for prescribed fire in the Highlands and approximately 500-2,000 acres of mechanical and prescribed fire are planned in the Wise River area. These projects would likely improve wildlife habitat by restoring grassland, shrubland, and forest habitat conditions.

Vegetative treatments on BLM lands have had moderate effects to wildlife habitat in the TPA. While most vegetative treatments have improved habitat for wildlife, some old timber sale units have not recovered. Timber harvest on private lands and other public lands has also had minor to moderate effects to wildlife habitat in the TPA. Past mining activities on public and private lands in the Soap Gulch and Camp Creek areas has altered some areas of the landscape, although high quality habitat is still available for wildlife. Roads constructed to access mining claims, timber harvest and recreation activities are, most likely, having the most direct impact on wildlife in the TPA.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the TPA. Motorized activities play a large role in the distribution of noxious weeds. The cumulative effects of the spread of noxious weeds from open roads would be greater under Alternative A than all other alternatives. Alternative A would result in more wildlife habitat being lost or degraded due to noxious weed infestations compared to the action alternatives. Alternative B would have fewer open roads than Alternatives A and D resulting in fewer infestations of noxious weeds. Alternative C would close the most roads and would have the fewest cumulative effects from loss of habitat due to noxious weeds of all alternatives. Open roads and development adjacent to BLM lands and the substantial amount of public use this area receives would still allow for the spread of noxious weeds.

Public lands make up 58 percent of the TPA and provide large blocks of habitat. However, open roads on BLM lands as well as on private lands (about 570 miles) and other public lands (about 574 miles) have reduced the quality of wildlife habitat within the TPA. Open roads in the TPA cause disturbance and harassment to wildlife during the breeding and wintering seasons along with fragmentation and loss of habitat. Open roads in the

Planning Area would likely increase due to development and management of private lands, especially in the Big Hole Valley. Alternative A would have the greatest negative cumulative effects to wildlife and wildlife habitat from open roads with 158 miles of open roads. Alternative B would have fewer negative cumulative effects with 81 miles of open road than Alternatives A and D (97.4 miles), but more than Alternative C (60 miles).

Of the action alternatives, Alternative C would have the most beneficial cumulative effects by reducing habitat fragmentation, restoring habitat, and reducing disturbance during all seasons of use. Alternative B would be more beneficial than Alternatives A and D but less than Alternative C.

Historic and recent timber cutting, past mining activity and firewood gathering along open roads in the TPA may have reduced the amount of suitable snag habitat for cavity nesting species. Alternative A would allow a substantial amount of access to the area for firewood cutting that would continue to prevent snag recruitment for snag dependant species and minimize the amount of down woody material along open roads. Alternative B would protect more snag and down woody habitat from loss due to firewood cutting than Alternatives A and D but would protect less of this habitat type than Alternative C.

The Upper Big Hole TPA provides the most functional big game security habitat of the five TPAs being analyzed in this EIS. The large amount of public land allows for larger blocks of habitat away from roads. However, there would be less security habitat under Alternative A due to higher open road densities than under other alternatives. Alternatives B and C would provide the most security habitat for big game (5,296 and 6,813 acres, respectively) and Alternative D would provide a similar amount to Alternative B (5,258 acres). Security habitat would still be limited on private (unless closed to hunting) and other public lands. Under the action alternatives, the reduction of open roads during the hunting season would help mitigate for the loss of security habitat on adjacent lands.

Approximately 71 percent of the TPA is mapped as core and subcore habitat that is predominately Forest Service and BLM lands. Open roads has had some impact on the quality of core/subcore habitat and wildlife movement corridors in the TPA.

Habitat mapped as core and subcore habitat and wildlife movement corridors having high road densities would continue to be of lower value to wildlife under Alternative A. An increase in open roads in both the Decision and Planning Areas could result in a loss of core and subcore habitat under all alternatives but, especially, Alternative A. Although core/subcore habitat and wildlife movement corridors would continue to be impacted by development on private lands in the Big Hole Valley, Alternatives B and C would allow more BLM lands to

function as core/subcore habitat and wildlife movement corridors. Alternatives B and C would have fewer negative cumulative effects to core/subcore and wildlife habitat than Alternatives A and D.

The cumulative effects of high road densities would continue to negatively affect wildlife species during the breeding season more under Alternative A than under the action alternatives. Alternatives B and C would have the most beneficial cumulative effects to wildlife during the breeding season compared to Alternative D and, especially, Alternative A.

## FISH

For the sake of this discussion, “open” roads include roads that are open with seasonal restrictions as well as roads that are open yearlong. Roads identified as “closed” within 300 feet of streams also include roads that would be “decommissioned” in these areas by alternative. Effects to water quality described in the Water Resources section would affect fish populations and fish habitat quality. Analyses described and tabulated in the Water Resources section are referred to in the context of effects to fish in the discussion below.

### Effects of Alternative A

Under Alternative A, the Upper Big Hole TPA would have substantially more open roads (158 miles) compared to the action alternatives. Roads can have a wide range of effects on fish and fish habitat. These effects would include, but are not limited to, increased sedimentation from road construction and vehicle use, increased runoff, changes in surface water and drainage patterns from stream crossings, conduits for noxious weeds, loss of riparian vegetation, potential decreases in stream shading that could lead to water temperature increases, loss of instream habitats, and changes in local fish populations when culverts are impassable and limit fish migration.

Watershed (or hydrologic) function can be used as an indicator of relative risk or impacts to fish habitat. To determine the effects on watershed functions, a moving windows analysis was conducted on BLM lands to look at the miles of roads that would be decommissioned and removed from the landscape for each alternative. During this analysis, it was assumed that even though closing roads would improve watershed function, closed roads would remain on the landscape and could still have negative impacts to water quality and prevent or impede the restoration of riparian vegetation. Under Alternative A, there would be 19,646 acres with low road density, 18,204 acres with moderate road density and 25,357 acres with high road density on BLM lands in this TPA (**Table 4-89**). Alternative A would have fewer acres with low road density and more acres with high road density than the action alternatives and this alternative would be expected to have more overall negative effects

to watershed function and fish habitat due to roads than the other alternatives.

For this discussion, road miles within 300 feet of fish bearing streams would be considered an indicator of direct effects to fish habitat and fish populations. Under Alternative A, there would be 0.1 miles of closed road and 7.9 miles of open road within 300 feet of fish bearing streams on BLM lands. Alternative A would have 0.3-1.2 fewer miles of closed roads than the action alternatives and 0.3-1.3 more miles of open roads adjacent to fish bearing streams than the action alternatives. Of the 8 miles of open road adjacent to fish bearing streams under Alternative A, 4.3 miles are along streams with BLM special status species (westslope cutthroat trout and Arctic grayling). Alternative A would have more long-term negative impacts to westslope cutthroat trout as well as to other fish species compared to the action alternatives.

Perennial non-fish bearing streams contribute to fish habitat indirectly by serving as conduits for watershed products (water, sediment, nutrients, contaminants, and in some cases woody material) to fish bearing streams. Under Alternative A, there would be 0.8 miles of closed road and 23 miles of open road within 300 feet of non-fish bearing streams on BLM lands in the TPA. Alternative A would have substantially more miles of open road adjacent to perennial streams than the action alternatives.

This alternative would have the greatest negative impacts to fish and aquatic resources from open roads of all the alternatives.

### Effects of Alternative B

Under Alternative B, the Upper Big Hole TPA would have substantially fewer open roads (81 miles) compared to Alternative A (158 miles). Alternative B would have more open roads than Alternative C (60 open miles) but less than Alternative D (97 open miles).

In the context of watershed function, Alternative B would have approximately 946 more BLM acres in the low road density category, 1,330 more BLM acres in the moderate road density category, and 2,257 fewer BLM acres in the high road density category than Alternative A (**Table 4-89**).

Alternative B would contribute to improved hydrologic function more than Alternative A. This analysis does consider “decommissioned” roads, but does not consider “closed” roads as contributing to watershed function. Even though closed roads could still have adverse effects to aquatic habitats, these roads have more potential to become revegetated and lessen sedimentation and runoff, and restore riparian vegetation (thus contributing to improved fish habitat conditions) than open roads. Under Alternative B, there would be approximately 44 more miles of closed roads than under Alternative A, an additional indication that Alternative B would pose less impact to fish habitat than Alternative A. Alternative B

would have 0.4 miles of closed road and 7.6 miles of open road within 300 feet of fish bearing streams on BLM lands. Of the 7.6 miles of open roads, 4 miles would be adjacent to streams with special status species (westslope cutthroat trout and/or Arctic grayling). Alternative B would slightly reduce direct effects fish bearing streams (including streams with special status species) compared to Alternative A.

Alternative B would contribute fewer indirect effects to fish habitat associated with roads within 300 feet of perennial non-fish bearing streams than Alternative A. Under Alternative B there would be 8.1 miles of closed road and 15.7 miles of open road within 300 feet of perennial non-fish bearing streams on BLM lands in the TPA. This would be approximately 7.3 more miles of closed roads in these areas than under Alternative A. Alternative B would have fewer road-related adverse effects to fish and aquatic habitats than Alternative A and would contribute to aquatic habitat improvement compared to the current condition.

### Effects of Alternative C

Under Alternative C, the Upper Big Hole TPA would have substantially fewer open roads (60 miles) compared to Alternative A (158 miles). Alternative C would also have fewer open roads than Alternative B (81 miles) and Alternative D (97 miles).

In the context of watershed function, Alternative C would have 1,815 more BLM acres in the low road density category, 1,302 more BLM acres in the moderate road density category, and 3,112 fewer acres in the high road density category than Alternative A (**Table 4-89**). This alternative would have 869 more BLM acres in the low road density category, 28 fewer acres in the moderate road density category, and 835 fewer acres in the high road density category than Alternative B. This analysis does consider “decommissioned” roads, but does not consider “closed” roads as contributing to watershed function. Even though closed roads could still have adverse effects to aquatic habitats, these roads have more potential to become revegetated and lessen sedimentation and runoff, and restore riparian vegetation (thus contributing to improved fish habitat conditions) than open roads. Under Alternative C there would be approximately 62 more miles of closed roads than under Alternative A, and approximately 19 more miles of closed road than under Alternative B. From the standpoint of watershed function, Alternative C would pose less impact to fish habitat than Alternative B, and would provide the greatest improvement to watershed function of all the alternatives.

Alternative C would have more miles of closed roads (1.3) and fewer miles of open roads (6.7) within 300 feet of fish bearing streams on BLM lands than all other alternatives. Of the 6.7 miles of open road, 4.0 miles would be adjacent to streams with special status species (westslope cutthroat trout and/or Arctic

grayling). Alternative C would reduce direct effects to fish bearing streams from roads more than all other alternatives.

Alternative C would contribute fewer indirect effects to fish habitat associated with roads within 300 feet of perennial non-fish bearing streams on BLM lands compared to all other alternatives. Under Alternative C there would be 9.4 miles of closed road and 14.4 miles of open road within 300 feet of perennial non-fish bearing streams on BLM lands in the TPA. This would be 8.6 more miles of closed road than Alternative A and 1.3 more miles of closed road than Alternative B in these areas.

Overall Alternative C would have fewer road-related adverse effects to fish and aquatic habitats than any of the alternatives and would contribute the most to aquatic habitat improvement compared to the current conditions.

### Effects of Alternative D

Under Alternative D, the Upper Big Hole TPA would have substantially fewer open roads (97 miles) compared to Alternative A (158 miles). Alternative D would have considerably more open roads than Alternative B (81 miles) and Alternative C (60 miles).

In the context of watershed function, Alternative D would have 933 more acres in the low road density category, 1,149 more acres in the moderate road density category, and 2,081 fewer acres in the high road density category on BLM lands than Alternative A (**Table 4-89**). This alternative would have the second fewest BLM acres in the low and moderate road density categories, and the second most BLM acres in the high road density category of all the alternatives. This analysis does consider “decommissioned” roads, but does not consider “closed” roads as contributing to watershed function. Even though closed roads could still have adverse effects to aquatic habitats, these roads have more potential to become revegetated and lessen sedimentation and runoff, and restore riparian vegetation (thus contributing to improved fish habitat conditions) than open roads. The fewest total road miles would be closed under Alternative D (33 closed miles) of the action alternatives (51 closed miles under Alternative B and 69 closed miles under Alternative C). Alternative D would improve watershed function more than Alternative A, but less than Alternatives B and C.

Effects associated with roads within 300 feet of fish bearing streams on BLM lands under Alternative D would be the same as under Alternative B.

Alternative D would contribute more indirect effects to fish habitat associated with roads within 300 feet of perennial non-fish bearing streams than Alternatives B and C, but less than Alternative A. Under Alternative D there would be 6.3 miles of closed road and 17.5 miles of open road within 300 feet of perennial non-fish bearing streams on BLM lands in the TPA. This would be 5.5

more miles of closed roads than under Alternative A, 1.8 fewer miles of closed roads than Alternative B, and 3.1 fewer miles of closed roads than Alternative C in these areas.

Alternative D would have fewer road-related adverse effects to fish and aquatic habitats than Alternative A, but more than Alternatives B and C, and would contribute to aquatic habitat improvement compared to the current condition.

## Cumulative Effects on Fish

The Upper Big Hole TPA supports a variety of native and introduced fish species. One of the major human influences to fish in the TPA has been the introduction of non-native trout species including rainbow trout, brook trout, and brown trout throughout the TPA as well as Yellowstone cutthroat trout in Moose Creek and Wise River. Rainbow trout have hybridized with the native westslope cutthroat trout in many streams. Brook trout and brown trout have displaced the native cutthroats in other streams, especially those altered by sedimentation and increased water temperatures brought on by human activities. Yellowstone cutthroat trout have also hybridized with westslope cutthroat trout in Moose Creek.

The majority of the Upper Big Hole River TPA is characterized by undeveloped land (private homes/ranches, BLM, State, and USFS lands). Only about 2,000 people live in the area, many of them making their living by ranching and hay farming. Population growth for the TPA is expected to remain low and the area will likely remain predominantly undeveloped for the foreseeable future.

Recreation use is well established in the TPA, with fishing and big game hunting being the dominant recreational activities. The Big Hole River has a national reputation as a premiere fly fishing destination primarily for rainbow and brown trout. Big game hunting attracts regional and national attention, as well.

Agricultural activities from farming and ranching can contribute increases in nutrients, sedimentation and cause the loss or degradation of aquatic habitats. Many streams in the TPA have been impacted by historic and on-going livestock grazing that breaks down streambanks, widens channels, removes vegetative cover, and causes increases in fine sediment and nutrients.

Agricultural water withdrawals are a substantial impact to water resources in the Big Hole River itself. During late summer the Big Hole River typically experiences lower than natural flows, increased water temperatures, and algal blooms. These conditions are exacerbated by agricultural water withdrawals during this period. Government agencies and local entities regularly work with ranchers to minimize their agricultural withdrawals during summer low flow periods to minimize low flow effects on fish populations in the Big Hole River. In particular, concern about the population status of fluvial

Arctic grayling have prompted stakeholders in the Big Hole River to provide greater instream flows during low flow periods to benefit Arctic grayling and prevent a federal listing of this species under the Endangered Species Act.

The amount of historic mining varies throughout the TPA. From Divide to the northwest, there is little mineralization and minimal impacts from historic mining. From Divide to the southeast through the Soap Gulch and Camp Creek drainages, there is a substantial amount of mineralization and historic mining. Current activity, however, is low but increases in mineral prices could lead to renewed mining activity. Increases in mineral prices could lead to increased or renewed mining activity in the Soap Gulch and Camp Creek drainages. The impacts from historic mining on aquatic habitats have been concentrated in the Soap Gulch and Camp Creek areas. See the Cumulative Effects portion of the Water Resources section for a description of streams impacted with heavy metal contamination due to historic mining.

Fires, floods, and drought have historically affected fish habitat in the TPA. These disturbances can cause a pulse of sediment or may temporarily reduce the quality of fish habitat in some watersheds while leaving other streams largely unaffected. Population recovery in disturbed streams may be facilitated by fish immigration from nearby drainages less affected by the catastrophic event. From 1981-2004 there have been 18 wildland fires that burned 230 acres. Nine of the fires were identified as human-caused and these fires burned the majority of the acres (229). There have been several vegetative treatments in the TPA on BLM lands in the last 10 years. Approximately 474 acres were burned with prescribed fire and another 141 acres were mechanically treated in the Jerry Creek and Dickie Hills areas to remove conifer encroachment into meadow habitat. These activities had minimal effects on fish habitat.

Timber harvest can alter the recruitment of large woody material, reduce canopy closures, and result in an increase in fine sediment to streams. Timber harvest along with associated roads can contribute substantially to the overall cumulative effects in forested watersheds. Approximately 60 acres of timber on BLM lands were harvested between 1984 and 1995 and from 1995 to present there have been approximately 200 acres of timber harvest. Adjacent private and Forest Service lands have also had a small amount of timber harvest in the past and additional harvest is expected in the future with a range of effects to fish and aquatic habitat.

Past vegetative treatments on BLM lands may have had minor to moderate effects to aquatic habitat in the TPA. While most vegetative treatments have improved overall watershed functions, some old timber sale units have not recovered and have removed riparian vegetation. Timber harvest on private lands and other public lands may have also had minor to moderate effects to fish and aquatic habitats in the TPA.

Additional vegetation treatments, consisting of thinning dry Douglas fir and removing conifer encroachment from sagebrush and grasslands, are planned for the Highlands and Wise River areas on BLM lands. Approximately 2,660 acres are planned for prescribed fire in the Highlands and approximately 500-2,000 acres of mechanical and prescribed fire are planned in the Wise River area. These treatments will likely have minimal effects to fish and aquatic habitat.

Roads are another major contributor of sediment to streams and a major problem with regards to cumulative watershed effects. Roads and trails can have localized effects on nearby stream segments or at stream crossing sites, especially fords. Cumulatively, roads degrade aquatic habitat due to sedimentation from road construction and vehicle use, increased runoff, changes in surface water and drainage patterns from stream crossings, loss of riparian vegetation, and loss of large woody material. Roads can cause changes in local fish populations when culverts are impassable and limit fish migration. Alternative A would have more negative cumulative effects to watersheds and individual streams due to roads than the action alternatives. Alternative B would have fewer negative cumulative effects than Alternatives A and D but more than Alternative C. Alternative B would improve overall watershed functions as well as improve habitat in individual streams more than Alternatives A and D but less than C. Alternative C would have the greatest beneficial cumulative effects.

## SPECIAL STATUS PLANTS

### Effects Common to All Alternatives

Ground-disturbing activities from road construction and maintenance, as well as road use by vehicles can affect special status plant populations and habitat. These activities can reduce sensitive plant species through disturbance to individual populations, increasing competition from invasive species, and reducing habitat connectivity. Closure of roads and trails can improve or maintain sensitive plant populations or habitat by reducing avenues of noxious weed spread, maintaining habitat connectivity, and improving pollinator habitat. Road and trail restrictions have the same effects but to a lesser degree.

### Effects of the Alternatives

Under Alternative A, 70.6 miles of BLM roads and trails would remain open, 88.0 miles of roads and trails would be open with seasonal restrictions, and 7.4 miles of roads and trails would be closed. On the open roads, effects would continue as described in the Effects Common to All Alternatives section. On the closed routes, vectors of noxious weed spread would be reduced and habitat connectivity and health would be improved for sensitive plants and their pollinators. Restricted routes have some positive impact because some possible noxious weed spread is reduced; however the benefit isn't as large as closing or decommissioning a route.

Under Alternative B, 26.9 miles of BLM roads and trails would remain open, 57.9 miles of roads and trails would be open with seasonal restrictions, 49.2 miles of roads and trails would be closed, and 27.7 miles would be decommissioned. On the closed routes, vectors of noxious weed spread would be reduced and habitat connectivity and health would be improved for sensitive plants and their pollinators. The restricted roads would reduce weed spread a limited amount. Alternative B would benefit and reduce risk to special status plants compared to Alternative A.

Under Alternative C, 19.2 miles of BLM roads and trails would remain open, 40.8 miles of roads and trails would be open with seasonal restrictions, 69.3 miles of roads and trails would be closed, and 33.5 miles would be decommissioned. On the closed routes, vectors of noxious weed spread would be reduced and habitat connectivity and health would be improved for sensitive plants and their pollinators. The restricted roads would reduce weed spread a limited amount. Alternative C would benefit and reduce risk to special status plants the most of any alternative because it would eliminate disturbance, vehicular use, and spread of noxious weeds on the most road miles.

Under Alternative D, 26.8 miles of BLM roads and trails would remain open, 70.6 miles of roads and trails would be open with seasonal restrictions, 33.2 miles of roads and trails would be closed, and 25.7 miles would be decommissioned. On the open roads, effects would continue as described in the Effects Common to All Alternatives section. On the closed routes, vectors of noxious weed spread would be reduced and habitat connectivity and health would be improved for sensitive plants and their pollinators. The restricted roads would reduce weed spread a limited amount. Alternative D would benefit and reduce risk to special status plants more than Alternative A, but less than Alternatives B and C.

### Cumulative Effects on Special Status Plants

Under all alternatives there are a number of past, present, and reasonably foreseeable future actions that affect special status plant populations.

Livestock grazing will continue in the area and has the potential to impact sensitive plant populations and habitat. On public lands, ongoing rangeland health assessments and implementation of livestock grazing guidelines would continue to improve or maintain sensitive species populations and habitat. On private lands, livestock grazing is expected to decline slowly as more ranch and farmland is subdivided. Conditions may improve or degrade as management changes.

Noxious weed control will continue on both public and private lands with varying degrees of success. To the extent that these efforts are successful, sensitive plants would benefit from the reduced competition. Use of her-

bicides for noxious weed control could cause mortality to special status plants if individual plants are inadvertently sprayed.

Although less residential development is anticipated in the Upper Big Hole River area than in other TPAs, recent and anticipated subdivision growth on private lands will lead to more road construction and maintenance. More roads and development will reduce sensitive plant species habitat and in some cases individual populations. Additionally, subdivisions have the potential to disrupt the connectivity of plant habitat and populations as well as disturbing or eliminating pollinators needed by sensitive species. Some sensitive species that require soil disturbance may benefit.

Timber sale activity disturbance can destroy or degrade sensitive plant habitat. On public lands, projects would be designed to avoid, mitigate, or enhance sensitive plant habitats. The disturbance associated with timber harvest activities does have the potential to increase noxious weed spread which degrades sensitive species habitat and individual plant populations.

Mine closures are planned, and have been completed, in the Soap Gulch and Camp Creek areas where sensitive plant habitat is present. Activities have been planned to minimize or eliminate surface disturbance in sensitive plant habitat, however some plant populations or habitat may be inadvertently disturbed.

The Big Hole Watershed group has completed a number of projects to improve livestock grazing, weed control, and irrigation practices on private land. Riparian conditions along the river have improved in a number of places as a result. Habitat for Idaho sedge would improve as well as it is a riparian species.

The BLM fuels reduction project now being planned for the Wise River area is not anticipated to have any adverse effects on special status plants. Treatments would be designed to minimize surface disturbance in sensitive plant habitat. Additionally, treatment would improve habitat in some areas by opening up parks and edges where trees have expanded into grassland soils and trees have thickened to the point of closing canopies.

At the scale of the entire Upper Big Hole River TPA (all land ownerships), the BLM travel plan alternatives would have slightly variable contributions to cumulative effects on special status plants. Under Alternative A less than 1 percent of all roads in the TPA would be closed. Under Alternative B adverse effects on special status plants would be slightly reduced compared to Alternative A because 6.1 percent of all roads in the TPA would be closed or decommissioned. Alternative C would provide the most benefits of all alternatives as 7.9 percent of all roads in the TPA would be closed or decommissioned. Alternative D would provide slightly more benefits than Alternative A but slightly fewer benefits than either Alternatives B or C as 4.5 percent of all roads in the TPA would be closed or decommissioned. Because

BLM lands make up only 17.7 percent of all lands in the TPA, activities on non-BLM lands would play a dominant role in determining status of special status plants.

## WILDLAND FIRE MANAGEMENT

Travel planning alternatives were analyzed to determine whether they could result in impact on wildland fire management, causing change to any of the following indicators:

- Fire regime condition class (FRCC)
- Firefighter and public safety
- Reducing threat to Wildland Urban Interface (WUI)

## Effects Common to All Alternatives

Public road access during the fire season provides opportunities for human-caused fires either due to catalytic converters on vehicles igniting dry vegetation, or due to some types of human activities. Roads that are closed to public access reduce the risk of human-caused fire starts in those areas.

Decommissioned roads and roads that are closed and not regularly maintained for navigability reduce access for fire suppression. Closed roads may become impassible due to vegetation regrowth, downfall of trees, or severe erosion. Some roads may be closed with earthen berms or fallen trees and would need to be physically manipulated to make them useable for vehicles again. These roads would extend firefighting response time and have negative impacts on efforts to reduce wildland fire threat to WUI areas and firefighter and public safety. In an emergency fire suppression situation, any navigable closed roads needed for fire suppression would be used immediately. Non-navigable closed roads could also be used if deemed to be needed for fire suppression, after needed improvements are made to make those roads useable. Planning and implementation of fuels reduction treatments could occur in association with closed roads if variances for temporary road use were to be allowed. Variances would be subject to internal BLM review.

In the context of fuels reduction projects, availability of open roads is important to facilitating fuels project location as well as increasing project feasibility and decreasing costs. Open roads also facilitate spread of noxious weeds by transporting weed seed on vehicles and their tires. Presence of large noxious weed populations could delay or cause fuels projects to be cost-prohibitive due to the fact that the weeds may have to be treated before and/or after the fuels treatment. Also, some applications of fuel treatments (e.g., prescribed fire) may promote the spread of some weeds. The presence of weeds and non-native species are indicators that FRCC has departed from historical conditions.

Noxious weeds and non-native invasive species are well established and spreading in the Upper Big Hole River TPA.

### Effects of Alternative A

Under Alternative A, all BLM routes located within the TPA would continue to be managed as indicated on the Southwest Montana Interagency Visitor/Travel Map (USDA-FS, USDI-BLM, and State of Montana, 1996). Alternative A provides 157.9 miles of routes open to wheeled motorized use (69.9 miles open yearlong, 88.0 miles seasonally restricted). Alternative A would allow for the greatest flexibility between alternatives for access for suppression purposes. Fuels project feasibility would be highest under this alternative. However, public access during the fire season would be the greatest under this alternative and would provide the most opportunities for human-caused fire starts.

The distribution of noxious weeds could be the greatest under Alternative A with the most open roads and noxious weeds already well established. This would contribute to reduced feasibility of fuels reduction projects more than under any other alternative.

### Effects of Alternative B

Under Alternative B, 80.9 miles of routes would be available for wheeled motorized use (26.9 miles open yearlong, 57.9 miles seasonally restricted). Alternative B would limit the flexibility for access for suppression purposes, and fuels project feasibility would go down compared to Alternative A due to the fact that access would be limited to 84.8 miles of road. Of the 76.9 miles of closed roads, 27.7 miles would be decommissioned and would likely be unusable for fire suppression. The risk of human-caused fires from motorized use would be limited compared to Alternative A, due to a 44 percent decrease in miles of road open to motorized public travel.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the area. Because more roads would be closed than under Alternative A, Alternative B should help reduce the spread of noxious weeds, and may make fuels treatment more feasible than Alternative A, reducing FRCC departure.

### Effects of Alternative C

Under Alternative C, 60.0 miles of routes would be available for wheeled motorized use (19.2 miles open yearlong, 40.8 miles seasonally restricted).

Alternative C would limit the flexibility for access for suppression purposes, and fuels project feasibility would go down compared to both Alternatives A and B, due to the fact that access would be limited to 60 miles of road. Of the 102.8 miles of closed roads, 33.5 miles would be decommissioned and would likely be unusable for fire suppression. The risk of human-caused fires associated

with motorized use would be the lowest of all alternatives, due to a 58 percent decrease in miles of road open to motorized public travel. However, this degree of reduced motorized access may promote more non-motorized users to a concentrated area, increasing the odds for a human-caused fire to occur by another ignition source.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the area. Because more roads would be closed than under any other alternative, Alternative C should help reduce the spread of noxious weeds more than any other alternative, and may make fuels treatment more feasible, reducing FRCC departure.

### Effects of Alternative D

Under alternative D, 26.8 miles of open routes would be available yearlong for wheeled motorized use and 70.6 miles would be restricted seasonally. Of the 58.9 miles of closed roads, 25.7 miles would be decommissioned and would likely be unusable for fire suppression. Alternative D would be more flexible than Alternatives B and C but would limit flexibility for access for suppression purposes, and fuels project feasibility would go down compared to Alternative A. The risk of human-caused fires associated with motorized vehicle use would be reduced compared to Alternative A, but would be greater than under Alternatives B and C, due to a 31 percent decrease in open roads compared to Alternative A.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the area. Because an intermediate number of road miles would be closed under this alternative, Alternative D should help reduce the spread of noxious weeds and may make fuels treatment more feasible compared to Alternative A, but would promote more weed spread and potentially make projects less feasible than Alternatives B and C.

### Cumulative Effects on Wildland Fire Management

Effects on wildland fire management associated with any of the BLM travel plan alternatives would be overshadowed by reasonably foreseeable uncharacteristic fire, continued fire suppression made necessary by WUI and intermingled landownership, and large-scale forest insect infestations and disease outbreaks that would continue for the planning period. BLM lands make up about 12.6 percent of all lands while BLM roads make up about 17.7 percent of all roads in the Upper Big Hole River TPA.

Revision of the Beaverhead-Deerlodge National Forest Plan could result in more or less treatment of adjacent areas. Because no decision has been made, the effects are not known. Wildland fire management, particularly where wildland fire use (management of naturally ignited wildland fires to achieve resource objectives) may

occur on USFS lands, will be determined in the plan decision. BLM would need to coordinate with USFS on all wildland fire use actions and events. Wildland fire use on USFS lands could affect FRCC on BLM lands. USFS lands make up 40 percent of all lands in the Upper Big Hole River TPA so activities there would likely have more influence on future fire characteristics than activities on BLM lands (17.7 percent of all lands in TPA).

Decisions to increase the level of wildland fire use, prescribed fire, or open burning by the public could impact the BLM's ability to use wildland fire and prescribed fire due to air quality concerns and requirements. This could postpone or eliminate BLM fuel reductions or treatments to improve FRCC.

Access is a critical component of wildland fire suppression. In some cases, access to public lands is being reduced by adjacent landowners gating or closing roads, which could hamper wildland fire suppression efforts and pose a risk to public and firefighter safety. Reducing access would also increase the potential for larger fires to occur due to an increase in time needed to access a fire and control it. Time needed to move in crews would be extended, and the ability to effectively apply and place resources (e.g., engines, water tenders, etc.) would be limited.

Effects on wildland fire management, including FRCC and firefighter and public safety due to management accomplished by other landowners may affect wildland fire management on public lands. When activity fuels (such as logging slash) are not treated adequately, fuel hazard could increase on adjacent lands which could affect fire intensity and severity on public lands. When adjacent owners treat fuels or implement fire mitigation plans in the WUI, fires are easier to suppress and firefighter safety is increased. In the Boulder/Jefferson City TPA, activities on private lands (32 percent of all lands in TPA) would have more influence on future fire characteristics in the area overall than activities on BLM lands (17.7 percent of all lands in TPA).

Human population increases and subsequent residential development are likely to expand the WUI and could alter forest management, taking the emphasis off restoring historic composition and structure and focusing more on fuel reduction.

## CULTURAL AND PALEONTOLOGICAL RESOURCES

### Effects Common to All Alternatives

Alternative-specific risks or impacts to cultural and paleontological resources are difficult to discern due to a lack of extensive site-specific knowledge about the presence of these resources in a given TPA. By designating open routes, limiting open-country travel, and closing some routes, inadvertent discovery of cultural and pa-

leontological resources and vandalism to them is reduced. Higher road densities in a given area would allow greater access to more land on the average, but that does not imply greater amounts of vandalism, since the vehicles would remain on designated routes.

## VISUAL RESOURCES

### Effects Common to All Alternatives

Roads (temporary or permanent) may affect visual quality. Roads that remain open for public use may impact visual qualities where noticeable. The quantity of open roads would also influence sensitivity levels since with more open roads, more areas would generally be viewed by more members of the public. Closing or decommissioning roads would generally reduce effects to visual resources and reduce sensitivity levels because fewer members of the public would generally be accessing and viewing areas with closed roads.

### Effects of the Alternatives

Under Alternative A, approximately 158.6 road miles would remain open (including open with seasonal restrictions), while 7.4 miles would remain closed. This alternative would leave the greatest mileage of open roads and would have the greatest level of impact to visual resources of all alternatives.

Under Alternative B, there would be 84.8 miles of open road (including open with seasonal restrictions), 49.2 miles of closed road, and 27.7 miles of decommissioned road. Road closures and decommissioning under this alternative would reduce effects on visual resources compared to Alternative A.

Under Alternative C, there would be 60 miles of open road (including open with seasonal restrictions), 69.3 miles of closed road, and 33.5 miles of decommissioned road. Alternative C would have fewer adverse effects and would improve visual resources the most of all alternatives.

Under Alternative D, there would be 97.4 miles of open road (including open with seasonal restrictions), 33.2 miles of closed road, and 25.7 miles of decommissioned roads. Alternative D would improve visual resources compared to Alternative A, but would have more adverse effects than Alternatives B and C.

### Cumulative Effects on Visual Resources

Under all alternatives, most activities on BLM lands would generally not adversely affect visual resources to unacceptable degrees because discretionary activities on BLM lands would be required to meet Visual Resource Management objectives within individual project areas.

Activities on non-BLM lands, particularly activities near BLM lands associated with residential development, urbanization, additional mining, or vegetation management, could have adverse cumulative effects on visual

resources on BLM lands because BLM VRM objectives would obviously not apply to non-BLM activities.

## LIVESTOCK GRAZING

### Effects Common to All Alternatives

Roads and trails can potentially affect livestock grazing management. Roads and trails often act as avenues of noxious weed spread. Noxious and invasive weeds can reduce the quantity and quality of forage. Users of roads and trails can cause management problems for livestock permittees when they leave gates open at fences, vandalize range improvements, or harass livestock purposely or unintentionally.

Closure of roads and trails can improve or maintain the forage base by reducing vectors of noxious weed spread. Additionally, road and trail closures can reduce management conflicts. On the other hand, closures may increase permittees' time requirements if and when work has to be conducted with horses or afoot. Permittees could minimize effects of closed roads on grazing management time by seeking variances from the BLM for temporary use of specific closed roads.

### Effects of the Alternatives

Under Alternative A, 158.6 miles of BLM roads and trails would remain open during the grazing season, and 7.4 miles of roads and trails would be closed. The effects would continue as described above. All action alternatives would close or decommission more roads and trails than Alternative A. As more roads and trails are closed, noxious and invasive weed spread along with multiple user conflicts would be reduced. On the other hand, permittee management time may increase. Consequently, more effects as described under the Effects Common to All Alternatives section would occur under Alternative C (60 miles open during grazing season, 102.8 miles closed or decommissioned) than under any other alternative. Alternative B (80.9 miles open during grazing season, 79.9 miles closed or decommissioned) would produce fewer effects than Alternative than C, but more than Alternative A or Alternative D (97.4 miles open during grazing season, 58.9 miles closed or decommissioned). Alternative D would have fewer effects than Alternatives B or C, but more than Alternative A.

### Cumulative Effects on Livestock Grazing

A number of past, present, and reasonably foreseeable future actions affect livestock grazing at the scale of the entire Upper Big Hole River TPA. Livestock grazing will continue in the area and has the potential to impact forage quality and quantity. On public lands, ongoing rangeland health assessments and implementation of livestock grazing guidelines would continue to improve or maintain forage quality and quantity. On private

lands, livestock grazing is expected to decline slowly as more ranch and farmland is subdivided.

Noxious weed control will continue on both public and private lands with varying degrees of success. To the extent that these efforts are successful, forage conditions would benefit.

The Big Hole Watershed group has completed a number of projects to improve livestock grazing, weed control, and irrigation practices on private land. Livestock grazing management would improve correspondingly.

The fuels reduction project scheduled for the Wise River area is not anticipated to have any major effects on livestock grazing. Reduction of conifers in meadows and parks would improve forage production for livestock. Some allotments may require growing season rest for one to two years after treatments are completed.

Because BLM lands make up only 17.7 percent of all lands in the Upper Big Hole River TPA, all of the BLM travel plan alternatives would have a minor contribution to cumulative effects on livestock grazing at the scale of the entire TPA.

## MINERALS

### Effects Common to All Alternatives

Road closures and decommissioning could affect access to locatable minerals in areas of moderate or high mineral potential. Operators would be required to seek travel variances from the BLM to use motor vehicles to conduct mineral exploration on closed roads, or to conduct exploration on seasonally restricted routes during the season of closure. Decommissioned roads could not be used for motorized exploration. Travel management provisions that require a permit or variance could result in reducing access to mining claims or interfere with the ability to conduct exploration work for some operators. Historic knowledge of mineralized areas associated with "closed" roads may be lost after long periods of time if no exploration occurs there. Additional costs and time could be required for exploration and development of mining projects associated with closed or decommissioned roads. Impacts of road closures or decommissioning in areas with low mineral potential would not be substantial to mineral development.

### Effects of the Alternatives

Alternative A for the Upper Big Hole TPA would seasonally restrict access on 18 percent of the roads in areas with high mineral potential and 6 percent of those in moderate mineral potential areas (**Table 4-94**).

Alternative B for the Upper Big Hole TPA would seasonally restrict access on 14 percent, close 8 percent, and decommission 3 percent of the roads in areas with high mineral potential. Additionally this travel plan alternative would seasonally restrict access on 4 percent and

<b>Table 4-94</b>				
<b>Analysis of Access to Mineral Potential Areas</b>				
<b>Upper Big Hole River TPA</b>				
<b>Mineral Potential</b>	<b>Open Miles (%)</b>	<b>Seasonally Restricted Miles (%)</b>	<b>Closed Miles (%)</b>	<b>Decom Miles (%)</b>
<b>Alternative A</b>				
High	17.8 (11%)	29.8 (18%)	0.8 (0%)	0.0 (0%)
Moderate	10.2 (6%)	10.2 (6%)	0.1 (1%)	0.0 (0%)
Low	41.8 (25%)	48.0 (29%)	6.5 (4%)	0.0 (0%)
Total Miles = 165.3				
<b>Alternative B</b>				
High	7.7 (5%)	23.1 (14%)	13.4 (8%)	4.3 (3%)
Moderate	1.2 (1%)	6.7 (4%)	11.6 (7%)	1.0 (0%)
Low to none	12.2 (7%)	34.5 (21%)	26.4 (16%)	23.3 (14%)
Total Miles = 165.3				
<b>Alternative C</b>				
High	5.7 (3%)	11.3 (7%)	26.9 (16%)	4.6 (3%)
Moderate	1.2 (1%)	6.6 (4%)	7.6 (5%)	5.1 (3%)
Low to none	12.2 (7%)	25.5 (16%)	34.9 (21%)	23.8 (14%)
Total Miles = 165.3				
<b>Alternative D</b>				
High	8.9 (5%)	26.3 (16%)	9.3 (6%)	4.0 (2%)
Moderate	4.2 (3%)	7.9 (5%)	7.5 (4%)	0.9 (1%)
Low to none	12.2 (7%)	47.0 (28%)	16.4 (10%)	20.7 (13%)
Total Miles = 165.3				

Mineral Potential areas have been delineated by the Montana Bureau of Mines and Geology (MBMG)

close 7 percent of roads in areas with moderate mineral potential in this TPA (Table 4-94).

Alternative C for the Upper Big Hole TPA would seasonally restrict access on 7 percent, close 16 percent, and decommission 3 percent of the roads in areas with high mineral potential. Additionally this alternative would seasonally restrict access on 4 percent, close 5 percent, and decommission 3 percent of roads in areas with moderate mineral potential in this TPA (Table 4-94).

Alternative D in the Upper Big Hole TPA would seasonally restrict access on 16 percent, close 6 percent, and decommission 2 percent of the roads in areas with high mineral potential. Additionally this alternative would

seasonally restrict access on 5 percent, close 4 percent, and decommission 1 percent of roads in areas with moderate mineral potential in this TPA (Table 4-94).

## Cumulative Effects on Access to Mineralized Areas

No other past, present, or reasonably foreseeable future actions in the Upper Big Hole River TPA would adversely affect mineral availability or access.

## RECREATION

Effects of travel plan alternatives on Recreation in the Upper Big Hole River TPA are described qualitatively below.

### Effects of the Alternatives

Under Alternative A, all BLM routes located within the TPA would continue to be managed as indicated on the Southwest Montana Interagency Visitor/Travel Map (interagency cooperative mapping effort, 1996 revision). Alternative A provides 158.6 miles of routes open to wheeled motorized use (70.6 miles open yearlong, 88.0 miles seasonally restricted). Where allowed, snowmobile use would continue to be open to area-wide cross-country use as well as use on existing routes, during the season of use, 12/2-5/15, conditions permitting.

Under Alternative B, motorized travel opportunities would be decreased by about 50 percent while non-motorized opportunities would be enhanced and conflicts between users would be reduced. Effects of Alternative C would be similar to Alternative B with the exception that 22 additional miles of roads would be closed and snowmobile use would be limited to designated routes only. This alternative would reduce motorized recreation opportunities while non-motorized opportunities would be most enhanced of all alternatives. Impacts of Alternative D would be similar to those of Alternative A with the exception that fewer secondary roads would be available to motorized travel.

### Cumulative Effects on Recreation

Under Alternative A, motorized travel opportunities would be the greatest under this alternative given the miles of roads available to wheeled vehicles and the acres available to snowmobiles. Big game hunting opportunities and motorized access within the Sawlog Gulch, Jerry Creek-Johnson Creek, Tie Creek, Dickie Hills, Sawmill, Humbug Spires/McClain Creek, and Soap/Camp Creek areas would continue. Existing travel restrictions in these areas would encourage big game retention, quality walk-in hunting and game retrieval challenges as motorized vehicle use would be somewhat limited. During the non-hunting season conflicts between non-motorized and motorized users would remain relatively high within some areas. Public access and management of developed recreation sites along the Big Hole River would continue to provide for a wide spec-

trum of water based opportunities and visitor trends are expected to increase. The Upper Big Hole Special Recreation Area and plan would continue and management priorities would remain high. The state would continue lead management responsibilities for the river and quality fishing and floating opportunities will continue subject to water flow conditions.

Under the action alternatives, big game hunting opportunities within the TPA would continue for both motorized and non-motorized users as the primary access routes would remain. Additional travel restrictions of secondary and primitive roads in numerous areas would promote more big game retention on public lands and better walk-in hunting experiences. Game retrieval challenges would be increased in many portions of the TPA since fewer retrieval roads would be available. Recreation Opportunity Spectrum designations would be established and therefore a range of varied settings would be provided and maintained. Although available travel routes and motorized riding opportunities would be limited, access to higher elevation lands and quality walk-in areas would be retained to help disperse users and ensure natural settings. Cumulative impacts on developed recreation sites and water based activities would be similar to Alternative A.

## TRAVEL MANAGEMENT AND ACCESS

### Effects of Alternative A

BLM routes in the Upper Big Hole River TPA would continue to be managed as both open yearlong (70.6 miles) and open with seasonal restrictions (88 miles) (Table-4-95). Alternative A would provide the greatest amount of motorized use opportunities and the least amount of non-motorized opportunities of all the alternatives.

Proposed Management	Total Miles			
	Alt A	Alt B	Alt C	Alt D
<b>Wheeled motorized routes</b>				
Open Yearlong	69.9	26.9	19.2	26.8
Seasonally Restricted	88.0	57.9	40.8	70.6
Closed	7.4	49.2	69.3	33.2
Decommissioned	-	27.7	33.5	25.7
Non-motorized trails <sup>1</sup>	11.5	81.0	106.9	62.9

<sup>1</sup> Non-motorized trails include all existing trails, closed roads, and decommissioned roads.

Where allowed, snowmobile use would continue to be open to area-wide cross-country use as well as use on existing routes, during the season of use, 12/2-5/15, conditions permitting. Alternative A would provide the most miles of routes available to seasonal snowmobile users and the greatest opportunity for motorized winter use

while providing the fewest opportunities for non-motorized winter recreation of all alternatives.

The extent of management activities and costs under Alternative A would be mixed. Less personnel time would be required to monitor travel compliance than under the action alternatives. However, more effort would be required for initial implementation (signing designated routes, installing bulletin boards) than under the action alternatives. Estimated costs for road/trail maintenance would be highest of all alternatives.

The need for the BLM and members of the public to obtain travel variances for temporary specific uses of specific closed roads would be minimal under this alternative, given the availability of motorized access.

### Effects of Alternative B

Approximately 50 percent fewer route miles would be open to wheeled motorized access yearlong or seasonally restricted than under Alternative A (Table-4-95).

Snowmobile management would continue to remain substantially in effect as represented by the 1996 Southwest Interagency Visitor/Travel Map. However, several additional areas would be closed to cross country travel, and travel in other areas would be restricted to existing designated routes and trails. Proposed cross country closures include the area located between the Soap Gulch and Camp Creek roads, the Goat Mountain/Maiden Rock area, and the Sawmill Gulch/Nez Perce Ridge area. The proposed closures would have little impact on snowmobile use due to the poor snow conditions in these areas.

Route restrictions/closures that would enhance recreational opportunities include: enhancement of high-elevation hunting in the Humbug Spires area; road density reduction in the Nez Perce Creek road area that would enhance non-motorized recreation, as well as provide big game security; and restricting motorized vehicle crossings of the Big Hole River from 12/2-7/15 in the Sawlog Gulch (Fishtrap Creek area). The river crossing restriction would help enhance non-motorized recreational experiences as well as provide improved public safety.

The extent of management activities and costs under Alternative B would be mixed. Less personnel time would be required for initial implementation (signing designated routes, installing bulletin boards) than under Alternative A. However, more effort would be required for public education and compliance than under Alternative A. Estimated costs for road/trail maintenance would be less than under Alternative A.

The need for the BLM and members of the public to obtain travel variances for temporary specific uses of specific closed roads would increase under Alternative B compared to Alternative A.

## Effects of Alternative C

Alternative C would have the least number of wheeled motorized routes open yearlong or seasonally restricted than all other alternatives in the Upper Big Hole River TPA (**Table-4-95**). This would result in fewer opportunities for motorized users. Alternative C would have 62 percent fewer motorized miles than Alternative A, and 30 percent fewer miles than Alternative B.

For areas open to snowmobile use under the Southwest Montana Interagency Visitor/Travel Map, travel would be restricted to designated routes only. No cross-country travel would be allowed. Alternative C would provide the lowest level of opportunities for snowmobile use.

Route closures that would enhance non-motorized opportunities include: additional yearlong closures between Soap Gulch and Camp Creek travel corridors (Humbug Spires area), additional yearlong closures near Johnson and Jerry Creeks (Jimmie New Creek area), and closure of the Sawlog Gulch route (Fishtrap Creek area).

Closing the Sawlog Gulch route (Fishtrap Creek area) would provide for improved public safety by eliminating fording of the Big Hole River.

Closure and decommissioning of routes in the Upper Big Hole River TPA would result in more non-motorized opportunities under Alternative C than under any other alternative. Alternative C would have 89 percent more miles of non-motorized trails than Alternative A, and 46 percent more than Alternative B.

The extent of management activities and costs under Alternative C would be mixed. Less personnel time would be required for initial implementation (signing designated routes, installing bulletin boards) than under any alternative. However, more effort would be required for public education and compliance than under any other alternative. Estimated costs for road/trail maintenance would be the lowest of the alternatives.

The need for the BLM and members of the public to obtain travel variances for temporary specific uses of specific closed roads would be greater under Alternative C than under any other alternative.

## Effects of Alternative D

Alternative D would offer the highest level of motorized access of the action alternatives with 97.4 miles of open and seasonally restricted routes (**Table-4-95**). This would be 38 percent less than Alternative A, but 13 and 38 percent more than under Alternatives B and C, respectively.

Conversely, Alternative D would provide fewer opportunities for non-motorized use than Alternatives B and C. Route closures under Alternative D that would enhance user opportunities include: additional routes in the Humbug Spires area and adjusting existing seasonal route restrictions to allow for high elevation big game

hunting access; additional routes for the Jimmie New Creek area, including game retrieval routes; and a seasonal closure on Sawlog Gulch (Fishtrap Creek area) that could enhance non-motorized opportunities.

For the Sawlog Gulch/Fishtrap Creek area, motorized access would be managed the same as under Alternative B, with a seasonal closure from December 2 to July 15. This change would provide for improved public safety from fording the Big Hole River during periods of high river flows and enhanced non-motorized opportunities.

The Big Hole watershed would be a priority area for restoration and protection treatments. Vegetation treatments could impact user opportunities and create user conflicts, depending on the timing and duration of the treatments.

Snowmobile management and effects would be the same as under Alternative A.

The extent of management activities and costs under Alternative D would be mixed. Less personnel time would be required to monitor travel compliance than under Alternatives B and C, but more time would be needed than under Alternative A. However, more effort would be required for initial implementation (signing designated routes, installing bulletin boards) than under Alternatives B and C, but less effort would be needed than under Alternative A. Estimated costs for road/trail maintenance would be higher than the other action alternatives, but less than under Alternative A.

The need for the BLM and members of the public to obtain travel variances for temporary specific uses of specific closed roads would be greater under Alternative D than under Alternative A, but less than under Alternatives B and C.

## Cumulative Effects on Travel Management and Access

Under all alternatives there are a number of past, present, and reasonably foreseeable future BLM and non-BLM actions and activities affecting travel management and access in the Upper Big Hole River TPA.

The majority of the Upper Big Hole River TPA is characterized by undeveloped land (cattle ranches; BLM, State, and USFS lands). Only about 2,000 people live in the area, many of them making their living by ranching and hay farming. Human population growth for the TPA is expected to remain low. However, as the area becomes more populated, there could be increased public pressure to alter the travel management to accommodate more or less motorized use.

The TPA is largely undeveloped. Several small communities (Divide, Dewey, and Wise River) are located within the TPA; Melrose and Wisdom lie just outside. The extent of urbanization is low, only about 2,000 people live in the area. Urbanization is unlikely to become an issue for many years in this area.

Recreation use is well established in the TPA, with fishing and big game hunting topping the list. The Big Hole River has a national reputation as a premiere fly fishing destination. Big game hunting attracts regional and national attention as well. As recreation use grows, conflicts between non-motorized and motorized recreation users could lead to increased public demands for either more, or less motorized use.

The TPA includes important habitat for big game (elk, bighorn sheep, mule deer) and fisheries (last wild population of fluvial Arctic grayling). Concerns could lead to demands to restrict motorized use.

The Humbug Spires WSA, Humbug Spires Potential ACEC, and Upper Big Hole River Eligible WSR segment are located within the TPA. These special designations could influence (restrict) travel management for existing roads and trails as well as for new proposed roads and trails.

In some site specific cases, visual resource management may affect or restrict new road construction.

Applications for right-of-way permits to access private property or for commercial development are likely to increase in the future. As a result, public access to BLM lands, via the rights-of-way, could increase as well.

Limits or reductions in the BLM's funding and ability to maintain designated routes could lead to an overall reduction of maintained motorized routes.

A variety of resource management projects, such as BLM initiated vegetation treatments, or wildland fire fuels reduction projects, could affect travel management. BLM forest management activities from 1984 to present include 126 acres of forest planting and 246 acres of timber harvest. Future activities may include approximately 430 acres of forest and woodland treatment (thinning, selective harvest). Past wildland fire management activities include treatments of 474 acres of prescribed fire and 141 acres of mechanical treatments in the Jerry Creek and Dickie Hills areas. Future treatments would include the Highland Mountain and the Wise River projects. The Highland Mountain project will entail 2,087 acres of mechanical treatment and 2,659 acres of prescribed fire treatment starting in 2007 through 2012. The Wise River project (currently being planned) will consist of mechanical and/or prescribed fire treatments ranging from 500-2,000 acres, focused on the urban interface areas. Depending on the type and scope of project, effects could vary from temporary, short-term area/route closures, to new opportunities (new routes) for motorized or non-motorized access.

A portion of this TPA is highly mineralized, particularly in the Soap Gulch/Camp Creek area. Current mining activity is low. Increases in mineral prices, however, could lead to additional increased or renewed mining activity. Depending on the type and scope of mining activity, effects on travel planning could vary from tem-

porary, short-term area/route closures, to increased opportunities (new routes) for motorized or non-motorized access.

Noxious weeds and non-native invasive species are well established and spreading rapidly in the TPA. Motorized activities play a large role in the distribution of noxious weeds. Concerns over the spread of noxious weeds may lead to the need to impose motorized travel restrictions or closures.

Motorized use on dirt roads and trails is a major contributor to soil erosion and stream sedimentation. These concerns may influence travel management, and result in fewer motorized opportunities.

Most illegal activities (trash dumping, drug use, underage alcohol use, unattended camp fires, vandalism, etc.) are directly associated with motorized use. Increases in illegal activity may lead to a need to alter travel management and impose motorized travel or other restrictions (site specific management).

For perspective, BLM managed lands represent approximately 17.7 percent of the total travel planning area (357,275 total acres, 63,108 BLM acres); while BLM managed routes represent approximately 12.6 percent of the total routes available (1,309 total miles, 165 miles of BLM roads/trails). Future travel management (for all agencies, nationwide) is likely to lead to fewer opportunities for motorized recreational use than under current management (particularly for OHV use). As a result, BLM routes available to motorized use in this TPA could experience increased use from displaced users, eventually leading to more concentrated use, increased resource impacts, and user conflicts. These impacts could lead to demands from motorized users for additional routes, and conversely, demands from non-motorized users for fewer routes.

Under all alternatives, increases in human population, recreation use, user conflicts; and concerns for wildlife, fisheries resources, noxious weed spread, soil erosion/water quality, and illegal activities are likely to lead to increased conflicts associated with travel management. Under Alternative A, this may lead to increased demands to restrict motorized travel, particularly in the areas adjacent to Divide, Dewey, and Wise River. Under Alternative B, these pressures would have less impact on travel management than under Alternatives A and D, due to the overall reduction in motorized opportunities and separation of motorized and non-motorized uses. Under Alternative C, these pressures would likely have the least impact on travel management than under the other alternatives, due to the greatest reduction in motorized opportunities and separation of motorized and non-motorized uses of all alternatives. Under Alternative D, these pressures may lead to increased demands to restrict motorized travel, particularly in areas with urban development.

## TRANSPORTATION FACILITIES

For the sake of this discussion, “open” roads include roads that are open yearlong as well as those that are open with seasonal restrictions.

### Effects of Alternative A

Under Alternative A, the Upper Big Hole TPA would have 157.9 miles of open roads and no motorized trails (**Table-4-96**). Estimated costs for annual maintenance and stabilization of roads under Alternative A would be substantially higher than under any other alternative. Estimated annual costs for monitoring and compliance, and weed control would also be more than under the action alternatives.

### Effects of Alternative B

Under Alternative B, the Upper Big Hole TPA would have 80.9 miles of open roads and no motorized trails (**Table-4-96**). Estimated costs for annual maintenance and stabilization of roads under Alternative B would be more than two times less than under Alternative A, more than under Alternative C, and slightly less than under Alternative D due to the reduction in roads from current conditions. Estimated annual costs for monitoring, compliance, and weed control would also be much less than under Alternative A.

Effects to transportation facility management under Alternative B would result in increased costs associated with new signage and sign maintenance due to changing seasonal use restrictions in the Humbug Spires area, the reduction in road density in the Jimmie New Creek area, and restricting motorized access in the Sawlog Gulch area of Fishtrap Creek.

Closing additional portions of the Upper Big Hole TPA to cross-country snowmobile travel would also result in an increase in transportation facility costs for additional signage and sign maintenance.

### Effects of Alternative C

Under Alternative C, the Upper Big Hole TPA would have 60 miles of open roads and no motorized trails (**Table-4-96**). Estimated costs for annual maintenance

and stabilization of roads under Alternative C would be the least of all the alternatives due to the least number of motorized routes. Estimated annual costs for monitoring, compliance, and weed control would also be less than under the other alternatives.

Effects to transportation facility management under Alternative C would result in increased costs associated with new signage and sign maintenance due to route closures and seasonal restriction changes in the Humbug Spires area, route closures to reduce road density in the Jimmie New Creek area, and the year-long closure of the Sawlog Gulch area of Fishtrap Creek.

Changing portions of the TPA from an open designation to a limited designation for snowmobile use would result in increases costs associated with new signage and sign maintenance.

### Effects of Alternative D

Under Alternative D, the Upper Big Hole TPA would have 97.4 miles of open roads and no motorized trails (**Table-4-96**). Estimated costs for annual maintenance and periodic stabilization of roads under Alternative D would be about half the cost as under Alternative A due to a reduction in motorized access. Road maintenance would be higher under Alternative D than under either Alternative B or C. Estimated annual costs for monitoring, compliance and weed control would also be much less under Alternative D than under Alternative A, and more than under Alternatives B and C.

Transportation facility costs under Alternative D would increase due to new signage and sign maintenance required in the Humbug Spires area, Jimmie New Creek area, and the Sawlog Gulch area of Fishtrap Creek.

## LANDS AND REALTY

### Effects Common to All Alternatives

The Butte Field Office administers approximately 122 rights-of-way within the boundaries of the Upper Big Hole TPA, which encumber approximately 6,805 acres of BLM land (**Table 4-97**). Various types of road rights-of-way (ROW) are the most common type of grant, ac-

<b>Classification/Cost</b>	<b>Alt A</b>	<b>Alt B</b>	<b>Alt C</b>	<b>Alt D</b>
Miles of Open/Restricted Roads	158.6	80.9	60	97.4
Motorized Trails	0	0	0	0
Annual Road Maintenance	\$12,632	\$6,472	\$4,800	\$7,792
Annual Trail Maintenance	\$0	\$0	\$0	\$0
Periodic Road Stabilization	\$5,053	\$2,589	\$1,920	\$3,117
Periodic Trail Stabilization	\$0	\$0	\$0	\$0
Monitoring/Compliance	\$7,895	\$4,045	\$3,000	\$4,870
Weed Control	\$2,369	\$1,214	\$900	\$1,461

counting for 57 percent, or over half of the total. Other types of authorized uses include: oil and gas pipelines, lines for electrical distribution and telephone facilities, communication sites, ditches, railroads, and mineral material sites.

Type	Approximate Number	Approximate Acres
Roads	70	2,907
Power	20	865
Telephone	4	45
O&G Pipelines	1	2
Comm. Sites	0	0
2920 Leases	0	0
Other	27	2,986
<b>Totals</b>	<b>122</b>	<b>6,805</b>

Approximately one right-of-way application for new facilities as well as amendments, assignments, renewals, or relinquishments of existing right-of-way grants are processed annually in the TPA. This would not vary by alternative.

The general trend of granting rights-of-way is expected to increase through the planning period as a result of increasing public demands. From a cumulative effects standpoint, development of adjacent federal, state, and private land, increased recreational use and the trend of homeownership away from urban areas, coupled with traditional on-going uses, are all expected to require more guaranteed access involving public land, including BLM lands.

## SPECIAL DESIGNATIONS

There would be no effects to any special designation areas such as Wild and Scenic Rivers, Wilderness Study Areas, or Areas of Critical Environmental Concern under any of the travel plan alternatives for the Upper Big Hole River TPA.

## CUMULATIVE EFFECTS OF TRAVEL PLANS AT THE PLANNING AREA SCALE

This section discusses cumulative effects of the five site-specific travel plans in aggregate at the level of all BLM lands in the Butte Field Office (Decision Area), as well as (to the extent possible) all lands in the entire Planning Area regardless of ownership. Effects of activities on BLM lands must be considered in the context of the fact that the approximately 307,300 acres of BLM surface lands administered by the Butte Field Office make up about 4.2 percent of the approximate total of 7,191,181

acres of land in the Planning Area. For the sake of context, total road miles in the Planning Area have been calculated based on available GIS data as approximately 17,810 miles. This figure is an underestimation of total road miles and should be considered a minimum. Total road mileage on Butte Field Office lands is estimated at 856 miles, or 4.8 percent of all roads in the Planning Area based on the 17,810 mile figure. Private lands make up about 49 percent of all lands and 64 percent of all roads are on private lands in the Planning Area. References to effects in this section tie back to effects described for a particular resource or resource use under the TPA-specific discussions.

No additional cumulative effects to Minerals, Lands and Realty, Cultural and Paleontological Resources, or Special Designations associated with the five site-specific travel plans have been identified at the Decision Area or Planning Area scales beyond those discussed in the cumulative effects section for the RMP.

## AIR QUALITY

Contributions of BLM travel plan management to cumulative effects on air quality would be minor regardless of alternatives selected in final implementation decisions because BLM roads make up only 4.8 percent of all roads in the Planning Area. Alternative A would promote the most widespread contributions to airborne dust due to the greatest (and most dispersed) mileage of open roads. Alternative B would lessen this impact by virtue of closing or decommissioning 199 more road miles than under Alternative A. Alternative C would lessen the distribution of airborne dust the greatest of all alternatives by providing for closure or decommissioning of 253 more road miles than Alternative A. Alternative D would be intermediate between Alternatives A and B by providing for closure or decommissioning of 138 more road miles than Alternative A.

Vehicle emissions may be reduced somewhat accordingly as described above for airborne dust. However, it is unknown whether proposed road closures associated with action alternatives would markedly affect motorized use levels, or whether proposed closures would merely redistribute use to other areas or focus it more intensively on remaining open routes.

## SOILS

Under current conditions (Alternative A), approximately 172 miles of motorized routes mapped on the BLM transportation system would remain closed. Generalized impacts to soil resources described above for each TPA (and in "Effects Common to All Alternatives" sections) would reduce over time on these routes as they revegetate and soils stabilize. These routes represent about 20 percent of the approximately 856 BLM road miles, and 1.0 percent of the at least 17,810 road miles across all ownerships in the entire Planning Area.

Alternative B would close (318 miles) or decommission (53 miles) approximately 371 miles of routes in the Decision Area currently open to use by motorized vehicles, the second most of any alternative. These routes represent about 43 percent of the approximately 856 BLM road miles in the Decision Area, and 2.1 percent of the at least 17,810 road miles across all ownerships in the entire Planning Area. This reduction in ground disturbance should reduce adverse effects on soils more than under Alternatives A and D, but less than under Alternative C.

Alternative C would close (375 miles) or decommission (50 miles) approximately 425 miles of routes currently open to use by motorized vehicles. These routes represent about 50 percent of the approximately 856 BLM road miles in the Decision Area, and 2.4 percent of the at least 17,810 road miles across all ownerships in the entire Planning Area. This reduction in ground disturbance associated with motorized routes would reduce impacts to soils more than under other alternative.

Alternative D would close (266 miles) or decommission (44 miles) approximately 310 miles of routes currently used by motorized vehicles. These routes represent about 36 percent of the approximately 856 BLM road miles in the Decision Area, and 1.7 percent of the at least 17,810 road miles across all ownerships in the entire Planning Area. This reduction in ground disturbance would benefit soils more than in Alternative A, but less than in Alternatives B and C.

## WATER RESOURCES

Under current conditions (Alternative A) approximately 172 miles of motorized routes, mapped on the BLM transportation system for the entire Decision Area, would remain closed. Over time, erosion and sediment delivery would likely be reduced as these closed routes revegetate and soils stabilize.

Alternative B would close (318 miles) or decommission (53 miles) approximately 371 miles of routes in the Decision Area currently open to use by motorized vehicles, the second most of any alternative. This reduction in ground disturbance would reduce soil erosion, promote vegetative recovery, and should produce a moderate to high long-term benefit to water quality (compared to the current conditions).

Alternative C would close (375 miles) or decommission (50 miles) approximately 425 miles of routes in the Decision Area currently open to use by motorized vehicles. This reduction in ground disturbance associated with motorized routes would reduce impacts to water quality (primarily sedimentation) more than with any other alternative.

Alternative D would close (266 miles) or decommission (44 miles) approximately 310 miles of routes in the Decision Area currently used by motorized vehicles. This reduction in ground disturbance would reduce soil ero-

sion and should provide a moderate to high long-term benefit to water quality (compared to current conditions). However, the improvement would be less than under Alternatives B and C.

Generally, road density is an indicator of overall watershed health and function. Watersheds with higher road densities tend to have lower water quality due to greater potential for erosion and subsequent sedimentation. Of all the alternatives, Alternative A maintains the most BLM acres in the entire Decision Area with high road density (107,566 acres with greater than 2 mi/mi<sup>2</sup> road density) and the fewest acres with low road density (116,236 acres with less than 1 mi/mi<sup>2</sup> road density (Table 4-98).

Alternative B would result in more acres with low road density across the Decision Area (131,982 acres with less than 1mi/mi<sup>2</sup> road density) compared to Alternative A (116,236 acres) and Alternative D (123,073 acres), but less than Alternative C (141,264 acres). In the moderate road density category (1 to 2 mi/mi<sup>2</sup> road density), Alternative B would produce over 4,000 more acres of this category compared to Alternative A. Alternative B would result in almost 20,000 acres less in the high road density category (greater than 2 mi/mi<sup>2</sup> road density) than Alternative A. This would represent a reduction in risks and adverse effects to water resources associated with watershed conditions, from the current management situation.

Across all Decision Area lands, Alternative C would provide the most acres with low road density (141,264 acres with less than 1 mi/mi<sup>2</sup> road density) compared to all other alternatives (Table 4-98). This represents 25,000 more acres than currently exists. Alternative C would also produce the fewest acres with high road densities (road density greater than 2 mi/mi<sup>2</sup>) of all alternatives (26,000 fewer acres than current conditions). Of the action alternatives, Alternative C would produce 6,500 fewer acres of high road density compared to Alternative B and 14,300 less than Alternative D. This would indicate a lower risk to water quality under Alternative C than under the other alternatives.

**Table 4-98**  
**Acres of BLM Land in Road Density Categories by Alternative for all Decision Area Lands**

Alternative	Road Density Category		
	Low ( <1 mi/mi <sup>2</sup> )	Moderate ( 1 to 2 mi/mi <sup>2</sup> )	High ( > 2 mi/mi <sup>2</sup> )
<b>Alt. A</b>	116,236	78,175	107,566
<b>Alt. B</b>	131,982	82,267	87,729
<b>Alt. C</b>	141,264	79,516	81,196
<b>Alt. D</b>	123,073	83,424	95,481

Alternative D would result in more areas with low road densities than currently exists (123,073 acres versus 116,236 acres with Alternative A). However, it would have the least among the action alternatives. It would also provide a reduction in the amount of area with high road density (greater than 2 mi/mi<sup>2</sup> road density) from current conditions (95,481 acres versus 107,560 acres for Alternative A). However, this would be the lowest reduction among the action alternatives. These road densities suggest that this alternative would pose a reduced risk (to water quality) from current conditions, but the highest among the action alternatives.

Motorized routes within 300 feet of streams generally have greater potential to impact water quality through erosion and sedimentation, increased water temperatures (due to loss of shading vegetation), and direct alteration of stream channel morphology than those farther away. Under Alternative A, approximately 94.3 miles of motorized routes within 300 feet of streams (including intermittent streams) would remain open to motorized use Decision Area-wide. This is the highest of any alternative and represents the greatest threat to water quality associated with motorized routes of the alternatives.

Under Alternative B, approximately 77.4 miles of motorized routes within 300 feet of streams (including intermittent streams) would remain open to motorized use Decision Area-wide. This is less than with Alternatives A and D (94.3 miles and 81.2 miles, respectively), but more than with Alternative C (73.7 miles). Alternative B would pose the second lowest threat to water quality (associated with roads in and near riparian areas) of all alternatives. It would also represent an improvement over existing conditions.

Under Alternative C, approximately 73.7 miles of motorized routes within 300 feet of streams (including intermittent streams) would remain open to motorized use Decision Area-wide. This is less than with any other alternative and would represent a reduction of 21.6 miles from current conditions. Therefore, Alternative C would pose the lowest threat to water quality associated with roads in and near riparian areas of all alternatives.

Under Alternative D, approximately 81.2 miles of motorized routes within 300 feet of streams (including intermittent streams) would remain open to motorized use Decision Area-wide. This is 13.1 miles less than are currently open but would leave more miles open than under Alternatives B and C. As a result, Alternative D would pose the second greatest threat to water quality related to roads in and near riparian areas of all alternatives (but it would still represent an improvement over current conditions).

Overall, from a roads management standpoint, Alternative C would pose the greatest improvement to water resources (and least contribution to adverse cumulative effects) of all the alternatives. Alternative B would be the next most beneficial, followed by Alternative D, then

Alternative A. At the Planning Area scale, effects to water resources associated with management of the 856 miles of road administered by the Butte Field Office would be minor in the cumulative effects context of the at least 17,810 road miles in the Planning Area overall.

## VEGETATIVE COMMUNITIES – FOREST RESOURCES AND FOREST AND WOODLAND PRODUCTS

Since BLM manages only 4.8 percent of the road miles in the Planning Area on the whole, the extent of cumulative effects from road management on BLM lands at the Planning Area scale is not great. However, federal and state public lands are used more extensively than other lands for firewood and other product gathering by the general public, as permission or a bill of sale is needed from landowners to gather products from private lands.

Effects referenced below tie back to effects of travel plan alternatives on forest resources and forest products described for each TPA-specific discussion above.

### Effects of Alternative A

As compared with the other alternatives, travel management under Alternative A provides the highest level of support for forest/woodland management and timber removal activities. There would be no impact on the forest and woodland treatments or the forest products program from travel management. Alternative A has the most miles of open road for economic efficiency, as well as to provide public access for small sales permits (firewood and Christmas trees in particular).

At the scale of all BLM lands managed by the Butte Field Office, Alternative A would retain closure on approximately 20 percent (172 miles) of the current total of approximately 856 road miles. No additional roads would be decommissioned with this alternative so all 172 miles of closed roads would be subject to potential use for vegetation treatments if travel variances for temporary road use were allowed.

### Effects of Alternative B

Travel management under Alternative B in the five TPAs being analyzed with this RMP revision, would provide an adequate level of support for the proposed forest management activities by maintaining approximately 84 percent of the existing roads in these TPAs shown under Alternative A as available for forest management and timber removal activities. While Alternative B would reduce the amount of open and limited use roads for the public by about 55 percent of the total roads available under Alternative A, travel variances could allow temporary use of “closed” roads for vegetation management projects. Road closures under Alternative B are expected to reduce the economic efficiency of some projects, as well as reduce by approximately one-half, public access for small sales permits (firewood and

Christmas tree) in these five TPAs. The maintenance costs for the closed roads would also be reduced, improving management efficiency in isolated areas which have limited product availability and low priority for vegetative treatment.

At the scale of all BLM lands managed by the Butte Field Office, Alternative B would close or decommission approximately 44 percent (371 miles) of the current total of approximately 856 road miles. Approximately 53 miles (6.2 percent of Field Office total) of the road miles across the Field Office would be decommissioned under this alternative. The remaining 318 miles of closed roads would be subject to potential use for vegetation treatments if travel variances for temporary road use were allowed. Alternative B would contribute to cumulative effects associated with making planning and implementation of vegetation treatment projects more costly and complex, as well as decreasing public access for forest product use more than Alternatives A and D, but less than Alternative C.

### Effects of Alternative C

Effects from proposed travel management under Alternative C in the five Travel Planning Areas (TPAs) being analyzed with this RMP revision, would be reduced when compared to Alternative B in spite of the fact that no construction of new permanent roads would be allowed for purposes of extracting forest products under Alternative C. Alternative C would maintain approximately 87 percent of the existing roads in the five TPAs under Alternative A, as available for forest management and timber removal activities. While Alternative C would reduce the amount of open and limited use roads for the public by about 67 percent of the roads available under Alternative A, travel variances could allow temporary use of “closed” roads for vegetation management projects. Road closures under Alternative C are expected to reduce the economic efficiency of some projects, as well as reduce by approximately two thirds, public access for small sales permits (firewood and Christmas tree) in these five TPAs.

At the scale of all BLM lands managed by the Butte Field Office, Alternative C would close or decommission approximately 49 percent (425 miles) of the current total of approximately 856 BLM road miles. Approximately 50.1 miles (5.8 percent of Field Office total) of the road miles across the Field Office would be decommissioned under this alternative. The remaining 375 miles of closed roads would be subject to potential use for vegetation treatments if travel variances for temporary road use were allowed. Alternative C would contribute the most of all alternatives to cumulative effects associated with making planning and implementation of vegetation treatment projects more costly and complex, as well as decreasing public access for forest product use.

### Effects of Alternative D

Effects from proposed travel management under Alternative D in the five Travel Planning Areas (TPAs) being analyzed with this RMP revision, would be similar to those described for Alternative C. Alternative D would maintain approximately 87 percent of the existing roads in the five TPAs under Alternative A, as available for forest management and timber removal activities. While Alternative D would reduce the amount of open and limited use roads for the public by about 39 percent of the roads available under Alternative A, travel variances could allow temporary use of “closed” roads for vegetation management projects. Road closures under Alternative C are expected to reduce the economic efficiency of some projects, as well as reduce by approximately 39 percent, public access for small sales permits (firewood and Christmas tree) and reduced ability to meet public demand in these five TPAs.

At the scale of all BLM lands managed by the Butte Field Office, Alternative D would close or decommission approximately 36 percent (310 miles) of the current total of approximately 856 road miles. Approximately 43.4 miles (5.1 percent of Field Office total) of the road miles across the Field Office would be decommissioned under this alternative. The remaining 267 miles of closed roads would be subject to potential use for vegetation treatments if travel variances for temporary road use were allowed. Alternative D would contribute to cumulative effects associated with making planning and implementation of vegetation treatment projects more costly and complex, as well as decreasing public access for forest product use, less than Alternatives B and C, but more than Alternative A.

### VEGETATIVE COMMUNITIES -NOXIOUS WEEDS

Effects of the five site-specific travel plans in aggregate at the Field Office scale are discussed below. In this discussion closed or decommissioned roads are considered to reduce impacts to the landscape associated with noxious weeds because they eliminate motorized vehicle use as a vector for increasing spread of noxious weeds.

Since BLM roads make up about 4.8 percent of all roads and BLM lands make up 4.2 percent of all lands in the Planning Area, effects of BLM travel planning alternatives on noxious weeds at the RMP Planning Area scale would be minor. Activities and effects discussed above for each TPA on private lands (49 percent of lands, 63 percent of roads) and other public lands (42 percent of lands, 29 percent of roads) would have a stronger influence on noxious weeds in the Planning Area with activities on private lands likely having the greatest effect overall.

## Effects of Alternative A

At the scale of all BLM lands managed by the Butte Field Office, Alternative A would retain closure on approximately 20 percent (172 miles) of the current total of approximately 856 BLM road miles. No additional roads would be decommissioned with this alternative. Alternative A would have the least positive contribution of all alternatives to cumulative effects on weeds by providing for the largest network of open BLM roads for weed spread. Weed spread would be greatest under this alternative than under all other alternatives.

## Effects of Alternative B

At the scale of all BLM lands managed by the Butte Field Office, Alternative B would close or decommission approximately 44 percent (371 miles) of the current total of approximately 856 BLM road miles. Alternative B would contribute positively to cumulative effects on noxious weeds by reducing open road miles from on which weed spread can occur. Under Alternative B these benefits would be greater than under Alternatives A and D, but less than under Alternative C. Alternative B would have higher weed treatment costs on a per road mile basis than Alternative A due to increased concentration of motorized use on fewer open road miles.

## Effects of Alternative C

At the scale of all BLM lands managed by the Butte Field Office, Alternative C would close or decommission approximately 49 percent (425 miles) of the current total of approximately 856 BLM road miles. Alternative C would contribute positively the most of all alternatives to cumulative effects on noxious weeds by promoting weed spread from fewer open roads than under any other alternative. Like Alternative B, Alternative C would have higher weed treatment costs on a per road mile basis than Alternative A due to increased concentration of motorized use on fewer open road miles.

## Effects of Alternative D

At the scale of all BLM lands managed by the Butte Field Office, Alternative D would close or decommission approximately 36 percent (310 miles) of the current total of approximately 856 BLM road miles. Alternative D would contribute positively to cumulative effects on noxious weeds by promoting less weed spread from roads less than Alternatives B and C, but more than Alternative A. Like Alternatives B and C, Alternative D would have higher weed treatment costs on a per road mile basis than Alternative A due to increased concentration of motorized use on fewer open road miles.

## VEGETATIVE COMMUNITIES – RIPARIAN VEGETATION

The following discussion summarizes contributions to cumulative effects on riparian vegetation associated with

BLM road management at the scale of all BLM lands in the Butte Field Office. Specific mechanisms of effect on riparian vegetation tie back to effects described for TPA-specific discussions above, particularly in the Effects Common to All Alternatives sections of those discussions. Since BLM roads make up about 4.8 percent of all roads and BLM lands make up 4.2 percent of all lands in the Planning Area, effects of BLM travel planning alternatives on riparian vegetation at the RMP Planning Area scale would be minor. Activities and effects discussed above for each TPA on private lands (48 percent of lands, 63 percent of roads in Planning Area) and other public lands (42 percent of lands, 29 percent of roads in Planning Area) would have a stronger influence on riparian vegetation in the Planning Area with activities on private lands likely having the greatest effect overall.

## Effects of Alternative A

Under Alternative A, Decision Area-wide, approximately 94.3 miles of routes within 300 feet of streams and wet areas would remain open to motorized use. While this is not a direct indication of road and trail effects on riparian vegetation, it is a relative indication when compared to the other alternatives. Alternative A would leave the greatest mileage of routes within 300 feet of streams open to motorized use of all alternatives.

## Effects of Alternative B

Under Alternative B, Decision Area-wide, approximately 77.4 miles of routes within 300 feet of streams and wet areas would remain open to motorized use. This would be less than under Alternative A (94.3 miles) and Alternative D (81.2 miles), but more than under Alternative C (73.7 miles), and suggests that Alternative B has the next-to-least amount of road-related impacts to riparian vegetation of the alternatives.

## Effects of Alternative C

Under Alternative C, Decision Area-wide, approximately 73.7 miles of routes within 300 feet of streams and wet areas would remain open to motorized use. This is the least of all alternatives and suggests that Alternative C would have the least road-related impacts (and most benefits) to riparian vegetation of all alternatives.

## Effects of Alternative D

Under Alternative D, approximately 81.2 miles of motorized routes within 300 feet of streams would remain open to motorized use Decision Area-wide. This is less than under Alternative A but more than under Alternatives B and C. This suggests that Alternative D would pose the next greatest amount of impact associated with roads to riparian vegetation of all alternatives.

## WILDLIFE

### Effects of Alternative A

Under Alternative A, there would be approximately 472 miles of open roads in the Decision Area and an additional 157.4 miles with seasonal closures. This is substantially more miles of open roads compared to the action alternatives. Limited road restrictions and road closures under Alternative A would not address the impacts of travel management within important wildlife habitat areas such as big game winter and calving habitat, occupied grizzly bear habitat, and wildlife movement corridors. Roads can result in loss of habitat and approximately 2-5 acres of habitat is permanently lost with every mile of road. Open roads cause disturbance and displacement of wildlife, especially to those species sensitive to disturbance, or during crucial seasons of use (winter or spring). Roads fragment habitat, introduce noxious weeds, and make wildlife susceptible to direct mortality (road kill and hunting).

#### Riparian Habitat

Roads within riparian areas can cause disturbance to wildlife and degradation of habitat. There could be a loss of habitat for resident and migratory birds that use riparian areas for nesting and brood rearing. In addition, habitat would be lost for a wide range of wildlife species that use riparian areas for breeding, denning, foraging, overwintering, or for travel corridors. The more roads within riparian areas, especially open roads, the lower the quality of habitat (through disturbance and loss of vegetation) and less likely the habitat would be used.

Riparian roads were evaluated within a 300-foot area adjacent to streams to compare the effects of roads in riparian areas between alternatives. Across Butte Field Office lands, there would be 94.3 miles of open roads and 17 miles of closed roads within riparian areas under Alternative A. This would be considerably more open

roads and fewer closed roads than under the action alternatives.

#### Elk Winter Range

Roads can impact big game species, especially during critical phases of their life cycle. Disturbance and displacement of big game species can increase stress and energy demands of animals during critical periods such as the winter, breeding or calving seasons, and reduce survival, especially during the winter and spring months. Motorized use of roads can produce disturbance that prevents full utilization of available habitat. The losses in potential use of habitat can exceed 50 percent when open road densities exceed 2 mi/mi<sup>2</sup> (Christensen et al. 1993). During the hunting season, the probability of bull elk survival in areas close to open roads is much lower than in areas away from roads. Road kill causes direct mortality of elk and major interstate freeways may act as movement barriers in some cases.

**Table 4-99** displays road densities in big game winter range by big game analysis areas (distinct geographic locations based on winter range and Elk Management Units) in the entire Decision Area (all Butte Field Office lands).

Alternative A would have the highest road density in comparison to the action alternatives. Of the 11 Big Game Analysis Units, five of them would have more acres with high road density than moderate or low road densities (Big Belts, Blackfoot, Clancy, Granite Butte and Jefferson) (**Table 4-99**). Three Big Game Analysis Units (Clancy, Granite Butte and Jefferson) offer large acres of potential winter range within the Decision Area but the quality of this habitat is low due to high open road densities under Alternative A. Winter range would be greatly improved in these three Big Game Analysis Units with the reduction of road densities under Alternatives B and C and moderately to greatly improved with a reduction of road densities under Alternative D.

<b>Elk Winter Range Analysis Unit</b>	<b>Acres of Low Density (0-1 mi/mi<sup>2</sup>)</b>	<b>Acres of Moderate Density (1-2 mi/mi<sup>2</sup>)</b>	<b>Acres of High Density (&gt;2 mi/mi<sup>2</sup>)</b>
<b>Big Belts</b>	2,193	2,207	2,288
<b>Big Hole</b>	12,958	4,504	5,554
<b>Blackfoot</b>	49	76	320
<b>Clancy</b>	1,547	2,159	7,148
<b>Elkhorns</b>	16,225	8,515	4,631
<b>Granite Butte</b>	1,932	3,886	11,881
<b>Highlands</b>	14,871	6,205	5,333
<b>Jefferson</b>	13,059	7,003	13,317
<b>Missouri</b>	19,955	1,409	2,667
<b>Upper Missouri</b>	4,115	1,437	929
<b>Yellowstone</b>	2,370	660	222

Low Density - (0-1mi/mi<sup>2</sup>), Moderate Density - (1-2 mi/mi<sup>2</sup>), High Density - (>2 mi/mi<sup>2</sup>)

Source: GIS Analysis

Under Alternative A, the amount of big game security habitat on BLM lands in the Butte Field Office would be 5,846 acres. This is the least amount of security habitat of all alternatives (Table 4-100).

	A	B	C	D
<b>All BLM Lands in Butte Field Office</b>	5,846	8,510	10,946	7,007

### **Core and Subcore Habitat**

Core areas were described as areas large enough for wildlife to forage and reproduce, while subcore areas were areas that could act as stepping stones for wildlife as they moved through the region. Table 4-101 shows the approximate acres by road density categories displayed as “low”, “moderate” and “high” for core and subcore habitat. These acres were based on a Moving Windows Analysis.

Because core and subcore areas were delineated based on existing areas with low road density, these areas have the most acres with low road density in both the Planning and Decision Areas.

At the Planning Area scale, BLM roads can affect the quality of core and subcore habitat on other federal and private lands. BLM roads adjacent to other lands with low road densities can degrade the quality of the adjacent habitat and reduce the use of those areas by wildlife. Alternative A would have substantially fewer acres with low road densities than the action alternatives in core and subcore habitat.

Approximately 24 percent (71,600 acres) of the Decision Area is considered core or subcore habitat. As with the Planning Area, Alternative A would have the fewest

	<b>Low Road Density (0-1)</b>	<b>Moderate Road Density (1-2)</b>	<b>High Road Density (&gt;2)</b>
<b>Planning Area</b>			
Alt. A	2,001,951	515,059	878,065
Alt. B	2,010,928	520,019	864,139
Alt. C	2,012,918	520,146	862,134
Alt. D	2,007,448	522,053	865,577
<b>Decision Area (BLM lands)</b>			
Alt. A	33,406	12,629	25,564
Alt. B	40,458	15,052	16,099
Alt. C	42,043	14,959	14,638
Alt. D	37,442	16,850	17,334

BLM acres with low road density and Alternative C would have the most acres. The amount of BLM acres in low road density would be substantially less under Alternative A than the action alternatives. Alternative A would provide roughly 7,000 fewer BLM acres of low road density than Alternative B and approximately 4,000 fewer acres than Alternative D (Table 4-101). Alternative A would have roughly 8,600 fewer BLM acres of core and subcore habitat in low road density than Alternative C.

### **Wildlife Movement Corridors**

Wildlife travel corridors are a vital component of habitat for a variety of species. Corridors are travel routes used by wildlife to disperse to new core areas and/or for seasonal movements between summer and winter ranges. A corridor may also be used for daily movements from loafing to foraging areas. Habitat fragmentation and isolation of populations as a result of degradation or elimination of corridors can result in small, vulnerable wildlife populations. Disturbance related to high road density within wildlife corridors can degrade the quality of wildlife corridors, eventually making them unavailable to wildlife species that depend on them. Corridors were described as areas of predicted movement between core and subcore areas, where habitat quality is high, but not as high and contiguous as the core and sub-core areas.

Craighead *et al.* (2002) modeled wildlife corridors within the Northern Rocky Mountain Region, delineated core and subcore areas, and described corridors based on their habitat quality. High road densities within wildlife movement corridors can degrade the quality of corridors, eventually making them unavailable to wildlife species that depend on them. Factors considered in the delineation of corridors included topography, road density, presence of riparian areas, human developments and activities, vegetative cover and land ownership patterns (Craighead *et al.* 2002).

High and moderate quality corridors were combined on Table 4-102 to show acres of road density in higher quality movement corridors. As with core and subcore habitat, roads on BLM lands can affect the quality of movement corridors on adjacent lands. At the Planning Area scale, travel management under Alternative A would maintain the fewest acres with low road density in high or moderate quality movement corridors of all the alternatives.

Approximately 28 percent (85,120 acres) of the Decision Area is considered to be in high or moderate quality wildlife corridors. As with the Planning Area, Alternative A would have the fewest BLM acres with low road density and Alternative C would have the most acres. The amount of BLM acres in low road density varies markedly between Alternative A and the action alternatives. Alternative A would have roughly 5,300 fewer BLM acres with low road density (47,226 total acres) than Alternative B and approximately 5,100 fewer acres than Alternative D (Table 4-102). Alternative A would

<b>Table 4-102</b>			
<b>High and Moderate Quality Corridors</b>			
<b>Approximate Acres by Road Density Category</b>			
	<b>Low Road Density</b> (0-1)	<b>Moderate Road Density</b> (1-2)	<b>High Road Density</b> (>2)
<b>Planning Area</b>			
Alt. A	237,630	186,068	339,185
Alt. B	244,114	188,383	330,404
Alt. C	244,413	188,910	329,538
Alt. D	243,738	188,220	330,907
<b>Decision Area</b>			
Alt. A	47,226	17,513	20,386
Alt. B	52,580	18,371	14,163
Alt. C	52,756	18,912	13,447
Alt. D	52,359	18,211	14,533

have over 5,500 fewer BLM acres in low road density than Alternative C.

**Table 4-103** shows the acres of road density in low quality wildlife movement corridors (areas with more roads, less federal or state lands and more potential disturbance).

<b>Table 4-103</b>			
<b>Low Quality Corridors Approximate Acres</b>			
<b>by Road Density Category</b>			
	<b>Low Road Density</b> (0-1)	<b>Moderate Road Density</b> (1-2)	<b>High Road Density</b> (>2)
<b>Planning Area</b>			
Alt. A	323,877	221,390	291,595
Alt. B	326,503	221,534	288,780
Alt. C	329,363	219,489	287,952
Alt. D	325,217	222,315	289,295
<b>Decision Area</b>			
Alt. A	18,505	13,821	14,886
Alt. B	21,048	13,563	12,613
Alt. C	22,670	12,342	12,195
Alt. D	19,995	14,128	13,089

At the Planning Area scale, Alternative A would provide the fewest acres in low road density of all the alternatives.

Approximately 16 percent (47,220 acres) of the Decision Area is considered to be in low quality wildlife corridors. As with the Planning Area scale, Alternative A would have the fewest BLM acres with low road density and Alternative C would have the most acres. Alternative A would have over 2,500 fewer BLM acres with low road density (18,505 total acres) than Alternative B and approximately 1,500 fewer acres than Alternative D (**Table 4-103**). Alternative A would have approximately

4,200 fewer BLM acres with low road density than Alternative C.

## Effects of Alternative B

Less motorized access would occur with Alternative B than Alternatives A or D, but Alternative B would provide more motorized access than Alternative C. Across the Field Office, there would be approximately 263 miles of open roads, 371 miles of closed and decommissioned roads and 154 miles open with seasonal restrictions. Seasonal restrictions would reduce the impacts of roads within important wildlife habitats such as big game winter range and spring habitat.

### Riparian Habitat

Under Alternative B, there would be 77.4 miles of open roads and 34 miles of closed roads within a 300-foot riparian analysis area on BLM lands across the Field Office. Alternative B would have fewer open roads in riparian areas than under Alternative A. This alternative would also have fewer open roads compared to Alternative D but about 4 miles more than Alternative C. Alternative B would provide for more improvement in riparian habitat at the Decision Area scale compared to Alternatives A and D, but would provide for less improvement than Alternative C.

### Elk Winter Range

**Table 4-104** displays road densities within elk winter range by Big Game Analysis Areas in the Decision Area. Alternative B would increase the number of acres with low road density in elk winter range in all Big Game Analysis Areas over Alternative A with the exception of Elkhorns (Alternatives B and A would be similar because a travel plan already exists for this area) and Big Belts. In the Big Belts, some roads that had temporary closures in the Ward Ranch area and in the area of the 2000 fires would be opened under Alternative B (East Helena TPA).

Alternative B would have considerable increases in acres of low road density in the Granite Butte, Highlands, and Jefferson Big Game Analysis Areas over Alternative A. This alternative would have fewer acres in the low road density category in most Big Game Analysis Areas compared to Alternative C, especially in the Big Hole, Granite Butte, and Missouri Big Game Analysis Areas.

Alternative B would have more acres in the low road density category in six Big Game Analysis Areas compared to Alternative D. The Big Game Analysis Areas with the largest differences between Alternatives B and D would be the Big Hole, Granite Butte, Highlands, and the Missouri.

Under Alternative B, the amount of big game security habitat on BLM lands in the Butte Field Office would be 8,510 acres (**Table 4-100**). This is about 2,664 acres more than under Alternative A and is the second highest total of security habitat acres of all four alternatives.

<b>Elk Winter Range Analysis Unit</b>	<b>Acres of Low Density</b>	<b>Acres of Moderate Density</b>	<b>Acres of High Density</b>
<b>Big Belts</b>	1,969	2,295	2,425
<b>Big Hole</b>	14,537	4,872	3,607
<b>Blackfoot</b>	52	81	312
<b>Clancy</b>	1,919	3,321	5,614
<b>Elkhorns</b>	16,092	8,721	4,559
<b>Granite Butte</b>	5,289	4,536	7,875
<b>Highlands</b>	19,797	5,017	1,594
<b>Jefferson</b>	16,294	8,749	8,335
<b>Missouri</b>	20,849	2,250	932

Low Density - (0-1 mi/mi<sup>2</sup>), Moderate Density - (1-2 mi/mi<sup>2</sup>),  
High Density - (>2 mi/mi<sup>2</sup>)

Source: GIS Analysis

### ***Core and Subcore Habitat***

At the Planning Area scale, Alternative B would have approximately 9,000 more acres in low road density than Alternative A in core and subcore habitat (Table 4-101). The majority of core and subcore habitat at the Planning Area scale is predominately found on Forest Service lands. This displays how BLM roads can affect the quality of core and subcore habitat on adjacent federal, state, and private lands. BLM roads adjacent to other federal, state, or private lands with low road densities can degrade the quality of the adjacent habitat and reduce the use of those areas by wildlife. In the low road density category, Alternative B would provide approximately 3,500 more acres than Alternative D, but approximately 2,000 fewer acres than Alternative C.

Approximately 24 percent (71,600 acres) of the Decision Area is considered core or subcore habitat. Alternative B would have over 7,000 more BLM acres with low road density (40,458 total acres) than Alternative A, and 3,000 more acres than Alternative D. Alternative B would have about 1,600 fewer BLM acres in low road density than Alternative C (Table 4-101).

### ***Wildlife Corridors***

At the Planning Area scale, travel management under Alternative B would increase the amount of acres in low road density in high or moderate movement corridors by approximately 6,500 acres over Alternative A (Table 4-102). As a group, the action alternatives vary substantially from Alternative A but vary relatively slightly from each other. Alternative B would have only 300 fewer acres in the low road density category compared to Alternative C and only 400 more acres than Alternative D.

Approximately 28 percent (85,120 acres) of the Decision Area is considered to be in high or moderate quality wildlife corridors. Alternative B would have over 5,000 more BLM acres with low road density (52,580 total acres) than Alternative A and only 220 more acres than Alternative D. Alternative B would have slightly fewer BLM acres in low road density (200 acres) than Alternative C.

In the context of low quality wildlife movement corridors, at the Planning Area scale, travel management under Alternative B would increase the amount of acres with low road density compared to Alternatives A and D but would have fewer acres than Alternative C (Table 4-103). Alternative B would provide approximately 2,600 more acres of low road density than Alternative A, 1,300 more acres than Alternative D and approximately 2,900 acres less than Alternative C.

Within low quality movement corridors in the Decision Area, Alternative B would have over 2,500 more BLM acres with low road density (21,048 total acres) than Alternative A and 1,000 more acres than Alternative D. Alternative B would have approximately 1,600 fewer BLM acres in low road density than Alternative C (Table 4-103).

### **Effects of Alternative C**

Less motorized access would occur with Alternative C than with any of the other alternatives. Across BLM lands in the Butte Field Office, there would be approximately 244 miles of open roads, 425 miles of closed and decommissioned roads and 128 miles open with seasonal restrictions. Alternative C would have the greatest benefits to wildlife species from closed, decommissioned, and seasonally restricted roads of all other alternatives. Alternative C would increase the quality of habitat by reducing disturbance. The quantity of habitat would be increased by reducing fragmentation, allowing roads to become re-vegetated and preventing the spread of noxious weeds. Big game would have additional security habitat during the hunting season and wildlife would have additional refuge during critical seasons of use, such as during the winter or spring months, with Alternative C.

### ***Riparian Habitat***

Under the travel management, Alternative C would have 73.7 miles of open roads and 37.6 miles of closed roads within 300 feet of streams on BLM lands across the Field Office. Alternative C would have fewer miles of open roads and more miles of closed roads in riparian areas compared to the other alternatives; therefore, providing the most protection of riparian habitat.

### ***Elk Winter Range***

Table 4-105 displays the road densities within elk winter range by Big Game Analysis Areas in the Decision Area. Alternative C would increase the number of acres

with low road density in elk winter range in most Big Game Analysis Areas over the other alternatives.

<b>Elk Winter Range Analysis Unit</b>	<b>Acres of Low Density</b>	<b>Acres of Moderate Density</b>	<b>Acres of High Density</b>
<b>Big Belts</b>	2,195	2,088	2,405
<b>Big Hole</b>	15,070	4,680	3,265
<b>Blackfoot</b>	52	81	312
<b>Clancy</b>	1,921	3,322	5,610
<b>Elkhorns</b>	17,072	7,751	4,548
<b>Granite Butte</b>	6,445	4,637	6,617
<b>Highlands</b>	19,797	5,017	1,594
<b>Jefferson</b>	16,345	9,016	8,018
<b>Missouri</b>	21,903	1,969	159

Low Density - (0-1mi/mi<sup>2</sup>), Moderate Density - (1-2 mi/mi<sup>2</sup>), High Density - (>2 mi/mi<sup>2</sup>)  
Source: GIS Analysis

Alternatives C and B would have the same or similar number of acres with low road density in the Blackfoot, Highlands, Jefferson and Clancy Big Game Analysis Areas. Alternative C would have more acres in the low road density category (up to 1,200 acres per Big Game Analysis Area) in the Big Belts, Big Hole, Elkhorns, Granite Butte and Missouri Big Game Analysis Areas compared to Alternative B. Alternative C would have considerable increases in acreage of low road density in the Big Hole, Granite Butte, Highlands, Jefferson and Missouri Big Game Analysis Areas over Alternative A. This alternative would have more acreage of low road density in seven Big Game Analysis Areas compared to Alternative D. The Big Game Analysis Areas with the largest differences between Alternatives C and D would be the Big Hole, Granite Butte, Highlands, and the Missouri.

The actual road density in elk winter range would be the lowest under Alternative C of all alternatives and this alternative would have more acreage of elk winter range in low road density than all other alternatives. Alternative C would do more than any other alternative to protect and restore big game winter range.

Under Alternative C the amount of big game security habitat on BLM lands in the Butte Field Office would be 10,946 acres (Table 4-100). This is 5,100 acres more than under Alternative A and about 2,400 acres more than under Alternative B. Alternative C would provide the highest total of security habitat acres of all four alternatives.

### ***Core and Subcore Habitat***

At the Planning Area scale Alternative C would have approximately 11,000 more acres in the low road density category than Alternative A in core and subcore habitat (Table 4-101). Alternative C would provide more acreage of low road density than all other alternatives and would help to improve the quality and quantity of core and subcore habitat on other federal, state, and private lands more than all other alternatives.

Approximately 24 percent (71,600 acres) of the Decision Area is considered core or subcore habitat. Alternative C would have over 8,600 more BLM acres with low road density (42,043 total acres) than Alternative A, and 4,600 more BLM acres than Alternative D. Alternative C would also have 1,600 more BLM acres with low road density than Alternative B (Table 4-101).

### ***Wildlife Movement Corridors***

As with the core and subcore habitat, roads on BLM lands can affect the quality of movement corridors on adjacent lands. At the Planning Area scale, travel management under Alternative C would increase the amount of acreage with low road densities by approximately 6,780 acres over Alternative A (Table 4-102). Alternative C would have 300 acres more than Alternative B and 700 acres more than Alternative D in the low road density category.

Approximately 28 percent (85,120 acres) of the Decision Area is considered to be in high or moderate quality wildlife corridors. Alternative C would have over 5,500 more BLM acres with low road density (52,756 total acres) than Alternative A but only 400 more BLM acres than Alternative D. Alternative C would have 200 more BLM acres in low road density than Alternative B (Table 4-102).

Table 4-103 shows the acres of road density in low quality wildlife movement corridors. At the Planning Area scale, travel management under Alternative C would have the most acres in low road density of all alternatives. Alternative C would provide approximately 5,500 additional acres of low road density in low quality corridors over Alternative A and approximately 4,100 more than Alternative D. Alternative C would provide about 2,900 more acres in low road density than Alternative B.

Approximately 16 percent (47,220 acres) of the Decision Area is considered to be in low quality wildlife corridors. Alternative C would have over 4,100 more BLM acres with low road density (22,670 total acres) than Alternative A, and 2,700 more acres than Alternative D. Alternative C would have approximately 1,600 more BLM acres in low road density over Alternative B (Table 4-103).

Overall, Alternative C would provide the most suitable core and subcore habitat and wildlife movement corridors in both the Decision and Planning Areas.

## Effects of Alternative D

Alternative D would allow more motorized access than the other action alternatives but less than Alternative A. Across BLM lands in the Butte Field Office there would be approximately 305 miles of open roads, 309.6 miles of closed and decommissioned roads, and 174 miles of seasonally restricted roads. Fewer seasonal restrictions would increase impacts associated with travel and recreation within important wildlife habitat areas. Alternative D would have more open roads than the other action alternatives but fewer open roads than Alternative A.

Alternative D would have more negative and long-term effects on wildlife and wildlife habitat from permanent and open roads than Alternatives B and C but fewer effects than Alternative A.

### *Riparian Habitat*

Under Alternative D, 81.2 miles of open roads and 30.2 miles of closed roads would be located within 300 feet of streams on BLM lands across the Butte Field Office. Alternative D would have more miles of open road in riparian areas compared to the other action alternatives but 13 miles less than Alternative A. Alternative D would have more negative effects from roads in riparian areas such as loss of riparian vegetation and habitat and disturbance than the other action alternatives, but fewer negative effects than Alternative A.

### *Elk Winter Range*

**Table 4-106** displays road densities within elk winter range by Big Game Analysis Areas in the Decision Area. Alternative D would increase the number of acres with low road density in elk winter range in all Big Game Analysis Areas over Alternative A with the exception of Elkhorns (Alternatives D and A would be similar because a travel plan already exists for this area) and Big Belts. In the Big Belts, some roads that had temporary closures in the Ward Ranch area and in the area of the 2000 fires would be opened under Alternative

D (East Helena TPA). Alternative D would increase acres with low road density in the Granite Butte, Highlands and Jefferson Big Game Analysis Areas over Alternative A, but would have fewer acres in low road density in most Big Game Analysis Areas compared to Alternatives B and C. Alternative D would have fewer acres in low road density in six Big Game Analysis Areas compared to Alternative B, and in seven Big Game Analysis Areas compared to Alternative C. The Big Game Analysis Areas with the largest differences between Alternatives D and B would be the Big Hole, Granite Butte, Highlands, and the Missouri. This same relative difference comparison applies between Alternatives D and C.

Approximately 28 percent (85,120 acres) of the Decision Area is considered to be in high or moderate quality wildlife corridors. Alternative D would have over 5,100 more BLM acres with low road density (52,359 total acres) than Alternative A and only 220 fewer acres than Alternative B. Alternative D would have approximately 400 fewer BLM acres in low road density than Alternative C (**Table 4-102**).

**Table 4-103** shows the acres of road density in low quality wildlife movement corridors (areas with more roads, less federal or state lands and more potential disturbance). At the Planning Area scale, travel management under Alternative D would increase the amount of acres with low road density compared to Alternative A but would have fewer acres in this category than Alternatives B and C. Alternative D would provide approximately 1,300 more acres of low road density than Alternative A, but 1,300 less than Alternative B and approximately 4,100 less than Alternative C.

Under Alternative D, the amount of big game security habitat on BLM lands in the Butte Field Office would be 7,007 acres (**Table 4-100**). This is approximately 1,160 acres more than under Alternative A but is the lowest number of security habitat acres of the action alternatives.

Elk Winter Range Analysis Unit	Acres Low Density	Acres Moderate Density	Acres High Density
<b>Big Belts</b>	1,583	2,158	2,947
<b>Big Hole</b>	13,335	5,888	3,793
<b>Blackfoot</b>	52	79	314
<b>Clancy</b>	1,919	3,321	5,614
<b>Elkhorns</b>	16,092	8,720	4,559
<b>Granite Butte</b>	4,287	4,796	8,616
<b>Highlands</b>	18,841	5,778	1,789
<b>Jefferson</b>	16,248	8,412	8,719
<b>Missouri</b>	20,243	2,062	1,726

Low Density - (0-1 mi/mi<sup>2</sup>), Moderate Density - (1-2 mi/mi<sup>2</sup>), High Density - (>2 mi/mi<sup>2</sup>)

Source: GIS Analysis

**Core and Subcore Habitat**

At the Planning Area scale, Alternative D would have approximately 5,500 more acres in the low road density category than Alternative A in core and subcore habitat (Table 4-101). Alternative D would provide about 3,500 fewer acres in the low road density category than Alternative B and about 5,500 fewer acres in this category than Alternative C.

Approximately 24 percent (71,600 acres) of the Decision Area is considered core or subcore habitat. Alternative D would have over 4,000 more BLM acres with low road density (37,442 total acres) than Alternative A, and 3,000 fewer acres than Alternative B. Alternative D would have approximately 4,600 fewer BLM acres in low road density than Alternative C (Table 4-101).

**Wildlife Movement Corridors**

At the Planning Area scale, travel management under Alternative D would increase the amount of acres with low road density in high and moderate quality movement corridors by approximately 6,100 acres over Alternative A (Table 4-102). Alternative D would have only 700 fewer acres in low road density compared to Alternative C and only 400 fewer acres than Alternative B.

Approximately 16 percent (47,220 acres) of the Decision Area is considered to be in low quality wildlife corridors. Alternative D would have over 1,500 more BLM acres with low road density (19,995 total acres) than Alternative A and 1,000 fewer acres than Alternatives B and C (Table 4-103).

**FISH**

Watershed function and roads within 300 feet of streams were used as indicators of the cumulative impacts of the five site-specific travel plans for BLM lands within the Butte Field Office. Relative comparisons of alternatives

would apply to effects described for fish habitat in the TPA-specific analyses.

**Effects of Alternative A**

Table 4-107 displays acreage of land by major watersheds in the Decision Area (BLM lands in the Butte Field Office) in different road density classes (low, medium, and high). Alternative A would have the greatest detrimental effects to watershed function and subsequently fish habitat, compared to the other alternatives.

Alternative A would maintain the most BLM acres with high density roads (107,566 acres) and the fewest BLM acres with low density roads (116,236 acres) of all other alternatives (Table 4-107).

Table 4-108 and Table 4-109 display miles of open and closed road within 300 feet of streams. The number of open road miles within 300 feet of streams on BLM lands would be greatest under Alternative A (94.3 miles) of all the alternatives. Alternative A would provide for the greatest mileage of riparian roads by each subcategory as well: 39.9 miles near fish bearing streams, 28.1 miles near perennial non-fish bearing streams, and 26.3 miles near intermittent streams. The miles of closed roads in riparian areas would be the least under Alternative A (17.1 miles) with the same trend being the case where Alternative A would provide for the fewest closed riparian roads by sub-category of all alternatives.

**Effects of Alternative B**

Alternative B would have more acres with low density roads across the Decision Area (131,982 acres) compared to Alternative A (116,236). In the moderate road density category, Alternative B has nearly 4,000 more acres compared to Alternative A and almost 20,000 acres less in the high road density than Alternative A (Table 4-107). The most marked differences between alternatives would be in the Big Hole, Boulder, Jeffer-

**Table 4-107**  
**Decision Area Acres in Road Density Categories by Alternative by Watershed**

Road Density	Low (0-1 mi/mi <sup>2</sup> )				Moderate (1-2 mi/mi <sup>2</sup> )				High (>2 mi/mi <sup>2</sup> )			
	Alternative	A	B	C	D	A	B	C	D	A	B	C
Big Hole	20,426	27,498	32,286	23,198	16,812	17,382	15,490	19,575	23,946	16,305	13,408	18,411
Blackfoot	186	230	230	191	147	156	156	155	1,277	1,223	1,223	1,263
Boulder	16,467	17,684	18,023	17,616	11,145	11,727	12,410	11,142	13,321	11,523	10,500	12,176
Jefferson	13,763	14,270	14,270	14,194	11,983	11,834	11,834	11,893	14,583	14,224	14,224	14,242
Madison	822	822	822	822	387	387	387	387	189	189	189	189
Upper Clark Fork	0	0	0	0	0	0	0	0	0	0	0	0
Upper Missouri River	58,823	65,729	69,884	61,303	35,783	38,863	37,321	38,354	53,615	43,630	41,017	48,565
Upper Yellowstone	5,749	5,749	5,749	5,749	1,918	1,918	1,918	1,918	635	635	635	635
<b>Total</b>	<b>116,236</b>	<b>131,982</b>	<b>141,264</b>	<b>123,073</b>	<b>78,175</b>	<b>82,267</b>	<b>79,516</b>	<b>83,424</b>	<b>107,566</b>	<b>87,729</b>	<b>81,196</b>	<b>95,481</b>

son, and Upper Missouri watersheds. For the five site-specific travel plans considered in aggregate at the Field Office scale, Alternative B would provide improved watershed function and reduced road-related impacts to fish habitat compared to Alternative A.

Under Alternative B there would be approximately 18 percent fewer open road miles within 300 feet of streams than under Alternative A (Table 4-108). Alternative B would provide for about 16.8 more miles of closed road within 300 feet of streams than Alternative A (Table 4-109). Differences between alternatives would be in the Big Hole, Boulder, and Upper Missouri River watersheds where more riparian roads would be closed under Alternative B than Alternative A in every case and in every subcategory of riparian areas (fish bearing streams, perennial non-fish bearing streams, intermittent streams). Alternative B would have fewer road-related adverse effects to fish and aquatic habitats associated with roads in and near riparian areas than Alternative A.

Overall, at the scale of all BLM lands in the Butte Field Office, Alternative B would pose fewer road-related adverse effects to fish and aquatic habitats than Alternative A, and would actually lessen existing impacts to improve aquatic habitats.

### Effects of Alternative C

Alternative C would have the most BLM acres with low density roads (141,264 acres) compared to all other alternatives. This alternative would have 25,000 acres more in the low road density category and 26,000 fewer acres in the high road density category compared to Alternative A (Table 4-107). This alternative would have 9,282 more BLM acres in the low road density category and 6,500 fewer acres in the high road density category than Alternative B (Table 4-107). Alternative C would have the fewest acres with high road densities of all alternatives with the watersheds seeing the most effects being the Big Hole, Boulder, and Upper Missouri River.

Watershed	Fish-bearing				Perennial				Intermittent				Total Open Roads			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
<b>Big Hole</b>	13.6	12.8	11.9	12.9	13.1	10	9.6	10.6	10.6	6.0	4.9	7.5	37.3	28.8	26.4	31
<b>Jefferson</b>	2.6	2.6	2.6	2.6	0.6	0.6	0.6	0.6	4.1	4.1	4.1	4.1	7.3	7.3	7.3	7.3
<b>Boulder</b>	5.8	5.0	4.7	5.0	5.6	5.5	5.4	5.4	4.6	2.2	2.2	2.6	16	12.7	12.3	13
<b>Madison</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Upper Missouri River</b>	16.1	14.8	14.8	15.4	8.4	6.7	6.5	6.9	6.6	5.0	4.8	5.5	31.1	26.5	26.1	27.8
<b>Upper Yellowstone</b>	1.2	1.2	1.2	1.2	0.4	0.4	0.4	0.4	0	0	0	0	1.6	1.6	1.6	1.6
<b>Upper Clark Fork</b>	0.6	0.4	0	0.4	0	0	0	0	0.4	0.1	0	0.1	1.0	0.5	0	0.5
<b>Blackfoot</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>39.9</b>	<b>36.8</b>	<b>35.2</b>	<b>37.5</b>	<b>28.1</b>	<b>23.2</b>	<b>22.5</b>	<b>23.9</b>	<b>26.3</b>	<b>17.4</b>	<b>16</b>	<b>19.8</b>	<b>94.3</b>	<b>77.4</b>	<b>73.7</b>	<b>81.2</b>

Watershed	Fish-bearing				Perennial				Intermittent				Total Closed Roads			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
<b>Big Hole</b>	0.3	1.1	2.0	1.0	0.1	3.2	3.6	2.6	0.7	5.3	6.4	3.8	1.1	9.6	12.0	7.4
<b>Jefferson</b>	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	1.4	1.4	1.4	1.4
<b>Boulder</b>	1	1.8	2.1	1.8	0	0.1	0.2	0.2	0	2.4	2.4	2.0	1	4.3	4.7	4
<b>Madison</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Upper Missouri River</b>	4.2	5.4	5.4	4.9	5.2	6.9	7.1	6.7	4.2	5.8	6.0	5.3	13.6	18.1	18.5	16.9
<b>Upper Yellowstone</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Upper Clark Fork</b>	0	0.2	0.6	0.2	0	0	0	0	0	0.3	0.4	0.3	0	0.5	1.0	0.5
<b>Blackfoot</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>6.0</b>	<b>9.0</b>	<b>10.6</b>	<b>8.4</b>	<b>5.8</b>	<b>10.7</b>	<b>11.4</b>	<b>10.0</b>	<b>5.3</b>	<b>14.2</b>	<b>15.6</b>	<b>11.8</b>	<b>17.1</b>	<b>33.9</b>	<b>37.6</b>	<b>30.2</b>

For the five site-specific travel plans considered in aggregate at the Field Office scale, Alternative C would provide the greatest degree of improved watershed function and reduced road-related impacts to fish habitat of all alternatives.

Under Alternative C there would be approximately 22 percent fewer open road miles within 300 feet of streams on BLM lands than under Alternative A (Table 4-108). Alternative C would provide for approximately 20 more miles of closed road within 300 feet of streams than Alternative A and about 3.7 more miles than Alternative B (Table 4-109). Differences between alternatives would be in the Big Hole, Boulder, and Upper Missouri River watersheds where more riparian roads would be closed under Alternative C than any other alternative in all riparian categories. Alternative C would have fewer road-related adverse effects to fish and aquatic habitats associated with roads in and near riparian areas than any other alternative. Overall, at the scale of all BLM lands in the Butte Field Office, Alternative C would pose fewer road-related adverse effects to fish and aquatic habitats than all other alternatives, and would actually lessen existing impacts to improve aquatic habitats more than any other alternative.

### Alternative D

Alternative D would provide fewer acres with low density roads (123,073 acres) across the Decision Area compared to Alternatives B and C, but more acres than Alternative A (116,236 acres). Of the action alternatives, Alternative D would have the most acres with high road density (95,481 acres) but moderate road densities would be similar for both Alternatives D and B (Table 4-107). Alternative D would have roughly 12,000 fewer acres with high road density than Alternative A. For the five site-specific travel plans considered in aggregate at the Field Office scale, Alternative D would provide improved watershed function and reduced road-related impacts to fish habitat compared to Alternative A, but more adverse effects than either Alternatives B or C.

Under Alternative D there would be approximately 14 percent fewer open roads within 300 feet of streams than under Alternative A, 5 percent more than under Alternative B, and 10 percent more than under Alternative C (Table 4-108). Alternative D would provide for approximately 13 more miles of closed road within 300 feet of streams than Alternative A, 3.7 fewer miles than Alternative B, and 7.4 fewer miles than Alternative C (Table 4-109). Alternative D would have fewer road-related adverse effects to fish and aquatic habitats associated with roads in and near riparian areas than Alternative A, but more than Alternatives B and C.

Alternative D would close and decommission fewer roads during travel management than Alternatives B and C but more than Alternative A.

Overall, at the scale of all BLM lands in the Butte Field Office, Alternative D would pose fewer road-related

adverse effects to fish and aquatic habitats than Alternative A, but would pose greater impacts than Alternatives B or C. Alternative D would lessen existing impacts to improve aquatic habitats compared to the current condition of Alternative A.

### SPECIAL STATUS PLANTS

The following discussion summarizes contributions to cumulative effects on special status plants associated with BLM road management at the scale of all BLM lands in the Butte Field Office. Specific mechanisms of effect on special status plants tie back to effects described for TPA-specific discussions above, particularly in the Effects Common to All Alternatives sections of those discussions.

Since BLM roads make up about 4.8 percent of all roads and BLM lands make up 4.2 percent of all lands in the Planning Area, effects of BLM travel planning alternatives on special status plants at the RMP Planning Area scale would be minor. Activities and effects discussed above for each TPA on private lands (48 percent of lands, 63 percent of roads in Planning Area) and other public lands (42 percent of lands, 29 percent of roads in Planning Area) would have a stronger influence on special status plants in the Planning Area with activities on private lands likely having the greatest effect overall.

### Effects of the Alternatives

Under Alternative A the greatest amount of BLM road use (629 open miles or 3.5 percent of all roads in the RMP Planning Area) would be possible, causing the greatest amount of special status plant habitat to be at risk. Habitat would be at risk because of greater ground disturbance and increased weed spread which reduces connectivity between populations, increases competition from invasive species, and increases plant mortality.

Under Alternative B, 417 BLM road miles (2.3 percent of all roads in the RMP Planning Area) would be open, reducing adverse effects to special status plants compared to Alternative A.

Under Alternative C, 372 BLM road miles (2.1 percent of all roads in the RMP Planning Area) would be open. Alternative C would reduce adverse effects to special status plants more than any other alternative.

Under Alternative D, 479 BLM road miles (2.7 percent of all roads in the RMP Planning Area) would be open. Alternative D would reduce adverse effects to special status plants more than Alternative A, but less than Alternatives B and C.

### WILDLAND FIRE MANAGEMENT

Effects referenced below are described in more detail in the Wildland Fire Management sections of each of the five specific TPA discussions above. The contribution of the five site-specific travel plans are discussed in aggregate

gate at the Decision Area (all BLM lands in the Butte Field Office) and Planning Area scales below.

The following conditions would apply to closed BLM roads under all alternatives. Many closed roads would still be available for use in fire suppression as well as fuels reduction treatments. Planning and implementation of fuels reduction treatments could occur in association with closed roads if variances for temporary road use were to be allowed. Variances would be subject to internal BLM review.

### **Effects of Alternative A**

Alternative A would leave the most miles of road (629 miles) available for public use (open yearlong and open with seasonal restrictions) of Butte Field Office BLM lands. Roads open to the public can provide benefits for wildland fire suppression by providing access that is usually passable (not overgrown with vegetation or closed by small rock slides, etc.) and allowing access for fuel reduction treatments. Alternative A would provide the most open road miles in the DA and would therefore provide the most benefits of all alternatives for fire suppression access as well as allowing ready access for fuels reduction projects.

Roads open to the public also provide additional opportunities for human-caused fire ignitions (either accidental or intentional). Human activities are the leading source of wildland fire ignition in the Planning Area. Alternative A would contribute the most open road miles of all alternatives from which these fire starts could occur and would therefore provide the greatest overall risk of human-caused fire starts.

At the Planning Area scale, the 629 miles of open BLM roads would make up about 3.5 percent of the at least 17,810 road miles in the entire Planning Area. The contribution of BLM roads is minor at the Planning Area scale, indicating that road management and activities off BLM lands have much more influence on future wildland fire characteristics at this scale than BLM road management.

### **Effects of Alternative B**

Alternative B would leave 417 miles of BLM road available for public use (open and seasonally restricted), slightly more than Alternative C, but 34 percent less than the 629 miles available under Alternative A. Alternative B would provide fewer open road miles in the DA than Alternative A and would therefore have fewer benefits than Alternative A for fire suppression access as well as allowing ready access for fuels reduction projects.

Roads open to the public also provide additional opportunities for human-caused fire ignitions (either accidental or intentional). Human activities are the leading source of wildland fire ignition in the Planning Area. Alternative A would contribute fewer open road miles

than Alternative A from which these fire starts could occur and would therefore provide less risk of human-caused fire starts than Alternative A.

At the Planning Area scale, the 417 miles of open BLM roads would make up about 3.5 percent of the at least 17,810 road miles in the entire Planning Area. The contribution of BLM roads is minor at the Planning Area scale, indicating that road management and activities off BLM lands have much more influence on future wildland fire characteristics at this scale than BLM road management.

### **Effects of Alternative C**

Alternative C would leave 372 miles of road available for public use (open yearlong and open with restrictions), slightly less than Alternative B, but 41 percent less than the 629 miles available in Alternative A. Alternative C would provide the least open road miles in the DA of any alternative and would therefore provide the least benefit of all alternatives for fire suppression access as well as allowing ready access for fuels reduction projects.

Roads open to the public also provide additional opportunities for human-caused fire ignitions (either accidental or intentional). Human activities are the leading source of wildland fire ignition in the Planning Area. Alternative C would contribute fewer open road miles than any other alternative and would therefore provide the least risk of human-caused fire starts than any other alternative.

At the Planning Area scale, the 372 miles of open BLM roads would make up about 2.1 percent of the at least 17,810 road miles in the entire Planning Area. The contribution of BLM roads is minor at the Planning Area scale, indicating that road management and activities off BLM lands have much more influence on future wildland fire characteristics at this scale than BLM road management.

### **Effects of Alternative D**

Alternative D leaves 479 miles of road available for public use (open yearlong and open with restrictions), slightly more than Alternatives B and C, but 24 percent less than the 629 miles available in Alternative A. Alternative D would provide fewer open road miles in the DA than Alternative A, but more than either Alternatives B or C and would therefore have fewer benefits than Alternative A but more benefits than Alternatives B and C for fire suppression access as well as allowing ready access for fuels reduction projects.

Roads open to the public also provide additional opportunities for human-caused fire ignitions (either accidental or intentional). Human activities are the leading source of wildland fire ignition in the Planning Area. Alternative D would contribute fewer open road miles than Alternative A, but more miles than either Alterna-

tives B or C from which these fire starts could occur. Alternative D would provide less risk of human-caused fire starts than Alternative A, but more risk than Alternatives B and C.

At the Planning Area scale, the 479 miles of open BLM roads would make up about 2.7 percent of the at least 17,810 road miles in the entire Planning Area. The contribution of BLM roads is minor at the Planning Area scale, indicating that road management and activities off BLM lands have much more influence on future wild-land fire characteristics at this scale than BLM road management.

## CULTURAL AND PALEONTOLOGICAL RESOURCES

At the scale of either the RMP Planning Area or the RMP Decision Area, alternative-specific risks or impacts to cultural and paleontological resources are difficult to discern due to a lack of extensive site-specific knowledge about the presence of these resources in a given TPA. By designating open routes, limiting open-country travel, and closing some routes, inadvertent discovery of cultural and paleontological resources and vandalism to them is reduced. Higher road densities in a given area would allow greater access to more land on the average, but that does not imply greater amounts of vandalism, since the vehicles would remain on designated routes.

## VISUAL RESOURCES

The following discussion characterizes effects to visual resources at the scale of all Butte Field Office BLM lands. Road mileages depicted are for all BLM lands in the RMP Decision Area with the alternatives of the five site-specific travel plans incorporated.

### Effects Common to All Alternatives

Roads (temporary or permanent) may affect visual quality. Roads that remain open for public use may impact visual qualities where noticeable. The quantity of open roads would also influence sensitivity levels since with more open roads, more areas would generally be viewed by more members of the public. Closing or decommissioning roads would generally reduce effects to visual resources and reduce sensitivity levels because fewer members of the public would generally be accessing and viewing areas with closed roads.

### Effects of the Alternatives

Alternative A would have the most miles of open road (approximately 629 miles) Butte Field Office-wide. This would create the most adverse effects to visual resources of all alternatives from a standpoint of both direct impacts of roads and creating the most potential for sensitive viewpoints.

Under Alternative B, reducing the mileage of designated open routes Field Office-wide to 417 miles would en-

hance scenic qualities and reduce sensitive viewpoints compared to Alternative A.

Under Alternative C, adverse effects from travel management and transportation would be slightly less than those of Alternative B with respect to impacts from open roads (372 open miles) on the landscape. Alternative C would improve visual resources the most of any alternative.

Under Alternative D, impacts from travel management would be less than with Alternative A, but greater than with Alternatives B and C. Alternative D would have 150 fewer miles of open road (479 open miles) than Alternative A. This reduction would lower sensitive viewpoints and the noticeability of landscape changes. Alternative D would have more adverse impacts to visual resources than Alternatives B and C.

Under all alternatives, most activities on BLM lands would generally not adversely affect visual resources to unacceptable degrees because discretionary activities on BLM lands would be required to meet Visual Resource Management objectives within individual project areas.

Activities on non-BLM lands, particularly activities near BLM lands associated with residential development, urbanization, additional mining, or vegetation management, could have adverse cumulative effects on visual resources on BLM lands because BLM VRM objectives would not apply to non-BLM activities.

## LIVESTOCK GRAZING

At the RMP Planning Area scale, contributions to cumulative effects on livestock grazing from alternatives for the five site-specific travel plans would be similar for all action alternatives. All action alternatives would close and decommission more roads and trails than Alternative A. As more roads and trails are closed, noxious and invasive weed spread along with multiple user conflicts would be reduced. On the other hand, permittee management time on BLM lands may increase. Consequently, more effects associated with closed roads as described under the Effects Common to All Alternatives sections for each TPA above would occur under Alternative C than under any other alternative. Alternative B would produce fewer effects than Alternative than C, but more than Alternatives A and D. A summary of the relative degree of proposed road closures at the RMP Decision Area scale (all BLM Butte Field Office lands) as well as the Planning Area scale by alternative is below.

Under current conditions (Alternative A), approximately 172 miles of motorized routes mapped on the BLM transportation system would remain closed. These routes represent about 20 percent of the approximately 856 BLM road miles, and approximately 1.0 percent of the road miles across all ownerships in the entire Planning Area.

Alternative B would close (318 miles) or decommission (53 miles) approximately 371 miles of routes in the Decision Area currently open to use by motorized vehicles, the second most of any alternative. These routes represent about 43 percent of the approximately 856 BLM road miles in the Decision Area, and approximately 2.1 percent of the road miles across all ownerships in the entire Planning Area.

Alternative C would close (375 miles) or decommission (50 miles) approximately 425 miles of routes currently open to use by motorized vehicles. These routes represent about 50 percent of the approximately 856 BLM road miles in the Decision Area, and approximately 2.4 percent of the road miles across all ownerships in the entire Planning Area.

Alternative D would close (266 miles) or decommission (44 miles) approximately 310 miles of routes currently used by motorized vehicles. These routes represent about 36 percent of the approximately 856 BLM road miles in the Decision Area, and 1.7 percent of the road miles across all ownerships in the entire Planning Area.

## RECREATION

Effects of the alternatives for the five site-specific travel plans on Recreation are discussed at the scale of the Butte Field Office below. The public often targets public lands for various recreational activities. At the scale of the 7.2 million-acre RMP Planning Area, the 302,000 acres of Decision Area lands make up about 4.2 percent of the total. Recreation opportunities on other public lands at the scale of the entire RMP Planning Area exist on approximately 2,803,359 acres of USFS lands (39 percent of all lands), approximately 318,000 acres of state lands (4.4 percent of all lands), approximately 11,466 acres of Bureau of Reclamation lands (0.2 percent of all lands), and approximately 150,000 acres of National Park Service lands (2 percent of all lands). BLM lands make up about 8.4 percent of public lands in the RMP Planning Area available for public recreation.

### Effects of Alternative A

This alternative would maximize motorized recreation opportunities, and minimize non-motorized opportunities within the five Travel Planning Areas (Helena, East Helena, Lewis & Clark-NW, Boulder/Jefferson City and Upper Big Hole) compared to the other alternatives. Approximately 372 miles of open road (including seasonally restricted roads) would be available in the five TPAs analyzed. This would provide approximately 629 miles of open road available across all Butte Field Office BLM lands.

### Effects of Alternative B

Road availability for wheeled motorized travel within the five TPAs being analyzed would be the second lowest of all alternatives (approximately 171 miles open yearlong or open with restrictions, 417 miles Butte Field

Office wide). Under this alternative motorized recreation users would be more affected than under Alternative A while visitors seeking non-motorized opportunities would be benefited with more walk-in areas associated with closed roads or from established trailheads.

### Effects of Alternative C

Road availability for wheeled motorized travel within the five TPAs being analyzed would be the lowest of any of the alternatives (approximately 122 miles open yearlong or open with restrictions, 372 miles Butte Field Office wide). Under this alternative motorized recreation users would be most affected while visitors seeking non-motorized opportunities would be benefited the most.

### Effects of Alternative D

This alternative would provide the second highest mileage of available roads (230 miles in the five TPAs, 479 miles Butte Field Office wide) of all alternatives for wheeled motorized recreation opportunities within the five Travel Plan Areas (Helena, East Helena, Lewis & Clark-NW, Boulder/Jefferson City, and Upper Big Hole) analyzed as part of this planning effort. Motorized recreation users would have more opportunities than under Alternatives B and C, but fewer opportunities than under Alternative A. Non-motorized users would have more opportunities than under Alternative A but fewer than under Alternatives B and C.

## TRAVEL MANAGEMENT AND ACCESS

To understand the entire cumulative effects picture for travel management and access at the Decision Area and Planning Area scales, past travel management actions, recent travel planning decisions and effects of the five site-specific travel plans are important.

### *Past Travel Management Actions*

Beginning in 1946, and continuing up to June 2003, the majority of lands managed by the BLM were managed under the “open” area designation. With some exceptions, under this management, the public was allowed to travel off-road (cross country) on motorized vehicles (both wheeled and snowmobiles) without restriction. During the initial decades under this management (1950-1980), the level of off-road motorized recreation use, adverse resource impacts, and user conflicts were relatively low. In more recent years (1980’s to the present), the Butte Field Office (as well as the rest of the nation) has experienced a dramatic increase in the popularity of Off Highway Vehicle recreation. According to a 1995 U.S. Bureau of Census abstract report for recreational use on public lands (U.S. Census Bureau. 1995), off-highway vehicle travel increased 138 percent between the years of 1982-1992, while other forms of motorized travel increased 186 percent. From 1997 to 2001, the number of ATVs in use increased by almost 40 percent (USDA-FS. 2005b). Nationwide, motorized enthusiasts are buying OHVs at a rate of 1,500 units per day, with

nearly one-third of them doing so as first time buyers. Non-motorized use increased as well. According to the U.S. Bureau of Census report, between the years of 1982-1992, non-motorized travel increased 290 percent. As a result, both nationally and at the scale of the Butte Field Office, user conflicts between motorized and non-motorized users have increased.

In 2003, BLM issued a major travel management document, the *2003 Off-Highway Vehicle Record of Decision* and plan amendment for Montana, North Dakota, and portions of South Dakota. Under this decision, all wheeled motorized use is restricted to existing roads and trails only (no cross country use), including big game retrieval, unless in an area with a site-specific travel plan that manages otherwise.

Prior to the recent Butte RMP revision roads/trails inventory, the total number of roads and trails located within the Butte Field Office was generally considered to be 285 miles. This figure has been used for many years by BLM personnel, and represents the primary roads and trails used by the public and agency over the past 20-30 years. During the comprehensive road and trails inventory conducted for the Butte RMP (2002-2004), a total of approximately 856 miles of roads and trails were documented. There is no data available to analyze when or at what rate this growth of the road network occurred (from 285 to 856 miles), or the numbers of miles of roads/trails that are attributed to agency development, versus public development (user made routes). The current total mileage is a combination of both BLM construction and user made routes that BLM never intended to place on the landscape. In some cases, the locations of existing routes and the (vehicle) type, frequency, and season of use, have resulted in resource impacts. This legacy of past travel management has a direct impact on current as well as future travel management.

### **Recent BLM Travel Plan Decisions**

Recent BLM travel planning decisions for four TPAs in the Butte Field Office reflect a general trend of reduced motorized use with more distinction made in designated uses compared to the past (**Table 4-110**). While mileages of road open year-round have generally decreased, miles of seasonally restricted routes, miles of motorized trail for OHVs and motorcycles, and miles of closed roads have generally increased.

Outside of but adjacent to the Butte RMP Planning Area, the Dillon BLM Resource Management Plan (February 2006) provides another example of a recent travel management decision. Prior to its recent travel management revisions, the Dillon Field Office had 1,860 miles of road open yearlong, 242 miles open with seasonal restrictions, and 822,284 acres of area in the "Open" area designation for snowmobile use. With the travel plan revisions made in the Dillon RMP, there are now 1,183 road miles open yearlong, 159 miles with seasonal restrictions, and 763,057 acres in the "Open" area designation for snowmobile use.

### **Recent USFS Travel Plan Decisions**

There have been two recent travel plan decisions made by the USFS on National Forest lands that are partially located within the Butte RMP Planning Area boundary. The North Belts Travel Plan completed in 2005 on the Helena National Forest applies to lands northeast of Canyon Ferry Reservoir. Some of these lands are within the Butte RMP PA boundary while others are outside the PA boundary. This decision has resulted in fewer combined miles of open motorized routes from 415 miles to 345 miles, and a reduction of open area for cross-country snowmobile use (**Table 4-111**).

<b>Butte Field Office Travel Planning Area; (Plan Date)</b>	<b>Plan Status (Before/ After Plan)</b>	<b>Open Yearlong</b>	<b>Seasonally Restricted</b>	<b>Closed</b>	<b>Motorized trails</b>	<b>Non- motorized trails</b>	<b>Open Area for Wheeled Vehicles</b>	<b>Open Area Designation for Snowmobiles</b>
<b>Whitetail-Pipestone (2002)</b>	Before	99.4	0	1.7	0	0	28,647	28,647
	After	51	22	32	20.2	0	0	0
<b>Clancy-Unionville (2000)</b>	Before	14	0	0	15	0	5,590	5,590
	After	5	4	5	14	0	0	1,350
<b>Sleeping Giant (2004)</b>	Before	29	0	0	0	0	7,463	7,463
	After	4.5	4.5	20	0	0	0	0
<b>Elkhorn Mountains<sup>1</sup> (1995)</b>	Before	0	1,036	0	32	-- <sup>2</sup>	125,900	125,900
	After	0	708	328	151	-- <sup>2</sup>	31,400	31,400

<sup>1</sup>The data for the Elkhorn Mountains travel management plan includes both BLM and USFS managed lands.

<sup>2</sup>Data Unavailable

Plan Status	Open Roads, Passenger	Dual Use	Motorcycle Trails	Motorized Trails	Snowmobile Only Trail	Snowmobile Open Area Designation
Before	370	0	2	40	3	113,550
After	160	125	14	43	3	63,686

The Gallatin National Forest travel plan (USDI-FS 2006b), a Forest-wide effort completed in 2006, applies to approximately 2.8 million acres within the Butte RMP Planning Area as well as USFS lands outside the Planning Area. This decision increased the miles of routes available for winter driving, snowmobile use, and cross-country skiing (Table 4-112).

Use Type	Before Plan	After Plan
Pleasure Driving	162	169
Snowmobiling	400	468
Cross-Country Skiing	214	231

### Effects of Five Site-Specific Travel Plans at RMP Decision Area Scale

This section discusses effects of the alternatives of the five site-specific travel plans considered in aggregate at the RMP Decision Area (all Butte Field Office BLM lands) scale as well as the Planning Area scale. Table 4-113 displays RMP Decision Area-wide road mileages by alternative.

For summer use, the total miles of routes available for all motorized uses combined increased slightly from 1,577 miles to 1,588 miles, but included shifts in types of uses with mileage increases for pleasure driving and motorcycle riding, and miles reductions for backcountry

Indicator	Alt A	Alt B	Alt C	Alt D
Miles of open yearlong routes	471.8	263.0	244.3	304.8
Miles of seasonally restricted routes	157.5	153.8	128.1	173.9
Miles of decommissioned routes	0	52.6	50.1	43.4
Miles of closed routes	172.0	317.7	375.2	266.2

Source: BLM Butte Field Office transportation GIS database, 2005.

roads and ATV routes (Table 4-114). Combined totals of routes where non-motorized uses were either emphasized or allowed reduced from 7,509 miles to 5,775 miles with reductions in routes where mountain bike and pack and stock saddle uses were emphasized, and increases in miles where mountain bike use is allowed (but not emphasized).

### Effects of Alternative A

Under Alternative A, approximately 629 miles of roads would be open (471.8 miles open yearlong, 157.5 miles open with seasonal restrictions) Decision Area-wide for motorized use opportunities (Table 4-113). This would be the greatest number of open miles of all the alternatives and would create the most opportunities for motorized users, and the least opportunities for non-motorized users of all alternatives. Approximately 172

Plan Status	Pleasure Driving	Backcountry Roads (4 X 4)	ATV	Motorcycle	Mountain Bike Use emphasized	Mountain Bike Use allowed	Pack and Stock Saddle Use emphasized	Pack and Stock Saddle Use allowed	Hiking Use emphasized
Before Plan	309	417	757	74	2,386	898	2,115	1	2,109
After Plan	402	337	554	295	1,323	1,754	347	347 <sup>1</sup>	2,004 <sup>2</sup>

<sup>1</sup> Use for this activity is prohibited on some trails.

<sup>2</sup> Use for this activity is not prohibited on any trails; use is either emphasized or allowed.

miles of road (approximately 20 percent of Field Office total of 856 miles) would remain closed Field Office-wide under this alternative.

Under Alternative A, user conflicts would be greater and safety would be reduced compared to the action alternatives because motorized and non-motorized users would share more of the same routes, which could lead to accidents and injuries.

Management costs under Alternative A would be mixed. Less personnel time would be required to monitor travel compliance than under the action alternatives. However, more effort would be required for signing designated open routes than under any other alternative (routes open yearlong and open with restrictions would be signed while closed routes would not be signed).

### Effects of Alternative B

Under Alternative B, opportunities for wheeled motorized access would be less, while opportunities for non-motorized user would be greater than under Alternative A (**Table 4-113**). Under Alternative B, approximately 43 percent of the current total of approximately 856 road miles would be closed or decommissioned. Alternative B would provide fewer opportunities for motorized users, but would increase opportunities for non-motorized users compared to Alternative A.

Under Alternative B, wheeled motorized and non-motorized users would have more separate routes than under Alternative A. User conflicts would be reduced compared to Alternative A.

The extent of management activities and costs under Alternative B would be mixed. Less personnel time would be required for initial implementation (signing designated routes, installing bulletin boards) than under Alternative A, but more time would be needed than under Alternative C. However, more effort on the part of the BLM would be required for public education and travel plan compliance than under Alternative A, but less time would be needed for this than under Alternative C.

### Effects of Alternative C

Under Alternative C, opportunities for wheeled motorized access would be less, while opportunities for non-motorized users would be greater than under any other alternative (**Table 4-113**). Under Alternative C approximately 49 percent of all BLM roads in the Decision Area would be closed or decommissioned.

User conflicts may be less under Alternative C than the other alternatives because wheeled motorized and non-motorized users would have a greater number of separate routes, thereby reducing the chances of encounters.

The extent of management activities and costs under Alternative C would be mixed. More personnel time would be required to monitor user compliance than under Alternatives A and B, but signage requirements

would be less than under any other alternative due to Alternative C having the fewest open routes.

Road and trail safety would be greater under Alternative C than under all other alternatives. Increased opportunities for dispersed recreation would result in a reduction in accidents and injuries from motorized and non-motorized recreationists using the same trails.

### Effects of Alternative D

Under Alternative D, opportunities for wheeled motorized access would be less than under Alternative A, but greater than under Alternatives B and C (**Table 4-113**). Opportunities for non-motorized users would be greater than under Alternative A but less than under Alternatives B and C. Under Alternative D approximately 36 percent of all BLM roads in the Decision Area would be closed or decommissioned.

Under Alternative D, user conflicts would be less than under Alternative A, but more than under Alternatives B or C. Due to increased route closures and seasonal restrictions, some dispersed recreation opportunities would be created that allow motorized and non-motorized users to recreate separately compared to the current condition.

The extent of management activities and costs under Alternative D would be mixed. Alternative D would entail additional construction costs compared to the other alternatives due to several new roads that would be constructed to interconnect with existing routes. Increased education and compliance monitoring would result in increased management costs under Alternative D compared to Alternative A, but these costs would be lower than under Alternatives B and C. Signage costs would be less than under Alternative A but greater than under either Alternatives B or C.

### Additional Effects at Decision Area and Planning Area Scales

Decreased opportunities for motorized recreation would help reduce the cumulative effects on natural resources, help provide non-motorized opportunities, and help reduce conflicts between motorized and non-motorized users. Under the action alternatives, motorized users would end up with fewer miles of dispersed roads or trails to recreate upon, and/or be displaced from some site-specific areas. As a result, motorized use would become more concentrated onto a smaller network of roads and trails. With some exceptions, given the combined level of motorized opportunities available across public lands managed by various agencies (USFS, BLM, MFWP, etc.), it should be many years before competition among motorized users for the same space becomes a social issue. Exceptions may include focus areas such as the Whitetail-Pipestone designated OHV trail system. Whitetail-Pipestone has gained rapidly in popularity (and public exposure) since its recent travel plan development in 2002; and receives use by local residents as

well as regional and nationwide visitors. Given the increasing popularity of motorized use, focus areas such as Whitetail-Pipestone would likely become more crowded in the future regardless of future travel management direction.

At the Planning Area scale, there are other key variables affecting travel management. Private lands account for nearly 49 percent of lands in the Planning Area. There is a general trend for private landowners to restrict public access onto or across their lands. This trend may be offset somewhat by the acquisition of additional lands by BLM, access easements, and block hunting agreements. Human population in the Planning Area grew by 40 percent between 1970 and 2002. In some cases, this population influx has led to fragmentation of large tracts of private lands for residential development, further complicating public access issues. This trend will likely continue. These same factors and influences would also affect travel management decisions made by other agencies located within the Planning Area, such as USFS, MFWP, and Bureau of Reclamation. Given that Butte Field Office lands occupy about 4.2 percent of all lands, and BLM roads make up about 4.8 percent of Planning Area total road mileage, the effects of BLM travel plan alternatives on travel management overall would be relatively minor at this scale.

## TRANSPORTATION FACILITIES

Costs associated with travel management for all BLM lands in the Butte Field Office (**Table 4-115**) are based on historical cost figures for road and trail maintenance. Percentage of annual maintenance is also historical, with 20 percent of the total mileage of roads receiving annual maintenance. The remaining 80 percent of roads and trails would receive stabilization work and emergency repairs as needed.

Under Alternative A, the Butte Field Office transportation system would have 629.2 miles of open roads (including open with seasonal restrictions) and 75 miles of motorized trails (**Table 4-115**).

Estimated costs for annual maintenance, periodic stabilization, monitoring of compliance with travel plans, and weed control on roads would be about 30 percent more than any of the action alternatives.

Under Alternative B, the Butte Field Office transportation system would have 416.9 miles of open roads (including open with seasonal restrictions) and 75 miles of motorized trails (**Table 4-115**). Estimated costs for annual maintenance, periodic stabilization, monitoring of compliance with travel plans, and weed control on roads under Alternative B would be slightly higher than under Alternative C and less than under Alternatives A and D.

Under Alternative C the transportation system would have 372.4 miles of open roads (including open with restrictions) and 75 miles of motorized trails (**Table 4-115**). Estimated costs for annual maintenance, periodic stabilization, monitoring of compliance with travel plans, and weed control on roads under Alternative C would be less than under any other alternative.

Under Alternative D, the Butte Field Office transportation system would have 478.6 miles of open roads (including open with restrictions) and 75 miles of motorized trails (**Table 4-115**). Estimated costs for annual maintenance, periodic stabilization, monitoring of compliance with travel plans, and weed control on roads under Alternative D would be greater than under Alternatives B and C, but less than under Alternative A.

<b>Classification/ Cost</b>	<b>Alt A</b>	<b>Alt B</b>	<b>Alt C</b>	<b>Alt D</b>
<b>Miles of Open/ Restricted Roads</b>	629.2	416.8	372.4	478.6
<b>Motorized Trails</b>	75	75	75	75
<b>Annual Road Maintenance</b>	\$50,336	\$33,352	\$29,792	\$38,288
<b>Annual Trail Maintenance</b>	\$3,000	\$3,000	\$3,000	\$3,000
<b>Periodic Road Stabilization</b>	\$33,574	\$22,246	\$19,871	\$25,538
<b>Periodic Trail Stabilization</b>	\$1,200	\$1,200	\$1,200	\$1,200
<b>Monitoring/Compliance</b>	\$31,460	\$20,845	\$18,535	\$23,930
<b>Weed Control</b>	\$9,438	\$6,254	\$5,586	\$7,179

## CHAPTER 5

# CONSULTATION AND COORDINATION

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### INTRODUCTION

This chapter describes the public participation opportunities made available through the development of the Draft RMP/EIS. This chapter also describes consultation and collaboration efforts conducted by BLM with various entities. A distribution list identifies agencies, congressional staff, businesses, and organizations that were sent a copy of the Draft RMP/EIS.

The Draft RMP/EIS was prepared by an interdisciplinary team of resource specialists from the Butte Field Office, Montana State Office, and Maxim Technologies (RMP contractor).

Members of the planning team have consulted formally and informally with various agencies, local government representatives, groups, and individuals during the preparation of this document. Consultation, coordination, and public involvement occurred as a result of scoping, briefings, informal meetings, and individual contacts.

### SCOPING AND PUBLIC INVOLVEMENT PRIOR TO THE DRAFT RMP/EIS

A number of opportunities were available to the public to educate themselves about the planning process and participate in development of the plan prior to release of the Draft RMP/EIS for public review and comment.

A press release with regional distribution was issued at each major stage of the planning process including scoping, travel management planning, and issuance of the Proposed Planning Scenario. In addition, three planning updates were mailed to the general mailing list to announce the start of the planning process, again to announce the start of the travel planning effort, and again to describe preliminary draft alternatives and request Draft RMP/EIS document preference.

The web site [www.mt.blm.gov/bdo/rmp/index.htm](http://www.mt.blm.gov/bdo/rmp/index.htm) provided information on the resource and travel planning processes.

The Western Montana Resource Advisory Council, a 15 member advisory group appointed by the Secretary of Interior, was briefed at a number of their meetings on the status of the Butte RMP/EIS and given the opportunity to ask questions and provide feedback. The council's role is to provide advice to BLM on a variety of issues associated with public land management.

### TRAVEL MANAGEMENT PLANNING

Five public meetings were held over a two-week period during November and December 2004 on travel plan-

ning. Separate meetings were held specific to five Travel Planning Areas: Upper Big Hole, Boulder/Jefferson City, East Helena (North Hills), Helena (Scratchgravel Hills), and Lewis and Clark NW (Marysville). The overall goals of the meetings were to identify public travel planning issues and concerns for BLM lands, and to identify possible solutions to issues and concerns. Public attendance at these meetings is presented below:

- Upper Big Hole – 4 attendees;
- Boulder/Jefferson City – 7 attendees;
- East Helena (North Hills) – 24 attendees;
- Helena (Scratchgravel Hills) – 101 attendees; and
- Lewis and Clark NW (Marysville) – 16 attendees.

### COLLABORATIVE EFFORTS

A variety of public involvement strategies have been implemented throughout this planning process to improve communication and develop understanding of the issues and the process in development of the RMP/EIS. In addition to the scoping efforts and public meetings described in Chapter 1, various potential cooperators including Tribes, the Governor's Office, state and federal agencies, and local governments within the Planning Area were solicited to become cooperators in summer 2002. No agencies or governments signed on as cooperators for the development of this plan.

### TRAVEL MANAGEMENT WORKING GROUPS

In an effort to help BLM develop site-specific travel management alternatives agreeable to the public as well as the agency, community based collaborative working groups were initiated. Two working groups, representing a wide, "balanced" range of public land users, were recruited and managed under the direct supervision and guidance of the Lewis and Clark County Board of Commissioners. One of the groups was assigned to assist with travel planning for the Helena (Scratchgravel Hills) and East Helena (North Hills) TPAs, and the other for the Lewis and Clark County NW (Marysville) TPA. Membership criteria included: Montana residency, familiarity with the TPAs, and a willingness to work collaboratively with people of differing viewpoints. In order to provide for balanced representation, members were selected from three different interest categories (in accordance with the Western Montana Resource Advisory Council criteria), as described below.

#### Category 1:

Hold federal grazing permits or leases within the Travel Planning Area;

Represent interests associated with transportation or rights-of-way;

Represent developed outdoor recreation, OHV users, or commercial recreation activities;

Represent the commercial timber industry; or

Represent energy or mineral development.

**Category 2:**

Nationally or regionally recognized environmental organization;

Dispersed recreational activities;

Archaeological and historical interests; or

Nationally or regionally recognized wild horse and burro interest groups.

**Category 3:**

Hold state, county, or local elected office;

Are employed by a state agency responsible for the management of natural resources, land, and water;

Represent Indian tribes within or adjacent to the Travel Planning Area;

Are employed as academicians in natural resource management or the natural sciences; or

Represent the public-at-large.

The Working Groups consisted of eight or nine members, representing each of the three interest categories. These individuals included:

Helena-East Helena Working Group

- Cleve Johnson (Category 1)
- R. Allan Payne (Category 1)
- Randy Pearson (Category 1)
- Andy Baur (Category 2)
- Cedron Jones (Category 2)
- Connie Cole (Category 2)
- Rich Moy (Category 3)
- Bonnie Morgan (Category 3)
- Marilyn Pearson (Category 3)

Lewis and Clark County NW Working Group

- Mike Clark (Category 1)
- Eric LeLacheur (Category 1)
- Rudy Strobbe (Category 2)
- Ken Wallace (Category 2)
- Shaheen Siddiqui (Category 2)
- George Marble (Category 3)

- George Bower (Category 3)
- Michael McHugh (Category 3)

Each group held a series of five or six meetings during June and July 2005. The meetings were attended by at least one BLM representative available to answer questions, provide information and feedback from the BLM's interdisciplinary team, and provide written materials and maps as needed. Group recommendations for route-specific management were based on consensus. In the end, the working groups were able to arrive at complete consensus for the Marysville (subset of Lewis and Clark County NW TPA) and North Hills (subset of East Helena TPA) areas, but only partial consensus for the Scratchgravel Hills (subset of Helena TPA) area.

The Working Groups presented their findings to the Lewis and Clark County Commissioners at their regularly scheduled meeting in Helena on September 22, 2005. The Lewis and Clark Commissioners forwarded Working Group recommendations to the BLM soon afterward. BLM incorporated working group recommendations into Alternative B for each of these three Travel Planning Areas.

## RELEASE OF THE DRAFT RMP/EIS

The Draft RMP/EIS was mailed to the public in late May/early June 2007. The Notice of Availability was published in the Federal Register by the Environmental Protection Agency on June 8, 2007, beginning the official 90-day comment period. BLM published a concurrent Notice of Availability containing supplemental information. Written comments on the Draft RMP/EIS were initially slated to be due September 6, 2007. The BLM extended this public comment period to October 9, 2007.

In addition to printed copies or CDs mailed to people who requested them, the Draft RMP/EIS was available for review on the Butte RMP website. Approximately 360 printed copies and 130 CDs were distributed.

Over the period of June 26, 2007, to July 16, 2007, the BLM conducted briefings on key RMP contents for each of the eight county commissions in the Planning Area.

The BLM conducted six open house-style public meetings in the Planning Area in July 2007. Dates, locations, and times of public meetings were publicized through multiple press releases to local and regional press. This information was posted on the Butte RMP website as well.

The public meetings were designed to provide information to the public on the content of the Draft RMP/EIS as well as to provide information on how best to provide substantive comments on the document. Each meeting began with an introductory presentation covering key contents of the Draft RMP/EIS, contact information, and

suggestions on how to comment on the plan. Public members were then encouraged to visit with managers and members of the BLM planning team for the Draft RMP/EIS to discuss any specific questions or concerns. At each open house the public was strongly encouraged to provide any input on the Draft RMP/EIS to the BLM in writing during the comment period.

#### Open House Locations, Dates, and Public Attendance

Helena, Montana	July 17, 2007	12 attendees
Townsend, Montana	July 18, 2007	5 attendees
Butte, Montana	July 19, 2007	12 attendees
Boulder, Montana	July 23, 2007	5 attendees
Divide, Montana	July 24, 2007	11 attendees
Bozeman, Montana	July 25, 2007	5 attendees

## FORMAL CONSULTATION

### FISH AND WILDLIFE SERVICE CONSULTATION

Federal agencies are required to comply with provisions of the Endangered Species Act of 1973, as amended. This includes a requirement to “consult” with the U.S. Fish and Wildlife Service on any action that may affect species listed as threatened and endangered or result in destruction or adverse modification of habitat designated as critical for listed species. In addition, federal agencies must “confer” with USFWS on any action that is likely to jeopardize the continued existence of any species proposed to be listed or any action that may result in the destruction or adverse modification of critical habitat proposed to be designated for listed species.

This RMP/EIS is considered to be a major project and this document describes potential impacts to threatened and endangered species as a result of management actions proposed in the RMP. Contacts were made with the USFWS early in the RMP process, and a representative of the USFWS was on the planning team during development of the plan to adequately address and discuss the effects of management actions on listed and proposed species and their critical habitats. The USFWS also provided guidance to the BLM regarding compliance with Executive Order 13186 for the conservation of migratory birds.

Early drafts of alternative provisions were provided to USFWS staff for discussion and review. An initial list of federally listed threatened or endangered plant, animal, or fish species or habitats present in the Butte Field Office Planning Area was requested on March 23, 2006, with an update received March 29, 2006. Four federally listed threatened wildlife species and one threatened plant species potentially occur, or potential habitat is available in the Planning Area. These include: grizzly bear (*Ursus arctos horribilus*), gray wolf (*Canis lupis*), Canada lynx (*Lynx Canadensis*), bald eagle (*Haliaeetus leucocephalus*), and Ute ladies’ tresses (*Spiranthes diluvialis*).

A biological assessment that evaluates the impacts of the preferred alternative on federal threatened and endangered species was submitted concurrently with public release of the Draft RMP/EIS to the USFWS. The Proposed RMP/Final EIS (**Appendix G – Wildlife**) includes the USFWS biological opinion, received on January 22, 2008.

### STATE HISTORIC PRESERVATION OFFICE CONSULTATION

The BLM cultural resource management program operates in accordance with 36 CFR Part 800, and through the Montana State Protocol, which provide specific procedures for consultation between the BLM and the State Historic Preservation Office (SHPO) to meet BLM responsibilities under the National Historic Preservation Act. The SHPO was consulted during the development of the Draft RMP/EIS concerning cultural resources that may be affected by being included on the RMP mailing list throughout scoping and public involvement. The Proposed Planning Scenario and solicitation for feedback were also sent to SHPO in June 2005. Formal comments on the Draft RMP/EIS were received in August, 2007 and are addressed in the Comment and Response section of this chapter.

### TRIBAL CONSULTATION

In accordance with the National Historic Preservation Act as well as in recognition of the government-to-government relationship between tribes and the federal government, the Butte Field Office has included the business and preservation offices of 11 tribal governments in the development of the EIS. Letters were sent to the Blackfeet, Shoshone, Salish and Kootenai, and Shoshone-Bannock tribal governments and officials on August 13, 2002 to invite them to be cooperating agencies on the Butte RMP. The letters also requested their input on issues and concerns to be considered during the planning process and initiate efforts to identify areas of traditional cultural concern.

In December 2004 BLM invited the following tribes to an agency update briefing on the Butte RMP that was held in Helena on February 15, 2005: Tribal Council of the Confederated Tribes of the Flathead Reservation, Shoshone-Bannock Tribes Business Council, Shoshone Business Council, and the Blackfeet Tribal Business Council.

BLM solicited feedback when the Proposed Planning Scenario was sent to the following tribal governments in June 2005: Turtle Mountain Band of Chippewa Indians, Blackfeet Tribal Business Council, Chippewa Cree Business Committee, Tribal Council of the Confederated Salish-Kootenai Tribes of the Flathead Reservation, Crow Tribal Council, Fort Peck Tribal Executive Board, Northern Cheyenne Tribal Council, Shoshone-Bannock Tribes Business Council, and the Nez Perce Tribes.

Feedback was further solicited in additional mailings of the Proposed Planning Scenario in Spring 2006 to the Tribal Historic Preservation Offices of these tribes: Turtle Mountain Band of Chippewa Indians, Chippewa Cree Business Committee, Tribal Council of the confederated Salish-Kootenai Tribes of the Flathead Reservation, Fort Belknap Community Council, Fort Peck Tribal Executive Board, Northern Cheyenne Tribal Council, Shoshone Business Council, Arapaho Business Council, Shoshone-Bannock Tribes Business Council, Nez Perce Tribal Executive Committee, and Blackfeet Tribal Business Council.

Various levels of interest have been expressed by different tribal offices. Informal coordination as well as two meetings with the Preservation Office and resource specialists have been conducted with the Ft. Hall Shoshone-Bannock Tribes. Informal coordination, Business Council and two Preservation Office meetings have been held with the Confederated Salish and Kootenai Tribes of the Flathead Reservation. One meeting with the Tribal Historic Preservation Officer and one Business Council meeting was held with the Blackfeet Tribes.

## INFORMAL CONSULTATIONS

BLM has conducted less formal coordination and consultation with various entities throughout the development of the Draft RMP/EIS. As directed by the Watershed Protection and Flood Prevention Act and the Clean Water Act, BLM has included the U.S. Environmental Protection Agency, Montana Department of Environmental Quality, and Natural Resource Conservation Service in scoping activities, including the scoping of the Proposed Planning Scenario in June 2005.

Livestock grazing permittees and lessees have been included in public scoping efforts and mailings. Interested permittees were included in the scoping of the Proposed Planning Scenario in June 2005.

## PUBLIC COMMENTS ON THE DRAFT RMP/EIS

A total of 172 separate submissions of comments on the Draft RMP/EIS were received during the comment period. Approximately 20 submissions were duplicated through multiple media (fax, email, and U.S. mail). Unique submissions included 68 letters (including BLM-provided comment forms), 76 emails, and 8 faxes. Several additional verbal comments on site-specific travel plan alternatives were also received at public meetings.

## ADDRESSING PUBLIC COMMENTS

Upon receipt by the BLM, each comment submission was assigned an identification number and logged into a tracking database. Specific comments from each submission

were also entered into a database and coded to appropriate categories based on content of the comment, retaining the link to the original commentor. Comments similar to each other were combined and summarized, and have been responded to once in the Comment and Response section below. Commenters can reference their name (listed alphabetically by last name, or by the name of the organization or government entity represented) to identify the sections that contain responses to their identified concerns. When several submissions identified the same concern, the concern was summarized and may not necessarily appear in this document with wording identical to the commentors' language.

All comments were reviewed and considered, however comments were not counted as "votes". Comments that presented new data or addressed the adequacy of the document, the alternatives, or the analysis are responded to in the Proposed RMP/Final EIS. Changes were made to the Preferred Alternative (Alternative B) presented in the Draft RMP/EIS as a result of comments. Major changes or additions in the Proposed RMP/Final EIS are shaded in light gray, and reflect consideration given to public comment, corrections and rewording for clarification. A list of major changes to the document can be found in Chapter 1 of the Proposed RMP/Final EIS.

Many comments received through the process expressed personal opinions or preferences, had little relevance to the adequacy or accuracy of the Draft RMP/EIS, or represented commentary regarding resource management without real connection to the document being reviewed. These comments did not provide specific information to assist the planning team in making a change to the Preferred Alternative, did not suggest rationale for other alternatives, did not take issue with methods used in the Draft RMP/EIS, and are not addressed further in this document. Examples of these comments include:

- *BLM lands are not just dirt. BLM lands are acreage with resources other than oil, gas, coal, timber. Soils, aquifers, plant communities, and wildlife are resources too. So is silence. Please pay a little more attention to the unpermitted part of your resource management. A place to start is with management plans with extensive biological research as a foundation.*
- *MWF believes the BLM can most responsibly manage the public lands in its charge if it elevates the most protective aspects within the RMP/EIS, hereafter referred to as the Butte RMP, for hunting, fishing, and access to our public lands; the economic importance of outdoor recreation activities that include hunting and fishing to the state of Montana has surpassed agriculture, mining, timber and other extractive activities as per the Montana Department of Commerce.*

- *The needs of all the people are best met by management of public lands and programs for multiple-uses. Motorized roads and trails are a significant source of recreation for all of the public. The public expects decision-makers to adequately protect the existing standards of living and opportunities (human environment) in their decisions. NEPA did not intend for citizens who do not comment on NEPA actions to give up their standard of living to those that do. We ask that public comments not be used as a voting process and that the needs of all citizens be fairly addressed in the document and decision-making.*
- *The Elkhorn Mountains should not be a proposed ACEC site nor a wilderness site or any such thing. Now if the goal of BLM is to work with the FS to eliminate all opportunity to explore and mine in this area, an ACEC process is a great way to go. But if you go this way, then you are discriminating against one segment of taxpaying citizens in favor of other mostly non-taxpaying citizens.*
- *We support the designation of all five potential Areas of Critical Environmental Concern (ACECs, Sleeping Giant, Elkhorn Mountains, Spokane Creek, Ringing Rocks, Humbug Spires, page 66), including the expanded all BLM lands in the Elkhorn Mountains for a total ACEC acreage of 87,893 acres, to apply special management to protect such areas from damage or degradation.*
- *I support the BLM's recommendation to designate 3.1 miles of the Missouri River as a Wild and Scenic River.*
- *It is my opinion, given my history of riding and recreating, that ANY closure of existing used trails is unacceptable.*
- *Of all your Travel Plan alternatives it is obvious that the best and most logical choice is Alternative C. Please choose, implement, and enforce Alternative C for all the Travel Plan areas.*
- *Unfortunately rules often times go to the lowest common denominator, i.e. the guy doing the most irrational things. Agencies are encouraged to keep rules as simple as possible and focused on addressing problems that are common and not the exceptions. Motorized recreationists can be called upon to help address the exceptions.*
- *In your Preferred Alternative B and also Alternatives C and D, I feel you are closing and decommissioning way too many roads for no apparent reason, as far as I can see. I feel both BLM and Forest Service should be opening back up roads already closed, especially for game retrieval.*
- *I am writing to advocate Alternative C for the travel plan for the Scratchgravel Hills Draft Resource Management Plan.*
- *Always preserve biological, cultural, scenic and wilderness resources.*

## COMMENT CATEGORIES AND COMMENTER NAMES

Two lists are provided on the following pages. The first list is an index of codes assigned to the 38 subject categories within which comments were received. The second list alphabetically lists the agencies, organizations, and persons who submitted comments on the Draft RMP/EIS and the codes associated with their comments. Commenters can find their name (or the name of the agency or organization they represented) and the corresponding comment codes, and look up responses to see how their concerns have been addressed.

## INDEX OF COMMENT CODES

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Economics	D1 through D14	698-702
Fire and Fuels	E1 through E14	702-705
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Oil and Gas	N1 through N31	753-766
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Travel Management – Multiple Use/Public Access	Y1 through Y50	819-830
Travel Management – Mitigation, Maintenance, Closure Methods	Z1 through Z13	830-833
Travel Management – Resource Impacts	AA1 through AA38	833-846
Travel Management – Travel Plan Implementation	BB1 through BB11	846-849
Travel Management – Travel Planning Process	CC1 through CC33	849-857
Travel Management – User Conflicts	DD1 through DD13	857-860
Travel Management – User Data	EE1 through EE8	860-862
Travel Management – Winter Use/Snowmobiles	FF1 through FF5	862-864
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Travel Planning Areas – Lewis and Clark Co. NW TPA	JJ1 through JJ7	872-874
Travel Planning Areas – Upper Big Hole River TPA	KK1 through KK16	874-877
Water	LL1 through LL12	877-883

## LIST OF COMMENTERS/CODES

The following list displays the names of the individuals and organizations who commented on the Draft RMP/EIS and the corresponding comment codes for specific comments made. Organizations and government

entities are listed by the organization or government agency rather than by the signatory to the submission. Commentors can use this cross-reference to review responses to their comments by referencing the appropriate comment sections.

<i>Commenter</i>	<i>Code</i>
Alvey, Laura and Sam	H11, M1, II10
American Wildlands	B3, F28, J15, J16, L8, N27, Q19, U8, W8, W9, Z11, FF4, GG2, II1, KK1
Antonioli, Ted	O16
Balcerzak, Linda	II12
Barrett, Bob	HH3, Y47
Beardslee, Greg	L9, V10
Beardslee, Russ	Y31, Y32
Bennett, Judith and Daniel	U10, V6
Boles, Glenn and John	II12
Bradshaw, Rose Marie	U10, V6
Burk, Stoney	U10, V6
Cain, Clinton	O16
Capital Trail Vehicle Assn. (CTVA)	B1, C2, D1, D2, D3, D4, D5, D6, D7, D8, D9, F11, F12, F27, I1 L1, L6, M10, M11, O4, O5, O6, O7, O8, O9, O10, O11, O12, O13, O14, P9, P10, P11, P12, P13, P14, P15, P16, P17, P18, P25, P26, P27, P28, P29, P30, P31, P32, P33, P34, P44, P45, P56, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q24, S1, S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12, S13, S14, S15, S16, S17, T2, W6, W7, W11, X7, X8, X9, X10, X11, X12, X13, X14, X15, X16, X17, X18, X19, X20, X21, X22, X23, X24, X25, X26, X27, X33, X34, Y3, Y4, Y5, Y6, Y7, Y8, Y9, Y10, Y11, Y12, Y13, Y14, Y15, Y16, Y17, Y18, Y19, Y20, Y21, Y22, Y23, Y24, Y30, Y32, Y33, Y34, Y35, Y36, Y37, Y38, Y40, Y44, Y45, Y48, Y49, Z1, Z2, Z3, Z4, Z5, Z6, Z7, Z8, Z9, Z12, Z13, AA2, AA3, AA4, AA5, AA6, AA7, AA8, AA10, AA11, AA12, AA13, AA14, AA15, AA16, AA17, AA18, AA19, AA23, AA25, AA26, AA29, AA30, BB1, BB2, BB3, BB4, BB5, BB6, BB7, BB8, BB10, BB11, CC1, CC3, CC5, CC6, CC7, CC8, CC9, CC10, CC11, CC12, CC13, CC14, CC15, CC16, CC17, CC18, CC24, CC25, CC26, CC27, CC28, CC29, CC30, CC31, CC32, DD10, DD11, DD12, DD5, DD6, DD7, DD9, EE1, EE2, EE3, EE4, EE5, EE6, EE7, EE8, FF1, HH1, II3, JJ4
Carparelli, Mary and Peter	U10, V6
Casperson, Barbara	O20
Champion, Robert and Ruth	U10, V6
Chrichton, Jim	O15
Citizens for Balanced Use	CC2, D13, D14, L11, O18, P35, Q13, X1, X2, X3, X8, Y50
Coalition for State Public Land Access	P5, P40
Cole, Connie	HH4

Comer, Helen	U10, V6
Deutsch, Donna	U10, V6
Dolman, Aart	U10, V6
Earth Angel Health Mine	I2
Elkhorn Working Group	F7, F8, F9, G2, G3, H12, H8, J10, J11, J12, J13, J23, J24, J25, J4, J5, J6, J7, J8, J9, M2, M3, M14, M15, M16, O2, O3, R1
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Epstein, Susan	II8
Erickson, Bonee	U10, V6
Fay, Mary	U10, V6
Fay, Tim	E5, KK2
Fettig, Judy	U10, V6
Fisher, Joanne	U10, V6
Fisher, Richard	U10
Gilda, Alan	G1, K9, K12, N2, P1, P2, P37, U1, Y32, HH2, JJ1
Giop, John	KK3
Grant, John	U10, V6
Graymont Western US, Inc.	D10, D11, I4, K1, K2, K3, K11, K13, K14, K15, P47, U5, U9
Greene, Jim and Martha Vogt	U10, V6
Haverlandt, Carol	U10, V6
Heffern, Roy and Jacquie	U10, V6
Helvey, Angela	DD3
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Helvey, Pat	O22, O26
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Ingalls, Kelly	F29, J17, J18, J19
Jack, Patricia	U10, V6
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Jennings, Gerry	U10, V6
Johnson, Cleve	L8, LL11, P19, P19, P36, Z10, CC19, DD13, DD5, DD8, II3, JJ3
Jones, Cedron	B6, E12, H10, HH7, I16, I16, II9, N24, N24, N24, P6, P7, P8, P41, P42, P43, Q17
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Kilmer, Tom	Y42
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Krause (MD), William	U10, V6
Lane, Arlie, Norma Engleson, Helen Manaras, Virginia Ettien	U10, V6
Lydon, Sally	U10, V6
Marks, Bob	G12, K7
Mattfeldt, Jay	V6
McDaniel, Brian	V3
McDaniel, Tom	V4
McKenrick, Tim	GG4, GG5, GG6, GG7
Mehring, Leroy	Y30, Y43
Mercer, Colleen	U10
Miller, Paul and Naomi	U10, V6
Montana Fish, Wildlife & Parks	A9, AA20, AA21, AA22, AA24, AA38, BB9, F13, F17, F18, F19, F20, F21, , F22, F23, F24, F30, F31, F32, F33, F34, F35, F37, G8, GG3, H9, HH5, I5, II7, J21, JJ5, JJ7, K5, K6, KK11, L12, L13, LL12, M13, N31, F37, N30, O23, P50, P51, P52, Q15, Q16, R2, R7, U3, U11, U12, V12, W12, W13, X5, X6
Montana Historical Society	C1
Montana Snowmobile Association	F15, P45, P57, Q9, Q21, V9, X29, X30, X31, Y26, Y27, Y28, Y29, Y35, Y45, Y48, CC4, CC20, CC30, CC32, DD5, FF5
Montana Trail Vehicle Riders Assn.	P21, P48, P49, Q10, Q11, Q12, X32, Y3, CC21, CC22, CC23
Montana Trout Unlimited	N20, N21, N22, N23, N29, N30, N31
Montana Wilderness Association	B6, C3, F14, H10, N15, N16, N17, N18, N19, N24, U10, V1, V6, HH4, HH7, II6, II9, JJ6,
Montana Wildlife Federation	B2, F2, F13, F41, L7, M12, N14, P46, Q23, U6, U7, W15
Moy, Rich	II11
MTARNG	I6
Mullins, Jim and Lynn Hinch	U10
Oler, Terry	II5
Olson, Mary Jo	V6
Oral Comments from Divide Public Meeting	KK12, KK13, KK14, KK15, KK16
Pickett, Will	K8, P53, P54
Pitblado, Nancy	U10, V6
Public Lands/ Water Access Assn.	O17, O19, O25, Q14, X28, Y2, KK5
Pujol, J.P.	II5
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Richards, Paul	U10, V6
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Rogers, Dick	B4
Rusoff, David	V7
Russell, Todd	U10, V6
Salois, Larry and Betty	U10, V6
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Shropshire, Spencer	II8
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Silliman, Lee and Nancy	U10, V6
Starshine, Dr.	U10, V6
Stevens, Bob and Hopie	U10, V6
Swanson, John	L10, O17, U10
Synness, Curt	U13, V6
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Tatz, Janet	U10, V6
Thompson, Gordon	O17, U10
Thweatt, Don	U10, V6
Treasure State Alliance	D12, P20, Y25, Y39, Y41
US Geological Survey	F4, F5, F43, LL1, P4, P38
USDA – Helena National Forest	B5, HH6, O21
Ventres, Dale and Elena	KK4
Wampler, Todd	II4
Wanner, Kathleen	U10, V6
Warehime, HelenH	U10, V6
Western Environmental Law Center	V6
Wikstrom, Katharine	O16
Williams, Earl	GG8, GG9, GG10, GG11, GG12, KK6, KK7, KK8, KK9, KK10
Wilmouth, Stan	C1

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## COMMENTS AND RESPONSES

Page numbers references in public comments refer to page numbers in the Draft RMP/EIS. BLM responses refer to document sections, rather than page numbers, because page numbers have changed between the Draft RMP/EIS and the Proposed RMP/Final EIS.

### Air Quality, Climate

#### A1

**Comment:** The RMP should meet potential future Regional Haze requirements established by the State, and EPA. We note that the Montana DEQ has returned the clean air visibility program to EPA (see <http://deq.mt.gov/AirQuality/Visibility.asp>). Please call

Ms. Laurel Dygkowski of EPA in Denver for latest information on visibility issues in Montana at 303-312-6144. See also, <http://www.fs.fed.us/pnw/fera/research/smoke/haze/index.shtml>.

**Response:** As stated in Chapter 2 under Management Concerns, Air Quality, Management Common to All Alternatives, the BLM would comply with local, state, and federal regulatory requirements. This includes all existing and future requirements, including regional haze.

#### A2

**Comment:** The last sentence before the section on Air Quality Monitoring and Standards on page 209 refers to fine particulate matter. The sentence reads, “There are

no non-attainment designations for fine particulate matter (PM<sub>2.5</sub>) because the required monitoring data has not been collected or evaluated.” Please correct this sentence; the Montana Department of Environmental Quality (DEQ) and other state agencies have conducted air monitoring for PM<sub>2.5</sub> and EPA has designated non-attainment areas. See: [www.epa.gov/pmdesignations/](http://www.epa.gov/pmdesignations/).

**Response:** Content has been changed in the Proposed RMP/Final EIS to read: “Currently, there are no non-attainment designations for fine particulate matter (PM<sub>2.5</sub>) within the Planning Area. The closest non-attainment designation is Lincoln County in the far North West portion of the state of Montana.”

### A3

**Comment:** A footnote to Table 3-1 (page 210) states, “Monitoring data are not available through the EPA AirData Database for nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), and ozone (O<sub>3</sub>) since no counties within the Planning Area have monitoring stations for these pollutants.”

Although air monitoring stations in the planning area do not currently collect data for these pollutants, data are available from past monitoring at least in the case of SO<sub>2</sub> in Lewis & Clark County. We recommend that BLM consult with Montana DEQ regarding data for Table 3-1.

**Response:** Table 3-1 has been modified in the Proposed RMP/Final EIS to reflect any new or existing information that is available. Sulfur Dioxide was monitored until 2001 by East Helena (Lewis and Clark County). All values were well below Air Quality standards.

### A4

**Comment:** The Air Quality portion of the section about cumulative effects on resources (page 481) refers primarily to cumulative effects of smoke. The reasonably foreseeable development scenario for oil and gas exploration assumes 15 exploratory wells, and this development should be considered a part of cumulative effects on air quality. (The DEIS also discloses that up to 40 wells would be drilled for coal bed natural gas, but assumes that none of these wells would be drilled on federal mineral estate.) Other aspects of management, such as transportation, may contribute to cumulative effects. We suggest that the FEIS include at least a qualitative discussion of these potential contributions to cumulative impacts.

**Response:** The Air Quality sub-section of the Cumulative Effects section in Chapter 4 has been modified to include additional general discussion about effects from oil and gas development, motorized vehicle emissions, and other activities in the Planning Area.

### A5

**Comment:** It would be appropriate to reference in the air quality discussions in the draft RMP and EIS that Standard #4 in the Standards for Rangeland Health and Guidelines for Livestock Grazing (Appendix E, page 723) states that “Air Quality meets State Standards.” It is not clear to us why this Air Quality Standard is included in the Livestock Grazing guidance. Such an Air Quality Standard should be applied across all BLM lands, and it would appear appropriate to include this Standard also in the RMP section on Air Quality.

**Response:** The Air Quality section in Chapter 2 of the RMP under Management Common to All Alternatives states: “All resources uses would meet the Land Health Standards for air quality and BLM would comply with local, state, and federal regulatory requirements.”

### A6

**Comment:** Also, it would be appropriate to integrate the recent guidance on the PM-2.5 particulate standard into this RMP Standard. Also Appendix E, Standard #4, lists only Montana Ambient Air Quality Standards (MAAQS) and should also address National Ambient Air Quality Standards (NAAQS) in general. Note that the Montana DEQ’s web site has a table showing both MAAQS and NAAQS, [www.deq.state.mt.us/AirQuality/Planning/AirStandards/AIR\\_STANDARDS.pdf](http://www.deq.state.mt.us/AirQuality/Planning/AirStandards/AIR_STANDARDS.pdf).

Montana does not have a PM-2.5 standard other than the NAAQS. Please contact Joe Delwiche in EPA’s Denver Regional Office if you have any questions on the PM-2.5 particulate standard (telephone number, 303-312-6448).

**Response:** Standard #4 does include National Ambient Air Quality Standards. The last sentence under the Air Quality Standards states that “In no case, however, may pollutant concentrations exceed the National or State ambient air quality standards” (Appendix F of the Proposed RMP/Final EIS). This would include the new PM<sub>2.5</sub> National Standard.

### A7

**Comment:** Air quality concerns can result where concentrated snowmobile use occurs in areas of poor air dispersion (e.g., river valleys where frequent inversion conditions may trap air pollutants). Snowmobiles (and ATV) 2-stroke engines mix the lubricating oil with the fuel and both are expelled as part of the exhaust, and allow up to one third of the fuel delivered to the engine to be passed through the engine and into the environment virtually unburned. As stated in the U.S. Department of the Interior document, “Air Quality Concerns Related to Snowmobile Usage in National Parks”, Feb. 2000, hydrocarbon emission rates from 2-stroke snowmobile engines are about 80 times greater than those found in a 1995-96 automobile engines. A majority of these hydrocarbons are aromatic hydrocarbons, includ-

ing polyaromatic hydrocarbons, which are considered to be the most toxic component of petroleum products, and aromatic hydrocarbons are also associated with chronic and carcinogenic effects. If concentrated snowmobile use occurs in areas of poor air dispersion some restrictions may need to be considered. There are numerous studies underway to further determine environmental effects of these pollutants. The National Park Service Final EIS for Winter Use in Yellowstone and Grand Teton National Parks contains a good summary of the science regarding impacts from snowmobile use. EPA recommends that the Forests monitor the results of these studies and factor the results into travel management and resource planning. We will also try to pass on information emerging out of these studies. The EPA encourages use of the newer less polluting 4-stroke engine snowmobiles.

In 2003, the National Park Service implemented a commendable "best available technology" (BAT) program at Yellowstone National Park to reduce snowmobile emissions and noise that is critical to improving air quality and public health and recreational experience, and reducing wildlife disturbances due to snowmobile use in the Park. This has resulted in improved air quality and soundscapes as well as reduced wildlife disturbance from snowmobile use. The combination of significantly reduced snowmobile numbers and the use of BAT has decreased the predicted maximum carbon monoxide and particulate matter levels by about eighty-five percent.

We encourage the BLM to consider development of a program to manage snowmobile use, emissions, and noise to improve air quality, public health, and recreational experience while reducing wildlife disturbances.

**Response:** Most BLM lands are not within areas of poor air dispersion such as river valleys. There are no known areas of concentrated snowmobile use in the planning area on BLM managed public lands. The BLM manages snowmobile use through its site specific travel planning. See Chapter 2 under Travel Management and Access of the RMP for proposed open and closed areas for snowmobiles by alternative. BLM land use and travel plan decisions focus on designation of open, limited, and closed areas and/or routes and do not specify or limit types of snowmobile engines for use on public land since concentrated use is not an issue in the planning area.

#### A8

**Comment:** It is stated (page 81) under the section on Management Concerns, Air Quality, that, "Air resources would continue to be evaluated on a case-by-case basis as part of project level planning to ensure compliance with local, state, and federal regulatory requirements."

Where proposed projects involve substantial burning, particularly near populated areas or areas with protected visibility, planners should use software to estimate emis-

sions and dispersion of smoke. In addition, please add to this paragraph a statement that project level analyses for oil and gas development projects should also address air quality.

**Response:** In Chapter 2 of the Butte RMP under Management Concerns, in the Air Quality section, under Management Common to All Alternatives, it states: "Air resources would continue to be evaluated on a case-by-case basis as part of project level planning to ensure compliance with local, state, and federal regulatory requirements. Evaluations would consider the significance of the proposed project and the sensitivity of air resources in the effected area. Mitigation measures would be developed as appropriate to ensure compatibility of the projects with air resource management." That statement would ensure that projects involve substantial burning, particularly near populated areas or areas with protected visibility be considered.

BLM currently operates under the Interagency Prescribed Fire Planning and Implementation Procedures Reference Guide which provides for the use of computer modeling. It states that the burn plans need to describe how the project will comply with local community, county, state, tribal and federal air quality regulations and identify smoke sensitive areas including population centers recreation areas, hospitals, airports, transportation corridors, schools, non-attainment areas, Class I airsheds, and restricted areas that may be impacted. If required by state implementation plans and/or state or local regulations, modeling outputs will be included in burn plans as well as mitigation strategies and techniques to reduce the impacts of smoke production.

The Air Quality section of Chapter 2 has been modified to discuss oil and gas development by including the following statement under Management Common to All Alternatives: "Before approval of an application for permit to drill (APD) for oil and gas or a Sundry Notice application that would involve surface disturbance the appropriate level of NEPA analysis, in most cases an EA, is completed. This document would analyze effects on all appropriate resources and resource uses including air quality as identified."

#### A9

**Comment:** CHAPTER 3 AFFECTED ENVIRONMENT: Climate: More analysis of climate change should have been provided (p. 210). Table 3-2 provides averages for seven climatic measurements over a 110 year period from four different weather stations. The analysis should have looked at five or ten year increments in order to assess trends rather than averages. These climatic features may have had an influence that could be changing over time and thus affecting landscape function such as winter range, functional summer range, species distribution.

Scientifically quantified examples are the seriously diminishing habitat for pika, expansion of suitable habitat for noxious weeds, and implications for population and habitat management.

**Response:** Climate data displayed in Table 3-2 was provided to show the average temperatures and precipitation over a period of time and was intended to characterize weather patterns within the Butte Field Office. The data was not intended to display trends or changes in climate.

A section on Global Climate Change has been added to Chapter 3 (under the Air Quality heading, Climate sub-heading) to describe global climate change and its potential effects on resources and resource uses in the Planning Area. A section has also been added to Chapter 4 (after the Cumulative Effects on Social and Economic Conditions section) to discuss potential effects of BLM activities associated with the Butte RMP on global climate change.

Because the assessment of greenhouse gas emissions and climate change is in its formative phase, it is not yet possible to know with confidence the net impacts to climate. The Intergovernmental Panel on Climate Change (IPCC 2007) recently stated that “warming of the climate system is unequivocal...” and that “most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic [man-made] greenhouse gas concentrations.”

The lack of scientific tools designed to predict climate change on regional or local scales limits the ability to quantify potential future impacts. If global climate change results in a warmer and drier climate, cool season plant species’ ranges could potentially move north and result in a potential loss of habitat. A warmer, drier climate could also result in competition between plant and/or animal species whose ranges shift. It is also possible that populations of many plant and animal species could decline or be at risk of extinction.

Many of the models needed to make effective decisions at the local and regional levels have not been developed. The Department of the Interior is exploring whether global and regional climate modeling can be scaled to the point that it can be used to manage parks and refuges. When further information on the impacts to climate change is known, it would be considered during site-specific analysis and implementation of the RMP.

## Alternatives

### B1

**Comment:** There is a serious deficiency and conflict built into the “Travel & Transportation Management, Planning and Conducting Route Inventories, Technical

Reference 9113-1” (<http://www.blm.gov/nstc/library/pdf/TR9113-1.pdf>). There are only two references in the entire manual to single-track trails and in both cases the manual describes single-track as being primarily used for hiking (page 38, route type 6.) and in the second instance not used by motorbikes (page 39, use classification 6, Wilderness Area). The motorized single-track definition bound on figure 2.2 on pages 12 and 14 of Chapter 2 in the 3-State OHV EIS and decision (<http://www.mt.blm.gov/ea/chapter2.pdf>) is much better and more acceptable to the motorized community. This definition clearly shows that existing single-track trails used by motorcycles are to be considered as motorized trails/routes. We request that the definition of single-track motorized trails in Technical Reference 9113-1 be modified to reasonably address motorcycle trails which are very popular in the project area.

**Response:** Changing the definition of single-track motorized trails in Technical Reference 9113-1 is outside the scope of the Butte RMP.

### B2

**Comment:** Montana Wildlife Federation strongly supports Alternative C as most fully protecting and enhancing the high wildlife values that sportsmen have labored hard to conserve within the Butte RMP area.

Alternative C is far from being the most extreme management options but represents a realistic, pragmatic choice that will indeed maximize wildlife and hunting/fishing values. Montana Wildlife Federation requests that Alternative C to be chosen as the Preferred Alternative as it represents the highest benefit for resource in regards to hunting and fishing values. The following list of bullets supports our rationale and is quoted directly from the draft Butte RMP Alternative C in various places and paraphrased:

- Alternative C poses the lowest impact to water quality and Wild and Scenic values.
- Alt. C creates the lowest impacts from road construction.
- Alt. C offers the greatest winter range protection
- Alt. C provides the greatest habitat protection
- Alt. C provides for the most protection of all alternatives for fish and other aquatic organisms by only allowing activities within riparian areas that would restore or maintain the riparian zone.
- Alt C provides for the optimum protection while the area sustains a long-term population growth.
- Alt. C contributes the least number of adverse cumulative impacts to fish and wildlife values.

**Response:** The BLM acknowledges the long-term efforts of multiple entities in conserving wildlife values within the Butte Field Office. While Alternative C may

best meet the needs of wildlife in some respects, the BLM continues to believe that the mix of proposed activity and resource protection measures under Alternative B best meet the BLM's multiple use mission. The BLM notes that Alternative B provides improved protection and reduced impacts to wildlife compared to the current condition under Alternative A. Riparian protection measures under Alternative B would require these areas to be managed for site-specific riparian values, including wildlife. Alternative B would improve wildlife habitat as related to road impacts compared to the current condition. The nature and extent of proposed vegetation treatments under Alternative B would improve wildlife habitat more than either Alternative A or C.

### B3

**Comment:** American Wildlands recommends that the BLM reconsider Alternative B as the preferred alternative. If only one alternative had to be chosen at this time, Alternative C would be best for long term wildlife habitat connectivity. However, American Wildlands does not view Alternative C as the best alternative in all cases, and in some specific instances, recommends other alternatives.

**Response:** While wildlife habitat connectivity was considered in the development of RMP alternatives, the BLM still considers Alternative B to provide the best balance of resource protection and resource uses to best meet its multiple-use mission. The BLM believes that the level of active vegetation treatments proposed under Alternative B would benefit wildlife habitat more overall than the reduced levels of proposed treatment under Alternative C.

### B4

**Comment:** I have lived in the Silver Creek Subdivision since 1982 and my land is bordering along 6,679 feet of Scratch Gravel BLM land that is adjacent to Helena Travel Plan Route Map 8. This land is being used heavily by off road vehicles, motorcycles, and ATVs which put people that walk or ride horses there at risk due to the speeders which are tearing up the roads, trails and off road areas. They don't care about the damage they cause or the mess they leave behind - garbage, beer cans, drug stuff.

The BLM needs to have additional enforcement to control and catch these bad guys. This is why I feel that the Helena Travel Plan Route Designations under Alternative C would stop some of the damage but not all.

**Response:** The Preferred Alternative for the Scratch-gravel Hills portion of the Helena Travel Planning Area has been changed from the Draft RMP/EIS to the Proposed RMP/Final EIS. The revised Preferred Alternative would close the Scratchgravel Hills to wheeled public motorized use yearlong, 24 hours/day, with the exception of several routes with rights-of-way to homeowners

as well as a few other known routes needed by local residents to access their homes. This closure should improve the negative conditions described in the comment.

### B5

**Comment:** Areas of Critical Environmental Concern (ACEC): We support the ACEC special designation of the Elkhorns as described in Alternative C. Alternative C designates all of the land as described in the Elkhorns Wildlife Management Unit MOU and as depicted by the BLM portion of the ECMA (approximately 67,665 acres). This alternative would provide the greatest protection for the relevant and important values associated with this ACEC and is most compatible with our Forest Plan goals to manage the Elkhorns as a Wildlife Management Unit.

**Response:** The BLM has modified the boundaries of the Elkhorns potential ACEC in the Preferred Alternative (Alternative B). This boundary now excludes the Graymont Mine permitted area as well as the currently proposed expansion boundaries. Also, the Montana Army National Guard proposed withdrawal area is now fully excluded. The recently acquired Iron Mask property has been included in the Preferred Alternative.

### B6

**Comment:** York Bridge East: This is the BLM land on the east side of the bridge and north of York Road/Trout Creek. These lands, along with the adjoining FS lands that lie west of the road to Nelson and SE of Soup Creek, comprise a mini-wilderness, with rugged, scenic terrain, historic artifacts (aqueducts, some prospecting), goats, arches, the old peregrine hawk site, and a few old tracks to explore and help get around on. It's an area that should be left, and preserved, 'just like it is.' To that end, you should make it an "exclusion" area (towers or utility corridors would be an abomination here), impose NSO stipulations (any leaseholder could drill from the FS ground in the Nelson road corridor), and classify it as semi-primitive non-motorized.

The BLM land south of Trout Creek and north of the old sapphire diggings area, on the flats north of the Ward Ranch (roughly the S2 Sec 13 and N2 Sec 24), is also wild and rugged, and should be managed the same way, i.e., "exclusion" area, NSO stipulations, semi-primitive non-motorized.

**Response:** The BLM notes that under the Preferred Alternative in the RMP, much of the area in question is proposed for No Surface Occupancy stipulations for oil and gas leasing, and much of it is proposed for Recreation Opportunity Spectrum management of semi-primitive non-motorized. The Preferred Alternative in the Draft RMP/EIS proposed the area on the east side of the Missouri down through Ward Ranch as an "avoidance" area for rights-of-way. The BLM believes this

level of protection is adequate for this area and retains the same proposed management in the Proposed RMP/Final EIS.

## Cultural Resources

### C1

**Comment:** We do not agree with prescribed fire effects characterization found on page 417. It is and has been widely documented that prescribed fire has the potential to adversely affect many different cultural resources and we have met with you regarding those findings in the past. The potential for adverse effects varies with a number of variables embedded in the prescription and resources types. We disagree with the summary characterization made in the RMP that the potential for adverse effects is a "minimal threat." That threat level varies with the above variables and should be assessed on a case by case basis. If that is understood it should be made explicit in the RMP. Montana Historical Society is more than willing to consult on specific applications and proposed findings of effect as they are proposed. If, on the other hand, this characterization in the Butte RMP implies that prescribed fire will not be considered an undertaking with the potential to effect historic properties as some sort of categorical exclusion based on generic prescriptions we believe formal consultation on the issue is warranted.

**Response:** It is not the BLM's intention to imply that the phenomenon of fire (prescribed or not) is, in itself, a minimal threat. Nor is it the BLM's intention to imply that prescribed fire projects are not undertakings. Prescribed fires are undertakings that require cultural resource inventories and completion of the section 106 process prior to project implementation. Generally, a carefully conducted prescribed fire will avoid most impacts to all known cultural resources. While each project has the potential to escape, the BLM believes that this threat is minimal when prescribed fire burn windows are properly utilized. This section of text has been changed in the Proposed RMP/Final EIS to clarify the BLM's position.

### C2

**Comment:** We are concerned about the preservation of historic mines, cabins, settlements, railroads, access routes, and other features used by pioneers, homesteaders, loggers, settlers, and miners. These are important cultural resources and should not be removed from the landscape. Western culture and heritage has been characterized by opportunities to work with the land and preservation of all remnants of this culture and heritage is important. Current management practices are not adequately protecting western culture and heritage including the opportunity to work with the land. We request that the ties to the land that are part of our local western culture and heritage be protected and that the

preferred travel management alternative include opportunities to visit these features as part of motorized interpretative spur destinations and loops.

**Response:** The BLM has ongoing programs that identify historic structures suitable for restoration and repair. It is BLM policy to avoid impacts to historic structures and other historic property types through project redesign to reduce or eliminate impacts to these properties from a proposed surface disturbing activity. If impacts are not avoidable the BLM will identify measures that will reduce the impact of a proposed activity on that historic structure. The BLM considers impacts to historic period structures and features consistent with regulations found at 36 CFR Part 800, the implementing regulations for the National Historic Preservation Act.

The BLM does interpret some historic period features and properties on a case-by-case basis. For example, at Ward Ranch there are two historic ranch headquarters that are available for walk-in visitation. However, the BLM believes that linking heritage resources to the proposed travel management alternatives would exceed our available resources to prepare those historic features for public visitation.

### C3

**Comment:** Cultural, Historic, Paleontology: The RMP should explain how the agency will work with tribal governments and comply with the National Historic Preservation Act. Areas being considered for oil and gas drilling should be inventoried prior to leasing to determine whether the area is appropriate for oil and gas drilling. If the BLM has not completed an inventory of historic sites, how will the agency determine whether an area is appropriate to lease for oil and gas drilling? The RMP should include information about what areas have been inventoried and how the BLM plans to expand its inventory of cultural, historic, and prehistoric sites. Importantly, it should address how the BLM will protect these sites once they are identified.

**Response:** The BLM employs a phased approach toward oil and gas leasing, development, and meeting our obligations under section 106 of the National Historic Preservation Act (NHPA). The first phase begins at the initiation of the Resource Management Plan process. It is at this point where we analyze existing inventory data concerning the distribution and significance of cultural resources. It is also at this point where we consult with tribes to identify areas where the tribes have particular concerns should development occur in those areas. Based on available data and the results of the tribal consultation, the BLM then makes decisions in the RMP on which areas should be open or closed to leasing and what stipulations should be applied at lease issuance.

The second phase of the leasing development process is initiated when individual lease parcels are reviewed by the BLM prior to a lease sale. The agency decides if

enough information is available to lease the parcel and properly protect cultural resources or if more information is needed. The cultural resource specialist reviews the cultural resource records to determine whether cultural resources are present in the proposed lease area and also reviews previous information from consultation with the tribes, existing ethnographic data, and the archaeological and historic literature specific to the area under review. This information is then analyzed comprehensively to determine if sensitive cultural resources may be present. If it is determined that the analysis requires more information, the BLM may conduct sample-based cultural resource surveys and/or seek additional tribal information to augment existing data.

The final phase of the compliance process occurs at the Application for Permit to Drill (APD) stage where the location of the proposed drilling program has been fully defined. It is at that point where the BLM will require site-specific cultural resource inventories, gather additional tribal information through consultation, and implement mitigation measures where necessary.

## Economics

### D1

**Comment:** Each route must include a socio-economic analysis that includes the impacts on the public owning OHVs and looking for opportunities to use them and landowners who purchased property with the intent of being able to access and recreate using motor vehicles.

**Response:** The economic analysis in this RMP is based on a set of anticipated levels of activities and reasonably foreseeable development scenarios for each alternative. Travel management of individual routes may be one of several management actions that influence the level and nature of these activities in one or more of the following resource management areas (recreation, fish and wildlife, grazing, timber, minerals, and other). The economic impacts expressed for each alternative reflect the impacts of the set of management actions, including travel management actions, for each alternative.

### D2

**Comment:** The negative social and economic impact experienced by motorized recreationists when motorized recreational opportunities do not exist in nearby public lands must be adequately evaluated and considered in the decision-making. This is especially significant now that fuel is over \$2.00 per gallon. These impacts include the complete loss of recreational opportunities and the cost of having to travel farther and farther in search of fewer and fewer motorized recreational opportunities in times of increasing travel costs. For example, the lack of adequate OHV systems in the Helena National Forest requires us to travel at least 180 miles to adjacent national forests and many more miles to other states including Idaho and Utah. A 180 mile roundtrip costs at

least 3 hours and \$70 and that cost will increase substantially in the future. This added cost is a waste of time and energy resources and has not been adequately considered by the agency.

**Response:** The expected level of recreation use for each alternative considered the travel management prescription for each alternative. The level of motorized vehicle travel currently accounts for an estimated 12 percent of total recreation use (in visits). It is predicted to decline by about 7,700 visits (5 percent) with Alternative B, about 15,400 visits (10 percent) with Alternative C, and about 3,100 visits (2 percent) with Alternative D. The economic analysis of recreation management displayed in Chapter 4 is based on expected levels of recreation use for each alternative. These economic impacts are expressed in terms of employment and labor income, including proprietor's income.

### D3

**Comment:** The different management plans being developed by the BLM and Forest Service are using generated, estimated, and inadequate data to forward an agenda of eliminating access and motorized recreation from public lands. The economic impact of these closures will be devastating to small communities throughout the West. Models can be manipulated to predict any result. Economic models such as IMPLAN should not be used when the input data is estimated and not factual or actual. Adequate effort must be exercised by the agencies to gather true on the ground data from businesses and individuals that use our public lands. We request that the economic analysis use actual local data to determine the true economic and social impact of proposed motorized access and closures on the public.

**Response:** IMPLAN data are drawn from several government sources, the most important of which are the Bureau of Labor Statistics ES202 data, and the Bureau of Economic Analysis REIS and County Business Patterns data. All of these data are "real" and "local" in that they come from censuses of individual firms aggregated to the county level. The IMPLAN Model is the most flexible, detailed, and widely used input-output impact model system in the U.S. Over 1,500 clients across the country use the IMPLAN model. IMPLAN is a professionally accepted, widely used computer model to predict economic impacts of resource management decisions. It is analytical and it provides evidence that the agency used professional integrity, including scientific integrity, concerning economic impact assessments. Resource inputs to the Butte RMP IMPLAN analysis reflect the level of activity anticipated by the local Butte Field Office resource professionals and involved extensive levels of local public participation and consultation.

### D4

**Comment:** A recent study by David Sunding, an associate professor of natural resource economics, David

Zilberman, a UC Berkeley professor of agriculture and resource economics, and graduate student Aaron Swoboda to the California Resource Management Institute found that the economic impacts from designation and preservation of special plant and animal habitat areas continue to cost society hundreds of millions of dollars because of delays, court fees and opportunities forgone. Sunding's report, released Feb. 20, found that agencies had underestimated the actual economic and social impact by seven to 14 times. Certainly, natural resource decisions cannot and should not be made entirely on economic impacts. However, NEPA requires that both economic and environmental facts should be considered in the final land management decisions. The U.C. Berkeley study displays the fact that the full economic and social facts and impacts are not being adequately considered by the federal land management agencies. We request adequate evaluation of the economic and social impacts of this proposed action be considered in the analysis and decision-making. Additionally, we request that the cumulative negative impact resulting from inadequate evaluation of economic and social impacts in past actions are considered in the analysis and decision-making and that an adequate mitigation plan be included as part of this action to compensate for past cumulative negative impacts.

**Response:** To analyze individual national policies is beyond the scope of this analysis. The economic analysis in this RMP is based on a set of anticipated levels of activities and reasonably foreseeable development scenarios for each alternative. The designation and preservation of special plant and animal habitat may be one of several management actions that influence the level and nature of these activities in one or more of the following resource management areas (recreation, fish and wildlife, grazing, timber, minerals, and other). The economic impacts expressed for each alternative reflect the impacts of the set of management actions for each alternative by alternative, not individual actions or national policies.

#### D5

**Comment:** We request that the analysis include an adequate benefit-cost analysis of non-motorized versus motorized trail use. This analysis should include the annual cost of the non-motorized trails per the actual and documented number of non-motorized trail user. The economic analysis should also compare the annual benefit-cost per non-motorized user versus the annual benefit-cost per motorized user if the trails and funding were used as multiple-use/motorized trails. Motorized trail users out-number non-motorized trail users at least 25 to 1 (see summary of local observations). Motorized recreationists need approximately 5 times the miles of trail per day compared to non-motorized recreationists (CBU analysis). Therefore, motorized recreationists need 125 times (25 x 5) the miles of trails as do non-motorized recreationists. However, the current allocation of re-

sources in the forest is significantly weighted towards non-motorized and is no where near this ratio. Additionally, the allocation is moving in the wrong direction towards more non-motorized opportunities with each decision (refer to Table 2 past and current actions). An increased allocation of exclusive non-motorized trails is not a good use of the taxpayer's money. Additionally, non-motorized trails benefit a very limited number of recreationists who already have more than adequate recreational resources when compared to motorized recreationists. It is more reasonable for the decision to focus on multiple-use trail projects and invest our limited financial resources in those types of projects. The benefit-cost analysis should also recognize the significant economic benefit associated with motorized recreation. Motorized economic benefit far exceeds the economic benefit of non-motorized recreation because there are more motorized recreationists and they have a considerable investment in their recreation. Economic benefits to the local economy associated with motorized recreation include sale of OHVs, parts and service; sale of tow vehicles, parts and service; sale of camping units, parts and service; fuel; meals; motels, etc.

**Response:** There is no requirement under the National Environmental Policy Act to conduct a benefit-cost analysis, nor is it appropriate to conduct a benefit-cost analysis considering the social and economic goals summarized in Table 2-23 under Management Concern: Social and Economic Environment. Benefit-cost analysis is only one of several economic analysis methods that can be used to help make public decisions about the natural environment. Benefit-cost analysis focuses only on benefits and costs and therefore economic efficiency. This may not be the most socially acceptable option or the most environmentally beneficial option.

The economic analysis summarized in Chapter 4 addresses the changes in local employment and income attributable to the various resource management program decisions. These impacts caused by recreation management, including travel management, reflect the anticipated changes in recreation use and related local expenditures. The level of motorized vehicle travel currently accounts for an estimated 12 percent of total recreation use (in visits). It is predicted to decline by about 7,700 visits (5 percent) with Alternative B, about 15,400 visits (10 percent) with Alternative C, and about 3,100 visits (2 percent) with Alternative D. The economic analysis of recreation management displayed in Chapter 4 is based on expected levels of recreation use for each alternative. These economic impacts are expressed in terms of employment and labor income, including proprietors' income.

#### D6

**Comment:** The positive economic impact on the economy of the area must be adequately considered in the decision-making. Arizona State Parks has prepared a

good example of an economic analysis of OHV recreation for Coconino County, AZ [http://www.gf.state.az.us/pdfs/w\\_c/OHV%20Report.pdf](http://www.gf.state.az.us/pdfs/w_c/OHV%20Report.pdf).

**Response:** The Butte RMP contains information in Chapter 4 on the economic impacts resulting from each of the alternatives. BLM believes this analysis is adequate to make the decisions covered in the Butte RMP.

#### D7

**Comment:** A common theme with the public and local and state governments has been the need for more economic development in the area and they are searching for ways to expand and enhance the local economy. OHV recreation is a significant part of the existing economy. Any reduction in OHV recreational opportunities will hurt the local economy. Additionally, the enhancement of OHV recreational opportunities in the project area will provide a badly needed enhancement of the overall local economy as well.

**Response:** The expected level of recreation use for each alternative considered the travel management prescription for each alternative. The level of motorized vehicle travel currently accounts for an estimated 12 percent of total recreation use (in visits). It is predicted to decline by about 7,700 visits (5 percent) with Alternative B, about 15,400 visits (10 percent) with Alternative C, and about 3,100 visits (2 percent) with Alternative D. The economic analysis of recreation management displayed in Chapter 4 is based on expected levels of recreation use for each alternative. These economic impacts are expressed in terms of employment and labor income, including proprietor's income.

#### D8

**Comment:** Agency staff has told us that they intend to focus on resource management issues. Issues related to the management of natural resources have received most of the attention during the evaluation while socio-economic issues surrounding motorized access and recreation are largely ignored. This lack of adequate recognition has led to the creation of significant socio-economic issues affecting the quality of the human environment for motorized recreationists. Land management agencies must acknowledge that public land has significant meaning and socio-economic value to the public. We request that all significant issues involving the human environment for motorized recreationists be adequately considered during the evaluation and decision-making process.

**Response:** The expected level of recreation use for each alternative considered the travel management prescription for each alternative. The level of motorized vehicle travel currently accounts for an estimated 12 percent of total recreation use (in visits). It is predicted to decline by about 7,700 visits (5 percent) with Alternative B, about 15,400 visits (10 percent) with Alternative C, and

about 3,100 visits (2 percent) with Alternative D. The economic analysis of recreation management displayed in Chapter 4 is based on expected levels of recreation use for each alternative. These economic impacts are expressed in terms of employment and labor income, including proprietor's income.

#### D9

**Comment:** The environmental document should be an issue driven document as required under NEPA and the Council on Environmental Quality guidelines. The driving issue is the development of a reasonable travel management alternative that addresses the needs of the public. NEPA requires that agencies "Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated" [40 CFR 1502.14(a)]. We request that the environmental document adequately addresses the social, economic, and environmental justice issues associated with multiple-use access and motorized recreation. We request that the environmental document include a travel management alternative for the project area that adequately responds to these issues and the needs for multiple-use access and recreation.

**Response:** The expected level of recreation use for each alternative considered the travel management prescription for each alternative. The level of motorized vehicle travel currently accounts for an estimated 12 percent of total recreation use (in visits). It is predicted to decline by about 7,700 visits (5 percent) with Alternative B, about 15,400 visits (10 percent) with Alternative C, and about 3,100 visits (2 percent) with Alternative D. The economic analysis of recreation management displayed in Chapter 4 is based on expected levels of recreation use for each alternative. These economic impacts are expressed in terms of employment and labor income, including proprietor's income.

The discussion that motorized recreationists should be identified as an environmental justice-covered population is not valid. Order 12898 specifically deals with low-income and minority populations as the subject of this order. The Social Conditions sections of the Butte RMP/EIS address the social issues related to access and recreation uses.

#### D10

**Comment:** Page 204 - Under the heading "Mining and Mineral" it does not appear that the economic impact with respect to the implementation of the four alternatives is accurately described. Specifically, under Alternative C it would appear that more than "20 local jobs and \$0.73 Million in annual labor income" would be the result of the production numbers shown under that alternative. These numbers should be reevaluated.

**Response:** The text in the Proposed RMP/Final EIS has been revised to address this comment.

**D11**

**Comment:** Page 305 - The statistics utilized on pages 305 and 306 including those contained in Table 3-40, do not appear to correspond with the numbers shown on Table 2-24 at page 204.

**Response:** The data on page 305 and 306 of the Draft RMP/EIS describe total employment and income from resource uses on all lands within the planning area whereas the data displayed in Table 2-24 summarize the impacts expected to occur from BLM management decisions and land uses on BLM administered lands and resources only.

**D12**

**Comment:** Our list of concerns has grown considerably as we review the proposed project such as the reduction in organized group activities, reduction in trail miles available throughout the project and the lack of economic review that these reductions would mean for the surrounding communities.

**Response:** The expected level of recreation use for each alternative considered the travel management prescription for each alternative. The level of motorized vehicle travel currently accounts for an estimated 12 percent of total recreation use (in visits). It is predicted to decline by about 7,700 visits (5 percent) with Alternative B, about 15,400 visits (10 percent) with Alternative C, and about 3,100 visits (2 percent) with Alternative D. The economic analysis of recreation management displayed in Chapter 4 is based on expected levels of recreation use for each alternative. These economic impacts are expressed in terms of employment and labor income, including proprietor's income.

**D13**

**Comment:** The Draft Butte RMP has a mere 12 pages dedicated to the economic and social impact of this plan. Again CBU would raise the requirement of the Presidents Council of Environmental Quality which requires agencies to attempt to engage local residents and businesses in the process of gathering true local economic impacts to communities. We find no attempt through the Butte RMP that would satisfy this requirement. CBU requests that the Butte RMP provide this information.

**Response:** Efforts by the BLM to identify issues, gather data, and receive input from the public on how BLM lands should be managed are summarized in Chapter 1 and Chapter 5, Consultation and Coordination. These sections describe the public notification, initial scoping, additional scoping specific to travel planning, additional RMP scoping associated with the Proposed Planning Scenario, public meetings, and presentations to county commissioners, congressional delegations, and other

entities. Economists associated with this RMP worked closely with other resource specialists, local residents, and businesses to identify economic issues and gather appropriate local data for the economic analysis. Other efforts to meet with local publics and businesses include attending the Economic Outlook Seminar in Butte, holding six public meetings upon release of the Draft RMP/EIS throughout the planning area, and briefing all eight county commissions in the planning area on the contents of the Draft RMP/EIS. Various businesses and organizations have been on the Butte RMP mailing list throughout the planning process. The BLM believes that it has gone to considerable efforts to collect local input and information on the Butte RMP, and that the Effects on Social and Economic Conditions section in Chapter 4 of the RMP is adequate.

**D14**

**Comment:** In surveys conducted in 2003 and 2004 by CBU, we found significant expenditures by multiple use visitors. Summer motorized users were on the average spending 100 dollars per visitor day and winter use by motorized reflected an average approaching 300 dollars per visitor day. With these expenditures coupled with the visitor use days that the Butte RMP acknowledges occurs within the planning area, we feel your team has missed the mark on the negative economic impact that the proposed closures will have on the surrounding small communities. CBU requests that the BLM make at least an attempt to gather true economic data from affected communities and take a hard look at the results of this data prior to making any Butte RMP decisions.

**Response:** The level of motorized vehicle travel currently accounts for an estimated 12 percent of total recreation use (in visits). Compared to current management (Alternative A), it is predicted to decline by about 7,700 visits (5 percent) with Alternative B, about 15,400 visits (10 percent) with Alternative C, and about 3,100 visits (2 percent) with Alternative D. However, these impacts are expected to be offset by increases in other areas such as foot travel, biking, and horseback riding. The net effect is expected to be a 1.3 percent decline in recreation use with Alternative B, a 2.5 percent decline with Alternative C, and a 0.5 percent decline with Alternative D. The economic impacts of each alternative that are presented in Chapter 4 are based on the expected level of recreation use and average daily expenditures per visit. The average daily expenditures per visit are based on Spending Profiles of National Forest Visitors, NVUM Four Year Report, May 2005 by Daniel Stynes and Eric White. Based on input-output analysis of anticipated net changes in recreation use it is estimated that local employment supported by recreation use would, compared to current management, decline by about 5 jobs with Alternative B, 10 jobs with Alternative C, and 2 jobs with Alternative D. Annual local income supported by recreation use would decline by an estimated

\$130,000 for Alternative B, \$250,000 with Alternative C, and \$40,000 with Alternative D.

## Fire and Fuels

### E1

**Comment:** As you know, fire suppression over the last 100 years has changed the structure and composition of forest ecosystems, and it is recognized that fire is a necessary disturbance phenomena to keep fuel density in check and to maintain healthy forest ecosystems. The RMP offers opportunities to address the past heavy reliance on fire suppression by restoring more natural fire disturbance regimes to forest ecosystems, and treating unwanted competing vegetation, fuel loads, fire risk, and forest health with prescribed fire.

Although increasing development on private lands interface areas adjacent to public lands may make restoration of natural fire disturbance regimes in private lands interface areas more difficult.

EPA supports the BLM's wildland fire management goals to restore and maintain desired ecological conditions consistent with appropriate fire regimes; and minimize the adverse effects of fire on resources, resource uses and Wildland Urban Interface areas; and control wildland fire safely, efficiently and with minimal impact to resource values while minimizing the risk of catastrophic fire within the BFO lands and adjacent communities, while maintaining and reestablishing the natural influence of fire on vegetation (Table 1-5, page 9).

We especially support the prioritization of fire and fuels management activities in areas within or near the wildland urban interface (WUI) areas and areas of high or severe fire risk, and risk of damage to life and property. The RMP should reflect national fire management strategies and policies such as the 1995 Federal Wildland Fire Management Policy and Program Review (USDA and USDI 1995), that directs integration of fire into land management planning, working with landowners and stakeholders, and directing landscape level analysis; and the National Fire Plan directing full range of fire management activities linked to RMPs.

The risks of uncharacteristic disturbances such as catastrophic wildfire should be evaluated versus the effects of fuels management actions designed to reduce those risks (i.e., water quality, fisheries, and wildlife effects). Methods to address competing and unwanted vegetation and fuel loads and fire risk need to be evaluated vs. water quality, fisheries, and wildlife effects from fuel and vegetation treatments. We note that thresholds for acceptable environmental impacts for fuel treatments around WUIs and areas of severe fire risk may be higher.

**Response:** The SIMPPLLE model was used to: (a) simulate future vegetation changes caused by various disturbance processes at multiple landscape scales, (b)

show trends in vegetative communities over the next 50 years as a result of fire suppression, (c) simulate historic vegetative conditions by running the model over 500 years with variables such as fire, insect and disease activity, (d) simulate management treatment alternatives for their impact on disturbance processes and the attainment of desired conditions defined at the landscape scale, and (e) provide a basis for identifying the probability of disturbance processes and vegetation conditions. Use of the model is described in **Appendix D** of the Proposed RMP/Final EIS. The effects of the risk of wildfire vs. the effects of fuels treatments on resources are analyzed at the site-specific project level. However, Chapter 4 of the RMP (Effects on Resources, Wildlife Fire Management section) does contain generalized discussion on the effects that management proposed under each alternative would have on the potential for wildland fire.

### E2

**Comment:** Table 2-23 (page 115) under Fire Management Response shows the acreage that BLM would manage in various fire management unit (FMU) designations under the four alternatives. The table shows that alternative A (i.e. current management practice) would have approximately 7,300 acres designated as A FMU, 29,590 acres designated as B FMU, and 258,200 acres designated as C FMU, for a total of 295,090 acres. This is 8,910 acres less than the area shown as total managed land under the other three alternatives (304,000 acres). Please explain the difference in total area.

**Response:** All acres in the Butte RMP are approximate acres. It does appear that errors in the acres for Alternative A have occurred in the Draft RMP/EIS. Changes have been made in the Proposed RMP/Final EIS to show the appropriate acres for each FMU under each alternative.

### E3

**Comment:** Also, the data shown under the four FMU designations contrasts with maps 2, 3, 4, and 5, which depict fire management. These maps cover the entire planning area with color coding for the FMU designations even though BLM-managed lands are only a fraction of the planning area. For example, current management (alternative A) has no land under D FMU according to the text, but Map 2 shows areas with this designation. Most BLM land would be under C FMU under Alternative C, but Map 4 shows large areas of Gallatin, Park, and Lewis & Clark Counties under A FMU and B FMU. Only 42,000 acres would be under B FMU in Alternative D, but Map 5 shows most of Gallatin County and portions of Lewis & Clark, Jefferson, Deer Lodge, and Silver Bow Counties under B FMU. Perhaps the maps would be more easily understood if only the BLM lands showed color coding. Alternatively, the maps

could distinguish BLM lands by superimposed marks such as cross-hatching.

**Response:** The BLM acknowledges that errors were made on Map 2 in the Draft RMP/EIS; there is no FMU D designation in the current condition as expressed by the text. The FMU designation and acres only pertain to those acres administered by the BLM. Maps providing a better representation of the BLM administered ground and the FMU designation have been included in the Proposed RMP/Final EIS.

**E4**

**Comment:** It is stated on page 415 and elsewhere in the DEIS that, “no Fire Management Units (FMUs) would have any Category A designated lands” under Alternative B. Accordingly, BLM’s preferred alternative would remove 7,300 acres from Category A, which emphasizes fire suppression and non-fire fuels treatments. Map 2 shows that most of the areas currently under A FMU lie in Gallatin and Park Counties (see related comment above), which suggests the 7,300 acres proposed to be removed from A FMU are in this portion of the planning area. Please clarify the location of these parcels and why BLM’s preferred alternative would remove them from A FMU.

**Response:** The 7,300 acres in Category A are BLM administered land within Park and Gallatin counties. Maps providing a better representation of the BLM administered ground and the FMU designation have been included in the Proposed RMP/Final EIS. In the Butte RMP in Chapter 4, in the Wildland Fire Management section under Effects of Alternative B, it states that “Fire suppression under this alternative would be similar to Alternative A except it would allow for more flexibility to manage fires with no FMU Category A designations.”

**E5**

**Comment:** Revise map to include Beaverhead County, and update to B designation in Wise River/Dewey/Hwy 43 area (see attached). Coordinate with Beaverhead County Fire Plan for this area, call Scott Marsh.

**Response:** The Preferred Alternative in the Proposed RMP/Final EIS has been modified to include these lands in a FMU B designation.

**E6**

**Comment:** The EPA supports reintroduction of fire into federal land management programs to allow fire to play its natural role and provide resource benefits, consistent with public health and environmental quality considerations. We agree that judicious use of prescribed fire can be used to control forest fuel accumulation and to influence vegetative composition and structure. We are pleased that the RMP acknowledges BLM’s participation in the Montana/Idaho Airshed Group in accordance with

the EPA Interim Air Quality Policy on Wildland and Prescribed Fires (page 210). EPA supports management direction consistent with the EPA Interim Air Quality Policy on Wildland and Prescribed Fires, that was developed with the active involvement of stakeholders, including the U.S. Department of Interior, to integrate the public policy goals of allowing fire to function in its natural role in maintaining healthy ecosystems and protecting public health and welfare by mitigating the impacts of air pollutant emissions on air quality and visibility.

We suggest that RMP Air Quality direction advise that project level NEPA documents for prescribed fire treatments discuss the EPA Interim Air Quality Policy on Wildland and Prescribed Fires and disclose involvement in a certified Smoke Management Program (Montana/Idaho Airshed Group). For example, “Project level NEPA documents involving treatments with prescribed fire should discuss the EPA Interim Air Quality Policy on Wildland and Prescribed Fires, and disclose how the BLM is participating in a EPA certified Smoke Management Program (e.g. Montana/Idaho State Airshed Group), and describe how prescribed burns will be conducted in accordance with the State certified Smoke Management Program.” Also, it may be of interest to the public to display the website for the Montana/Idaho State Airshed Group, <http://www.smokemu.org> in the final RMP/EIS. Similarly it may be of interest to display the website for the Interim Air Quality Policy and a fact sheet on this policy in the FEIS, <http://www.epa.gov/ttn/oarpg/t1/memoranda/firefnl.pdf>, and [www.epa.gov/ttn/oarpg/t1/fact\\_sheets/firefl.pdf](http://www.epa.gov/ttn/oarpg/t1/fact_sheets/firefl.pdf).

**Response:** In Chapter 2 of the RMP, under Management Concerns, in the Air Quality section it states: “Air resources would continue to be evaluated on a case-by-case basis as part of project level planning to ensure compliance with local, state, and federal regulatory requirements.” That statement would ensure that project level NEPA takes into account the EPA Interim Air Quality Policy on Wildland and Prescribed Fire.

**E7**

**Comment:** There is a vast difference between the “natural fires” of a hundred years ago and the all-consuming forest fire we witnessed in the Gates of the Mountains Wilderness this summer. Back then forests were in fire equilibrium, that is, periodically natural forest-cleansing ground fires reduced the combustible fuel load on the forest floor, along with excessive numbers of small trees and brush. The fire seldom reached the lower limbs of big trees which would cause them to ignite and in turn create a fire storm that incinerates everything else in the forest.

Since BLM Wilderness Study lands are included in the FMU2 (Flexible Suppression Response Strategy), The Sleeping Giant (a wilderness study area) could suffer the same devastation as the Gates of the Mountains Wilder-

ness. When fires have been suppressed for many years the enormous buildup of fuel creates “burn intensity” such as that of the Meriwether fire. If the Sleeping Giant should ever be exposed to a lightning caused fire - some 6,000 acres will be toast.

Our public comment for the “Sleeping Giant study area”, will be; Alternative D (which allows the greatest flexibility in fire management. It treats the most acres for fuels reduction and would do the most of any alternative to reduce fire intensity and behavior, improve wild land fire fighter safety, and move toward historic fire regimes).

**Response:** BLM guidance mandates Wildland Fire Use will be based on approved Fire Management Plans and will follow specific prescriptions contained in operational plans. This means that if the RMP identifies areas that Wildland Fire Use can be used, a site-specific plan will need to be developed to take into account the specific issues raised in the comment. The BLM notes that the Interim Management Policy and Guidelines for Lands under Wilderness Review limits certain types of fire suppression activities for Wilderness Study Areas, such as Sleeping Giant. In the Butte RMP all BLM administered ground would be put into one of four Fire Management Unit (FMUs) Categories, as discussed in Chapter 2 under Wildland Fire Management in the Management Common to All Alternatives sections. After finalization of the Butte RMP, the Butte Field Office will revise its Fire Management Plan to more specifically address some of these issues.

#### E8

**Comment:** The Wildland Fire Management proposal under Alternative B has no lands designated in the Category A. The rapid growth and development in northern Jefferson County tends to support designation of these lands where fire is not desired.

**Response:** The BLM does not agree that Category A is the best designation for these lands. While Alternative C of the RMP/EIS allocates a portion of northern Jefferson County to Category A, placing these lands in Category B as proposed in the preferred alternative (B) allows for better flexibility for managing fuels in that area.

#### E9

**Comment:** The proposed ACEC designation for the Elkhorn Mountains dictates a more liberal fire management plan for naturally ignited fires. The concern for the large number of trees that are dying due to bug kill makes this large area a potential for being a location where a small fire could quickly grow into a major event that could become a public safety concern. This same concern exists for the proposed Elkhorn WSA tack-on that would further impede firefighting capabilities by restricting heavy equipment use and imposing retardant usage restrictions. The requirement to use 1/8th inch

screens on hoses when removing water from fish bearing streams should not be a restriction on fire management personnel. It appears the wildland fire strategy should include a detailed analysis, in conjunction with the Forest Service, of the current bug infestation and the fire risks involved with proposed fire mitigation measures for the most threatened areas. This fire assessment and discussions should include the county leadership along with volunteer fire management personnel.

**Response:** Under Alternative A (current management) the Elkhorn Mountains are in a Fire Management Unit (FMU) Category C (see Chapter 2 Wildland Fire Management), and they would be designated in Category C under Alternatives B and C. Under Alternative D the Elkhorn Mountains would be designated as FMU Category D which provides for the most flexibility in Fire Management. The BLM believes that a good range of fire management options are presented for the Elkhorn Mountains area. BLM guidance mandates Wildland Fire Use will be based on approved Fire Management Plans and will follow specific prescriptions contained in operational plans. This means that if the RMP identifies areas that Wildland Fire Use can be used, a site specific plan will need to be developed to take into account the specific issues raised in the comment. The BLM current standard for hose screen is 1/8<sup>th</sup> inch, therefore the BLM does not see it as a restriction as discussed in the Wildland Fire Management section in Chapter 2 of the Butte RMP. The Collaborative Efforts including outreach to county commissioners for the Butte RMP DEIS are discussed in Chapter 5.

#### E10

**Comment:** We also encourage BLM to conduct improved public education programs to increase public understanding on the need for and value of fire in forest ecosystems. We encourage the BLM to consider issues such as promoting public education and understanding on air quality trade-offs between increased use of prescribed fire vs. wildfire. Increased public understanding of prescribed fire vs. wildfire air quality tradeoffs may promote increased public acceptance of and support for prescribed fire to manage vegetation and fire risk.

**Response:** The BLM agrees that public education programs to increase public understanding on the need for and value of fire in forest ecosystems is important. The National Fire Plan and 2001 Federal Fire Policy, both referenced in Chapter 1 of the RMP/EIS, place an emphasis on fire mitigation, education, and prevention. Discussions on air quality tradeoffs depending on proposed management in the different alternatives are provided in Chapter 4 of the RMP/EIS.

#### E11

**Comment:** BLM management direction should also assure that prescribed fire for fuel management and control or suppression of wildfire be conducted in a

manner that minimizes potential nonpoint source pollution of surface waters. All bladed firelines for prescribed fire and wildfire should be stabilized with water bars and/or other appropriate techniques if needed to control excessive sedimentation or erosion of the fireline.

**Response:** In Chapter 2 of the RMP, under Management Common to All Alternatives (of the Wildland Fire Management section), it states the BLM would use the BLM's Emergency Fire Rehabilitation Handbook (H-1742-2) for implementing fire rehabilitation projects following wildland fire and wildland fire use. It also states in the same section that: "Fire management activities would be designed and implemented in a manner that meets or moves toward meeting Land Health Standards." This should ensure that excessive sedimentation or erosion of the fireline will be considered in the planning and implementation of wildland fire management activities.

**E12**

**Comment:** On page 344 you state the different goals for prescribed burns – 80 percent consumption of above-ground biomass for Alt B, 60 percent for Alt C, 90 percent for Alt D. But so what? - What's the import of those differences, what are the tradeoffs? (The answer may well be buried in there somewhere, but that's part of my point.)

**Response:** The importance of the difference in percent consumption of above ground biomass is the nature of the mosaic of vegetation that will be left after a prescribed fire treatment, to provide desirable vegetation for colonization into the burned area. The tradeoff would be directly proportional to the size of the treatment area, which will have direct effects on wildlife, vegetation, and soils. See the Wildlife section in Chapter 4 of the RMP, Effects of Alternative B for more detail.

**E13**

**Comment:** Programmatic direction should also assure that the effects of burning on the potential stimulation of noxious weeds be evaluated during site-specific project level analysis. Prescribed fire has the potential to stimulate weed growth (e.g., Dalmatian toadflax or leafy spurge), and can destroy insects planted for biological weed control. Burning followed by application of appropriate herbicides can provide effective weed control. We suggest that such considerations be evaluated during development of direction and plans for prescribed burning. Areas should not be prescribed burned for at least 30 days after herbicide treatment.

**Response:** Treatment of weeds in relation to specific proposed prescribed burning would be determined during project specific analysis. The Wildland Fire Management section in Chapter 2 of the RMP/EIS contains goals that assure that noxious weeds will be evaluated at the site-specific level, while the Noxious Weed Man-

agement section outlines the goal to minimize infestations of invasive plants and noxious weeds. Whether burning would occur within 30 days of herbicide treatment would be dependent on site-specific factors and label instructions on herbicides or other known factors. In general, the window for herbicide treatment in the summer and fall and the windows for prescribed burning in the spring and fall would allow for the suggested objective.

**E14**

**Comment:** Is Urban Wildland Interface still alive? Destroy the vegetation on public lands to protect adjoining private landowners?

**Response:** The BLM is operating under laws, regulations and policies, as well as the most current scientific knowledge, in effort to reduce the risk of large-scale, severe wildfires by restoring healthy, viable ecosystems to our public forests and rangelands. These efforts include fuels reduction projects designed to protect communities at risk of wildfire and promote the safety of firefighting personnel. See Chapter 1 of the RMP, Relationship to BLM Policies, Plans and Programs, for reference to the National Fire Plan and 2001 Federal Fire Police.

**Fish and Wildlife**

**F1**

**Comment:** BLM did not even mention wildlife habitat for wild sheep, mule deer, white-tailed deer, pronghorn antelope, very little on elk, nothing about moose, beaver including beaver dams, ruffed grouse, and blue grouse habitat, very little on non game species and nothing on waterfowl/ wetlands habitat. No vegetative maps were shown of plant communities or wildlife habitat by quality and quantity was presented. Where is bighorn sheep habitat on public lands in HD 340 for example?

**Response:** The Wildlife Section in Chapter 3 of the RMP discusses wildlife habitat for a variety of wildlife species including those species that depend on grassland/shrubland, forest, and wetland/riparian habitats. This section also provides specific discussion on species such as elk, bighorn sheep, mule deer, white-tailed deer, pronghorn antelope, moose, and game birds (including grouse and waterfowl). The role of beaver dams is described in the Wetlands and Riparian Communities Section of Chapter 3.

Although suitable habitat for waterfowl is minimal on BLM lands in the Butte Field Office, the Wildlife Section in Chapter 3 of the Proposed RMP/Final EIS has been modified to include discussion of waterfowl species and their associated habitats that may be present in the Planning Area.

Maps displaying vegetation zones are cited under Vegetation Communities in Chapter 3 of the RMP (AMS

Figures 2-9a, 2-9b, and 2-9c) and are located on the supplemental disc provided in the RMP. The supplemental disc also provides maps that display wildlife habitat for wildlife corridors (AMS Figure 2-15), elk winter range (AMS Figure 2-16), mule deer winter range (AMS Figure 2-17), bighorn sheep winter range (AMS Figure 2-18), grizzly bear recovery and distribution zones (AMS Figure 2-19) and sage grouse distribution (AMS Figure 2-20).

Table 3-4 on the Vegetation Section in Chapter 3 of the RMP displays acres of different vegetation communities for the Planning and Decision Areas. Discussion on the quality and quantity of wildlife habitat is also found in the Wildlife section of Chapter 3.

Bighorn sheep habitat in HD 340 is discussed in the Wildlife Section (Bighorn Sheep) of Chapter 3. Bighorn sheep habitat in HD 340 is identified as habitat within the Soap Gulch and Camp Creek areas.

## F2

**Comment:** MWF agrees strongly that fences can be significant barriers and cause unnecessary wildlife deaths if constructed irresponsibly but believes the statement needs much more clarification and emphasis. Too many area fences do not meet the requirements of the Unlawful Enclosures Act. Ensure that new and existing livestock fences comply with legal parameters as directed in BLM Manual H-1741-1 which ensures they do not inhibit free movement of wildlife. Those standards for domestic fence requirements as quoted, "...3-wire, 38-inch height, with bottom wire 16 inches off the ground..." fences constructed as such comply with the Unlawful Enclosures (sic) of Public Lands Act of 1885 (43 USC. 1061-1064; 23 Stat. L. 321. ch.149). MWF requests that these specifics be stated clearly within the RMP so that BLM's intentions to provide for wildlife friendly fences are more than just empty promises, it complies with the law.

**Response:** In Chapter 2 of the Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species section (Management Common to All Alternatives) of the Proposed RMP/Final EIS cites BLM's Manual H-1741-1 to clarify what fence specifications will be used. The BLM also works directly with Montana Fish, Wildlife and Parks to design fences that best allow for wildlife movement.

## F3

**Comment:** No wildlife evaluation was done on any exchange lands.

**Response:** Within the Land Ownership Adjustment Section (Management Common to Action Alternatives) of Chapter 2 in the Draft RMP/EIS, 7,472 acres of BLM lands were identified under the "disposal" category. This figure has been revised to 8,901 acres in the Proposed RMP/Final EIS. Parcels identified for disposal are gen-

erally small (less than 100 acres), isolated parcels and often are surrounded by private lands. The interdisciplinary team reviewed all BLM parcels in the Butte Field Office and determined which parcels could be available for disposal. During this process, no major wildlife issues were identified for any of the parcels. The "disposal" category only determines which parcels would be available for sale or exchanged in the future. Site-specific analysis, however, of each parcel would be required when specific parcels are proposed for sale or exchange. As identified under the Federal Land Policy and Management Act of 1976, parcels can only be sold if important recreation, wildlife, watershed, threatened or endangered species habitat, and/or cultural values are not identified during site-specific analysis. **Appendix L** of the Proposed RMP/Final EIS provides information on land exchanges and sales.

## F4

**Comment:** The document contains generalized statements regarding the potential impacts on wildlife, aquatic, and special status species for all of the proposed alternatives and affected areas. As a result, the reader is left with a limited understanding of the specific impacts on the various species. For instance, the potential effects of Alternative B for the Helena TPA include the following statements (Volume II, page 503, paragraphs 2 and 3): "The amount of big game security habitat would be low, but still more under Alternatives B and C...compared to Alternatives A and D which have no functional security habitat...Alternative B would allow for more breeding, foraging, and hiding habitat as well as improve more movement corridors for a wide variety of species than Alternatives A and D but less than Alternative C." It would greatly benefit the public if more explicit discussions on the potential impacts of the proposed activities on the various species affected could be provided to the extent that the detailed analytical information is available.

**Response:** Many of the types of impacts or effects to wildlife would be the same or similar under the different alternatives. All alternatives propose using the same types of treatments or allow similar management across the Field Office with the major differences being acres treated and road density. Because the type of treatments would be the same, the effects to wildlife species would be similar between alternatives but the degree of those effects would differ. For example, security habitat is defined as blocks of forested habitat greater than 250 acres in size that are non-linear and located further than 0.5 mile from a road that is open during the hunting season. Because of their size and location on the landscape, these areas would provide a refuge to big game during the hunting season. Therefore, the difference between alternatives would be the acres of security habitat available to big game, which are displayed by alternative for each TPA in Chapter 4, Volume II. More acres of security habitat would be better for elk than

fewer acres. This would be similar for wildlife corridors, winter range, and riparian habitat.

The general effects of management actions to wildlife and fish are described in the Wildlife and Fish Sections (Management Common to All Alternatives) of Chapter 4 of the Proposed RMP/Final EIS as well as under alternative-specific discussions in Chapter 4.

Some specific discussion on the effects to wildlife from roads is found within the travel plan sections in Chapter 4 (Volume II) of the RMP and additional analysis on the impacts to big game has been added to these sections in the Proposed RMP/Final EIS.

The Wildlife Section of Chapter 3 (Affected Environment) also provides discussion on the effects of management activities to specific wildlife habitat (such as wildlife corridors) as well as on wildlife species such as elk, black bear, and grizzly bear.

**F5**

**Comment:** It would be of great benefit to the public if the final RMP/EIS included references where statements of fact about species are made and on wildland fire management, especially because the number of references in the draft document are limited. For instance, a reference is needed for statements like (Volume II, page 534, 1st full paragraph), "...perennial non-fish bearing streams contribute to fish habitat indirectly by serving as conduits for watershed products (water, sediment, nutrients, contaminants, and in some cases woody material) to fish bearing streams."

**Response:** The BLM agrees that there was a lack of references in the Draft RMP/EIS. Additional references have been added to the Wildlife and Fish sections of Chapter 4 in the Proposed RMP/Final EIS.

**F6**

**Comment:** There is a big difference in the amount of acres that would be available for oil and gas leasing between alternatives B and C, but it is not clear why B is preferable over C on this point. It would also seem that C would pose far fewer unavoidable adverse impacts due to oil and gas leasing because fewer acres are available, though this is not stated in the plan. For example, an analysis of the impacts identifies benefits to Wildlife for C and to Energy and Minerals for B, while adverse impacts to Energy and Minerals are identified for C. What are the impacts to Wildlife for B? Perhaps the preferred alternative should look more like C when it comes to oil and gas leasing, particularly since the twelve stipulations to lessen the impacts to Special Status Species that are proposed for B (page 400) seem to have been the impetus for identifying much of the additional acres in C as available. At the same time, it is not clear why the same 12 stipulations are necessary for C (page 405), when lands for Special Status Species are specifically unavailable to leasing.

**Response:** The action alternatives represent a range of effects to fish and wildlife from oil and gas leasing. The type of stipulations and acres of leasing under Alternative B were consistent with the other types of management prescriptions proposed under this alternative. Generally, management prescriptions under Alternative B were more restrictive or beneficial to wildlife than Alternative D but less restrictive or less beneficial to wildlife than Alternative C. The comment is correct with the statement that Alternative C does pose fewer adverse impacts to wildlife due to oil and gas leasing. This is consistent with the more "protective" approach under Alternative C. Alternative C however, also effectively prohibits oil and gas leasing from most of the federal mineral estate acres in the Butte Field Office and this is less consistent with the BLM's multiple-use mission than Alternative B.

Impacts to wildlife from oil and gas development under Alternative B are described under the Wildlife and Special Status Species sections of Chapter 4 in the RMP. The BLM believes that the stipulations identified under Alternative B, combined with the relative lack of oil and gas activity in the Decision Area forecast in the Reasonable Foreseeable Development scenario would protect resources while providing for oil and gas development.

The 12 wildlife stipulations for oil and gas leasing found in the Special Status Species section of Chapter 4 of the RMP are necessary to identify the type of stipulation for each species under Alternative C. There are differences between the stipulations under Alternative C including; No Lease, No Surface Occupancy and Timing Restrictions.

**F7**

**Comment:** In the Elkhorn Mountains analyze and map elk security habitat for all elk within Hunting District 380 (using Hillis et al. and in conjunction with information on elk use patterns from Fish, Wildlife and Parks).

**Response:** Acres of elk security habitat were generated for the five site-specific travel plan areas to display differences in acres of security habitat between alternatives. Acres of elk security habitat are also discussed at the Field Office scale to display the cumulative differences of security habitat in the five site-specific travel plan areas by alternative in both the Draft and Final EIS. For those areas that already have travel plans, such as the Elkhorn Mountains, the amount elk security habitat was not specifically displayed because elk security habitat was already mapped and discussed in the Elkhorn Mountains Travel Management Plan (completed in 1995).

Although the BLM agrees that updated mapping should be completed for elk security habitat in the Elkhorn Mountains, it is recognized that this mapping should be done in coordination with the Helena National Forest,

Beaverhead-Deerlodge National Forest and Montana Fish, Wildlife and Parks.

**F8**

**Comment:** In the Elkhorn Mountains thin or reduce conifers in areas where appropriate identified as security habitat in order to reduce risks of catastrophic wildfire, to enhance grasslands, and to maintain security habitat.

**Response:** Although each alternative differs in how aggressive the BLM would be with vegetation treatments to reduce fuel loads and restore grassland/shrubland habitats, all alternatives do propose treatments to meet these objectives. The emphasis for vegetative treatments are found in Chapter 2 of the RMP in Goals Common to All Alternatives for all BLM Activities, General Approach of Vegetation Management Activities, General Summary of Alternative Emphasis for Vegetation Communities as well as within other discussions in the Vegetation Communities main section.

The Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species section (Management Common to All Alternatives) in Chapter 2 of the RMP provides direction to consider important blocks of security habitat during project planning.

**F9**

**Comment:** In the Elkhorn Mountains use prescribed fire to reduce or eliminate areas of conifer encroachment. In addition, when prescribed burns are planned to reduce conifer encroachment, the potential of such small patches of hiding cover should be evaluated to determine if some patches might contribute to the landscape pattern of security, and if some, therefore should be retained.

**Response:** The BLM agrees with the comment and the RMP provides for these types of treatments in the Elkhorn Mountains as well as throughout the Butte Field Office. Site-specific analysis (outside the scope of this RMP) of any project that proposes reducing conifer encroachment, or other types of vegetation manipulation, will address the amount and distribution of vegetation that contributes to hiding and security habitat as well as how the project would affect the amount and distribution of hiding and security habitat.

**F10**

**Comment:** We also support management direction that ensures that population strongholds and key refugia for listed or proposed species and narrow endemic populations are protected and restored. More pristine wilderness study areas and less developed areas further from roads often provide the key refuge areas and population strongholds for threatened and endangered and sensitive species. We believe it is important that wilderness study areas and less developed areas further from roads be

protected and maintained in order to protect wildlife resources within the BFO area.

**Response:** The BLM agrees with the comment. The existing six Wilderness Study Areas would continue to be managed under the Interim Management Policy and Guidelines for Lands under Wilderness Review. As stated in the Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species section (Management Common to Action Alternatives) in Chapter 2 of the RMP, the BLM would minimize fragmentation in wildlife linkage corridors as well as maintain the function and diversity of habitats within large “patch” sizes. This would be accomplished by protecting areas with low road densities and excluding or minimizing certain types of development in these areas.

The action alternatives also provide additional guidelines to minimize open road densities in important areas such as grizzly bear habitat and big game winter range.

**F11**

**Comment:** Hikers disturb nesting birds (Swarthout, Elliott and Steidl, Robert, Journal of the Society of Conservation Biology, February 2003) yet restrictions on hiking and other non-motorized recreationists to reduce impacts on nesting birds are rarely imposed.

**Response:** The literature referenced by the comment refers to the Mexican spotted owl (Experimental Effects of Hiking on Breeding Mexican Spotted Owls), a species not found in the Butte Field Office.

The BLM, however, is aware that hikers can disturb nesting birds and has taken measures to protect active raptor nests along hiking trails in the past. The BLM will continue to restrict access to areas where hikers or other types of activities could have a substantial negative effect on breeding birds.

**F12**

**Comment:** The encroachment of residences into the forest is often the most significant factor contributing to the loss of summer and/or winter wildlife habitat. First, we request that the impact of these permanent encroachments be quantified and compared to the relatively minor impact that mechanized forest visitors have on wildlife habitat. Secondly, public land visitors should not have to pay the price in the form of motorized closures required to offset the impact of permanent encroachments by private residences. Proper assignment of restrictions would rest on those private individuals who permanently encroached on the natural habitat.

**Response:** The amount of residential development adjacent to BLM lands can not be quantified under this planning effort. However, Chapter 4 of the RMP considers the cumulative effects of residential development and roads in the five travel planning areas (Chapter 4, Wildlife). The Cumulative Effects on Resources sections

(under Vegetation Communities, Wildlife) of the RMP also provide discussion on the effects of residential development adjacent to BLM lands. The amount of residential development adjacent to BLM lands must be analyzed under “Cumulative Effects” because these developments are occurring on private land, not on BLM lands. Roads, however, are located on BLM lands and the effects to wildlife from roads are specifically addressed under all alternatives in the RMP. The alternatives for the five site-specific travel plan areas provide for a range of access into these areas.

The BLM does not have the authorization to assign restrictions to private land owners regarding development of their lands.

### F13

**Comment:** Recreation Management: Executive Order 13443, Facilitation of Hunting Heritage and Wildlife Conservation was enacted on August 17, 2007. The purpose of this order is to “direct Federal agencies that have programs and activities that have a measurable effect on public land management, outdoor recreation, and wildlife management, including the Department of the Interior and the Department of Agriculture, to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.”

MWF believes E.O. 13443 has not been sufficiently addressed in the Butte RMP/EIS and suggests that the Butte Office amend the RMP to include an analysis of the alternatives and how they affect hunting opportunities, quality of the hunt, and maximizing habitat protection.

MWF also asks how the Travel Plan ensures habitat security so that fish and wildlife remains on the public estate and if displacement of wildlife towards public land is discouraged. We believe these analyses appropriate in light of the new Executive Order 13443.

**Response:** The BLM acknowledges the importance of meeting the direction of Executive Order 13443. A recent study of Montana’s outfitting industry (Nickerson et. al. 2007) indicated that this industry is a viable sub-component of Montana’s travel industry, and that hunting contributes the largest economic portion to outfitting in Montana (Nickerson et al., 2007).

The BLM believes that many management actions proposed under the Wildlife and Travel Management and Access sections in Chapter 2 of the Butte RMP facilitate the implementation of Executive Order 13443 such as providing for wildlife friendly fences; emphasis on security habitat, hiding habitat and winter range; seasonal timing restrictions in big game habitat; minimizing fragmentation of linkage corridors; habitat restoration; identifying big game species as “priority species”; coordination with federal, state, tribal and private landowners to improve wildlife habitat; and cooperating with Mon-

tana Fish, Wildlife and Parks to adjust seasonal travel restrictions to meet state harvest goals.

Hunting access and quality of hunting experiences were issues that were considered during the development of alternatives and later analyzed in Chapter 4 under Recreation effects. These issues influenced many travel plan decisions with regard to routes available to motorized uses. The primary considerations were seasons of use, elevational access for hunters, hunter disbursement opportunities, game retention on public lands, conflicts between non-motorized and motorized users and game retrieval.

Although the alternatives differ in their degree of habitat restoration, each alternative emphasizes conserving and/or restoring wildlife habitat including habitat for game species. The Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species section (Management Common to All Alternatives) in Chapter 2 of the RMP states that all alternatives would emphasize maintaining and supporting healthy, productive and diverse wildlife populations and communities of native plants and animals including big game species. All action alternatives would maintain or restore habitat for game species or minimize the effects to these species.

The Environmental Consequences of Five Site-Specific Travel Plans section (Wildlife subsections) in Chapter 4 provides analysis on the effect from roads to wildlife and compares the impacts from roads by alternative. The Wildlife sections in Chapter 4 include discussion on security habitat, winter range, travel corridors, as well as general effects to wildlife from roads.

The Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species section (Management Common to All Alternatives) in Chapter 2 of the Proposed RMP/Final EIS states that the BLM would facilitate the expansion of hunting opportunities and management of game species and their habitats, as per Executive Order 13443.

### F14

**Comment:** Elkhorn ACEC: The protection of wildlife is a priority so in areas where vehicle use is well established, the routes should be monitored and re-evaluated to ensure that quality habitat is provided for a wide range of wildlife, but especially for elk which require good winter range, safe calving grounds, and a high level of security to keep them on public land. On BLM lands where vehicle use has become well established, routes should be monitored and evaluated, and management decisions should be primarily based on the most recent science.

**Response:** The Elkhorn Mountains Travel Management Plan Environmental Assessment was completed for Forest Service and BLM lands in the Elkhorn Mountains in 1995. Big game security habitat and winter range

were two driving issues that resulted in road closures (including seasonal closures) in the Elkhorn Mountains.

Montana Fish, Wildlife and Parks conducts annual surveys for big game in the Elkhorn Mountains. The results of these surveys, along with any recommendations for changes in management or restoration opportunities, are provided to both the BLM and the Forest Service. Future amendments to the Elkhorn Mountains Travel Plan could result from these recommendations.

The BLM, Forest Service and Montana Fish, Wildlife and Parks entered into a cooperative agreement to manage the Elkhorn Mountains consistently across administrative boundaries and to manage public lands for wildlife habitat and recreation in 1992. The agencies currently work together to identify issues in the Elkhorn Mountains as well as with management of wildlife and wildlife habitat.

### F15

**Comment:** Pg.S-2: Habitat: Mt. FWP studies show elk numbers exceed the projected goal in all areas under the RMP. There isn't any data presented to warrant [road] closures for wildlife issues.

**Response:** The BLM manages habitat for wildlife, including big game species, while Montana Fish, Wildlife and Parks regulates harvest of game species. One of the goals of habitat management on BLM lands is to provide habitat for self-sustaining populations of game and non-game species. The number of elk in an area depends on many factors including (but not limited to) weather, forage, predation, disease and hunter success. Although elk populations will fluctuate from year to year, the BLM manages wildlife habitat for the long-term sustainability of many species while providing for recreational activities. Montana Fish, Wildlife and Parks' Statewide Elk Management Plan identifies management goals and objectives for each Elk Management Unit across the state. The BLM took these goals and objectives into consideration when addressing the impacts of roads on elk and elk habitat in the five site-specific travel plan areas. In addition, while elk numbers may be high in some areas at the current time, these numbers could change substantially over time, further reinforcing the need for BLM to manage habitat appropriately.

The Travel Management and Access section (Management Common to Action Alternatives) in Chapter 2 indicates that the BLM will continue to coordinate travel restrictions with Montana Fish, Wildlife and Parks to provide adequate access to meet the harvest goals that they set.

### F16

**Comment:** Some wildlife considerations appear to impose more restrictions on land use that could impact future decision-making based on sound logic. The rec-

ommendation to retain contiguous blocks of dead and dying forests is subjective and may not be in the best interests of healthy forests and public safety. The raptor nest restriction of 0.5 mile noise buffer for active nests and the 0.25 mile noise buffer for five years for unoccupied nests has the potential to negatively impact many other aspects of the proposed RMP since raptor nesting locations could easily be a changing variable.

**Response:** Butte RMP management direction to retain contiguous blocks of dead and dying forests was intentionally left general in nature so as to allow project-level planning teams to identify what would be appropriate on a site-specific basis and provide management flexibility. There are a host of wildlife species, including a number of BLM sensitive species (such as black-backed and three-toed woodpeckers), that require this type of habitat. So from that standpoint, dead and dying forests are a natural and healthy part of ecosystem diversity.

The management prescription for raptor nest sites would not preclude management in these areas. The noise buffer around active nest sites would only be in effect during the breeding season. Noise disturbance buffers around raptor nests would entail seasonal activity restrictions, but would allow noise-producing management activities outside nesting/rearing seasons. Management activities could occur in these areas as well as around unoccupied nest sites providing suitable habitat is maintained around the nest sites. In the case of unoccupied raptor nests, some raptors have a tendency to re-occupy such nests in the future. There would be no noise disturbance seasonal restrictions applied to unoccupied raptor nests. In many cases throughout the Butte Field Office, thinning dense stands of trees around raptor nests would improve the habitat for these species.

### F17

**Comment:** Related Plans (p.14). It is not clear whether plans and management direction by other agencies are considered. Recently issued plans, agency direction, and Executive Orders as listed below are not addressed in the plan but should be considered:

\*Lynx Management Direction, adopted by the Forest Service in July 2007 – the core habitat includes several parcels of BLM lands including Granite Creek (Greenhorn-Skelly Gulch area), Marysville, and Virginia Creek area (Stemple Pass). Additional Core Habitat occurs in the Gallatin and Custer National Forests and virtually all of the remainder of southwest Montana occurs in Secondary Lynx Habitat.

\*Grizzly Bear Recovery Plan Supplement: Habitat Based Recovery Criteria for the Yellowstone Ecosystem (March 2007). This plan calls for enhancing linkage connections between Yellowstone and other ecosystems. BLM lands at the headwaters of Little Prickly Pear Creek and Dog Creek on the Continental Divide are essential to the continuity of linkage connectivity north

to the Northern Continental Divide Ecosystem and the Yellowstone Ecosystem.

\*Department of the Interior, Fish and Wildlife Service, Endangered and Threatened Wildlife and Plants; Final Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Area. Federal Register/Vol. 72, No. 48/Tuesday, March 13, 2007/Notices.

\*Executive Order 13443, Facilitation of Hunting Heritage and Wildlife Conservation, August 17, 2007. Addresses hunting opportunity and wildlife conservation on all federal lands.

**Response:** FLPMA emphasizes the need to ensure coordination and consistency with the plans and policies of other relevant jurisdictions. To the extent practicable, BLM will consider these plans and management direction during site-specific planning. All recovery or conservation plans identified by the U.S. Fish and Wildlife Service would be implemented by the BLM as well as management plans developed by Montana Fish, Wildlife and Park for those species removed from the Endangered Species list (such as the Yellowstone population of the grizzly bear).

The BLM will follow the Lynx Conservation Assessment and Strategy and the BLM has worked closely with the Helena, Beaverhead-Deerlodge, and Gallatin National Forests to provide consistent mapping of lynx habitat between Forest Service and BLM lands. To ensure management consistency in the Butte RMP with other agencies, the BLM worked with adjacent National Forests to integrate lynx habitat on BLM and Forest Service lands into common Lynx Analysis Units. This will improve vegetation management and coordination of projects within lynx habitat between the BLM and adjacent National Forests.

The BLM will continue to use peer reviewed scientific studies along with recommendations from the U.S. Fish and Wildlife Service and Montana Fish, Wildlife and Parks to manage habitat in occupied grizzly bear habitat.

The BLM believes that many management actions proposed under the Wildlife and Travel Management and Access sections in Chapter 2 of the RMP will facilitate the implementation of Executive Order 13443 such as wildlife friendly fences; emphasis on big game security habitat, hiding habitat and winter range; seasonal timing restrictions in big game habitat; minimizing fragmentation of linkage corridors; habitat restoration; identifying big game species as “priority species”; coordination with federal, state, tribal and private landowners to improve wildlife habitat; and cooperating with Montana Fish, Wildlife and Parks to adjust seasonal travel restrictions to meet state harvest goals.

The Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species section (Management Common to All Alternatives) of the Proposed RMP/Final EIS states that the BLM would facilitate the

expansion of hunting opportunities and management of game species and their habitats, as per Executive Order 13443.

**Appendix B** of the Proposed RMP/Final EIS provides a list of laws and executive orders that affect BLM planning and management.

## F18

**Comment:** Big game security cover could be more adequately addressed if both security blocks of 250 to 500 acres and the Elk Management Guidelines were applied (p. 122). Currently only Alternative A calls for use of Elk Management Guidelines while Alternative B calls for 250 acres and Alternative C calls for 500 acres of security cover. However, the context and distribution in which these security block acreages would be applied is not described, does this mean 250 or 500 acres in an area of 1,000 acres or in an area of 10,000 acres?

**Response:** The Elk Management Guidelines referenced by the commenter found in Alternative A is The Coordinating Elk and Timber Management Study (1985). This study, along with more recent literature and research, was used to identify appropriate activities within elk habitats as well as to address the effects of management actions in the proposed RMP. For example, The Coordinating Elk and Timber Management Study, along with more recent literature, discusses security habitat, road location, road density and closures, vegetative management and winter range. All aspects of this study and other related research are found throughout the Draft and Final EIS.

Site-specific projects will continue to consider The Coordinating Elk and Timber Management Study along with other relevant research and literature during site specific project analysis.

The BLM agrees with the commenter that security habitat identified in the Wildlife Section of the Draft EIS is confusing and may not meet the intent of BLM’s objectives for providing elk security habitat. The management prescription for elk security habitat under each action alternative has been deleted from the Proposed RMP/Final EIS. A new management prescription has been included in the Proposed RMP/Final EIS under the Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species section (Management Common to Action Alternatives) of Chapter 2 that states that functional blocks of security habitat for big game species would be maintained across the landscape. Where minimum-size blocks of security habitat (250 acres), as defined by Hillis et al. (1991), are located, they would be retained in a suitable condition during project implementation. Larger blocks of security habitat would be addressed and analyzed during project or watershed level planning to address the protection of security habitat. Where security habitat is limited or fragmented across the landscape, the BLM would emphasize

improving habitat through vegetation treatments and road closures (including seasonal closures) to increase security habitat for big game species.

### F19

**Comment:** Two attached maps submitted from the Helena Area Resource Office entitled “Wildlife Distribution in Northern BLM RMP” and “North BLM RMP Land Ownership & Wildlife Linkage Zones” display linkage zones through the landscape. The primary one, the Continental Divide, as well as a series of local movement linkages (narrow dashed lines) are depicted. These linkages exist and are defined by a combination of suitable topography and vegetative cover, lower human densities, and appropriate habitats render these public lands crucial in the context of wildlife linkages. The most striking feature of the land ownership map is the critical role the BLM lands play in defining these linkages.

In the majority of cases, BLM lands are being utilized by wildlife to move between local areas and between ecosystems. It is a fact that wildlife will do their best to adapt to changes, but as human density spreads throughout all types of wildlife habitats, the simple presence of lands that are not inhabited by people (public lands) provides the security and thoroughfare necessary to accommodate not only local wildlife movements, but also the larger flow of genetic material through the landscape to help minimize isolation of meta-populations. For these reasons whenever BLM lands are being evaluated for disposal the above factors should be analyzed on both the broad and local scales, and wherever possible be retained and managed to provide for wildlife movements.

**Response:** Parcels identified for disposal are generally small (less than 100 acres), isolated parcels and often are surrounded by private lands. The “disposal” category only determines which parcels would be considered for sale or exchange in the future. Site-specific analysis, including a review for wildlife values such as location of lands relative to linkage corridors, would be required when specific parcels are proposed for sale or exchange.

### F20

**Comment:** The RMP specifically indicates that it would coordinate with MFWP to determine whether habitat conditions exist that would allow for successful reintroduction of locally or regionally absent species and then lists several species. However, mountain goats are notably absent and should be added to the list. The mountain goat population decline began to occur immediately after a joint BLM-MFWP effort to introduce bighorn sheep into the Sleeping Giant.

**Response:** The BLM agrees and mountain goats have been added to the list of species identified for possible re-introduction in the Proposed RMP/Final EIS.

### F21

**Comment:** Wolverines are rarely mentioned in the RMP and in Table 3-15 they are listed as occurring in the Planning Area but not in the Decision Area. It is very possible that wolverine do in fact occur within the decision area, particularly in the Great Divide, Mount Thompson, and Sleeping Giant areas that occur at higher elevations and within linkage areas. A dead wolverine was located by MFWP on the Sheep Mountain ridgeline in the Clancy area, and wolverine tracks and cache was observed by MFWP in the Great Divide area. Wolverines have home ranges as large as grizzly bears and both locations were within 2-4 miles of BLM lands.

**Response:** The BLM appreciates the information provided by the commenters regarding wolverines and has included this information in the Proposed RMP/Final EIS. Additional descriptions on wolverine habitats have also been included in the Wildlife Section of Chapter 3 in the Proposed RMP/Final EIS.

### F22

**Comment:** The Western Association of Fish and Wildlife Agencies (WAFWA) convened a Wild Sheep Working Group (WSWG) consisting of wildlife and animal health specialists to develop recommendations for domestic sheep and goat management in Wild Sheep Habitat in 2007. Those recommendations were finalized this year and adopted by the Directors of the Western Agencies on June 21, 2007. Both the BLM and Forest Service had representatives on the Working Group. Some of the recommendations from the WSWG to WAFWA agencies that are pertinent to the discussion of interface between domestics and wild sheep and should be recognized by the BLM in the RMP revision include:

1. Following completion of site-specific risk assessment, wild sheep transplant, augmentation, restoration, and management strategies should be designed to minimize the likelihood of contact between wild sheep and domestic sheep and goats.

2. Wild sheep managers should coordinate with local Weed & Pest Districts or other appropriate agencies/organizations involved with weed management to preclude the use of domestic sheep and goats for noxious weed control, in areas where contact between wild sheep and domestic sheep and goats is likely to occur. Agencies should provide educational information and offer assistance to Weed & Pest Districts regarding the disease risks associated with domestic sheep and goat use. Specific guidelines have been developed implemented in, British Columbia ([www.for.gov.bc.ca/hfp/publications/00006/](http://www.for.gov.bc.ca/hfp/publications/00006/)).

**Response:** The Wildlife, Fish, Wildlife Habitat and Special Status and Priority Plant and Animal Species section (Management Common to Action Alternatives) in Chapter 2 of the RMP addresses the re-introduction of bighorn sheep. This section of the RMP states that the

BLM would coordinate with Montana Fish, Wildlife and Parks to determine whether habitat or other conditions exist that would allow successful reintroduction of big-horn sheep. Any reintroduction efforts would be subject to site-specific analysis in which strategies would be identified to minimize the likelihood of contact between wild sheep and domestic sheep and goats.

Management direction described for each action alternative under Livestock Management in Chapter 2 provide guidance on when domestic sheep and goats could be allowed for weed control on BLM lands. Site-specific analysis of weed control projects using domestic sheep and goats would continue to address the effects to wild sheep. The BLM will follow the recommendations from the Wild Sheep Working Group to reduce the risk of disease transmission to wild sheep from domestic sheep and goats.

### F23

**Comment:** The opening sentence in Appendix F states: “Grizzly bears, wolves, bald eagles, and lynx are the listed species that occur incidentally throughout the Butte Field Office. “ MFWP firmly believes that these species occur more than just “incidentally” throughout the Butte Field Office. It is our opinion that reports of these and other species of concern such as wolverine should be seriously considered, carefully tracked, and their potential habitat conserved.

**Response:** The BLM agrees with the comment and understands the confusion the word “incidentally” has created. The word “incidentally” has been removed from this appendix (now **Appendix G** in the Proposed RMP/Final EIS).

### F24

**Comment:** Wildlife Screens (p. 732) Part 2 (table of activities). For Item 6, Silviculture Activities, in addition to the criteria that “Chemicals do not affect cutworm moth or habitat” it is recommended that honeybees be included.

**Response:** The BLM agrees with the comment and honeybees have been added to these screening criteria.

### F25

**Comment:** Roads and motorized uses also increase wildlife encounters with humans, which can degrade and fragment wildlife habitat; displace wildlife; change behavior and increase stress; reduce reproductive success; and increase wildlife mortality. The proposed management direction did not appear to say much about promoting a road network or transportation system that reduces wildlife fragmentation and displacement, and that is consistent with maintenance and protection of productive and diverse populations of wildlife species; and reducing impacts to sensitive species and contributing to recovery of listed species. To address these con-

cerns we recommend that BLM consider improving such direction. For example, “The BLM will manage the transportation system to minimize fragmentation of wildlife habitat and to maintain and protect productive and diverse populations of wildlife species, reducing impacts to species of concern and contributing to recovery of threatened and endangered species.”

**Response:** The BLM believes that management prescriptions found in the Butte RMP do relate to minimizing road construction and reducing road densities to promote quality habitats for wildlife. Maintaining suitable habitat conditions and minimizing fragmentation in linkage corridors as well as maintaining or emphasizing large block “patches” of habitats across the landscape would not be possible without reducing road densities or by maintaining areas that currently have low road densities. Management actions identified in the Wildlife sections of Chapter 2 in the RMP also identify minimizing road densities and disturbance to wildlife in critical habitats such as big game winter range, calving habitats, security habitat, and in the distribution of grizzly bear. All alternatives would emphasize maintaining and supporting healthy, productive, and diverse populations of animals including threatened, endangered, and sensitive species. Management of the transportation system would be taken into consideration during travel planning to maintain or improve habitats for a wide variety of wildlife species.

Travel planning under the five site-specific travel plans did address the effects of roads on fragmentation of habitats and disturbance as well as the direct and indirect effects of roads on a variety of wildlife and aquatic species.

### F26

**Comment:** We support the proposed fish and wildlife goals in the RMP (page 40) to conserve, enhance, restore, or minimize impacts to important wildlife habitats, and contribute to the recovery of threatened, endangered, or candidate plant or animal species. We encourage restoration of degraded wildlife habitats, and protection and enhancement of travel and migration corridors for wildlife, including threatened species such as the grizzly bear, lynx, and gray wolf. We recommend your consideration of additional more specific language to strengthen protections to fish and wildlife and their habitat. For example, “BLM will ensure that the structure, composition, and function of aquatic ecosystems is maintained and/or restored to support a diversity of aquatic plant and animal species and ensure that hydrologic connectivity within watersheds is maintained and/or restored to provide for habitat and connectivity needs to maintain populations of aquatic dependent species.”

“BLM will ensure that native wildlife species are provided habitat of sufficient quantity and quality, including connectivity and wildlife movement corridors, habitat

complexity, forest openings, edges, and ecotones, to enhance biological diversity”.

**Response:** The BLM agrees with the comment and has added the following modified suggested wording under Management Common to Action Alternatives in the Wildlife, Fish, Wildlife Habitat, and Special Status and Priority Plant and Animal Species section in Chapter 2:

“The BLM would emphasize maintaining and/or restoring the structure, composition, and function of aquatic ecosystems to support a diversity of aquatic plant and animal species and emphasize hydrologic connectivity within watersheds to maintain and/or restore habitat and connectivity needs for populations of aquatic dependent species.

The BLM would emphasize providing habitat of sufficient quantity and quality, including connectivity and wildlife movement corridors, habitat complexity, forest openings, edges, and ecotones, to enhance biological diversity and provide quality, sustainable habitat for native wildlife species.”

The BLM notes that the scattered nature of Butte Field Office lands in the planning area may limit the BLM’s ability to meet these objectives depending on land ownership patterns.

#### F27

**Comment:** If protection of fish and game species is a significant issue, then a reasonable alternative that would produce far more positive results would be a different management scenario for fishing and hunting in the area rather than the closure of trails to OHV use. OHV recreationists have been the only recreationists to pay the price for improvements to fish and game populations. At the same time the improvements to fish and game populations from motorized closures is miniscule and the cumulative impact on motorized recreationists has been significant and negative. Motorized recreationists have been the first to be eliminated for far too long. The human environment is also important but it has been ignored and not adequately quantified. If there is some over-arching mandate to maximize fish and wildlife populations, then fishing and hunting management scenarios must be developed as reasonable alternatives to be considered. It is time for a reasonable approach to the management of fish and wildlife. If maximizing fish and game populations is that significant, then the opportunities for others besides motorized recreationists (who have paid their dues many times over) should be reduced. This concept is entirely reasonable and particularly when fishing and hunting closures or management would be far more effective in producing the desired outcome. We request consideration of fish and game management alternatives and a more balanced consideration of recreation versus fish and wildlife populations in the decision-making.

**Response:** The BLM is responsible for managing habitat for a variety of fish and wildlife species including game and non-game species. Montana Fish, Wildlife and Parks has the responsibility for managing the population of game species. The BLM believes that the alternatives in the Proposed RMP/Final EIS provide a range of alternatives that address the issues of recreation (including OHV use) and habitat for fish and wildlife.

#### F28

**Comment:** We would encourage the BLM to consider developing a new alternative altogether that would emphasize wildlife population habitat connectivity.

**Response:** Connectivity of wildlife populations can occur at many different scales depending on species and/or season of use. Movement corridors are described as areas of predicted movement between blocks of suitable habitat. Corridors can allow seasonal movements for a species such as elk migration between summer and winter range or provide for dispersing juveniles such as a subadult cougar who has to leave fully occupied habitat of other adult cougars.

Movement corridors may be small, such as in the case of amphibians or small mammals, or large such as with grizzly bear or big game species. If a patch of habitat is too small to support a population over time, corridors connecting patches of habitats can provide a larger habitat structure, and thus support a larger effective population.

Because of the different scales of habitat connectivity, it is difficult for the BLM to know exactly what the commenter would like the BLM to display in a new alternative. The BLM did take into consideration important wildlife movement corridors at different scales (landscape scale for large carnivores as well as riparian corridors) throughout the Butte RMP. The impacts to these corridors from management activities under the different alternatives are discussed in Chapter 4 of the Proposed RMP/Final EIS.

#### F29

**Comment:** On page 72 I read under Wildlife that “BLM would seek opportunities to convert sheep allotments to cattle allotments to protect Bighorn Sheep populations.” This is also for Alternative B, the preferred alternative. I am concerned about the ramifications of this proposal. Can the wording here be altered to reflect that the existing sheep allotments will not be targeted for conversion to cattle allotments without the cooperation and consent of the holder of the sheep allotment?

**Response:** Where bighorn sheep populations are at risk in the proposed Elkhorns ACEC (the context of this comment), the BLM would seek opportunities to convert sheep allotments to cattle allotments at the time an allotment is vacated, sold or transferred. Existing sheep

allotments would remain in effect unless the permittee is interested in working with the BLM to convert to cattle.

**F30**

**Comment:** Mountain goat habitats on BLM lands should receive special attention. Few BLM areas qualify as mountain goat habitat, but where they occur, these lands are crucial to the existence of mountain goats, such as the Sleeping Giant Area. Mountain goat population dynamics are such that every opportunity should be afforded to sustain and enhance their habitat and habitat availability. Mountain goats exist within a narrow range of population tolerances, therefore minimal disturbance or overlap of multiple uses would enhance their well being. The RMP does not address mountain goats except in the No Action Alternative (Alternative A). MFWP requests that seasonal mountain goat habitat requirements be addressed and that timing restrictions be applied in all action alternatives, consistent with the Rocky Mountain Front Interagency Cooperative Guidelines that were adopted in 1987 by the BLM, MFWP, USFS, USFWS, Nature Conservancy, Montana State University, and members of the petroleum industry.

**Response:** The BLM will follow existing policy. The seasonal timing restrictions, however, have been added to Management Common to the All Alternatives in the Proposed RMP/Final EIS. Currently, the Sleeping Giant area represents the only occupied mountain goat habitat on BLM lands in the Field Office. Since the Sleeping Giant area is within a Wilderness Study Area and an Area of Critical Environmental Concern, mountain goats would be provided adequate protection in this area.

The Wildlife section of Chapter 3 provides a description of mountain goat habitat in the Butte Field Office.

**F31**

**Comment:** Some recommendations to BLM and USFS (and other land management agencies) from the WSWG report that are pertinent to proposals being made in this RMP revision in relation to bighorn sheep include:

1. Joint federal land management agency guidelines on management of domestic sheep and goats in wild sheep habitat should be developed and included in both broad agency policy documents (e.g., USFS Manuals) and local Forest Plan/Resource Management Plans. Once guidelines have been approved, there should not be an automatic “sunset” provision or expiration date. If there is a specified longevity required by federal policy, and if appropriate and timely review cannot be completed, the existing guidelines should remain in effect, rather than becoming obsolete.
2. Land management agencies responsible for domestic sheep and goat grazing allotments, trailing routes, vegetation management (e.g., weed control, enhancement of conifer regeneration), use as pack stock, or any other uses involving domestic sheep and goats should only

authorize such use where mechanisms are in place to achieve effective separation with wild sheep.

3. Land Use/Resource Management Plans, where relevant, should specifically address the issue of potential domestic sheep and goat interaction with wild sheep. Land use plans should evaluate the suitability of permitting activities involving domestic sheep and goats. Plans should address this issue and identify general areas of public land where domestic sheep and goats should not be permitted for weed control, commercial grazing, recreational packing, conifer regeneration vegetation management, and other management activities.

4. Where mandatory buffer zones (frequently cited as a minimum of 9 air miles [13.5 km]) between domestic sheep and goats and wild sheep have been used to ensure effective separation, it should be recognized that buffer zones apply to herds or populations of wild sheep, rather than wandering individuals (e.g., most often sub-adult bighorn rams).

5. In some cases, buffer zones have been a very effective strategy to reduce the opportunity for interaction between wild sheep and domestic sheep and goats. However, in continuous wild sheep habitat, where wild sheep movements may eventually exceed prior expectations, buffer zones may not be the most effective or practical tool (Schommer and Woolever 2007).

6. Land management agencies should clearly define the process, protocols, and timelines for short-term or emergency management actions when intervention is needed to minimize or eliminate the risk of interaction between wild sheep and domestic sheep and goats.

Given these recommendations from WAFWA, we support the management practice expressed in Alternative B regarding no new sheep/goat allotments occurring within a five-mile buffer of occupied bighorn sheep habitat. However, we strongly recommend going with the management practice put forth in Alternative C that sheep and goats could not be used for weed control within four miles of occupied native sheep habitat.

In short, FWP recommends against any action that may increase the likelihood of increasing contact between domestic sheep and goats and bighorn sheep.

**Response:** The BLM believes that Alternative B provides adequate protection to bighorn sheep. The management proposed under Alternative B meets or exceeds the protection provided by the direction in the current BLM Instruction Memorandum No. 98-140 Revised Guidelines for Management of Domestic Sheep and Goats in Native Wild Sheep Habitats (1998) under which the BLM currently operates. Should this policy be updated, the Butte Field Office would operate under that updated direction. If domestic sheep or goats are used for weed control, the BLM would undergo considerable coordination and effort during implementation to ensure that wild sheep are safeguarded.

**F32**

**Comment:** East Helena TPA: “Under Alternative C, soil erosion from roads would be reduced more than under any other alternative because the lowest mileage of roads in the high and moderate erosion categories would be left open (4.6 miles combined), while the greatest mileage in these categories combined would be closed (43.9 miles) and decommissioned (4 miles) of all alternatives.

Weeds: Alternatives B and C would have the same effects and both would result in fewer weeds than Alternatives A and D.

Wildlife: Actual road density in elk winter range would be 0.3 mi/mi<sup>2</sup> in Alternative C, far less than other alternatives. Under Alt. C there would be substantially more acres of functional winter range. The quality and quantity of winter range would improve more than all other alternatives, and the amount of big game security habitat would be greater (p. 531). Fragmentation of habitat would be least under Alternative C (p. 533).

Please consider modifying your preferred alternative to provide for conditions more favorable towards wildlife, similar to what is found in your Alternative C.

**Response:** The BLM is already proposing to reduce road densities in this area which should improve wildlife habitats. The Preferred Alternative attempts to balance the needs of providing motorized access while providing for resource protection.

**F33**

**Comment:** Recreation Opportunity Spectrum: Alternative C is the least roaded option and would be consistent with previous concerns for wildlife and their habitat by providing the most natural acreage; but even in Alternative C, 60 percent of the landscape would be roaded and allow for moderate to heavy motorized recreation. So from a wildlife perspective Alternative C generally provides the best scenario for maintaining wildlife habitats and linkages.

**Response:** The BLM agrees that Alternative C provides the best opportunities for improving or maintaining wildlife habitats and linkage corridors. However, Alternative B remains the Preferred Alternative that best meets the BLM’s mission to provide for a range of resource uses and resource protection.

**F34**

**Comment:** The Continental Divide Trail (a Congressional Designation): receives a lesser status than Historic Trails, but because it occurs on the divide and essentially identifies the Continental Divide Wildlife Linkage Zone, it should receive greater consideration for non-motorized use and management (as per Congressional designation) to protect the integrity of its varied habitats. Relatively little BLM lands occur along the Continental Divide, but

with notable and important exceptions including: Trout Creek in the northwest Lewis & Clark Area and Marysville. We believe that these areas are at least as important and should receive status equal to or greater than “Historic Trails.”

**Response:** The BLM acknowledges the importance of the Continental Divide Trail for recreation as well as the importance of the Continental Divide for wildlife. BLM’s section of the Continental Divide Trail follows a utility corridor access road and private lands. Due to this, the BLM cannot viably propose this section of trail as non-motorized. To allow for a non-motorized recreational experience along the Continental Divide Trail in the future, both the BLM and the U.S. Forest Service may pursue moving this section of trail onto Forest Service lands.

**F35**

**Comment:** Finally, FWP would like to propose a possible alternative use for the recently acquired McMaster’s property. A possible use for this property may be as an alternative grazing allotment for domestic sheep where the existing allotment may allow for potential contact between bighorn sheep and domestic sheep. This may be a viable option for the permittee and prevent contact between domestic and wild sheep.

**Response:** The BLM believes that appropriate use of this area is as a forage reserve allotment as described in the RMP. Establishing forage reserves on BLM lands would provide the BLM flexibility in conducting vegetation treatment projects within existing general allotments while providing temporary substitute forage for permittees in forage reserve allotments as vegetation project areas are rested from livestock grazing. The McMasters property is ideal for this because it is newly acquired land and does not have any general allotments established on it at this time. The provisions for grazing forage reserve allotments do not restrict the type of livestock grazed. Criteria have been added to the Proposed RMP/Final EIS to address how BLM would determine priority for applicants applying for temporary grazing on a forage reserve allotment.

**F36**

New scientific information and analysis has emerged on the status of greater sage-grouse (*Centrocercus urophasianus*), the affects of energy development and West Nile virus on sage-grouse (Connelly et al. 2004; Naugle et al. 2006a; Naugle et al. 2006b; Holloran 2005). We provide here excerpts from these studies: Energy development for oil and gas influences sagebrush habitats by physical removal of habitat to construct well pads, roads, and pipelines. Indirect effects include habitat fragmentation and soil disturbance along roads, spread of exotic plants, and increased predation from raptors that have access to new perches for nesting and hunting. Noise disturbance from construction activities and vehicles

also can disrupt sage-grouse breeding and nesting. Development of oil and gas resources will continue to be a significant influence on sagebrush habitats and sage grouse because of advanced technological capability to access and develop reserves, high demand for oil and gas resources, and the large number of applications submitted (4,279 in fiscal year 2002) and approved each year. . . . Sage-grouse are a relatively long-lived species of upland game bird with low reproductive rates. Sage-grouse are entirely dependent on sagebrush habitats for successful reproduction and winter survival. Disease and hunting have generally not been major factors in sage-grouse population change but new information suggests West Nile Virus may pose a significant threat. . . . Approximately 56 percent of the potential pre-settlement distribution of habitat is currently occupied. The area currently occupied by sage-grouse is clearly smaller than was occupied in pre-settlement times. With most of the analysis of sage-grouse numbers, we focused on the 1965-2003 period. Although many states and provinces were collecting data prior to 1965, this 39-year range provided an opportunity to analyze data after a sample of leks had been identified and protocols for data collection had been established and implemented. Eleven of 13 (85 percent) states and provinces showed significant long-term declines in size of active leks. Similarly, eight of 10 states (80 percent) showed population declines over the same time frame. . . . Our analysis of the entire sage-grouse population indicated that sage-grouse declined dramatically from the 1960s to the mid-1980s and then tended to stabilize. This analysis indicated that these changes were often not density-independent. If trends characteristic of the 1960s through the mid-1980s continued, sage-grouse had a relatively high likelihood of being extirpated. However, those trends have not continued. As a result, data suggest sage-grouse populations in most areas have been relatively stable or slightly declining during the last 15-20 years. In many areas numbers increased between 1995 and 2003. Although there are areas that presently could be considered population strongholds, some populations are still declining rather precipitously in various portions of the species range. . . . Annual rates of change suggest a long-term decline for greater sage-grouse in western North America and support the trend information obtained from lek attendance (males/lek) data. Sage-grouse populations declined at an overall rate of 2.0 percent per year from 1965 to 2003. From 1965-85, the population declined at an average rate of 3.5 percent. From 1986 to 2003, the population declined at a lower rate of 0.4 percent and fluctuated around a level that was 5 percent lower than the 2003 population. A total of 50,566 male sage-grouse were counted on leks in 2003 throughout western North America. However, we are not optimistic about the future of sage-grouse because of long-term population declines coupled with continued loss and degradation of habitat and other factors (including West Nile Virus), (Connelly et al. 2004). Knowledge that sage-grouse avoid energy development in breeding (Naugle et al.

2006a) and wintering seasons (Naugle et al. 2006b) shows that conservation strategies to date to protect the species have been largely ineffective. An effective conservation strategy is one that limits the cumulative impact of disturbances across a landscape at all times of the year. . . . Winter habitat is limited for birds along the border of Montana and Wyoming. Movements of radio-marked birds indicate that this non-migratory population remains in small parcels of suitable habitat to breed, raise broods, and spend the winter. The most suitable winter habitat in Montana and northern Wyoming encompasses only 13 percent of total land area and has already been impacted by surface mining activities. Expansion of CBNG development threatens to extirpate birds from otherwise suitable habitats and further isolate remaining populations. Risk of complete loss of this population is high if plans proceed to develop the entire northern study area because their non-migratory status and behavioral avoidance of CBNG will leave these birds with no other options (Naugle et al. 2006b). Comparatively more undeveloped winter habitat exists further south in Wyoming (south and east of the town of Buffalo) than along the border of Montana and Wyoming. Large pieces of undeveloped habitat near Buffalo provide winter habitat for a migratory population that nest up to 28 km to the north where winter habitat is poor. Some of these same good wintering areas also contain resident populations of nesting birds that distribute themselves around active leks with >20 males in attendance. Spatially-explicit planning tools, when coupled with knowledge of bird movements and active lek locations provide a biological basis for decision-makers to formulate an effective conservation strategy for sage grouse have shown that sage-grouse either avoid energy development during the breeding season (Holloran 2005, Naugle et al. 2006) or experience rates of mortality that result in extirpation (Holloran 2005). Avoidance is typically detrimental to populations because individuals are forced into sub-optimal habitats where vital rates decline (i.e. survival and reproduction), which in turn negatively influences population growth rate, size, and persistence, and generally leaves populations with little capacity to respond to new stressors (e.g. West Nile virus). New knowledge that sage-grouse also avoid energy development during winter shows that conservation strategies to date to protect this species have been largely ineffective. Current "Best Management Practices" that place timing stipulations or limit surface occupancy next to leks still result in a human footprint that far exceeds the tolerance limits of sage-grouse. We cannot write a prescription for development for each piece of the landscape because the exact mechanisms for each source of disturbance in a gas field that results in avoidance and/or increased mortality are not known. Rather, effective conservation strategies will be those that limit the cumulative impact of disturbances at all times of the year. Size of a functional conservation area will need to be large because sage-grouse are a landscape species that require contiguous tracts of undis-

turbed habitat that meet all their seasonal life requisites. Holloran et al. (2005) found that nest distributions were spatially related to lek location, and that a 5-km buffer encompassed just 64 percent of nests. This marks a shift in our understanding of the size of area necessary to maintain a viable sage-grouse population. Thus, land managers are encouraged to think in terms of “numerous square miles” of suitable habitat rather than individual parcels of land or even an individual square mile of habitat (Naugle et al. 2006b). Greater sage-grouse in western Wyoming appeared to be excluded from attending leks situated within or near the development boundaries of natural gas fields. Declines in the number of displaying males were positively correlated with decreased distance from leks to gas-field-related sources of disturbance, increased levels of development surrounding leks, increased traffic volumes within 3 km of leks, and increased potential for greater noise intensity at leks. Displacement of adult males and low recruitment of juvenile males contributed to declines in the number of breeding males on impacted leks. Additionally, responses of predatory species to development of gas fields could be responsible for decreased male survival on leks situated near the edges of developing fields and could extend the range-of-influence of gas fields. Generally, nesting females avoided areas with high densities of producing wells, and brooding females avoided producing wells. However, the relationship between selected nesting sites and proximity to gas field infrastructure shifted between 2000 - 2003 and 2004, with females selecting nesting habitat farther from active drilling rigs and producing wells in 2004. This suggests that the long-term response of nesting populations is avoidance of natural gas development. Most of the variability in population growth between populations that were impacted and non-impacted by natural gas development was explained by lower annual survival buffered to some extent by higher productivity in impacted populations. Seasonal survival differences between impacted and non-impacted individuals indicates that a lag period occurs between when an individual is impacted by an anthropogenic disturbance and when survival probabilities are influenced, suggesting negative fitness consequences for females subjected to natural gas development during the breeding or nesting periods. I suggest that currently imposed development stipulations are inadequate to protect greater sage-grouse, and that stipulations need to be modified to maintain populations within natural gas fields. My results support the suggestion that greater sage-grouse leks situated relatively near extractive mineral developments ultimately will become unoccupied. The evidence suggests that natural gas field development within 3-5 km of an active greater sage-grouse lek will lead to dramatic declines in breeding populations. Overall declines in male lek attendance approached 100 percent (i.e., lek inactivity) when distances from leks to drilling rigs, producing wells, and main haul roads decreased, and as the number of quadrants containing wells within 5 km and the total length

of main haul road within 3 km of leks increased. Conversely, as distances from leks to disturbance sources increased and the level of development surrounding leks decreased, male lek attendance remained stable. These observations were similar to 3 lek complexes in southern Canada that were disturbed by oil and gas activities occurring within 200 m between 1983-1985; none of these leks has been active since the disturbance (Braun et al. 2002, Aldridge and Brigham 2003). In northern Colorado, the numbers of males counted on 3 of 4 leks within 2 km of coal mine development declined as mining activity increased (Braun 1986, Remington and Braun 1991). Following the increase in activity, 1 lek became inactive in 3 years, 1 lek became inactive in 5 years, and 1 lek declined by approximately 88 percent in 4 years (Braun 1986 Remington and Braun 1991). Further, 2 of the 3 most heavily impacted leks in my study became essentially inactive over a 3-4 year period (Holloran and Anderson In Press). Greater sage-grouse leks appeared to be negatively influenced if situated within 5 km of a drilling rig that was operating during the breeding season. Male lek attendance declines were not associated with drilling rig visibility, suggesting that something other than the potentially negative effects of structure (Braun 1998) were influencing drill-disturbed leks. (Holloran 2005). We report unexpected impacts of West Nile virus (WNV) on radio-marked greater sage-grouse (*Centrocercus urophasianus*), a species that has declined 45-80 percent and is endangered in Canada and under current consideration for federal listing in the US. We show that WNV reduced late-summer survival an average of 25 percent in four radio-marked populations in the western US and Canada. Serum from 112 sage-grouse collected after the outbreak show that none had antibodies, suggesting that they lack resistance. The spread of WNV represents a significant new stressor on sage-grouse and probably other at-risk species. While managing habitat might lessen its impact on sage-grouse populations, WNV has left wildlife and public health officials scrambling to address surface water and vector control issues in western North America (Naugle 2004). Summaries of significant findings in the-above sage-grouse studies:

#### Breeding Activities:

Holloran (2005 - western WY)

§ Male lek attendance declined as distance from leks to drilling rigs, producing wells and haul roads decreased and as densities of those infrastructure facilities increased. Effects were detectable out to various distances (3 - 6.2 km) depending on the disturbance variable. These observations were similar to that reported for sage-grouse associated with energy development in Alberta (Aldridge and Brigham 2003) and Colorado (Remington and Braun 1991).

§ Well densities exceeding 1 producing well every 283 ha (1 well/699 acres) appeared to negatively influence male lek attendance.

§ Main haul roads within 3 km of leks negatively influenced male lek attendance largely through increased traffic volume.

§ Male attendance decreased with traffic volume of < 12 vehicles per day and leks became inactive when volume exceeded 75 vehicles per day.

Naugle et al. (2006 - northeast WY)

§ Among leks of known status in 2004-2005, only 34 percent remained active within CBNG fields, compared to 83 percent of leks adjacent to or outside CBNG fields.

§ From 2000-2005, leks in CBNG fields had 11-55 percent fewer males per active lek than leks outside CBNG development. All known remaining leks with  $\geq 25$  males occurred outside CBNG fields in 2005.

§ Findings show that CBNG development is having negative effects on sage-grouse populations over and above those of habitat loss caused by wildfire, sagebrush control, or conversion of sagebrush to pasture or cropland. Moreover, the extent of CBNG development explained lek inactivity better than power lines, pre-existing roads, or West Nile virus mortality.

§ Research findings show a lag effect, with leks predicted to disappear, on average, within 4 years of CBNG development. Regardless of other stressors, 22 of 24 lek complexes (92 percent) did not go inactive until after CBNG development came into the landscape.

§ Leks typically remained active when well spacing was  $\geq 500$  acres (1.3 wells per section), whereas leks typically were lost when spacing exceeded 4.2 wells per section.

Summary Statement: During the breeding season, male sage-grouse are sensitive to disturbance during both the exploratory and production phase of oil and gas development. Levels of sensitivity as measured by the distance at which no change in male attendance was detectable, vary by factor, but are significant at distances of less than 3 km. In the Powder River Basin, impacts to lek activity included an observed 50 percent decrease in the number of active leks within developed gas fields as well as a 50 percent reduction in the average number of males present on remaining leks. There was a discernable time lag between development and observed declines. Changes in numbers were likely an artifact of both distribution shifts in attendance as well as changes in survival and recruitment rates. Existing stipulations that restrict surface occupancy within .4 km (.25 mile) of an active lek are insufficient to maintain populations within developed oil and gas fields. Current well-spacing of 32 - 64 ha (80 - 160 acres) appear to be several times greater than breeding sage grouse populations can tolerate. Supports utilizing a minimum 1.6 km (1 mile) buffer of no surface occupancy around existing leks and preferably, utilize a minimum 3 km (1.8 mile) buffer. Recognize that development activities within 3 km will have negative impacts on sage grouse populations.

Nesting and Brood Rearing (Holloran and Anderson 2005), (Holloran 2006):

§ Sage-grouse nest locations are spatially related to lek locations and a 5 km buffer included 64 percent of known nests.

§ The substantial number of females nesting > 5 km from a lek could be important for population viability.

§ Observed lek to nest distances was not related to lek size.

§ Closest known lek to nest distance was greater for successful nests than destroyed nests.

§ Nests located < 1 km from another known nest tended to have lower success probabilities.

§ Nesting females strongly avoided areas with high well densities but adult females can exhibit strong nest site fidelity. Mean annual survival rates for females suggest that 5 to 9 years may be required to realize ultimate nesting population response to development activities.

Lyon and Anderson 2003:

§ Female sage-grouse disturbed by natural gas development during the breeding season had lower nest initiation rates.

Schroeder and Robb 2003:

§ Nest distribution patterns may change as a result of habitat alteration and fragmentation and the 5 km buffer should be considered relevant only for contiguous sagebrush habitats.

Aldridge and Boyce 2007.

§ Sage-grouse chick survival decreased as well densities increased within 1 km of brooding locations. These brood-rearing areas acted as habitat sinks where recruitment was poor.

§ Low nest success (39 percent) and low brood survival (12 percent) characterized sage-grouse vital rates in habitat fragmented by energy development in southern Alberta.

Summary Statement: Female sage-grouse are spatially grouped around a lek or lek complex during the nesting season. Females tend to move away from leks in selecting nest locations and to an extent, those movements appear to improve their rates of nest success. However, females in developed habitat moved twice as far as females in undisturbed habitat and exhibited lower rates of nest initiation. Females also select nest locations that segregate their nests from those of adjacent hens and the probability of successfully hatching those nests increases when that distance is > 1 km. When females have suitable and contiguous nesting habitat to select from, slightly over 60 percent of nests occur within 5 km of the lek. This strategy of mutual avoidance reduces nest densities and therefore reduces probability of detection by nest predators. However, land use practices that fragment sagebrush habitat and reduce the amount of suitable nesting cover may lead to increased densities of nesting birds and lower rates of nest success. Even if 5

km buffers are employed around existing leks, increased development and production activity in the zone beyond that buffer will impact the remaining 40 percent of nesting hens and potentially compromise the success of those birds nesting within that 5 km buffer based on the density dependent factors noted above. Stipulations restricting seasonal surface use within 2 miles of an active lek during the breeding and nesting period (1 March - 15 June) are inadequate to maintain sage-grouse populations within developed habitat.

Supports utilizing a 6.9 km (4 mile) buffer around leks to protect nesting and brood rearing habitat for a minimum of 70 percent of the nesting hens associated with a lek from March 1 through June 30. This protection should apply to both initial development and subsequent annual development and maintenance operations.

Winter Habitat Use (Naugle et al. unpub. report 2006):

§ In NE WY, predictive winter habitat use models based on vegetation and topographic features were strongly correlated with observed sage-grouse locations ( $R^2 = 0.96$ ).

§ Sage-grouse select for large intact and relatively flat expanses of sagebrush as winter habitat and avoid more rugged terrain and conifer habitat. Given that severe winter conditions (deep snow, low temperatures) could force birds into more rugged terrain, topographic variables should be considered in regions outside the PRB.

§ After controlling for vegetation and topography, the addition of a variable quantifying the extent of energy development showed that sage-grouse avoid energy development in otherwise suitable habitat. At 80 acre well-spacing birds were found only in the highest quality winter habitat that may not be available in all wintering locations.

§ Avoidance of CBNG in winter and the high likelihood of lek loss in spring threaten to severely impact populations along the Montana/Wyoming border where models classify only 13 percent of area as high quality winter habitat.

Summary Statement: Sage grouse are sensitive to energy development associated with winter habitat. Recent advances in modeling efficiencies provide a tool to assess important winter habitat and the spatial relationship between known leks and potential winter habitat. Sage grouse in this region can be non-migratory when suitable seasonal habitats occur in reasonable juxtaposition while other population segments must move greater distances (and across jurisdictions) when those habitats are unavailable. In some cases, this dissimilar distribution pattern may involve birds using the same lek complex or a shared winter range. Seasonal restrictions will not be effective at mitigating infrastructure development if the level of development is moderate to intense and overlays important winter habitat.

West Nile Virus (Naugle 2004):

§ West Nile virus (WNV) mortalities in radio-marked sage-grouse each year since 2003 (2-25 percent per yr)

show that disease is a new and likely permanent stressor to sage-grouse populations. Mortality from

WNV may have population-level impacts because female survival plays a vital role in population growth. Mortality events from WNV in 8 of 11 states since 2003 support the need to conserve the sage-grouse across their remaining range to reduce the risk of impacts from disease.

§ Research shows that CBNG ponds pose a threat to sage-grouse because they provide habitat for mosquitoes that spread WNV. Landscapes with the highest mosquito densities also harbor the highest infection rates in *Cx. tarsalis*, the species of mosquito that spreads the disease. Larval *Cx. tarsalis* were produced at similar rates in CBNG and natural sites, whereas CBNG ponds produced *Cx. tarsalis* over a longer time period than agricultural irrigation.

Inference: West Nile Virus should be considered endemic across the northern Great Plains portion of the range of greater sage-grouse. The presence of this disease has added another stressor to sage grouse population dynamics. The prevalence of the disease and associated level of mortality in sage-grouse appears to vary considerably from year to year based on environmental conditions. However, CBNG ponds do provide a much more consistent set of conditions favorable to the spread of WNV even in years of low natural precipitation. Conservation actions need to consider the relationship between CBNG and WNV and attempt to mitigate those conditions favorable to WNV. Supports reducing potential of CBNG ponds to produce late summer mosquito populations that vector WNV. The DSEIS fails to consider groundwater reinjection as an alternative which could limit some sources of West Nile virus infection. New Science on Vulnerability of Shrub-Steppe Habitat and Avifauna Degradation, fragmentation, and loss of native sagebrush (*Artemisia* spp.) landscapes have imperiled these habitats and their associated avifauna. Historically, this vast piece of the Western landscape has been undervalued: even though more than 70 percent of all remaining sagebrush habitat in the United States is publicly owned, only 3 percent of it is protected as federal reserves or national parks. We review the threats facing birds in sagebrush habitats to emphasize the urgency for conservation and research actions, and synthesize existing information that forms the foundation for recommended research directions. This research is essential because we already have seen that sagebrush habitats can be altered by land use, spread of invasive plants, and disrupted disturbance regimes beyond a threshold at which natural recovery is unlikely. Research on these issues should be instituted on lands managed by state or federal agencies because most lands still dominated by sagebrush are owned publicly. In addition to the challenge of understanding shrub steppe bird-habitat dynamics, conservation of sagebrush landscapes depends on our ability to recognize and communicate their intrinsic value and on our resolve to conserve them (Knick, et al. 2003).

Thank you for the opportunity to comment on the draft Butte RMP. We hope these comments and new scientific findings and recommendations will be incorporated into final RMP.

**Response:** The BLM manages very little sage grouse habitat in the Butte Field Office. Approximately 9 percent (2,354,572 acres) of the statewide sage grouse habitat is located within southwestern Montana including lands in the BLM's Butte and Dillon Field Offices. Within the Planning Area boundary of the Butte Field Office, current sage grouse habitat is located on roughly 340,000 acres (including all ownerships). Sage grouse breeding and nesting habitat in the Decision Area is found on approximately 67,000 acres and is predominately in the Big Hole and Yellowstone watersheds. BLM surface acres include approximately 2 percent (1,250 acres) of the breeding and nesting habitat and 6 percent (21,700 acres) of general sage grouse habitats within the Planning Area. While there are several known leks within the Planning Area boundaries, no leks have been documented on BLM lands since 1992.

The BLM has analyzed a range of alternatives that would mitigate impacts to sage grouse in the RMP. Under the Preferred Alternative (Alternative B), the BLM would provide mitigation for sage grouse by applying three different stipulations. Winter/spring range would be protected with a timing limit stipulation which would restrict activity in that range from December 1 through May 15. Leks, if any are ever discovered on BLM land, would be protected with a no surface occupancy stipulation extending ¼-mile out from the lek. Breeding habitat would be protected with a timing limit stipulation extending from March 1 through June 30 with a three mile buffer around leks. Essentially, due to the timing limitation stipulations, activity would be limited within the vicinity of leks from December 1 through June 30, a seven month interval. The most restrictive alternative analyzed in detail in the RMP (Alternative C) would make sage grouse winter/spring range unavailable for lease, and would provide for a ½-mile no lease buffer around leks. A no surface occupancy stipulation would apply to breeding habitat with a three mile buffer zone.

The BLM believes that with the use of the stipulations under consideration in the Butte RMP and best management practices, impacts to sage grouse and their habitat would be minimized. The BLM notes that the reasonably foreseeable development scenario prepared for the Butte RMP forecasts only up to seven producing deep gas wells on federal mineral estate. These wells would be spaced at one well for every 640 acres which is state-wide spacing for gas wells. Development would not be as concentrated as in the study areas described in the scientific studies mentioned in the comment. Any other federal wells would be dry holes that would be reclaimed. The oil production is forecast for state or fee minerals. Because of the small amount of sage grouse

habitat present, lack of known leks, small amount of forecasted oil and gas exploration/development activity foreseen, and protection provided by the proposed stipulations, the magnitude of any potential effects on sage grouse associated with oil and gas development from the Butte RMP would likely be comparatively minor.

### F37

**Comment:** FWP believes that no record of decision should be issued until the following concerns have been addressed satisfactorily in any selected alternative.

- 1) sage grouse strutting grounds (leks) should have a 1 mile NSO or be made unavailable for leasing and should have timing stipulations applied within a 4 mile radius in order to protect nesting areas, all sage grouse wintering areas should have an NSO stipulation attached or be unavailable for leasing;
- 2) all BLM minerals that occur under or adjacent within 1 mile to FWP land interests including state parks, wildlife management areas, fishing access sites, land owner incentive contract areas, fee title land, easements and or leased and FWP recreationally managed areas should have a NSO stipulation attached or be unavailable for leasing,
- 3) all conservation easements (FWP and private organization) especially those where Federal funding has been applied to secure the easement should have an NSO stipulation attached or be unavailable for leasing,
- 4) all flood plains, wetland and riparian areas should have NSO stipulations attached, and
- 5) any river eligible for WSA should have the entire drainage or river corridor designated as NSO.

Likewise, FWP is currently pursuing the development of crucial fish and wildlife areas and migratory corridors throughout Montana. FWP would appreciate the insertion of language into the final ROD that would allow this new information, when available, to be considered and included in the RMP and that at that time these areas would be considered for augmentation of stipulations as designated under the record of decision, including NSO if necessary.

Finally, all of the above recommendations should be given especially close consideration in the areas identified on the map insert page 884 that have moderate to high potential for development of oil and gas resources. It should be noted that areas 2 and 3 on the reference map contains large blocks of surface conservation easements established using Federal Funding. Likewise the BLM should consider language in the Butte RMP that will incorporate the need to recognize the future ROD from the BLM statewide CBM SEIS as it relates to area 5 along the Bozeman Pass.

**Response:** The numbered items from the comment are addressed in sequential order below.

1) The BLM manages very little sage grouse habitat in the Butte Field Office. Approximately 9 percent (2,354,572 acres) of the statewide sage grouse habitat is located within southwestern Montana including lands in the BLM's Butte and Dillon Field Offices. Within the Planning Area boundary of the Butte Field Office, current sage grouse habitat is located on roughly 340,000 acres (including all ownerships). Sage grouse breeding and nesting habitat in the Decision Area is found on approximately 67,000 acres and is predominately in the Big Hole and Yellowstone watersheds. BLM surface acres make up approximately 2 percent (1,250 acres) of the breeding and nesting habitat and 6 percent (21,700 acres) of general sage grouse habitats within the Planning Area. While there are several known leks within the Planning Area boundaries, no leks have been documented on BLM lands since 1992.

The BLM has analyzed a range of alternatives that would mitigate impacts to sage grouse in the draft RMP. Under the Preferred Alternative (Alternative B), the BLM would provide mitigation for sage grouse by applying three different stipulations. Winter/spring range would be protected with a timing stipulation which would restrict activity in that range from December 1 through May 15. Leks, if any are ever discovered on federal mineral estate lands, would be protected with a no surface occupancy stipulation extending ¼-mile out from leks. Breeding habitat would be protected with a timing limit stipulation extending from March 1 through June 30 with a three mile buffer around leks. Essentially, due to the timing limitation stipulations, activity would be limited within the vicinity of leks from December 1 through June 30, a seven month interval. The most restrictive alternative analyzed in detail in the RMP (Alternative C) would make sage grouse winter/spring range unavailable for lease with a ½-mile no lease buffer around leks. A no surface occupancy stipulation would apply to breeding habitat with a three mile buffer zone.

The BLM believes that with the use of the stipulations under consideration in the Butte RMP and best management practices, impacts to sage grouse and their habitat would be minimized. The BLM notes that the reasonably foreseeable development scenario prepared for the Butte RMP forecasts only up to seven producing deep gas wells on federal mineral estate lands. These wells would be spaced at one well for every 640 acres. Compared to other areas with more extensive oil and gas resources, this level of development is sparse and widely spaced, and would have fewer impacts on sage grouse overall than operations in more intensively developed areas.

2) The BLM has changed the existing no surface occupancy stipulation (within ¼-mile of developed recreation sites) in Alternative B to make it apply to "all developed recreations sites" with underlying federal minerals. As revised it would also apply to state and local sites and provide the same level of protection that the BLM pro-

vides to its own sites. Under the Preferred Alternative, wildlife management areas would be protected with a No Surface Occupancy stipulation. For landowner incentive areas, the BLM approach is to stipulate the values needing protection, rather than the geographic areas covered due to the fact that the areas periodically shift location. Therefore, if incentive areas include wildlife habitat, we would apply the appropriate stipulations for sage grouse, crucial winter range, etc. The BLM has been informed by MFWP that if MFWP holds land in fee, it is most likely subject to some stipulated designation and therefore the BLM believes that existing stipulations should be adequate.

3) For conservation easements we will follow our own BLM guidance on the "Acquisition and Stewardship of Conservation Easements" (H-2100-1), which indicates that the impact of mineral development on conservation values will be evaluated on a case-by-case basis. The legal language of each individual conservation easement may have addressed severed mineral estate, if it exists, and set parameters for surface occupancy, extraction and restoration within the extent that mineral laws apply. Additionally, mineral status is typically identified and considered during the easement development and this offers a chance to coordinate for new easements.

4) The Preferred Alternative does apply a no surface occupancy stipulation to floodplains, wetlands, and riparian areas.

5) The comment notes that "any river eligible for WSA should have the entire drainage or river corridor designated as NSO." The BLM believes that the comment was really making a reference to Wild and Scenic River (WSR) designations. The BLM notes that a river segment is identified as eligible based on the river area containing "outstandingly remarkable" values. All values should be clearly river related. That is, they should have the following characteristics:

- Be located in the river or on its immediate shorelands (for the purposes of this study, the preliminary boundary is 0.25 mile on either side of the river);
- Contribute substantially to the functioning of the river ecosystem; or
- Owe their location or existence to the presence of the river.

Under the Preferred Alternative, a corridor ½-mile on either side of the active river channels recommended as suitable (not eligible) river segments for WSR designation are proposed for a No Surface Occupancy stipulation.

After the numbered items, the comment mentioned that FWP is currently developing crucial fish and wildlife areas and migratory corridors throughout Montana, and that FWP would appreciate consideration of this information in the future. The BLM is very interested in this

information and when such information is available, the BLM will assess it and determine whether it necessitates an update to all existing RMPs; given that there would be potential impacts to other allocations, there isn't a way to build that data into the Butte RMP. Of course the stipulations ultimately selected in the Record of Decision for the Butte RMP would be applied to new values (i.e., newly found leks, special status fish populations, etc.).

Concern is expressed in the comment about the areas identified in the RMP as having the highest potential for oil and gas. Management prescriptions identified in the RMP apply to BLM minerals on a Field Office-wide basis and will be given close consideration in all parts of the Field Office. The areas identified on page 884 of the Draft RMP were highlighted to help improve the analysis in the document.

The comment expresses the desire that the Butte RMP recognize any future ROD from the BLM statewide Coal Bed Natural Gas Supplemental EIS as it relates to "Area 5" along the Bozeman Pass. No part of the SEIS planning area lies within the Butte Field Office and as such the BLM will not be carrying out this action. However, the BLM notes that there is no reasonably foreseeable chance for coal bed natural gas from federal leases to be produced in this area because the BLM controls almost no mineral estate in the area, and the Gallatin National Forest would be unable to lease due to the lack of a leasing document.

### F38

**Comment:** I thought it was already well established in the minds of most government employees responsible for managing our public lands, the importance of timber areas adjacent to primary winter-spring foraging areas for elk and mule deer as well as wild sheep. Timber cover is essential to save on energy levels with foraging areas close to cover under extreme temperatures. We also have a 15- year cooperative research project in which BLM participated and final recommendations were published in "Coordinating Elk and Timber Management". This document was signed by the BLM state director as well to be used as a guideline for timber management on public lands in Montana. BLM in Butte considers second growth Douglas fir (COVER) "encroachment" that must be dealt with accordingly. BLM again provided no literature references to support their opinions and wishful thinking. The 15-year cooperative project with recommendations BLM said they would follow is not even mentioned in the 11# document.

**Response:** The Coordinating Elk and Timber Management Study (1985) referenced by the commenter is cited in Chapter 2 of the Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species section under Alternative A. This study, along with more recent literature and research, was used to identify appropriate activities within elk habitats as well as to ad-

dress the effects of management actions in the Proposed RMP. For example, The Coordinating Elk and Timber Management Study, along with more recent literature, discusses security habitat, road location, road density and closures, vegetative management and winter range. All aspects of this study and other related research are cited and used throughout the RMP.

Site-specific projects will continue to consider The Coordinating Elk and Timber Management Study along with other relevant research and literature during site specific project analysis.

### F39

**Comment:** We support proposed direction in the Draft RMP/EIS regarding retention of adequate snags for wildlife habitat. The RMP states that snag management would be emphasized (page 27) and that there should be "abundant snags and downed logs" with the preferred alternative (page 29), and that impacts to snags and downed woody material will be minimized (page 40), and that the BLM would follow the Forest Service's Northern Region Snag Management Protocol (page 44).

We are also pleased that the direction for timber salvage indicates that when salvage is proposed in dead and dying forests that, "contiguous acres of undisturbed standing and down woody material would be retained in adequate amounts for those wildlife species that depend on this type of habitat" (page 30). This type of direction for retention of undisturbed standing and downed wood material in adequate amounts for wildlife is good, although it appears that such direction should be applicable to general forest and woodland management as well, and not just timber salvage.

**Response:** Although the management prescription raised by the comment is found under the subheading of "Timber Salvage" it would be applicable to all general forest and woodland management.

### F40

**Comment:** We support protection of old growth habitats that maintain and restore large, native, late-seral overstory trees and forest composition and structure within ranges of historic natural variability (e.g. Ponderosa pine). Old growth tree stands are ecologically diverse and provide good breeding and feeding habitat for many bird and animal species, which have a preference or dependence on old growth (e.g., barred owl, great gray owl, pileated woodpecker). Much old growth habitat has been lost. It is important that management direction prevent continued loss of this habitat and promote long-term sustainability of old growth stands, and restore where possible the geographic extent and connectivity of old growth (e.g., using passive and active management-such as avoiding harvest of large old growth trees, leaving healthy larger and older seral species trees, thinning and underburning to reduce fuel loads and

ladder fuels in old growth while enhancing old growth characteristics). Private lands outside the federal land boundary have often not been managed for the late-seral or old growth component, so federal lands may need to contribute more to the late-seral component to compensate for the loss of this component on other land ownerships within an ecoregion.

The draft RMP states that old forest structures would be managed in a sustainable manner (Table 1-5, page 9), and that old forest structures would be emphasized during forest management, and that old forests would be retained and protected from uncharacteristically severe wildland fires and insect and disease epidemics (page 27). The draft RMP also states that the preferred alternative would provide direction to maintain and promote old forest structure and conditions through active treatments and restoration activities (page 29), and that actions would be designed to develop and maintain stand structures that are relatively complex with highly variable tree densities, healthy and diverse understory composition (page 29).

This language provides a level of protection to old growth habitats, but may be subject to varying interpretations, and does not provide optimally clear direction to protect or restore old growth or late seral stage forest habitats. We encourage the BLM to consider additional direction that would provide clearer direction for protection and/or restoration of old growth or late seral stage habitats within historic ranges of natural variability. For example, “BLM will strive to maintain and/or restore old growth habitat within historic range of variability to maintain and/or enhance habitat for old growth dependent species.”

**Response:** The BLM agrees with the comment and has adopted the following modified wording related to old forest structure in Chapter 2 of the RMP:

“The BLM would strive to maintain and/or restore stands with old forest structure within historic range of variability to maintain and/or enhance habitat for old growth dependent species.”

#### F41

**Comment:** MWF believes that the BLM should establish a minimum 5-10 mile buffer zone around inventoried bighorn sheep core areas and not issue sheep grazing allotments to afford the greatest protection for bighorn sheep against contracting disease from domestic sheep in whichever alternative BLM chooses.

**Response:** BLM Instruction Memorandum No. 98-140 provides guidelines for the management of domestic sheep and goats in native wild sheep habitats. The Instruction Memorandum identifies that native wild sheep and domestic sheep or goats should be spatially separated to reduce the potential of interspecies contact. The Instruction Memorandum also states that when reviewing new domestic sheep or goat grazing permit applica-

tions or proposed conversions of cattle permits to sheep or goat permits in areas with established native wild sheep populations, buffer strips surrounding native wild sheep habitat should be developed, except where topographic features or other barriers minimize physical contact between native wild sheep and domestic sheep and goats. No minimum buffer strip widths are identified in the Instruction Memorandum but buffer strips could range up to 9 miles.

All alternatives would follow the Instruction Memorandum but the Preferred Alternative would provide guaranteed protection to wild sheep with a mandatory 5 mile buffer between wild sheep habitat and new domestic sheep or goat allotments. The distance could be greater if determined necessary during site specific analysis.

#### F42

**Comment:** BLM did not mention rainbow x cutthroat trout and brook trout another important species and habitat. What about the brook trout fisheries in Moose Creek and importance of beaver dams? What about the belt of public land along the Big Hole River in the Maiden Canyon area accessed by the Ponderosa Road? This BLM public land is adjacent to a nationally known blue ribbon trout stream. All fish habitat must be considered not what BLM chooses.

**Response:** All fish habitat was considered in the RMP. The Fish section of Chapter 3 in the RMP provides a description of fish species and habitats within the Butte Field Office. A table from the Analysis of the Management Situation indicating all fish species found in the Butte Field Office and their distributions has been added to the Proposed RMP/Final EIS. The role of beaver dams is described in Wetlands and Riparian Communities section of Chapter 3.

Reference to “blue ribbon” streams is located in the Recreation section of Chapter 3 in the RMP.

#### F43

**Comment:** The final document would be improved by including species-specific impact discussion rather than providing general assumptions, such as (Volume II, page 535, right column, 4th paragraph), “...Natural disturbances are typically followed by periods of stability, during which fish habitats and populations recover. Population recovery in disturbed streams may be facilitated by fish immigration from nearby drainages less affected by the catastrophic event [fires, floods, drought].”

**Response:** Many of the types of impacts or effects to fish species would be the same or similar under the different alternatives. For example, an activity that increases fine sediment to a fish bearing stream would have the same general effect to the majority of fish species common in the Butte Field Office, such as degradation of spawning habitat. Because of this, those effects

that could have a similar impact on many different fish and other aquatic species are discussed under the Fish section (Effects Common to All Alternatives) of Chapter 4 in the RMP.

Some specific impacts and threats to sensitive fish species, however, are described in Chapter 3 under Special Status Species. Some specific discussions related to fish species are also found in Chapter 4 under Special Status Species (within the Fish subsections of the different alternatives).

## Forest and Forest and Woodland Vegetation

### G1

**Comment:** Do the visual change maps also include changes in trees from green evergreens to red and brown evergreens? If change is not allowed or acceptable in some of these areas, then what is BLM doing to implement a program to prevent the changes in tree color that are occurring. Does it mean that BLM will actually start managing the forests in a responsible manner again with timber harvesting, spraying, or some other effective means to prevent the continuing change in tree color, which results in major visual impact?

**Response:** The visual maps depict the proposed Visual Resource Management Classifications for the action alternatives. These classifications establish varying degrees of modification allowed for classified landscapes. The primary focus of this management pertains to minimizing visual impacts from human rather than natural caused actions. BLM will strive to minimize visual resource impacts regardless of cause where feasible opportunities and budgets allow. Priorities for forest treatments will generally be driven by vegetation and fuel treatment objectives rather than visual resources. In Chapter 2, under Vegetation Communities, Management Common to All Alternatives, in the Forests and Woodlands section, the RMP indicates that vegetative treatments will be managed to reduce the occurrence of unnaturally large and severe wildland fires and insect outbreaks. Stands with characteristics indicating a substantial risk for developing epidemic levels of insect and disease would be high priority for treatment. Reducing these types of occurrences would also reduce the acres of dead and dying (red) trees on the landscape.

### G2

**Comment:** In the Elkhorn Mountains promote elk use in forested stands in the late-summer and fall by promoting palatable foraging habitat, where appropriate, through thinning and prescribed fire.

**Response:** At least some portion of the Elkhorn Mountains would be managed as an ACEC under all action alternatives in the RMP. Vegetation treatments would be geared toward improving upland and riparian habitat quality and resiliency. In many cases this would likely

entail reducing stem densities in forested stands which would promote development of palatable foraging species on the forest floor. It would also entail treating grassland and shrubland habitats to reduce conifer encroachment and promote palatable forage species in these habitats as well.

### G3

**Comment:** In the Elkhorn Mountains thin known areas of dense, thick conifer regeneration stands in order to open areas for use by elk and minimize elk use of private land. Known areas include Warm Springs, Upper Crow Creek, Staubach Creek, Sheep Creek, and other areas of prior fire activity.

**Response:** The Preferred Alternative of the RMP allows for conducting vegetation treatments such as those described by the comment. Treatment of specific areas in the Elkhorns would be addressed separately in project level NEPA analyses, outside the scope of the RMP.

### G4

**Comment:** EPA supports the draft RMP Forests and Woodlands goal to restore and/or maintain the health and productivity of public forests to provide a balance of forest and woodland resource benefits, as well as wildlife and watershed needs to present and future generations (page 17). We support management that moves vegetative composition, structure, pattern, and function within historic ranges of variability and toward long-term ecological sustainability, and reduced risk of uncharacteristically large and severe wildland fires.

Management should be based on understanding and consideration of natural disturbance processes (e.g. fire, insects, disease), including the intensity, frequency, and magnitude of disturbance regimes: natural succession and disturbance regimes: and ecosystem processes (such as the flows and cycles of nutrients and water) and their dynamics.

Efforts should be made to bring the intensity, frequency, and magnitude of disturbance regimes for all these natural disturbance processes (e.g. fire, insects, disease) within the range of natural or historic disturbance levels. Among the information to consider and analyze are:

1) Normal fire return intervals and mortality levels from disease or insects:

2) Post-treatment landscape vs. desired forest age class, composition, structure (How far outside the natural range of variability and disturbance regimes are areas to be treated? What forest types (e.g. cold, moist, or dry), stand densities, and species composition are to be treated? Do these vary from similar sites that have experienced natural disturbances? Is vegetation management directed at density management, thinning from below, strategically placed treatment units, etc.?);

3) Funding for vegetation management (Are large trees being cut to fund restoration? Are wildlife or restoration funds available to carry out vegetation management to meet desired future conditions?);

4) Trade-offs of adverse water quality, fisheries, wildlife impacts of vegetation management (Will fuels reduction require new road construction or reconstruction of roads? Will riparian areas, wetlands, and other important habitats be treated differently than the rest of the landscape?)

5) Monitoring (Is pre- and post-project monitoring proposed?)

**Response:** The Purpose and Need for Revising the RMP stated in Chapter 1, explains that the RMP provides goals, objectives, land use allocations and management direction to maintain, improve, or restore resource conditions. The RMP is designed to specify overarching management policies and actions, by providing an overall vision of the future (goals and objectives) which includes measurable steps, management actions, and allowable uses to achieve the vision. The statements and questions posed in the comment are appropriately considered at the project level and beyond the scope of the EIS.

**Appendix C** of the Draft RMP/EIS (**Appendix D** in the Proposed RMP/Final EIS) discusses the application of the SIMPPLLE model to the current vegetative conditions to determine the extent of variation from historic conditions and the landscape level treatment needs for the watersheds found in the Decision Area. Current forest conditions are described in the Vegetative Communities section of Chapter 3, specifically for various forest zones in the Planning Area and summarized on Tables 3-5 and 3-6 by forest type and watershed in the Decision Area. These tables present how far the current vegetative conditions have departed from historic conditions. The SIMPPLLE model aided in determining the amount of forest and woodland area that could effectively be treated under the guidance for each of the action alternatives discussed in Chapter 2.

The Record of Decision will provide for specific plan monitoring processes to assess progress toward meeting goals or objectives. Project monitoring will be guided by BLM protocols and conducted as part of the forest and woodland health assessment process.

#### G5

**Comment:** We also encourage efforts to restore declining tree species such as aspen, Ponderosa pine, whitebark pine, etc, and to address conifer encroachment upon non-forest habitat types. EPA encourages BLM to include management direction that assures that large healthy trees of desired species such as Ponderosa pine and whitebark pine that are decreasing in overall composition be retained during timber harvests and other vegetative treatments.

**Response:** The dry forest zone includes the stands of ponderosa pine found in the Butte Field Office. The treatments proposed for dry forest stands in Chapter 2 under Alternative B (preferred) would be designed to move these stands to fewer trees per acre with a larger average tree diameter. This emphasizes the retention of the large healthy trees which are often ponderosa pine, in order to meet the desired conditions that are based on historic range of variability and would provide for self-renewal of ponderosa pine in treated stands. Whitebark pine is a species that is found in some areas of the subalpine fir zone which is discussed under the vegetative communities in Chapter 3. This species comprises only a small portion of the subalpine zone that amounts to about 1 percent of the forests and woodlands in the Butte Field Office. The vegetative management guidance discussed for cool, moist forest types in Chapter 2, would also apply to subalpine fir stands, with the treatments focusing on maintaining and protecting healthy and diverse forest systems.

#### G6

**Comment:** We also support the proposed direction in the draft RMP/EIS for retention of downed woody material for soil productivity (organic matter-nutrient cycling) as well as wildlife habitat. The draft RMP states in the vegetation section that much of the fine material not utilized would be left scattered on the forest floor to maintain site productivity (page 27), and that levels of downed wood be maintain to contribute to the needs of wildlife, invertebrates, fungi, bryophytes, saprophytes, lichens, other organisms, long term soil productivity, nutrient cycling, carbon cycles and other ecosystem processes (page 44). This evidences good understanding of the need to retain woody debris on the ground, although we encourage identification of particular numerical levels of downed woody material per acre for habitat types to provide greater assurance that adequate downed woody debris would be left on the ground to maintain soil productivity (organic matter, nutrient cycling), wildlife habitat, and other ecosystem processes.

**Response:** Appropriate numerical target levels of downed woody debris would vary greatly by specific habitat types across the Butte Field Office. Target values such as “tons per acre” of downed woody debris would be developed as necessary at the project level and are beyond the scope of the RMP analysis

#### G7

**Comment:** The draft RMP and EIS discuss insects and disease (page 334). We note that bark beetles are natives of the forest ecosystem and local endemic populations of beetles are a normal component of the ecosystem and beetle interaction with weakened trees is a normal ecosystem function. Bark beetles have a role in forest ecosystems of helping to remove older, weakened, less vigorous trees. It is our understanding that even large

populations of bark beetles and resulting tree mortality can be part of normal ecosystem function, although we recognize that much of the public perceives epidemic beetle populations as an unhealthy forest environment. However, beetle populations generally experience “boom and bust cycles, and forests have proven resilient, if not dependent on these cycles. A beetle epidemic may also be part of a natural progression to a new successional sere, thus, beetle attack is a natural disturbance and regeneration agent in the ecosystem. Many forests that have undergone “devastating “infestations are now experiencing regeneration without active management before or prior to the epidemic. While we do not oppose management to address bark beetle outbreaks for silvicultural purposes, we think it is important that the public understand that bark beetle outbreaks are a normal component of a forest ecosystem.

**Response:** The BLM agrees with the comment. More information regarding the level of insect and disease infestation by watershed has been added in the Proposed RMP/Final EIS in Chapter 3 under Vegetative Communities, Process of Vegetation Change, Forests Insects, and Disease.

**G8**

**Comment:** Fish Wildlife and Parks looks forward to working with the BLM on the fuels reduction projects in the Big Hole watershed. Within these projects we believe there is a lot of potential to enhance and restore big game winter range in the vicinity of Divide. We also have some concerns about the size and scope of the projects that were proposed, then ultimately shelved, prior to the initiation of this planning effort. More recently concern over Rocky Mountain Juniper and its perceived lack of value, as wildlife habitat has become a concern.

**Response:** The BLM agrees that the size and scope of individual projects are important concerns to be analyzed under the appropriate level NEPA documentation. However, the RMP deals with land use planning level decisions rather than individual projects. The action alternatives in the RMP are flexible so that treatment projects can be designed at the size and scale that is most efficient and effective in meeting the desired conditions while complying with the appropriate laws, regulations, and BLM policies and protecting important resources that are discussed in the RMP.

With regards to the rocky mountain juniper, the RMP discusses the species in the Vegetative Communities section of Chapter 3. Juniper is discussed as both a problem species involved in conifer encroachment of grasslands, shrublands and riparian areas, which competes directly with a number of priority plant species named in the RMP; and, a natural component of forest and woodland systems. Juniper is not considered to be a special status species nor a priority species that the BLM has determined to be unique or significant. Project consider-

ations on juniper may vary based on specific vegetation conditions, treatment needs, and site characteristics, therefore concerns are most properly analyzed and handled at the project level.

**G9**

**Comment:** Approximately 140,000 acres of the 302,000 acres that the BLM manages from the Butte field office is classified as forest. The highest probable timber harvest sale quantity proposed in any of the BLM’s Resource Management Plans alternatives A, B, C, or D is 10 to 30 MMBF per decade. Assuming a harvest of five MBF per acre, 200 to 600 acres will be treated per year or 2000 to 6000 acres per decade. This harvest level is insignificant considering the number of acres that need to be treated. The Butte RMP does not address the problem but exacerbates the problem. Dealing with the problem generates sufficient volumes of timber to Montana’s milling infrastructure. It also leads to improved forest ecosystems conditions and a healthy attractive natural environment that is important to western Montanans and to the economy.

I propose another Alternative E to address these issues. My proposal is to conduct an accelerated timber management program during the next 10 to 20 years. A strong focus on restoration and fire hazard treatments addresses wildfire, insect and disease problems by dealing with the underlying forest density problem. To protect watersheds and be effective, timber management must be conducted at the landscape level. To protect communities and homes the wild land interface zone must be realistic. Let terrain be the determining factor, not political, 400 foot, predetermined distances. In drainages with north facing wetter slopes, zones may be much narrower. In drainages containing south facing slopes, wild land interface zones may extend several miles. Also, to be effective, timber harvesting must remove a sufficient number of trees to allow a minimum of 20 feet between crowns and must be followed by broadcast under burning. Research conducted by the University of Montana has shown that a comprehensive thinning program is an economically effective method to reduce fuels and improve forest health. I would also like to suggest that sale purchasers have the ability to sell small diameter and other non-merchantable material as pulp logs. The best way to accomplish this is with split pricing between saw logs and pulp logs. With one bid price fits all, the bidder has to estimate the volume of each product and lower the bid on saw logs to where he covers his expenses on pulp logs.

**Response:** The estimate of forested acres to be treated that was given in the comment was developed by using an assumed rate of product removal and provided a considerably lower range of area treated than those that would actually occur under all of the RMP alternatives except Alternative C. The amount of forest and woodland area that would be treated under each of the alterna-

tives is listed in the Comparison of Alternatives found in Table 2-23 under Forest Products. The total amount of area that would be treated under Alternative B (preferred) and Alternative D would be 3 to 4 times that of the comment estimate. This is due in part to the variety of treatments that would occur under each of alternative, which included a number of non-commercial or non-timber producing treatments such as broadcast burns, pre-commercial thinning, and mechanical reductions in areas where the products could not be efficiently removed due to access limitations or unacceptable resource damage.

The full range of available treatment tools under all alternatives as discussed in Chapter 2 under Vegetation Management Tools and commercial uses of materials from vegetation management activities would be considered in all cases where appropriate. Current BLM timber sale policy and practice would be followed in the implementation of the forest and woodland treatments under all of the RMP alternatives, as described under 43 CFR 5400 and the 5400 series of BLM timber sale handbooks. These guides encourage utilization of all available commercial products from forest management activities when it is efficient to do so, including the use of low value materials such as pulp and biomass. The BLM will also utilize recently developed stewardship contracting tools that were authorized under the Omnibus Appropriations Bill of 2003 (P.L.108-7, Section 323), which allows for technical evaluation of bidder proposals and award based on best value to the government rather than the highest return in revenue. The Butte Field Office would tend to give higher weight to proposals from bidders that would utilize more of the available forest products in the technical evaluation process.

There is no guidance or policy requiring the BLM to manage public forest specifically for timber production. The BLM would be unable to consider an alternative that promotes the production of timber over the other resources, as that would conflict with the multiple use mandates of FLPMA.

The four alternatives presented in the RMP provide a reasonable range of forest treatment alternatives, including actions needed to protect forest health and values, and to provide timber outputs. None of the alternatives propose exclusive or primary use, specific target output, or individual resource protection except in specific cases mandated by law. The RMP alternatives are designed to be flexible, being that treatments are proposed in acreage ranges that would allow for increased treatment of larger areas of forests and woodlands as natural resource, silvicultural and/or landscape needs and imbalances become apparent. They can be treated up to the high end of the acreage ranges to meet the goals, prescriptions, and benefits of each alternative. Other demands such as complying with the many environmental laws, policy initiatives, and budget constraints also influence the level of BLM activity at the field office level. However,

each alternative allows for an acceleration of treatments and an opportunity to increase product outputs, when the increased activity would comply with the resource management objectives of that alternative, while avoiding or mitigating damage to important resource values described in the RMP or protected by law.

#### G10

**Comment:** We have diseased trees now on much of our public land. A BLM sage burn could touch off a major uncontrolled fire. It's happened in other states with tort claims under the Tort Claims Act of high proportions. Pipestone now has many dead trees, standing firewood. None of this mentioned in your document. Nothing about BLM allowing these trees to be cut now for firewood.

**Response:** As stated in Chapter 2 of the RMP (under Vegetation Communities, Management Common to All Alternatives, Wildland Fire Management section), fire management activities would be prioritized by their risk to life and property across the Butte Field Office. More information regarding the level of insect and disease infestation by watershed has been added to the Proposed RMP/Final EIS in Chapter 3 (under Vegetative Communities, Processes of Vegetation Change, Forest Insects and Disease section). Firewood removal activities would be permitted under all alternatives as discussed in Chapter 2 (under Vegetation Communities, Management Common to All Alternatives, Forests and Woodlands section). Timber salvage resulting from forest insects and disease would also be considered under all alternatives.

#### G11

**Comment:** Forest products are a renewable resource and objectives should be sustained at levels that ensure healthy forests. The current insect infestations coupled with the prolonged drought have decreased healthy timber stands and should be addressed in more detail. A proactive management plan should be developed and implemented that utilizes this resource and reduces the overall public safety fire hazard. The proposed restriction against cutting dead trees over 24 inches in diameter for firewood doesn't seem like a prudent action considering the large amount of bug killed timber and the many mature timber stands that currently exist.

**Response:** Additional information has been included in the Vegetative Communities section of Chapter 3 in the Proposed RMP/Final EIS regarding insect infestations in the Butte Field Office. Public safety related to beetle killed trees will be addressed on a site-specific basis and site-specific analysis will determine the appropriate course of action in those areas.

The firewood restriction on trees greater than 24 inches in diameter is intended to protect the largest and highest quality snags for avian species as well as wildlife species

that use this type of habitat. Areas traditionally used by firewood cutters often have a deficiency of large, old snags.

Firewood cutting is not necessarily an adequate tool for preventing the spread of mountain pine or Douglas-fir beetle. Firewood cutters only remove the trees closest to the road, leaving infested trees throughout a stand. It is also important to note that by transporting infested logs, firewood cutters can actually promote the spread of beetles into healthy forested habitats.

Site-specific analysis will determine those areas where forest treatments should be done to prevent or slow the spread of beetles. The removal of large, mature trees could be identified at that time.

## G12

**Comment:** I generally support the Alternative A proposals. Some items need to be considered whichever plan is adopted:

The bug infestation is getting ahead of BLM, and their staff is not fully aware of the intensity of this concern. A very active forestry harvesting activity needs to commence immediately in order to reap some economic benefit from affected timber and to assist in reducing massive fire occurrences. Traditional economic benefits of forestry practices would also be enhanced.

**Response:** BLM staff is aware of current insect and disease conditions in the Planning Area. Aerial insect and disease surveys are conducted annually across the Planning Area. More information regarding the level of insect and disease infestation by watershed has been added to the Proposed RMP/Final EIS in Chapter 3 (under Vegetative Communities, Processes of Vegetation Change, Forest Insects and Disease section). Vegetation treatments proposed under Alternatives B and D represent increases from the current level of forestry activities on Butte Field Office lands. These levels of activity are summarized in Table 2-23, Comparison of Alternatives, near the end of Chapter 2 in the RMP.

## Grassland and Shrubland Habitat

### H1

**Comment:** This proposal for burning of sagebrush will be detrimental to the wildlife resource as well as watershed protection. The importance of sagebrush to various species of wildlife is well documented. BLM presented no literature references on sagebrush in Montana and the importance to wildlife and what species.

**Response:** The Vegetation Management Tools Section in Chapter 2 of the RMP outlines the types of activities that could be used to manage shrublands (including sagebrush). Although prescribed burning of sagebrush communities could be used as a management tool, if appropriate, the BLM is not specifically proposing the

burning of sagebrush habitat. Mechanical treatments are identified as an acceptable method to remove conifers from sagebrush communities and would likely be used in most cases.

The Vegetation Communities section in Chapter 2 of the RMP identifies goals for sagebrush habitat as well as management actions. Sagebrush communities are identified as priority habitats based on the conservation status of sage grouse, pygmy rabbit and other species associated with sagebrush and would be managed to protect habitat for these species as well as for other species that use sagebrush for all or part of their lifecycle.

The Wildlife, Fish and Wildlife Habitat, Special Status and Priority Plant and Animal Species section (Management Common to All Alternatives) in Chapter 2 of the RMP identifies that management activities in sagebrush habitat will be consistent with the National and Montana Management Plan and Conservation Strategies as well as current, accepted science for sage grouse. These plans provide direction for sagebrush protection and management. This section of the RMP also identifies the maintenance of sufficient densities and cover of sagebrush for sage grouse. All action alternatives would provide additional protection to sagebrush by maintaining large patches of sagebrush in sage grouse habitat, maintaining connections between sagebrush habitats, and enlarging the size of sagebrush patches within sage grouse habitat.

The Wildlife section in Chapter 3 of the RMP discusses the importance of sagebrush habitat for a variety of wildlife species.

### H2

**Comment:** Page 321, BLM selected Alternative B “Treatment of up to 11,800 acres of grassland habitat up to 3,650 acres of shrubland habitat, up to 14,750 acres of dry forest, up to 3,750 acres of cool, moist forest and up to 700 acres of riparian acres.” The grasslands you are referring to are sagebrush/grasslands and some of our most valuable winter range on public land. Are you aware of the memo of understanding with FWP on land treatment projects? Is BLM aware of the “Guidelines for Maintenance of Sage Grouse Habitats” Jour. of Wildlife Mgt and Western States Sage Grouse Committee “Guidelines for Habitat Protection in Sage Grouse Range?” 1. “The state wildlife agency should be notified of each specific vegetal control proposal a minimum of two years in advance of treatment by means of an Environmental Impact Analysis.” This is also stated in the MOU with FWP.

**Response:** The Vegetation Communities section in Chapter 2 of the RMP discusses the goals for vegetation communities. Goals related to vegetation focus on maintaining sustainable vegetation, maintaining or increasing diversity, managing for healthy forest stands and maintaining or moving communities towards proper function-

ing condition. The General Summary of Alternative Emphasis for Vegetation Communities (subsection of the Vegetation Communities section) in Chapter 2 identifies the major emphasis for Alternative B as fuels reduction in the urban interface, reduction of conifer encroachment in grasslands and shrublands (sagebrush) particularly in big game winter range areas (to restore and protect big game winter range), enhancement of bighorn sheep habitat and restoration of dry forest types. In both the Draft and Proposed RMP, the main emphasis of vegetation management outside the urban interface is to protect and restore vegetation communities and wildlife habitats.

The Vegetation Communities section (Management Common to Action Alternatives) under Chapter 2 of the Draft and Final EIS also discusses the objectives for management of grasslands/shrublands, forests/woodlands and riparian habitats. Vegetative treatments will focus on restoring the distribution and vigor of grassland and shrubland habitats by removing invading conifers. Sagebrush habitat is identified as a “priority” species based on concerns over the conservation status of sage grouse, pygmy rabbit and other species associated with sagebrush and grasslands habitats.

**Appendix D** (Use of the SIMPPLLE Model) of the Proposed RMP/Final EIS provides a discussion on how acres of various vegetation communities were identified for treatments and those considerations that went into identifying vegetation treatments. Some considerations with vegetation treatments included how vegetation has changed over time, fire suppression, past management and wildlife habitats.

Although the BLM acknowledges that there are many good recommendations for the management of sage grouse and sage grouse habitat in the literature, the BLM in Montana follows both the National and Montana Management Plan and Conservation Strategies for Sage Grouse (2005). These plans have taken into consideration much of the available literature on sage grouse and incorporated this literature into goals, objectives, and conservation actions for sage grouse habitats. The use of these plans, as well as the use of acceptable science, is outlined in the Wildlife, Fish and Wildlife Habitat, Special Status and Priority Plant and Animal Species section in Chapter 2 of both the Draft and Proposed RMP/Final EIS.

Although the BLM is unclear on the specific Memorandum of Understanding referenced by the commenter, it is assumed that the Memorandum of Understanding referenced is the “Mechanical and Chemical Alteration of Vegetation” Memorandum of Understanding of 1971. The BLM is aware of this Memorandum of Understanding and believes that the Memorandum of Understanding, although outdated, is still followed. As outlined in the Memorandum of Understanding, the BLM does coordinate with Montana Fish, Wildlife and Parks on all projects (not just vegetation projects) that can affect

wildlife and wildlife habitats. It is important to point out that the Memorandum of Understanding is an agreement between the BLM and Montana Fish, Wildlife and Parks and not a law.

### H3

**Comment:** Page 332 the BLM plan “Mechanical treatments (no fire) would be used in most cases to remove conifer encroachment in shrubland communities”. Conifers provide security cover for big game animals on winter range. “Conifer encroachment” does not exist in ecological nomenclature. Perhaps you mean second growth Douglas fir and plant succession of conifers.

**Response:** The term “conifer encroachment” is a common term used by public agencies, including the BLM, to describe coniferous trees that are now becoming established in grassland and shrubland habitats. The BLM uses the term “second growth” to refer to forested habitats where trees are becoming re-established after a disturbance such as fire, insect, disease, or logging. There are a number of studies and anecdotal accounts that verify the establishment of conifers in grassland and shrubland communities throughout the west.

Conifer encroachment can provide escape cover for big game but can also significantly reduce the amount of forage available to big game on their winter range. As described in the Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species section (Management Common to All Alternatives) of Chapter 2 of both the Draft and Proposed RMP/Final EIS, during site-specific project planning, important blocks of hiding, security and thermal cover for big game will be considered and the effects to these habitat types from site-specific projects will be analyzed.

### H4

**Comment:** This next statement on page 333 as well defies all the published scientific literature on the subject: “Sage grouse management activities involving treatments of sagebrush habitats would create mosaics of sagebrush and grassland communities, regenerate decadent sagebrush, and prevent further decline in the health of sagebrush communities and reduction in distribution of favorable sites (BLM statement)”. This statement lacks insight on research in Montana on sage grouse and sage grouse habitat and why it grows on a site not to mention wildlife literature on the subject, all falsehoods not supported with any literature reference. Habitat maintenance and preservation of sagebrush communities on our public land is essential.

**Response:** The statement in Chapter 4 mentioned by the comment contained editorial mistakes in the Draft RMP/EIS. This statement has been corrected in the Proposed RMP/Final EIS to state: “Treatments within sagebrush communities would emphasize improving or maintaining habitats for sage grouse and other sagebrush

dependant species by removing conifer encroachment, creating a mosaic of grassland and sagebrush habitats, regenerating decadent sagebrush and by preventing a decline in the quality and quantity of sagebrush communities.”

As stated in the Wildlife, Fish and Wildlife Habitat, Special Status and Priority Plant and Animal Species section (Management Common to All Alternatives) in Chapter 2 of the RMP, sage grouse management activities would be designed and implemented to be consistent with the National and Montana Management Plan and Conservation Strategies for Sage Grouse (2005) as well as current, accepted science. This section goes on to explain that sufficient sagebrush densities and cover would be retained in sage grouse habitat. The Management Plan and Conservation Strategies for Sage Grouse in Montana (2005) was developed by representatives of the Montana sage grouse work group (SGWG) which was comprised of federal and state agencies, tribal representatives, private organizations, and individuals from the general public, all of whom have an interest in the issue of sage grouse conservation. The plan also considered a large amount of literature and research on sage grouse and sagebrush habitat.

The overall goal of the Management Plan and Conservation Strategies for Sage Grouse in Montana is to “Provide for the long-term conservation and enhancement of the sagebrush steppe/mixed-grass prairie complex within Montana in a manner that supports sage grouse and a healthy diversity and abundance of wildlife species and human uses.” Objectives include maintaining the distribution and integrity of sagebrush steppe communities and maintaining the distribution of sage grouse populations within the mountain foothills and sagebrush ecotypes.

The Management Plan and Conservation Strategies for Sage Grouse in Montana (2005) provides a description of breeding, nesting, brood-rearing and winter habitat for sage grouse. Although sage grouse are obviously sagebrush obligates, their biological needs differ throughout the year based on the season. For example, nesting habitat is often located near lek sites and with sagebrush canopy of 15-31 percent whereas brood rearing habitat tends to be in more open sagebrush stands with canopies 1-25 percent and a broad range of succulent forbs, an important food source for young sage grouse. The plan and other sage grouse literature explains the importance of having diversity of sagebrush habitats to meet the requirement of sage grouse throughout their lifecycle.

The RMP emphasizes restoring or enhancing sagebrush habitat for sage grouse and other sagebrush dependant species. In some cases, it may be appropriate to treat decadent stands of sagebrush or remove conifer encroachment into sagebrush stands to improve breeding, nesting, brood-rearing, or winter habitat for sage grouse. A site-specific analysis will be done to identify the ef-

fects to sage grouse and other sagebrush dependant species at the time of a proposed activity.

#### H5

**Comment:** Is BLM aware of the fact that Idaho fescue (*Festuca idahoensis*) is a key winter forage species for elk and wild sheep? Idaho fescue is also susceptible to burning. In other words BLM burn plans will also destroy this key forage species as well as big sagebrush.

**Response:** As stated in the Wildlife, Fish and Wildlife Habitat, Special Status and Priority Plant and Animal Species section (Management Common to All Alternatives) in Chapter 2 of the RMP, fish and wildlife habitat would be evaluated on a case-by-case basis as part of project level planning. Overall, the RMP spells out more broad-scale goals and objectives that are to be implemented at the project level where objectives are defined much more specifically as related to site-specific conditions during project-level planning and NEPA. Such evaluations would consider the impacts to forage species (including Idaho fescue) and sagebrush. Measures would be taken to reduce the negative impacts to these species, such as early spring burning before green-up or burning when patches of snow are present for a mosaic burn pattern.

The Wildland Fire Management Section in Chapter 2 in the RMP provides a range of different intensity burns allowed under the alternatives to address maintaining a source of unburned vegetation.

#### H6

**Comment:** Here are a few references on Big Sagebrush you should consider: “A Sea Fragmented into Lakes, Ponds, and Puddles” by Welsh, Bruce L. USDA, Forest Service, Gen’l Tech Rpt RMRS-GTR-144, March 2005; Montana Sagebrush Bibliography, Montana FWP, Frisina, M.R. John J. McCarthy December 2001; SAGEBRUSH Ecological Implications of Sagebrush Manipulation, FWP by Peterson, Joel G.1995, Montana Sage Grouse, FWP/BLM 1975 by Wallstad, Richard.

**Response:** Almost all the referenced literature cited by the commenter was considered and used during the development of the National and Montana Management Plan and Conservation Strategies for Sage Grouse (2005). The Management Plan and Conservation Strategies for Sage Grouse in Montana (2005) was developed by representatives of the Montana sage grouse work group (SGWG) which was comprised of federal and state agencies, tribal representatives, private organizations, and individuals from the general public, all of whom have an interest in the issue of sage grouse conservation.

Although the BLM acknowledges that there are many good recommendations for the management of sage grouse and sage grouse habitat in the literature, the BLM in Montana follows both the National and Montana

Management Plan and Conservation Strategies for Sage Grouse.

The use of these plans, as well as the use of acceptable science, is outlined in the Wildlife, Fish and Wildlife Habitat, Special Status and Priority Plant and Animal Species section in Chapter 2 of the RMP.

The Draft and Proposed RMP/Final EIS emphasize restoring or enhancing sagebrush habitat for sage grouse and other sagebrush dependant species.

#### H7

**Comment:** Is BLM familiar with “Steppe Vegetation of Washington” by Dr. R. Daubenmire? On page 79 he lists 12 good reasons why not to manipulate sagebrush. 1. “There is little to indicate the extent to which the grass increase measured shortly after shrub eradication is maintained.” 2. “The protection afforded many grass plants by dense clumps of shrubs is the sole reason why any perennial grass remains on much of the depleted range.” He goes on to discuss the importance of big sagebrush in watershed protection and improving soil profile.

**Response:** The BLM was unable to view a copy of the reference cited by the commenter. However, many studies and peer reviewed journal articles related to sage grouse and sagebrush habitat were considered and used during the development of the National and Montana Management Plan and Conservation Strategies for Sage Grouse (2005). Although the BLM acknowledges that there are many good recommendations for the management of sage grouse and sage grouse habitat in the literature, the BLM in Montana follows both the National and Montana Management Plan and Conservation Strategies for Sage Grouse. The use of these plans, as well as the use of acceptable science, is outlined in the Wildlife, Fish and Wildlife Habitat, Special Status and Priority Plant and Animal Species section in Chapter 2 of the RMP. The reference cited by the commenter was addressed during the response to public comments in the Montana Management Plan and Conservation Strategy for Sage Grouse (2005). The BLM notes that sagebrush has been identified as priority species/habitat in the Butte RMP, and that Goal #6 under Vegetation Communities in Chapter 2 focuses on managing to promote sagebrush and other priority species.

#### H8

**Comment:** In the Elkhorn Mountains, continue ongoing encroachment reduction treatments (i.e. Power Gulch, Kimber, and Crow Creek). Pursue treatments in other known areas of encroachment (i.e. McClellan, Crystal, and Jackson Creeks) through mechanical manipulation (e.g. slashing, masticator) or prescribed fire. Pursue additional treatments in areas identified through mapping. Use existing maps of known encroachment and fill

in missing data through photo interpretation and other tools.

**Response:** The BLM agrees with the commenter that the reduction of conifer encroachment should occur in the Elkhorn Mountains as well as throughout the Field Office. The BLM, however, doesn’t manage any land in Power Gulch, Crystal Creek, or Jackson Creek and the BLM manages very little land in the Crow Creek and McClellan drainages. The BLM does manage land in Kimber Gulch and future site-specific projects to reduce conifer encroachment may be proposed within the Elkhorn Mountains to improve habitat for wildlife. Site-specific analysis will continue to map conifer encroachment.

#### H9

**Comment:** The document states that bitterbrush and mountain mahogany would be protected and restored in Alternatives B and C. It is not clear how this would be accomplished, especially with mountain mahogany. We would not support burning in stands of mountain mahogany as fire kills mountain mahogany and it is very slow to reproduce and it may take many decades before climatic conditions are favorable for its reproduction.

**Response:** Mountain mahogany and bitterbrush would be protected, when possible, from fire, herbicides and, in the case of bitterbrush, from extensive browsing by livestock. The BLM would also minimize the loss of these species from ground clearing activities such as road construction and mineral activity. To promote these species, the BLM would target projects that focus on the use of mechanical treatments to eliminate conifer encroachment. As described in the Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species section of Chapter 2, there would be more proactive efforts to restore these species as described under Alternative B, than would be the case under Alternative C where such efforts would be undertaken on an opportunistic basis.

#### H10

**Comment:** Ward Ranch: For now, your Alt B seems a good start, except I don’t see any reason to move the trailhead further west from where it is now. The main thing is to not let ORV use get established in the area. There’s lots of neat hiking and exploring in the wooded sections (the old BLM holdings). And there’s a crying need to restore the grasslands on the old ranch holdings, and to preserve or improve the scenic qualities (as viewed from west of the river.)

**Response:** All action alternatives in the Butte RMP provide for restoring up to 850 acres of grasslands in the Ward Ranch and McMasters Ranch acquisitions (Chapter 2, Vegetation Communities, Management Common to Action Alternatives, Grasslands and Shrublands section). After further consideration of the location of the

Ward Ranch trailhead, the BLM is proposing to change the Preferred Alternative to keep the trailhead in its current location on the ground as under Alternative A. Because the public has grown accustomed to and regularly uses the existing trailhead, the BLM believes it is more desirable overall and is an appropriate blend of uses to maintain the existing motorized access to this trailhead in a predominantly non-motorized area.

**H11**

**Comment:** I strongly believe that only native plant materials (seeds, seedlings, etc.) appropriate to the area should be used for restoration and revegetation projects. Sometimes, non-native materials appear to be cheaper and more abundant in the short term, but in the longer term, the non-native introduction may prove to be noxious and it may take great time, effort, and cost to fix such mistakes.

**Response:** Using native plant materials was analyzed under Alternative C. Under the Preferred Alternative, revegetation seed mixes would usually consist of site-appropriate native species. In some instances such as after an intense fire or in an area infested with noxious weeds, low-impact, non-invasive species or annual cereal crops may be used to stabilize soils or to compete with noxious weeds. Additionally, seed availability of native species can be an issue when time is of the essence to re-establish vegetative ground cover over large areas. The ability to use non-native species in those rare cases, provides the BLM with more management options.

**H12**

**Comment:** We recommend that ecological site descriptions (ESD's) need to be developed for all lands (USFS, BLM, State, DNCR, and private) in the Elkhorns to be used within the State Transition Model.

**Response:** The Natural Resources Conservation Service (NRCS) develops ecological site descriptions which the BLM uses for site specific planning and rangeland health standard evaluation. The NRCS is currently in the process of developing new ecological site descriptions for the entire state of Montana.

**Lands and Realty**

**I1**

**Comment:** The elimination of public access to public lands through private property has also contributed to the loss of motorized access and motorized recreation opportunities. We request that agencies acquire private land and right-of-ways to provide access to public land that is now blocked off to the public. Anytime there is a land exchange between private and public entities, a public access easement or right-of-way should be required. This action is necessary to reverse the prevailing

trend of significantly less public access to public land over the past 35 ± years and the cumulative negative impact of that trend on multiple-use recreationists.

**Response:** The BLM shares the concern about the lack of legal access to certain areas of public lands, and will continue to pursue access easements from willing landowners as funding and staff capabilities allow. The goal statement for Lands and Realty in Chapter 2 indicates that it is our intention to look for opportunities to acquire non-federal land or interest in non-federal land with important resources or resource uses. Under the Management Common to All Alternatives section under the heading of Access, the RMP lists the various means by which the BLM would seek to acquire access, including easement acquisition and several different types of land ownership adjustment. For more specific information please refer to **Appendix L** (Lands and Realty) in the Proposed RMP/Final EIS.

**I2**

**Comment:** I request that my desire to acquire a portion of these lots be included in the new Butte Resource Management Plan. I have attempted to show basis of inclusion from the "Draft" wording. I attach that statement.

I understand that legal description through the Public Land Survey System is required for a property to be listed. The above "Lots 15 and 18, Sec. 16, T.6 N, R.5W, PMM" are specified for that purpose. However, only a small portion of each lot is involved. The boundaries to be specified later. Some 5 to 15 acres of Lot 18 and 2 to 5 acres of lot 15 are desired. Only a portion of the south face of the mountain side is needed. No "island effect" of land boundaries would be created. I would, of course, pay for the cost of the cadastral survey as well as other expenses involved in the sale.

I request this to be a direct sale since the land is so isolated from ease of public access. If any but the adjacent landowner bought it, the right-of-way issue would be very invasive to the surrounding forest. This proposal before you has no more invasion of the BLM land than the transaction itself. And it will open another public access for the surrounding lands.

**Response:** The BLM is unable to add these parcels to the potential disposal list as they are attached to and contiguous with a large block of federal land administered by the BLM. Parcels identified on the disposal list in **Appendix L** (Lands and Realty) of the Proposed RMP/Final EIS are generally scattered parcels that are difficult and/or uneconomical to manage.

**I3**

**Comment:** BLM proposes land sales and land exchanges but where? The BLM land pooling program promoted for years resulted in the loss of valuable wild-

life habitat and public land access in this area. No public lands should be sold and little if any exchanged.

**Response:** The Butte RMP follows national and state-level planning direction by 1) specifically listing legal descriptions of tracts that could potentially be sold pursuant to Section 203 of the Federal Land Policy Management Act (FLPMA) (although land exchange is the preferred means of disposal), and 2) developing land acquisition criteria rather than listing legal descriptions of specific tracts for acquisition.

Land exchange transactions are typically processed under the authority of Section 206 of the FLPMA and involve the discretionary, voluntary exchange of lands or interests in lands between the federal government and a non-federal party. Since most land exchange proposals are initiated by external customers, the Butte Field Office has no way of identifying where land exchanges are likely to occur.

Sales of public lands are authorized under Section 203 of the FLPMA and parcels are offered at not less than fair market value. Public lands determined suitable for sale are offered only on the initiative of the BLM. Approximately 8,901 acres in the Butte FO are potentially suitable for disposal under Section 203 of FLPMA if important recreation, wildlife, watershed, threatened or endangered species habitat, and/or cultural values are not identified during disposal clearance reviews and no viable exchange proposals have been identified.

The Butte FO recently completed the Ward Ranch land exchange and has acquired the McMasters and Iron

Mask properties to promote wildlife habitat and increase public access in this area.

Please refer to **Appendix L** (Lands and Realty) in the Proposed RMP/Final EIS to obtain information pertaining to land ownership adjustments, and the list of potential disposal parcels.

#### I4

**Comment:** In lieu of such a designation [as ACEC], the Limestone Hills area should be identified as an area available for disposal through sale or exchange into private ownership as suggested in Graymont's 2005 comments. [BLM Note: ACEC boundary will likely exclude Graymont's permitted area.]

**Response:** Disposal of the Limestone Hills area is outside of the scope of this planning effort as the area is currently being considered for a legislative withdrawal for military training purposes by the Department of Defense.

#### I5

Appendix K – Lands and Realty - Potential Disposal Parcels (p. 873). Many of these parcels should not be considered for disposal. See table below, describing parcels in Helena-west area that should not be disposed of.

The following table identifies several parcels that the BLM has identified for “disposal” that MFWP does not feel would be in the best interest of the wildlife resource

Potential Disposal Parcels			
T/R/Sec	Acres	Location-HD	Rationale for not disposing the parcel
6N 4W 5	38.54	Amazon-318	Elk winter range
9N 3W 32	1.43	Lump Gulch-335	Deer, moose, elk. Contiguous with other accessible BLM lands
10N 1W 6	3 small parcels	Spokane Bay	This may be a surveying issue, but BLM lands are accessible from Missouri River
10N 1W 32	40	Spokane Creek	No BLM land appears on map
10N 5W 3	38.33	Greenhorn	Elk, deer, bear, Wildlife Linkage on Cont. Divide. Contiguous with accessible public land
10N 5W 4	34.93	Greenhorn	Same as above
10N 5W 13	40.41	Stemwinder Hill	Elk winter range
11N 4W 36	77 (4)	Scratchgravel, adjacent to Green Meadow Dr.	Wildlife Linkage Zone, continuous public land, important buffer to Scratchgravel
11N 5W 15	17.73	Threemile Creek	Adjacent to state section. Accessible. Mule deer, elk, Wildlife Linkage Zone.
11N 5W 16	44.09	Threemile Creek	Same as above
11N 5W 27	43.69	Willet Ridge	Important elk winter range. Wildlife Linkage Zone
11N 5W 34	61.53	Willet Ridge	Important elk winter range. Wildlife Linkage Zone

or the public if they were disposed. Section 203 (a) of FLPMA indicates that if important recreation, wildlife, watershed, threatened or endangered species habitat, and/or cultural values are not identified during the disposal clearance reviews then parcels can be considered for disposal. Only parcels that meet one of these criteria are listed in the following table, and therefore should not be removed from BLM (public land) ownership. Several small isolated segments are valuable wildlife habitat, however they are not mentioned here because they are isolated and inaccessible.

**Response:** The table in **Appendix L** (Lands and Realty) in the Proposed RMP/Final EIS (formerly **Appendix K** in Draft RMP/EIS) depicts the legal descriptions of parcels which are potentially suitable for disposal through sale under section 203(a) of FLPMA if important recreation, wildlife, watershed, threatened or endangered species habitat, and/or cultural values are not identified during disposal clearance reviews and no viable exchange proposals for them can be identified. These lands would also be available for transfer to another agency or to local governments, as needed, to accommodate community expansion and other public purposes. Project level NEPA under which site-specific issues could be identified would be conducted before any such transactions.

The following parcels are generally widely scattered parcels which are difficult and uneconomical to manage due to their size, shape, location, topography, and access constraints. They would remain on the proposed disposal list in the Proposed RMP/Final EIS.

Township	Range	Section
6 North	5 West	5
10 North	5 West	4 and 13
11 North	5 West	15, 16, 27, and 34

In the Proposed RMP/Final EIS, the parcel located in T. 10 N., R. 1 W., Section 32, is land administered by the BLM and this parcel remains on the list due to the same rationale listed above.

The parcels located in 11 N., R. 4 W., Section 36 and T. 9 N., R. 3 W., Section 32 are very small slivers of public land which are either within the boundaries or very close to proposed subdivision developments. These parcels would stay on the disposal list in order to reduce the chance of future trespass issues.

The parcels located in 10 N., R. 1 W., Section 6 are currently authorized as non-commercial occupancy (2920) leases which were issued to resolve un-willful trespass cases that involve permanent residential structures. These parcels would remain on the disposal list.

The parcel located in 10 N., R. 5 W., Section 3 has been removed from the disposal list upon further review by the BLM.

**I6**

**Comment:** On page 479 under "Lands Use Authorizations", the right-of-way agreement between BLM and MTARNG is mentioned. The following sentence is "about 30,000 acres that are currently withdrawn." It is our opinion that it could cause confusion to the reader. MTARNG has proposed a withdrawal of the Limestone Hills Training Area and a reader might think that the decision has already been reached. We suggest that some addition be made to the paragraph to clarify.

**Response:** Language in this Land Use Authorizations section in the Proposed RMP/Final EIS has been changed to correct this error.

**Livestock Grazing**

**J1**

**Comment:** In the livestock section of the document, BLM recommended land treatment over management.

**Response:** Virtually all of the prescriptions for Livestock Grazing described in Chapter 2 for all the alternatives cover various aspects of livestock grazing management. Some prescriptions do address livestock grazing management as it relates to land treatments. The BLM will continue to address livestock management at a site-specific allotment level, outside the scope of this RMP revision.

**J2**

**Comment:** BLM will not mention again Rest Rotation Grazing and applying the principles and concepts of August L. Hormay to manage our public lands.

**Response:** Rest rotation grazing is certainly one of the methodologies employed in grazing management on a number of Butte Field Office allotments; however it will not be the only method applied. The specific method of grazing on an allotment will continue to be determined on a site-specific basis, outside the scope of this RMP.

**J3**

**Comment:** We are concerned that there is no proactive planning to enhance grazing on BLM land. We recommend allotment improvements in planning process.

**Response:** The BLM's goal is to manage for a sustainable level of livestock grazing while maintaining, restoring, or enhancing BLM rangelands to meet the Land Health Standards. Allotment range improvements are tools to help achieve Land Health Standards and are included in the guidelines for livestock grazing management found in **Appendix F** of the Proposed RMP/Final EIS. Additionally, new and existing Allotment Management Plans would continue to be implemented with associated allotment improvement projects under all alternatives as staffing and budgets allow. Proposed vegetation treatments also stand to increase the

amount of forage available that would contribute to enhanced livestock grazing. Any range improvements would require site-specific analysis.

**J4**

**Comment:** Maintain upland utilization monitoring during cattle grazing season.

**Response:** The BLM will continue to collect utilization data on allotments as staffing and budgets allow. Livestock grazing prescriptions in Chapter 2 and guidelines in **Appendix F** of the Proposed RMP/Final EIS both outline the need for utilization monitoring.

**J5**

**Comment:** We recommend that the agencies establish, maintain, and document an annual pre-cattle utilization-monitoring program in all allotments in the Elkhorns.

**Response:** Although beyond the scope of this RMP, the BLM will continue to collect utilization data on allotments as staffing and budgets allow. Livestock grazing prescriptions in Chapter 2 and guidelines in **Appendix F** of the Proposed RMP/Final EIS both outline the need for utilization monitoring. The method and timing of utilization monitoring on each allotment will be determined on an interdisciplinary, site-specific basis, outside the scope of this RMP.

**J6**

**Comment:** Elkhorn Working Group recommends: Re-establish all Parker 3-Step transects, even if permanent are gone.

**Response:** The Butte RMP is a broad-based plan covering the analysis area. The BLM will continue to collect monitoring data on BLM allotments as staffing and budgets allow. The BLM will continue to use BLM approved vegetation monitoring methods which does include the Parker 3-Step method as one of many. However, most of the established Butte Field Office long term trend monitoring studies use Daubenmire or other methodologies. Switching to, or establishing, Parker 3-Step studies would not improve long term trend information and analysis. The method to be used on each allotment will be determined on an interdisciplinary, site-specific basis outside the scope of this RMP.

**J7**

**Comment:** Elkhorn Working Group recommends continuing existing riparian utilization standards and monitoring while rethinking monitoring site selections.

**Response:** Under all alternatives, existing utilization objectives would continue to be implemented under existing Coordinated Resource Management Plans. Lower or higher utilization objectives and changes in monitoring sites may be set through interdisciplinary

planning or project level NEPA processes to achieve resource objectives on a site-specific basis.

**J8**

**Comment:** Elkhorn Working Group recommends future adoption of the State and Transition Model to help better understand and manage rangeland habitats. Elkhorn Working Group believes that state and transition modeling as a measure of range condition or health, and its relation to succession and ecological processes will enhance management of the Elkhorns.

**Response:** Although beyond the scope of the RMP, under all alternatives, existing management for all Elkhorn Mountain allotments would continue to be implemented under existing Coordinated Resource Management Plans. Elements of the State and Transition model are currently applied by the Bureau as rangeland health assessments are conducted. Additionally, the SIMPPLLE analysis process basically uses the state and transition theory of vegetation modeling. The SIMPPLLE analysis was used to complete a portion of the vegetation potential and analysis in the RMP (See **Appendix D** of the Proposed RMP/Final EIS).

**J9**

**Comment:** Elkhorn Working Group recommends that normal precipitation figures be developed and utilized to predict annual production and to plan for reduced forage availability. This precipitation data should be utilized for adaptive monitoring for elk/cattle management purposes.

**Response:** The BLM regularly examines precipitation and climatic data collected and collated by the various branches of the National Oceanic and Atmospheric Administration (NOAA). This data is used to modify annual operating plans of livestock permittees as needed. Although beyond the scope of this RMP, under all alternatives, existing management for all Elkhorn Mountain allotments would continue to be implemented under existing Coordinated Resource Management Plans. Changes to management and/or monitoring plans to include climate and precipitation data collection may be effected through interdisciplinary planning or project level NEPA processes to achieve resource objectives on a site-specific basis.

**J10**

**Comment:** We recommend the US Forest Service and BLM adopt State and Transition Models to manage this species (Kentucky Bluegrass).

**Response:** Elements of the State and Transition model are currently applied by the BLM as rangeland health assessments are conducted, which would be the avenue where issues with Kentucky Bluegrass are identified.

**J11**

**Comment:** In the Elkhorn Mountains management strategies should move away from attempts to resolve cattle vs. wildlife use conflicts and begin to develop long term approaches designed to sustain grassland systems.

**Response:** The BLM believes the prescriptions outlined for the action alternatives in Chapter 2 of the RMP are designed to sustain grassland ecosystems. The BLM's goal is to manage upland vegetation communities to move toward or remain in proper functioning condition, including a full range of herbaceous and shrub species. Grasslands and shrublands would be treated to remove conifer encroachment and move towards a more desired ecological condition of open areas with a low density of tree species. Grasslands and shrublands would also be assessed to ensure that uplands are in properly functioning condition. If these habitat types are not in properly functioning condition due to management activities, management would be modified to improve conditions. Alternatives B, C, and D as described in Chapter 2 outline varying degrees of aggressiveness towards addressing this issue.

**J12**

**Comment:** In the Elkhorn Mountains continue current adaptive allotment systems, rather than strict management plans.

**Response:** Although beyond the scope of this RMP, under all alternatives, existing management for all Elkhorn Mountain allotments would continue to be implemented under existing Coordinated Resource Management Plans. Changes to management may be effected through interdisciplinary planning or project level NEPA processes to achieve resource objectives on a site-specific basis.

**J13**

**Comment:** Elkhorn Working Group recommends maintaining cattle grazing on public land in the Elkhorn Mountains and using cattle as a tool for achieving wildlife management goals.

**Response:** Cattle grazing would be maintained on public lands in the Elkhorn Mountains under all alternatives with one exception. As shown on Table 2-2 in Chapter 2, under alternative B the Indian Creek allotment (Iron Mask property) would be managed as a forage reserve allotment and under Alternative C, this allotment would not be available for livestock grazing.

The Vegetation Management Tools section (under Vegetation Communities) in Chapter 2 of the RMP indicates that livestock grazing management or prescription grazing would be available as a method to treat habitat to achieve wildlife management goals.

**J14**

**Comment:** Clarify if there is adequate monitoring and oversight of implementation of Land Health Standards (Appendix E) and enforcement of grazing permits when State Water Quality Standards are not being met due to grazing. We also recognize that it is important to maintain economically viable ranching/ grazing operations on private lands adjacent to BLM lands to reduce pressure for subdivision and development of such lands.

**Response:** The BLM believes there is adequate monitoring and oversight of implementation of Land Health Standards. As of the end of fiscal year 2006, 229,000 acres (90 percent) of a possible 253,000 acres of currently permitted allotments had been assessed for Land Health Standards. Of the acres assessed, 113,000 acres were meeting standards (49 percent), 80,000 acres were not meeting standards but appropriate action has been taken to ensure significant progress toward meeting standards and livestock is a significant factor (35 percent), 3,000 acres were not meeting standards and appropriate action had not been taken yet to ensure significant progress toward meeting standards and livestock is a significant factor (1 percent), and 34,000 acres were not meeting standards due to causes other than livestock grazing (15 percent). Furthermore, the Bureau continues to monitor allotments to ensure Land Health Standards are being met, or progress is being made toward meeting Land Health Standards. The BLM regularly monitors allotments on a scheduled basis.

**J15**

**Comment:** American Wildlands recognizes that riparian zones are often critical for wildlife movement. Livestock grazing often leads to the degradation of these areas; and therefore AWL recommends the BLM fencing where necessary to prevent unrestricted access to riparian zones.

**Response:** In Chapter 2 of the RMP, under Vegetation Communities, Management Common to All Alternatives, in the Livestock Grazing section there is a management prescription that indicates: "The health and integrity of riparian areas and wetlands would be protected by and improved by using tools such as livestock fencing, alternate upland water sources or livestock grazing adjustments (timing and stocking rates)."

**J16**

**Comment:** American Wildlands recommends that the BLM perform a thorough watershed assessment of all livestock allotments within the BLM's Butte Office lands. AWL was particularly impressed with the series of watershed assessments performed by the BLM's Dillon Field Office (2006-2007) and suggests the Butte Field Office provides a similar assessment. This would give the BLM a strong foundation from which to create and implement changes in allotments, and would pro-

vide the public with technically solid reasoning behind these changes.

**Response:** Given the scattered and fragmented nature of BLM ownership across the planning area, the Butte Field Office has conducted Rangeland Health Assessments on an allotment-by-allotment basis. The Butte Field Office has used the information from these assessments to develop and implement changes on allotments where livestock grazing is a significant factor in not meeting standards.

#### J17

**Comment:** Using domestic sheep to control noxious weeds in Schedule [Alternative] B is interesting. The proposed regulations state that the domestic sheep will be kept 2 miles from the known Bighorn Sheep habitat, with the bed grounds for the domestic sheep being 4 miles from the known Bighorn Sheep habitat. The management provisions that are proposed concerning domestic sheep grazing of noxious weed infestations in areas adjacent to Bighorn Sheep habitat are so restrictive that it is unlikely that any sheep producer will agree to the restrictions. I base this upon my 30 years experience of raising range sheep. Domestic sheep will have a greater impact controlling noxious weeds when they are camped or bedded in the noxious weed infestation. From a livestock producer perspective these proposals effectively preclude the possibility of using domestic sheep to graze noxious weeds in areas adjacent to Bighorn Sheep habitat.

**Response:** Grazing domestic sheep to control noxious weeds is one of many useful management tools for controlling noxious weeds. However, the transmission of disease from domestic sheep to bighorn sheep is a significant concern. Buffer strips of sufficient distance or topographic barriers to keep domestic sheep and bighorn sheep from interacting are the only currently known methods of preventing disease transmission. The proposed management prescription was included to provide the possibility of management flexibility to address some noxious weed infestations near bighorn sheep habitat. Using domestic sheep as a weed control tool under a contract basis rather than under a permit basis would require the sheep owner to use younger sheep which would graze further from camp; in this case the sheep owner would calculate the costs of using younger animals and trailing further as part of his or her bid proposal.

#### J18

**Comment:** On page 33, though, livestock grazing is discussed and it is mentioned that cattle allotments cannot be converted into sheep allotments if they are within 5 miles of known Bighorn Sheep habitat. Is it stated anywhere what will happen if Bighorn Sheep populations shift into an existing domestic sheep allotment? When the Bighorn Sheep were introduced to the Elkhorn

Mountains years ago assurances were given that the Bighorn Sheep would be far from existing domestic sheep allotments. Presently the range of the Bighorn Sheep is different from what was originally thought to be.

**Response:** Current BLM guidance would be followed under all alternatives for the scenario described above. Current BLM guidance outlined in Washington Office Instruction Memorandum 98-140 states that cooperative efforts should be undertaken to notify the permittee and appropriate agency to determine the appropriate action if domestic and wild sheep come in contact. Appropriate action is often removal of stray wild sheep, but could also entail removal of stray domestics if they may contact the wild sheep.

#### J19

**Comment:** Who will perform the maintenance of fences and water development projects and provide weed control of the Forage Reserve Allotments if those allotments are used only on a temporary and nonrenewable basis?

**Response:** The BLM would pursue and establish the infrastructure (i.e. fences, water developments, etc.) and control weeds through the annual work planning for forage reserve allotments. The BLM would assign maintenance to users or perform upkeep as needed to maintain the infrastructure.

#### J20

**Comment:** The livestock grazing analysis needs to clearly specify the anticipated impact on grazing allotments when other conditions presented in the plan such as riparian areas, water quality, wilderness areas, and endangered species plans are overlaid. It appears current grazing allotments may be reduced due to these outside impacts and [the RMP] does not address the potential impacts on the agricultural producers through possible mitigation measures by reallocation of grazing allocations from one area to another.

**Response:** Impacts to livestock grazing are disclosed in Chapter 4 of the RMP under Effects on Resource Uses in the Livestock Grazing section, based on estimates of what could occur with implementation of any given alternative. The impacts described in the Economic and Social sections also estimate impacts to livestock operators and people/groups that value livestock grazing on public lands. Under current regulations and management direction, the BLM is required to manage livestock grazing to meet Rangeland Health Standards for riparian areas, water quality, and endangered species. This will remain the case for all of the alternatives. In most cases when an allotment is not meeting standards, a range improvement project or change in season of use is sufficient to initiate an improving trend. Additionally, the Butte Field Office manages livestock grazing in a num-

ber of Wilderness Study Areas. No significant reduction in the amount of livestock grazing authorized in the BFO is anticipated with adopting any of the alternatives.

**J21**

**Comment:** Range monitoring: “self-monitoring is encouraged” (p.724) Agency monitoring is a must.

**Response:** Under current regulations and management direction, the BLM is required to manage livestock grazing to meet Rangeland Health Standards described in **Appendix F** of the Proposed RMP/Final EIS. This will remain the case under all of the RMP alternatives. As is stated in the appendix, “Self-monitoring by permittee should be encouraged, but with these sideboards:

- permittee's data and BLM's data should be comparable;
- BLM must perform some level of compliance monitoring for each self monitored allotment to ensure the permittee's monitoring is being done and it is valid;
- there should be regular reporting of self-monitoring data; and
- when appropriate, monitoring should include the use of reference sites (such as exclosures).”

The BLM will continue to monitor rangeland and vegetation on a regular basis as time and funding allow.

**J22**

**Comment:** I agree with the grazing level of Alternative B although rotational grazing through quality range review is very important. We need to insure our range conservationists are out in the field reviewing the need for rest rotation of the pastures. Soil and riparian impacts will be decreased with a quality level of on-the-ground management.

**Response:** The BLM agrees that range inspections and monitoring of resources are important. The BLM will continue to inspect allotments and collect data on allotments as staffing and budgets allow. Livestock grazing prescriptions in Chapter 2 and guidelines in **Appendix F** of the Proposed RMP/Final EIS both outline the need for regular range inspections and periodic monitoring.

**J23**

**Comment:** Recommendations for the Elkhorn Mountains, Page 31 and 32 concerning forage reserve allotments:

1. An appropriate infrastructure including boundary and interior fences, water development and weed treatment, will occur before livestock grazing use begins on the forage reserve allotments.
2. The BFO will determine who is responsible for building and maintaining boundary and interior fences and water developments.

3. The Elkhorn coordinator shall track interested applicants for livestock grazing on the forage reserve allotments.
4. Preference shall be given to forest service permittees, BLM permittees or private land owners who are otherwise qualified applicants and involved in or affected by a project, emergency or resource use occurring in the Wildlife Management Area or the lands managed by the BFO in the Elkhorns.
5. The Elkhorn Coordinator shall collaborate with the BLM range specialist, Forest Service Range Specialist, and FWP on a yearly basis as to the rangeland health on the forage reserve allotments.

**RATIONALE:** One of the primary reasons for the acquisition of the lands proposed for the forage reserve allotments was to help resolve wildlife/livestock grazing issues on federal lands under the particular managements as a Wildlife Management Area and a MOU among the Forest Service, Fish Wildlife and Parks, BLM and other state and federal agencies. The success of management practices concerning wildlife within the managed lands is inherently tied to private ranches surrounding the federal lands and the maintenance of that open space landscape. It is therefore important to give preference to those ranches around the Elkhorns who affect and are affected by this unique management situation. As the Ecosystem Research Group noted in its recent study, “The benefit of coordinated public/private land management in the Elkhorns is the leverage it offers our public land resources to produce a far larger accessible wildlife ecosystem than would otherwise be available from public land only.” By giving a preference to those Elkhorn connected ranches that are involved in or affected by projects, emergencies, or wildlife resource use, the BLM will be furthering their goals shared with other agencies in this cooperative management plan. Whether the BLM Elkhorn lands are managed pursuant to an MOU or by an ACEC designation, the preference will facilitate and help achieve those management goals and policies of the federal and state agencies regarding wildlife and the other resources involved.

**Response:** The BLM would pursue and establish the infrastructure (i.e. fences, water developments, etc.) where necessary for forage reserve allotments through the annual work planning process. The Butte Field Office would assign maintenance to users or perform upkeep as needed to maintain the infrastructure. The BLM will determine the amount and timing of use and rest on forage reserve allotments to ensure they are meeting rangeland health standards. The BLM will keep track of interested applicants. As modified in the Proposed RMP/Final EIS for Alternative B in Chapter 2, preference will be given to qualified applicants within the Elkhorn Cooperative Management Area for the Indian Creek forage reserve allotment (Iron Mask acquisition). The Proposed RMP/Final EIS also provides addi-

tional criteria as to how the BFO would select applicants if multiple applications were received.

#### J24

**Comment:** Rework upland use standards for areas in the Elkhorn Mountains that have transitioned to non-native grass communities.

**Response:** Under all RMP alternatives, existing utilization objectives would continue to be implemented under existing Coordinated Resource Management Plans. Lower or higher utilization objectives may be set through interdisciplinary planning or NEPA processes to achieve resource objectives on a site specific basis.

#### J25

**Comment:** Repeat rangeland data collection on the Elkhorn Vegetative Study area using methods similar to those used during the Elkhorn Vegetation Study.

**Response:** Though this comment is outside the scope of the Butte RMP, the BLM will continue to collect monitoring data on BLM allotments within the Elkhorn Vegetative Study area as staffing and budgets allow. The BLM will continue to use BLM approved vegetation monitoring methods which are similar to those used during the Elkhorn Vegetation Study.

### Minerals

#### K1

**Comment:** Page 463 - This page contains Table 4-39. Under the heading "Limestone" the data on that table indicates a consistent output both currently and through all alternatives at a level of 365,000 short tons. Page 466 - Tables 4-41 and 4-42 appear to contain conflicting information when compared to the content of Table 4-39. In Table 4-41 under the heading "Minerals" it is currently stated that there are "16" full and part-time jobs in the minerals industry. Under Alternatives A, B and D the number of full and part-time jobs would be 105 while under Alternative C the number would again be 16. Given the employment at the Graymont facility and the content of Table 4-39 it would appear that these numbers are simply not correct.

**Response:** The Proposed RMP/Final EIS has been adjusted to address this comment. Text revisions address economic impacts related to minerals management in Table 2-24, Chapter 3, and Chapter 4 of the Proposed RMP/Final EIS. Please note that the minerals resources referred to in Tables 4-41 and 4-42 of the RMP include anticipated natural gas activities as well as locatable minerals.

#### K2

**Comment:** On Table 4-42, it is currently estimated in 2006 Dollars that the "average annual labor income"

from the minerals" industry is \$730,000. Under Alternatives A, B and D this average annual income would increase to \$1,087,000 while under Alternative C it would remain at \$730,000. Obviously, these numbers do not reflect Graymont's operations and apparently were based upon the erroneous "Analysis Assumptions and Guidelines" instead of the reality of Graymont's existing operations. Also, Graymont could not find anything in its analysis of the various alternatives that would support the numbers utilized in Alternative C which would appear to indicate that somehow Graymont's operations would cease under Alternative C. If the Draft Plan alternative intends to terminate Graymont's operations it should be more clearly stated.

**Response:** Text revisions that address economic impacts related to minerals management have been made in Table 2-24, Chapter 3, and Chapter 4 of the Proposed RMP/Final EIS. Please note that the minerals resources referred to in Tables 4-41 and 4-42 of the RMP include anticipated natural gas activities as well as locatable minerals.

#### K3

**Comment:** Page 478 - In Table 4-44, the "anticipated operation timeframe" for Graymont's operations run through 2030. As indicated in the Mine Plan Modification submitted to the Butte Field Office in early 2006, Graymont anticipates that its mining operations in the Limestone Hills will run at least 50 additional years. Graymont believes the table should reflect this anticipated life.

**Response:** Text in this table has been corrected in the Proposed RMP/Final EIS to address this comment.

#### K4

**Comment:** The RMP analyzes the impacts on mineral exploration as it relates to wilderness area expansion, Areas of Critical Environmental Concerns (ACEC) and Visual Resource Management (VRM). When all these other proposed conditions are overlaid on the available land there is a significant increase in restricted area available to potential future mining operations in Alternative B. This limitation on possible mineral production has the potential to decrease tax revenues to Jefferson County due to the increased requirements that will be placed on future mineral development. The proposed Muskrat Creek and Elkhorn Tack-on Wilderness Study Area would preclude mineral development in areas of high proven mineral deposits and be a foregone opportunity for future generations. These permanent closures would also generate standard county PILT payments that wouldn't be equitable to the permanent lost potential that mineral development could produce.

**Response:** The RMP provides for mineral development opportunities in both ACECs and areas with high VRM ratings. These areas would likely require additional

measures to mitigate visual impacts or prevent unnecessary or undue degradation, but they are available for mineral development. The Muskrat Creek withdrawal has been dropped from the Preferred Alternative of the Proposed RMP/Final EIS because the BLM believes that aquatic resources there could be protected using the 43 CFR § 3809 regulations. The Elkhorns Tack-On WSA existed before this RMP revision so this RMP revision would not apply any additional restrictions than what already exist for this area. The Preferred Alternative for the Butte RMP does provide for this tack-on WSA being dropped in the event that adjacent Forest Service lands are removed from wilderness consideration.

#### K5

**Comment:** “Map 46: Lands Proposed for Withdrawal from Locatable Mineral Entry under Alternatives B & C” includes several recreation areas and the proposed Muskrat Creek Wilderness Area, but does not include the proposed Wilderness of the Sleeping Giant – it should.

**Response:** One complexity with respect to proposing a withdrawal from locatable mineral entry in the Sleeping Giant Wilderness is that the area does include privately held mineral rights that would not be affected by any withdrawal. The area has low potential for mineral resources other than slate so the likelihood of claims being filed is low. However, on lands for which the BLM holds mineral rights in Wilderness Study Areas (WSAs), locatable mineral entry would be managed in accordance with the Interim Management Plan for Lands under Wilderness Review. If Congress designates WSAs as wilderness, they would then be withdrawn from mineral entry where the BLM holds mineral rights.

#### K6

**Comment:** On page 13 under planning criteria and regulatory requirements BLM indicates that FLPMA and all other applicable laws will be met. Montana Fish, Wildlife, and Parks believes that some of the issues we have related to mineral and energy issues ultimately stems from the vision and management mission statement in Table 1-5. This statement fails to capture the spirit of the Federal Land and Policy Management Act of 1976 that directs the BLM to conduct land use planning, and that management on the basis of multiple use and sustained yield unless otherwise specified by law. The overarching mission and goal statement for minerals and energy that will help frame the selection of an alternative for the record should include a statement to address fish, wildlife, and recreational resources. Specifically, this mission should state that not only geologic features be preserved but that in mineral leasing and development should occur in a manner that protects fish, wildlife and recreational resources, including crucial fish and wildlife habitat and migratory corridors through

appropriate stipulations including No Surface Occupancy where required.

**Response:** The plan does protect fish, wildlife, and recreational resources using appropriate stipulations, including the use of No Surface Occupancy stipulations for oil and gas exploration.

#### K7

**Comment:** The Boulder Batholith has traditionally offered mining opportunities and tremendous local and statewide economic and employment benefits from extractive industries. These opportunities should continue to be made available without undue restrictions.

**Response:** The RMP notes the Boulder Batholith is an area of high mineral potential that has hosted many of Montana’s most historic mining districts. The plan continues to make lands available for mineral development. Any measures required to prevent unnecessary or undue degradation related to mineral development are the result of the BLM’s responsibility to protect a variety of resources as noted in FLPMA.

#### K8

**Comment:** Page 601 Minerals, Effects Common to All Alternatives; Travel management provisions that “could result in reducing access to mining claims or interfere with the ability to conduct exploration work for some operators”, is inconsistent with Locatable Minerals, Management Common to all Alternatives on Page 94 that states, “BLM provide opportunities for mineral exploration an development”, and “BLM will ensure accessibility to mineralized areas for exploration and development”. Any travel provisions in any of the options contrary to those statements on Page 94 need to be removed.

**Response:** The access for mineral development through the travel management plans will restrict access only to those operators who may not be willing to take the time to follow the travel plan variance requirements. Operators following the available provisions for obtaining a travel plan variance will have access to mineralized areas for the purpose of mineral exploration and development. Operators interested in obtaining a travel variance should be aware of additional lead time and potential expense that a travel variance request may involve.

#### K9

**Comment:** It is obvious (clear) that our concern was well founded that BLM is very serious about closing off as much mineralized areas from public access as possible. This is reflected in the pursuit of closing off 20-70 percent of the mineralized areas to public use/prospecting and claim staking. If you say I have it all wrong and BLM is not intentionally locking up minerals by closing and decommissioning key roads, let look at

their conclusions in the EIS/RMP. Helena TPA – BLM wants to lock up 49-72 percent of all known high-mineral potential areas by closing and decommission key roads. East Helena TPA – BLM wants to lock up 9-22 percent of all known high-mineral potential areas by closing and decommission key roads. NW L&C TPA - BLM wants to lock up 32-36 percent of all known high-mineral potential areas by closing and decommission key roads. Boulder/Jefferson City TPS - BLM wants to lock up 38-61 percent of all known high-mineral potential areas by closing and decommission key roads. Upper Big Hole TPA - BLM wants to lock up 8-19 percent of all known high-mineral potential areas by closing and decommission key roads.

**Response:** The areas identified for road closure or decommissioning are not withdrawn from operation of the Mining Law and remain open to the location of mining claims and development of minerals. The travel restrictions would impact the exploration and development by requiring the permitting, either through a travel variance or a Plan of Operations for activities that might otherwise have been Casual Use or Notice level activity under the Bureau's Surface Management Regulations (43 CFR 3809). These requirements may restrict exploration and development activities to those unwilling to pursue the required permits, but these lands do remain open to the Mining Law and are not "locked up".

#### K10

**Comment:** The final RMP/EIS should evaluate and discuss the potential for acid mine drainage and/or metal or nutrient transport or pollution to occur during mineral exploration and development on BLM lands. Impacts to water quality from active and inactive mining on BLM lands within the BFO area should be identified and disclosed. It would also be helpful to identify where active and inactive (abandoned) mines are located on a map, and to identify mine sites where reclamation work is needed for environmental restoration, and the proposed implementation schedule for mine reclamation. There is a need to protect the taxpayer from the potential expense of reclamation and remediation following hard rock mine financial failures or abandonment.

We note that pollutant discharges from mine adits, and mine site surface runoff and ground water seepage are regulated by EPA and/or the States National or Montana Pollutant Discharge Elimination System (NPDES or MPDES) permits under Section 402 of the Clean Water Act.

**Response:** The potential for acid mine drainage (now more commonly referred to as acid rock drainage) and/or metal or nutrient transport or pollution is much too site-specific to be discussed in the RMP, and would be addressed at a project-specific scale. Impacts to water quality from Abandoned Mine Land (AML) sites are also highly site-specific. AML sites proposed for reclamation work are discussed only briefly in the RMP. For

a more detailed discussion of BLM AML sites please visit: [http://www.blm.gov/wo/st/en/prog/more/Abandoned\\_Mine\\_Lands/abandoned\\_mine\\_site.html](http://www.blm.gov/wo/st/en/prog/more/Abandoned_Mine_Lands/abandoned_mine_site.html). Potential impacts associated with these sites are addressed in project level NEPA analyses.

#### K11

**Comment:** Under the heading Resource Assumptions and the subheading "Minerals and Geology" there is a further subheading titled "Locatable" on pages 314 and 315. As we have reviewed this material, while it makes reference to "three currently operating large scale metal mines" and "three currently operating limestone mines located on private land within the initial Planning Area..." we do not find any reference to Graymont's activities on the public lands nor to the significant impacts Graymont's operation has on the economy of Broadwater County. To the extent the text accurately reflects the "analysis assumptions and guidelines actually used in preparing the alternative management actions," it would appear to Graymont that the failure to even consider Graymont's operations as a part of the analysis of the alternative management actions constitutes a significant defect in the preparation of the Draft Plan as it relates to locatable minerals.

**Response:** The text has been changed in the RMP to reflect the fact that the limestone mines are on both private and public lands.

#### K12

**Comment:** Why is White Sandy, Spokane Bay (or Bar?), Muskrat Creek, and French Bar being proposed for mineral withdrawal? This is the first I heard about it, I haven't seen any public notices or anything in the Federal Register that you are planning to withdraw those areas from mineral entry. Isn't this a major process and shouldn't it be done in a separate process, not sneaked in through the backdoor in a RMP? It is fine to note that these areas "may be" considered for withdraw, but I thought there is an actual proper and formal route to take to withdraw minerals from public domain?

**Response:** The proposal to withdraw these areas is initiated through the planning process and the RMP, but the RMP does not actually withdraw these lands. The comment is correct that the "withdrawal" process for withdrawing areas from the operation of the Mining Law is a formal process involving both internal and public review. The areas proposed for withdrawals remain open to the Mining Law until the withdrawal process is formally started. The RMP recommendations are only the first step in this process.

#### K13

**Comment:** Page 87 - The Draft Plan acknowledges the fact that the LEIS is being prepared and that if, and when, legislation is passed by Congress, the legislation

would "subsequently amend the Butte RMP." This text does not appear to reflect the actual circumstance in the Limestone Hills, particularly with regard to the existing emergency closure and the recently published "segregation" for purposes of the proposed withdrawal. The Draft Plan needs to be amended to reflect actual circumstances as they exist on the ground.

**Response:** Text has been added to reference the Federal Register notice which segregated the lands.

#### K14

**Comment:** Table 2-23 on page 141 under the heading "Management Common to All Alternatives" appears to indicate at the third bullet point that the LEIS itself would cause a revision to the Draft Plan. It was our understanding that only the actual legislation would cause the change in the plan. If the mere preparation of the LEIS will change the Draft Plan, then since the draft of the LEIS has already been published, this text should be clarified.

**Response:** The text under the heading Management Common to All Alternatives has been modified to address this comment.

#### K15

**Comment:** Page 263 - On this page in the right hand column under the heading Limestone, the second sentence in the second paragraph should be reconsidered. While this sentence appears to reflect the proposed action as contained in the draft LEIS, it does not refer to the preferred alternative identified in the LEIS. Also, it would appear to indicate the "Army National Guard" is evaluating the withdrawal while in fact it is Congress that is ultimately going to consider the withdrawal on behalf of the Department of the Army, Corps of Engineers.

**Response:** The text has been modified in this location in the RMP to reflect this comment.

## Monitoring, Implementation

### L1

**Comment:** Monitoring and evaluation must be made consistent with and pursuant to the best available scientific information, techniques, and methods, and any conclusions based on these evaluations must be statistically significant.

**Response:** Appendix N of the Proposed RMP/Final EIS describes the implementation, monitoring, and evaluation process that will be used for the Butte RMP. The Approved Plan accompanying the Record of Decision will identify monitoring processes by goal and program area.

### L2

**Comment:** Monitoring and adaptive management programs are necessary and crucial elements in identifying and understanding the impacts of management actions, and should be an integral part of ongoing resource management and RMP implementation. There should be a continuing process of planning, implementing, monitoring, and evaluating effects of management, and adjusting management where effects are not as predicted. It is only through monitoring of actual effects that occur that the BLM will be able to determine whether:

- 1) goals and objectives are being met;
- 2) assumptions/indicators used in developing and implementing the plan are valid; and
- 3) effects are as predicted (i.e. addressing uncertainties); and
- 4) if mitigation is effective or should be increased or decreased or otherwise adjusted to be meet project goals and objectives. A properly designed monitoring plan will quantify how well the preferred alternative resolves the issues and concerns identified during scoping, and provides the flexible program for monitoring and feedback of monitoring results to improve predictive methodology and modify mitigation. Balancing of recreational uses and resource development with ecosystem and environmental protection needs will require careful monitoring of impacts associated with uses and resource development and feedback of monitoring information to BLM management within an adaptive management framework.

We did not see much discussion of the BLM's proposed monitoring and adaptive management program for the BFO area. Additional information on the BFO's monitoring and adaptive management program should be provided in the final RMP/EIS. Programmatic documents provide an ideal mechanism to develop monitoring programs ultimately used through tiered documents to gather data and answer questions raised in scoping. EPA supports linking the approval of projects tiered to the RMP to availability of funding for conducting necessary monitoring and evaluation. We are concerned that monitoring is often under funded in land management agencies. We believe the RMP/EIS should include a strong, explicit commitment to monitoring, especially watershed/water quality monitoring, such as that in the Forest Service Pacific Northwest Region's Forest Monitoring and Evaluation Guide in which the Regional Forester stated, "All programs and projects should contain appropriate levels of monitoring funds in their costs or they should not be undertaken." (USDA FS 1993)

We recommend that an Appendix be devoted to describing the monitoring and adaptive management program that will be used within the BFO to assure that goals and objectives are met. The final RMP/EIS should demonstrate how future decisions will affect monitoring and

evaluation if financial commitments to these programs or the operating budget are reduced.

**Response:** Appendix N of the Proposed RMP/Final EIS describes the implementation, monitoring, and evaluation process that will be used for the Butte RMP. The Approved Plan described in the Record of Decision will identify monitoring processes by goal and program area.

### L3

**Comment:** Does BLM consider the second growth Douglas fir growing on the winter range in Sawmill Gulch a weed, a nuisance species as well as big sagebrush and Idaho fescue? This winter range needs more timber cover not less.

Is BLM again going to try to burn sagebrush on elk/mule deer winter-spring range in the Pole Creek, Whiskey Gulch, and winter range south of Divide using this seriously flawed document?

**Response:** Vegetative conditions and associated potential treatments of specific localities within the Butte Field Office, such as the areas mentioned in the comment, are implementation decisions that will be considered site-specifically outside of the RMP. After finalization of the RMP priority project areas and habitats for vegetative treatments will be tiered to the priorities identified in the RMP.

### L4

**Comment:** BLM also has a memo of understanding with FWP on land treatment projects and it should be in this document. Each land treatment is subject to an EA/EIS with full public involvement as well including field trips. Refer to BLM manual on Environmental Assessments H-1790-1 and National Environmental Policy Act. This document will not give BLM a license to go out and destroy our public land wildlife habitat.

**Response:** The BLM agrees with the commenter that specific treatment projects are subject to site-specific NEPA analysis on a project-level basis outside the context of the Butte RMP. The BLM regularly coordinates these projects and activities to involve Montana Fish, Wildlife and Parks. The BLM has no plans to go out and destroy wildlife habitat.

### L5

**Comment:** We request public meetings on any sagebrush control project and the process followed including Fish Wildlife and Parks involvement.

**Response:** The BLM proposes to promote and enhance sagebrush habitats in the Butte RMP. Specific projects geared toward promoting sagebrush will follow a site-specific NEPA process that may involve public meetings, and will involve coordination with Montana Fish, Wildlife, and Parks. Such project level site-specific NEPA occurs outside the RMP process. Upon finaliza-

tion of the RMP, such projects will employ and tier to management direction described in the RMP.

### L6

**Comment:** The most common maintenance requirement for 4x4 and OHV routes is the construction and maintenance of water bars/dips/mounds to divert runoff from the route. This maintenance could easily be provided by running a SWECO trail machine with a trained operator over each route once every 5 years. OHV trail maintenance and gas tax monies are available to fund this maintenance. AmeriCorps type labor could also be used. The SWECO could not be used on motorcycle single-track trails but they typically require less maintenance and water bars/dips/mounds can usually be constructed on these trails by hand work.

**Response:** As part of travel plan implementation and road/trail maintenance, the BLM routinely physically maintains motorized routes with a SWECO and other machinery.

### L7

**Comment:** Sheep Mountain area outside Clancy near Lump Gulch has been used as a motorized playground in recent history. Other areas would get increased use if the motorized public were aware of them. Montana Wildlife Federation encourages the BLM to concentrate motorized activities to roads in and near Sheep Mountain and offer the most protective measures elsewhere in the Helena TPA.

**Response:** Travel planning for the Sheep Mountain area was completed several years ago in the Clancy-Unionville travel plan. This area is outside the Helena Travel Planning Area (TPA) and is therefore not being re-addressed in this RMP revision. The BLM is addressing travel management in the Helena TPA with the range of alternatives presented in the Butte RMP. The Preferred Alternative (Alternative B) for the Helena TPA would reduce availability of motorized routes overall in that area.

### L8

**Comment:** If criminal or illegal activity in the Scratchgravel Hills is a big concern, the BLM and local authorities need to provide more effective enforcement regardless of the alternative selected. A dusk to dawn curfew could provide this security only if more effective enforcement is provided.

**Response:** Law enforcement issues are outside the scope of the RMP. However, the Preferred Alternative for the Helena Travel Planning Area has been modified in the Proposed RMP/Final EIS so that all interior roads in the Scratchgravel Hills would be closed to public wheeled motorized travel yearlong at the five proposed trailheads, with the exception of a few perimeter right-of-way routes and routes to private residents. This mod-

ification of the Preferred Alternative is due to the high degree of user conflicts and illegal activity taking place in this area. The BLM believes that this closure may reduce criminal/illegal activity in this area but we also acknowledge that this closure will need to be enforced.

#### L9

**Comment:** Northeast of the Wheat Montana Store and west of Three Forks are several BLM sections and a state section (Copper City). This area is becoming important for mountain bikers from the Gallatin Valley in recent years. This area is only used during the shoulder season months of the spring and fall. Bicyclists have expressed a desire to have a couple of loop trail options there. I would like this area identified in the resource management plan as a potential non-motorized recreation area.

**Response:** Decisions suggested by the comment are implementation decisions that will be considered during site-specific travel planning for this area after finalization of the RMP.

#### L10

**Comment:** Recover and restore Cottonwood Creek [in the Sleeping Giant area].

**Response:** After reviewing the location of the Cottonwood Creek in question, the BLM believes the comment is related to Cottonwood Creek on state-owned lands east of Sleeping Giant. There are no BLM lands in the watershed for this creek. Therefore, restoration of this creek is beyond the BLM's control.

#### L11

**Comment:** CBU has been proactive in preventing cross country travel in the B-D National Forest by offering a 250 dollar reward for individuals reporting violators that are convicted. CBU is willing to engage with your agency in a similar program. This type of cooperative effort between user groups and agencies creates an atmosphere of a vested interest in the resource by the public. Responsible use of the resource should be the primary goal of your agency and CBU is willing to assist the BLM in accomplishing this. Closure of trails and roads to multiple use should be a last resort.

**Response:** The BLM appreciates willingness to assist with enforcement of travel plans. While this implementation issue is beyond the scope of the RMP, the BLM will consider this suggestion for implementation of both existing travel plans, as well as those that will be developed and finalized in the future.

#### L12

**Comment:** Fish, Wildlife, and Parks looks forward to working with the BLM on the fuels reduction projects in the Big Hole watershed. Within these projects we be-

lieve there is a lot of potential to enhance and restore big game winter range in the vicinity of Divide. We also have some concerns about the size and scope of the projects that were proposed, then ultimately shelved, prior to the initiation of this planning effort.

**Response:** Implementation of projects is outside the scope of the Butte RMP. However, the BLM looks forward to working with Fish, Wildlife, and Parks on the fuels reduction project in the Big Hole watershed as well as other future projects.

#### L13

**Comment:** Regardless of what Travel Plans get chosen, we are concerned for the successful implementation and enforcement of any travel plan changes that are proposed. Without strong commitment to the financial and personnel resources necessary to affect and maintain on-the-ground change, even the most thoughtfully devised travel management plan will not work.

**Response:** Travel plan implementation is outside the scope of the Butte RMP. However, the BLM agrees that there are considerable financial and personnel investments that need to be made with implementation of site-specific travel plans. The BLM will continue to request funding for workforce and facilities necessary to implement and enforce travel plans upon finalization of travel plan decisions being made with this RMP.

### Noxious Weeds

#### M1

**Comment:** I would prefer to see the greatest effort possible to reduce noxious weeds on BLM lands. Noxious weeds reduce habitat for game animals and other wildlife, crowd out native vegetation, and are an eyesore. Alternative B appears to be acceptable, especially when paired with fewer travel routes. I would like to see weed control activities taking place at trailheads, along travel routes, and in areas where sensitive or "threatened" plant species are threatened by weeds. Also, BLM may consider posting signs with pictures of noxious weeds at trailheads to educate BLM users about the identification of these plants. BLM should encourage recreators to notify BLM of small (more controllable) infestations in otherwise weed-free areas, so that BLM can manage these areas before the infestation spreads. BLM may also consider partnering with researchers, high schools, and groups like the Native Plant Society to conduct weed pulls and other vegetation management activities, especially at areas close to towns.

**Response:** The Noxious Weed section in Chapter 2 of the RMP outlines priority areas for treatment including trailheads and travel routes.

Presently BLM does provide noxious weed education in terms of posting noxious weed signs and conducting direct user communications at recreation sites including

trailheads. Chapter 2 of the RMP under Vegetation Communities, Alternative B – Preferred Alternative, Noxious Weeds section indicates that weed education would be offered to the public at campgrounds and trailheads. The BLM believes that early detection and rapid response is one of the most effective methods of invasive species management, and uses an integrated approach to use all tools to curb the spread of weeds.

The Butte Field Office has several weed partnerships using biological and herbicide weed control. Some of these partnerships include the following: with Montana State University biological weed researchers, the Elkhorn Mountains Implementation Group, the Big Hole Watershed Weed Committee, the Lewis & Clark County Weed District, the Silver Bow County Weed District, the Jefferson County Weed District, the Broadwater County Weed District, the Beaverhead County Weed District, the Gallatin County Weed District, Whitehall High School and the Park County Weed District. Spray treatment days and weed pulls have been completed with many of these groups, often in cooperation with local watershed groups and/or county representatives.

### M2

**Comment:** Page 33 Noxious Weed Management: The BLM needs more aggressive weed management on all BLM land, particularly on McMasters and Iron Mask properties. BLM is responsible for the weeds on their properties and should demand more accountability from contracted services regarding weed control.

**RATIONALE:** Recommendations from the Elkhorn Working Group to the Elkhorn Steering Committee, on July 14, 2007, include monitoring weed treatment effectiveness and mapping weed infestation.

**Response:** The BLM is treating and monitoring noxious weeds and non-native invasive species as aggressively as time and budget allow. Both the Iron Mask and McMasters areas are priority weed treatment areas and received treatment in 2007 by herbicide and biological means. Both monitoring for weed treatment effectiveness and mapping weed infestations are tools used by the BLM in weed management on public lands including lands in the Elkhorn Mountains.

### M3

**Comment:** In the Elkhorn Mountains, conduct a complete weed-mapping program, spray and pull weeds, monitor effectiveness of treatments, prioritize treatment areas. Treat trailheads, roads and other disturbed areas first.

**Response:** The weed-mapping suggestion in the comment is outside the scope of the RMP. The BLM acknowledges that a complete weed mapping program has not been finished in the Elkhorn Mountains. However, many of the public lands in the Elkhorn Mountains managed by the BLM have been inventoried for noxious

weed infestations in Broadwater and Jefferson Counties. Achievement of a complete weed-mapping effort will depend upon future budgets and workforce availability. Herbicide and biological control methods have been used on weed project areas in the Elkhorns. Many areas of public lands in the Elkhorn Mountains are monitored annually for weed treatment effectiveness. All weed infested areas in the Elkhorns aren't treated annually, but treatment is centered around trailheads, travel routes, and recently disturbed sites where weeds exist.

### M4

**Comment:** Plant seeds can be carried from a source area by the wind, wildlife, or pack animals, on equipment tires and tracks, by water, and on the boots of workers, so care should be taken to implement control procedures in all source areas to avoid spread to unaffected areas. For your information, measures we often recommend at the project level for preventing spread from source areas to uninfested areas include:

Ensure that equipment tracks and tires are cleaned prior to transportation to an uninfested site.

Focus control efforts at trail heads and transportation corridors to prevent tracking of seed into uninfested areas.

Attempt to control the spread from one watershed to another to reduce water as a transport vector.

If a localized infestation exists and control is not a viable option, consider rerouting trails or roads around the infestation to reduce available vectors for spread.

Establish an education program for industrial and recreational users and encourage voluntary assistance in weed prevention and control activities.

Reseed disturbed sites as soon as possible following disturbance.

**Response:** Many of these measures are regularly utilized on public lands within the Butte Field Office to help prevent the further spread of weed seed and noxious weed plant parts. The BLM includes requirements to clean mechanical equipment that are authorized to work on public lands. Other public land users including many recreationists clean their vehicles to rid them of as many weed seeds and weed plant parts as possible, but are not regulated to do so.

### M5

**Comment:** Also, if sufficient vegetation is killed during ground disturbing activities (e.g. by prescribed burning) it may warrant revegetation efforts. Revegetation (re-seeding with native grass mix) should be expanded to seed any site within the control area where the vegetation density is low enough to allow reinfestation or introduction of other noxious weeds, or erosion. The goal of the seeding program should be to establish the sustain-

nability of the area. Where no native, rapid cover seed source exists, we recommend using a grass mixture that does not include aggressive grasses such as smooth brome, thereby allowing native species to eventually prevail. Mr. Phil Johnson, Botanist, Montana Dept. of Transportation, in Helena at 406-444-7657, may be able to provide guidance on revegetation with native grasses.

**Response:** It is BLM policy to reseed disturbed areas of ground. Proposed management in the Preferred Alternative of the Butte RMP (Chapter 2, Vegetation Communities, Alternative B – Preferred Alternative, Grasslands and Shrublands section) states that, “native or low impact, non-invasive seed mixtures would be used when restoring vegetation on disturbed ground.” Mr. Phil Johnson may be contacted if guidance is needed on specific projects.

**M6**

**Comment:** Programmatic direction should also assure that the effects of burning on the potential stimulation of noxious weeds be evaluated during site-specific project level analysis. Prescribed fire has the potential to stimulate weed growth (e.g., Dalmatian toadflax or leafy spurge), and can destroy insects planted for biological weed control. Burning followed by application of appropriate herbicides can provide effective weed control.

We suggest that such considerations be evaluated during development of direction and plans for prescribed burning. Areas should not be prescribed burned for at least 30 days after herbicide treatment.

**Response:** Weed presence and weed control is evaluated in every fuels reduction proposal. As a standard operating procedure, if weeds are present in a proposed prescribed burn area, the weeds are generally treated at a minimum one year before and one year following the burn. Weed infestations are treated in following years if needed. Label instructions and manufacturer’s recommendations will be adhered to for any prescribed burning that would occur on an area following herbicide treatment.

**M7**

**Comment:** As a general practice, EPA suggests prioritizing perimeter weed infestations such as around trailheads and roadsides before treating interior weed infestations. Also, in order to prevent the establishment and spread of noxious weeds in recreation areas (trailheads, toilet areas, etc.), it may be helpful to consider the use of mulch where foot traffic is high and revegetation is difficult or impossible. Additionally, we encourage use of aesthetic barriers and posted signs to discourage foot traffic in sensitive areas.

**Response:** The Butte Field Office uses an Integrated Weed Management (IWM) approach in the treatment and control of weeds. This includes a wide range of strategies to prevent and control the spread of noxious

weeds on public lands including those mentioned in the comment. The BLM uses the IWM approach under all alternatives of the Butte Draft RMP/EIS including the “No Action” alternative.

**M8**

**Comment:** Please be aware that certain pest control activities described in the RMP may fall under EPA’s Worker Protection Standard (WPS) if, (1) the BLM is the “employer” in control of the “operation” and the operation involves or is related to commercial production of timber or timber products, (2) the BLM is using WPS-labeled pesticides, and (3) the pesticide applications in question are related to the production of timber/timber products and they are not covered by one of the applicable exceptions or exemptions. If you have any questions regarding the WPS or its applicability please contact Jaslyn Dobrahner in the Denver EPA office at (303) 312-6252.

**Response:** The Butte Field Office applies all herbicides and pesticides, in accordance with product labels, Material Safety Data Sheet (MSDS) instructions, and agency policy. Use of Personal Protective Equipment by all personnel applying herbicides or pesticides will continue to be required in accordance with product labels and agency policy. In our contacts with Ms. Dobrahner, it was determined that few of our pesticide applications fall under the EPA’s Worker Protection Standard (WPS). All herbicide and pesticide applications under the RMP will comply with the guidance provided under the EPA publication titled “How to Comply with the Worker Protection Standard for Agricultural Pesticides” No. EPA 735-B-05-002. The herbicide and pesticide application Risk Assessment, for the Butte Field Office, shall also include WPS considerations for personnel involved in these pesticide activities and personnel shall be appropriately trained and equipped for their application tasks.

**M9**

**Comment:** We also fully support the proposed conduct of monitoring to determine effectiveness of weed treatment strategies at project level and Planning Area and Decision-wide level (page 24). We recommend that all weed treatment methods be tracked to provide a comparison of the effectiveness of control measures, and that all weed infestations and control actions be tracked in a BFO level weed database.

**Response:** All weed treatments are tracked through the BLM’s application record process and the hard copies are kept for a minimum of 10 years. Annual summaries are compiled from these records and submitted to the BLM State Office. Some weed treatments receive more on the ground monitoring than other treatments, depending on the size of the infestation. A large majority of all weed treatments are evaluated for treatment effectiveness, however not every weed infestation acre or pre-

viously treated acre is visited each year due to budget and personal constraints.

### M10

**Comment:** The transport mechanism for noxious weeds includes all visitors and uses of public lands including hikers, equestrians, and cattle grazing in addition to motorized recreationists. Many events including fire, floods, and the importation of invasive species also contribute to noxious weed problems. For the most part, vehicles do not have a surface texture that will pick up and hold noxious weeds seeds. Transport mechanisms based on hair, fur, manure, shoes, and fabrics are more effective than the smooth metal and plastic surfaces found on vehicles. Additionally, motorized recreationists practice the "Wash your Steeds" policy. However, closures due to noxious weed concerns are only placed on motorized recreationists. We have observed an equal amount of noxious weeds in non-motorized areas as there are in motorized areas. We request that the document make a fair evaluation of all sources and uses that contribute to the noxious weed problem including hikers, mountain bikers, equestrians (non-use of weed-free hay), etc. The document should also fairly evaluate how natural processes and wildlife spread noxious weeds. The document should include a balanced discussion of the noxious weed problem. The discussions, decisions, and measures used to mitigate noxious weeds should be applied impartially to all visitors and with a realistic representation of noxious weeds natural ability to spread versus a relative magnitude for every activity's contribution.

**Response:** The BLM realizes that all of these mentioned uses transport noxious weed seeds and invasive species plant parts. Weed spread is described in Chapter 3 of the RMP in the Noxious Weeds subsection of the Vegetative Communities section. There are studies that have documented that vehicle travel routes promote a high degree of weed infestation spread. It is true that smooth metal and plastic surfaces on motor vehicles don't hold weed seeds well, however other portions of vehicles do hold them as well, such as the undercarriage and tires, and especially then they are adhered with mud. The Proposed RMP/Final EIS, Chapter 3 has been modified to more deliberately point out that direct human contact, wildlife use, and livestock use contribute to weed spread.

### M11

**Comment:** OHV owners in Montana, as part of their vehicle registration, contribute \$1.50 to a noxious weed abatement program. Non-motorized visitors do not contribute to a weed abatement program. We request that the analysis be based on a balanced discussion of the noxious weed problem. The discussions, decisions, and measures used to mitigate noxious weeds should recognize the relatively minor impact that OHVs have on the

noxious weed problem and credit OHV visitors for contributing to a program to control noxious weeds. Additionally, this is another example of predisposition because motorized recreationists have not been given credit for the positive action that they have taken and we have only been penalized for our past cooperation and the initiative taken to control noxious weeds.

**Response:** All vehicle owners when registering their vehicles pay the \$1.50 for the noxious weed program. This includes non-motorized visitors' vehicles they use to access public lands. There are studies that have documented that vehicle travel routes promote a high degree of weed infestation spread.

### M12

**Comment:** Noxious weeds become more widely distributed each year. Many factors influence the establishment and spread of invasive plant species. The following points should be incorporated into the RMP:

- Give high priority to noxious weed control by aggressively seeking funds to achieve this goal. Use biological controls whenever possible, chemical control when needed to restore natural environments, techniques that fit the "integrated pest management" guidelines. USDA- CSREES (Cooperative State Research Education and Extension Service) defines Integrated Pest Management (IPM) as "a sustainable approach to managing pest species by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks". Incorporate some or all of the following techniques.
- Biological controls such as differing various insects are known to control Leafy Spurge, Knapweed, Canada Thistle and Hounds tongue. Leafy spurge flea beetles have proven high success in the Lewistown area as bio-vector of leafy spurge. (Conversation with Craig Roberts, MT DNRC)
- Study the suitability of domestic goats as a bio-agent to control Russian and Spotted knapweed and domestic sheep for leafy spurge. Grazing contracts could concentrate these species, if suitable, in areas of infestation using small enclosures to minimize grazing on desirable species.
- Disturbed ground as will be created if BLM pursues fuel reduction projects is prime substrata for noxious weeds to become established. Plans must emphasize reclamation begin very quickly in those activities that produce this condition: tree and brush removal projects should be reclaimed within 90 days of work completed; Avoid overgrazing by domestic livestock to reduce a disturbed ground situation.

- Minimize use of herbicides in big-sage habitat types to minimize negative impacts to potential sage grouse expansion.

**Response:** The BLM currently uses an Integrated Weed Management approach. The BLM has strategic plans that are being implemented such as Partners against Weeds (PAWS) that parallel this comment. The PAWS plan is referenced in the RMP. These types of weed treatment prescriptions are also discussed in Chapter 2 of the RMP.

Biological controls on noxious weeds have been used in the Butte Field Office since 1992. Various biological control agents have been used in this time on a number of different noxious weeds. The leafy spurge flea beetles (*Apthona species*) and the knapweed root weevil (*Cyphocleonus achates*) have proven the most effective and are readily available.

The Butte Field Office along with the other cooperators including The Sheep Institute and Montana State University are involved in a sheep and goat study to control noxious weeds at present. Noxious weed control using domestic sheep and/or goats in occupied bighorn sheep habitat would be prohibited to prevent any possible disease transmission (from domestic sheep/goats to wild sheep) under the revised RMP.

During implementation of fuels reduction projects, noxious weed infestations are usually treated in those areas before and following completion of each project. BLM would reseed disturbed areas where needed (RMP Chapter 2, Soil Resources, Management Common to Action Alternatives section). Most reclamation is completed sooner than 90 days following any activity that disturbs the ground but this timing would be determined on a case-by-case basis during project implementation. Further reclamation may be completed if monitoring of the site shows it is needed.

Under the Preferred Alternative in the RMP (Chapter 2, Vegetation Communities, Alternative B – Preferred Alternative, Noxious Weed Management section), no herbicide or pesticide which would negatively affect sagebrush would be used aerially in sensitive sagebrush habitats.

### M13

**Comment:** A general comment that applies to alternatives where prescribed burning occurs is the need to ensure adequate noxious weed control prior to and post burning. A viable monitoring and control program needs to be in place to make sure adequate follow up on control of infestations is accomplished.

**Response:** It is a standard practice for the BLM to conduct pre and post weed treatment of fuels reduction treatment areas. Necessary weed treatments are completed a minimum of one year before and one year after the fuels treatments. These areas are monitored both

prior to and following any fuel treatment activity e.g. mechanical or burning. Following the fuels treatment, further weed treatment is completed if needed.

### M14

**Comment:** The remaining or additional recommendations are prioritized and modified by EWG as follows:

1. Fall annual updates on the ‘state of the weeds’ will be provided to the Working Group by all parties engaged in weed management in the Elkhorns.
2. Actively seek funding to pursue weed treatments in areas already identified. Funding would be used to assist agencies and counties in weed treatments.
3. Actively pursue weed control in known locations concentrating efforts along roads and at trailheads (e.g. spray and pull).
4. Mapping of unmapped weed locations can occur simultaneous to treatments.
5. Monitor weed treatment effectiveness. Utilize results to determine need for follow-up treatments and ensure that funding is available for the follow-up treatments.
6. Explore opportunities to develop a permanent fund for long-term weed treatments.
7. Map weed infestations in the Elkhorns. This is a multi-step effort and could utilize ongoing services such as those provided by the Townsend school:
  - a. Elkhorns Coordinator will pull together existing weed maps (B-D, County, Helena, BLM, state, private) and work with Interagency Weed Committee where mapping efforts are already underway;
  - b. Elkhorns Coordinator will work with other agencies, private landowners, and county weed coordinators to develop a collaborative, comprehensive map of Hunting District 380 with the following information: size, location, type of weeds, type of treatment, when treated, and any follow-up treatments. This map will be updated annually;
  - c. Identify where mapping efforts are already planned (e.g. northeast side Elkhorns);
  - d. Prioritize mapping in accessible areas then move towards the interior of the mountain range.

**Response:** BLM responses are indicated by numbered item corresponding to numbered items in the comment.

1. Specific decisions on public outreach to particular groups are beyond the scope of decisions made in the Butte RMP. BLM’s role in working with the Elkhorn Working Group and providing annual weed updates would be determined in the context of the partnership for management of the Elkhorn Mountains.

2. The Butte RMP does not provide direction as to how to use funding. However, the Butte Field Office (BFO) has an active program in weed management as budgets and staffing allow, and will continue to look for funding and grant opportunities to leverage appropriated funds as well as other mechanisms to control and prevent weeds.

3. The RMP outlines priorities for treatment and control efforts across the field office, which would include the BLM portions of the Elkhorn Mountain range, in the Noxious Weed Management section of Chapter 2. Under all alternatives, BLM would focus prevention of weed spread along roads, trails, waterways, and recreations sites, as well as in areas disturbed by project implementation activities. Additional measures would include requiring outfitters to use weed-free hay and to report weed infestations when encountered. The integrated weed management program currently in place and expected to continue after approval of the Butte RMP uses a combination of different methods (e.g. herbicide, pull, biological, etc.).

4. While specifying specific mapping protocols or sequencing of work is beyond the scope of the RMP, the BLM will continue to document weed locations when encountered during treatment activities. The BLM monitors treatment areas at present and requires the counties to do this also, simultaneous to treatment projects on public land. There is Global Positioning System (GPS) mapping and human observation mapping done.

5. The BLM monitors treatment areas at present and requires the counties to do this also, simultaneous to treatment projects on public land. Planning of follow-up treatments is based on results of this monitoring as well as reports of new infestations. This monitoring is used in planning for the method of treatment (e.g. mechanical or herbicide), and the level of intensity of treatment needed for future years. While funding cannot be guaranteed from year to year given the Congressional budget appropriation system, the Butte Field Office actively pursues funding to address identified weed concerns.

6. Specific decisions on developing a permanent fund for work in the Elkhorns are beyond the scope of decisions made in the Butte RMP. The BLM's role in assisting with establishing a permanent fund would be determined in the context of the partnership for management of the Elkhorn Mountains. Currently, the Butte Field Office places priority on the Elkhorn Mountains landscape when asking for funding for weed prevention and control.

7. Specific decisions on mapping weed infestations in the Elkhorns and the role of the Elkhorn Coordinator are outside the scope of decisions made in the Butte RMP. The BLM's role in cooperating with mapping efforts and prioritizing areas would be determined in the context of the partnership for management of the Elkhorn Mountain. In the past, BLM has been active in the Elkhorns Weed Committee and has used resources from Town-

send High School to inventory and map weeds on public lands in the Elkhorns.

### M15

**Comment:** In the Elkhorn Mountains utilize adaptive weed management strategies for ALL areas treated through prescribed burning.

- Inventory - Map the prescribed burn unit and an appropriate buffer around the burn unit to get an accurate inventory of weeds in the area.
- Weed Control Pre Burn - Begin active weed control at a minimum of one year before the unit is burned.
- Revegetation - The unit should be inspected to determine if seeding following the burn will increase competition with weed species, decrease re-invasion of weeds, or establish desired plants that help meet the land use objectives.
- Weed Control - Post Burn Monitoring - Following the prescribed burn and associated restoration, sites should be visited yearly for two to three years to monitor and treat weed infestations. The original inventory and treatments, if any, should be used as a baseline to monitor weed activity for increased infestations, control successes, and to map new invaders. This information can then be assessed and used to improve or adapt the current weed management goals and objects to better address the weeds associated with prescribed burns.
- Apply the above strategies to mechanical treatments where applicable.

**Response:** Weed management strategies for areas targeted for prescribed burning or mechanical treatment would be addressed on a case-by-case basis during project level analysis and planning. In general, BLM agrees with the outlined prescriptions suggested by the EWG. BLM continues to inventory, monitor and treat weed infestations both inside and outside of the Elkhorn Mountain range.

### M16

**Comment:** In the Elkhorn Mountains assure elk security levels are adequate. Prescribed burning should be used to reduce or eliminate the areas of encroachment identified in the Elkhorn Vegetation Study. Begin active weed control at a minimum of one year before the unit is burned.

**Response:** Elk security cover is addressed in all fuel reduction projects on public lands in the Elkhorns. Weeds are generally treated prior to burning and following prescribed burning for fuel reduction projects which have been completed to date on BLM managed lands in the Elkhorn Mountains. Weed treatment is continuing on

burned and unburned weed infested areas in the Elk-horns. Weed management strategies for areas targeted for prescribed burning or mechanical treatment would be addressed on a case-by-case basis during project level analysis and planning. Fuel treatments and weed control are discussed in Chapter 2 of the RMP under each alternative.

#### M17

**Comment:** Among the greatest threats to biodiversity is the spread of noxious weeds and invasive (non-indigenous) plants. Many noxious weeds can out-compete native plants and produce a monoculture that has little or no plant species diversity or benefit to wildlife. Noxious weeds tend to gain a foothold where there is disturbance in the ecosystem. We appreciate the discussion of noxious and invasive plants in the draft RMP/EIS, and support integrated weed management (e.g., effective mix of cultural, education and prevention, biological, mechanical, chemical management, page 23). EPA supports BLM's goal to minimize infestations of invasive plant and noxious weeds (Table 1-5, page 9, and page 17). We are pleased that weed seed-free forage would be used on BLM lands, and that weed management prescriptions would be included in all new treatment projects and incorporated where possible in all existing contracts, agreements, and land-use authorizations that would result in ground disturbing activities (page 24), and that all contractor and BLM equipment would be power washed to remove weed seed before entering areas with ground disturbance (page 28). Another option for preventing the introduction of noxious weeds is to require cattle and horses, especially those coming from areas with noxious weeds, to be penned and fed weed free hay for several days prior to being released on public lands.

**Response:** The BLM agrees that requiring weed free hay to be fed to livestock prior to their use of public land could assist in prevention of weed spread onto public land. However, to be effective, this type of requirement would have to be made at the national level. The Butte RMP has not been altered to require this provision.

#### M18

**Comment:** While EPA supports integrated weed management, including use of herbicides where needed, EPA also encourages prioritization of management techniques that focus on non-chemical treatments first, with reliance on chemicals being the last resort, since weed control chemicals can be toxic and have the potential to be transported to surface or ground water following application.

Management direction should assure that public health and water contamination concerns of herbicide usage are fully evaluated and mitigated. Herbicide drift into streams and wetlands could adversely affect aquatic life and wetland functions such as food chain support and

habitat for wetland species. All efforts should be made to avoid movement or transport of herbicides into surface waters that could adversely affect public health, fisheries, or other water uses. Early recognition and control of new infestations is encouraged to stop the spread of the infestation and avoid wider future use of herbicides, which could correspondingly have more adverse impacts on biodiversity, water quality, and fisheries. Herbicides should be applied at the lowest rate effective in meeting project objectives and according to guidelines for protecting public health and the environment. We recommend that the BLM include an objective stating that, "Herbicides, pesticides, and other toxicants and chemicals be used in a safe manner in accordance with Federal label instructions and restrictions that allow protection and maintenance of water quality standards and ecological integrity, and avoid public health and safety problems."

**Response:** The Butte Field Office uses EPA approved herbicides and pesticides in a safe manner in accordance with label and material safety data sheet instructions. Under an integrated approach, the BLM also uses several other means of weed treatment including: cultural, physical control, and biological controls. These methods are used in combination with strategies for weed prevention, education, monitoring, mapping, and coordination. Herbicide use is only one method of treatment used. It is the primary method used and will continue to be as long as it is the most effective method available. The BLM has many standard operating procedures for applying herbicides including, but not limited to the following:

- Selecting herbicide that is least damaging to the environment while providing the desired results.
- Applying the least amount of herbicide needed to achieve the desired result.

The BLM follows product label and material safety data sheet instructions when treating weeds to protect and maintain ecological integrity, including but not limited to water and air quality resources, livestock, wildlife and human health and safety issues.

#### M19

**Comment:** Aerial application of herbicides in some circumstances can provide the most cost effective means of addressing widespread weed infestations. We note, however, that it is very important that adequate mitigation measures are incorporated into aerial applications to reduce risks of adverse health and environmental effects. We are pleased that the RMP indicates that when winds are greater than 6 miles per hour or within a 300 foot RMZ aerial application of herbicides or pesticides would not occur (page 33). Suggested mitigation measures to avoid herbicide drift to streams and wetlands during ground and aerial applications of herbicide that should be considered as RMP guidelines, include:

- Use adequate streamside buffers {-300 feet for aerial applications and 50 feet for ground applications};
- Flag aquatic areas on the ground;
- Use GPS systems in spray helicopters in association with flagging or field marking of treatment areas to ensure accuracy of aerial treatments (i.e., to better assure that only areas marked for treatment are treated);
- Use drift reduction agents and nozzles that create large droplets to reduce drift to nontarget areas during aerial herbicide applications.
- Use photodegradable dyes in herbicides to facilitate identification of sprayed areas;
- Use spray detection cards;
- Monitor wind speeds;
- Maintain close communications between the helicopter pilot and the ground field observers who monitor herbicide drift, deposition and wind speeds during aerial applications of herbicide;
- Release herbicides at lower altitudes to reduce drift.
- Monitor for herbicides in selected waters near herbicide application areas.
- Notify people living within one-fourth mile of an area to be treated aerially during project planning and shortly before weed treatment.
- Do not locate herbicide mixing, loading, or cleaning areas within 200 feet of private land, open water, or wells, or other sensitive areas; etc.
- Ground field observers, who will be present during aerial applications, should be trained and equipped with the appropriate personal protective equipment according to the label.
- Assure that certified pesticide applicators supervise each BLM application crew and trains crew members in personal safety, proper handling and application of herbicides, and proper disposal of empty containers.
- Consider use of a more selective herbicide (such as clopyralid) in aerial spraying, since a more selective herbicide would kill fewer non-target plants.
- In the unlikely event of a spill, the spill is quickly contained and cleaned up, and appropriate agencies and persons should be promptly notified.
- Conduct surveys for sensitive plants by qualified surveyors prior to aerial applications and at all previously unsprayed sites so that sensitive and/or rare plant species may be protected where such plants are found in areas with weed infestations.

**Response:** While there are no BLM requirements to do so, all of this comment's guidelines are incorporated into the aerial treatment program in place in the Butte Field Office at present, with the exception of monitoring for

herbicides in selected waters near herbicide application areas. The BLM has received guidance for aerial treatment included in the recently completed BLM Vegetation Treatments Using Herbicides EIS (finalized after release of the Butte Draft RMP/EIS) and it will be included in the Preferred Alternative of RMP. Many of the guidelines mentioned in the comment are included in this new guidance.

The BLM does not typically test selected waters near herbicide application areas. The existing mitigation measures and standard operating procedures, used by the BLM, for maintaining buffer areas between treatment areas and water bodies should protect water resources from any impact by aerially applied herbicides. Potable water at developed BLM recreation sites is tested on a regular basis, not only for any herbicide impact but for pollutants that could be a public health concern.

The BLM follows product label and material safety data sheet instructions when treating weeds to protect and maintain ecological integrity, including but not limited to water and air quality resources, livestock, wildlife and human health and safety issues.

#### **M20**

**Comment:** We also recommend mechanical weed removal or hand-pulling of weeds adjacent to streams, for weeds that do not contain extensive root systems near surface waters. It may be helpful to add a list of those weed species which can be effectively hand-pulled (i.e. those without large tap roots and spreading rhizomatous root systems). The herbicide application technique of hand or manual wipe-on (especially applicable for contact systemic herbicides such as glyphosate) is not mentioned as an option to control individual weed plants up to the existing water level adjacent to streams or sensitive aquatic sites. As you know, picloram is toxic, mobile, and persistent, and we would be concerned about use of picloram near streams or in areas of high groundwater. For your information, Dow AgroSciences, the manufacturer of Tordon 22K, has recently developed supplemental labeling for Tordon 22K for areas west of the Mississippi River. They have directions for wick or carpet roller applications. Tordon 22K herbicide can be applied using wick or carpet roller equipment where drift presents a hazard to susceptible plants, surface waters, and other sensitive areas.

One part Tordon 22K is mixed with 2 parts water to prepare a 33 percent solution. The wick method of application is more labor intensive but very effective at targeting particular noxious weeds adjacent to surface waters, wetlands, or protected plants.)

**Response:** Wipe on or wick type weed treatment is considered a tool by BLM in its Integrated Weed Management approach. Biological and hand pulling are two important weed treatment techniques used in riparian areas by the Butte Field Office. Insect releases are the

primary biological technique used. Biocontrol insect releases have proven to be very effective in some areas. Their success is probably dependent upon particular environmental factors of each area. The Butte Field Office utilizes an IWM reference of weed management control methods for State of Montana categorized noxious weeds. This reference discusses the effectiveness of many control methods, including hand pulling, on these particular weed species.

The BLM follows product label and material safety data sheet instructions for each herbicide used, including Picloram, when treating weeds to protect and maintain ecological integrity, including but not limited to water and air quality resources, livestock, wildlife and human health and safety issues.

## Oil and Gas

### N1

**Comment:** Energy and Minerals, page 430, BLM forgot to mention that these activities are subject to individual environmental analysis and must involve the public for public input as well as FWP. Recent leasing in Dillon violated the National Environmental Policy Act and a separate EIS draft was not prepared by BLM. That conforms with the federal judges decision for the East Front Leasing. BLM ignored the federal judge's decision that a separate draft EIS must be prepared beyond a land use plan. That is a federal action requiring a comprehensive approach. Is your office following in the same tracks as Dillon and ignoring a federal judge's decision?

**Response:** The Record of Decision for the Butte RMP will make the decisions required for leasing, as was done for the Dillon RMP, based on the analysis found in this EIS. These required decisions are identified in the BLM Handbook, H-1601-1, Land Use Planning Handbook, beginning on page 23 of Appendix C. These requirements were developed in large part due to the decision that the BLM believes is being referenced in the comment (Connor v. Burford, 848 F. 2<sup>nd</sup> 1441, 9<sup>th</sup> Cir., 1988). Further guidance is found in BLM Handbook, H-1624-1, Planning for Fluid Mineral Resources. The purpose of this Handbook is to help ensure compliance with the Federal Land Policy and Management Act and the National Environmental Policy Act. A separate EIS beyond the land use plan is not required for oil and gas leasing.

### N2

**Comment:** This does not seem like the appropriate place/process to determine where to ban oil and gas exploration and production, especially with the uncertainty in the world market and oil pushing \$70/barrel. Until the US becomes independent upon foreign oil, we should keep all the options open here in Montana. Don't close off any areas until that time occurs. I haven't heard that this is an issue and so I am unsure why you have to

propose banning oil and gas exploration in this area. Again, there doesn't seem to be any "real" data to support your wish to close off all of these areas. It seems more like a lot of "office work" and effort to kiss up to various enviro groups. Actual field work is needed in order to support such premature push to close all these areas with (with no real data provided to support the notion).

**Response:** The BLM is required by law (the Federal Land Policy and Management Act) to manage lands for multiple use. This means the public lands are managed so that they are utilized in the combination that will best meet the present and future needs of the American people. The BLM attempts to make the best use of the land for some or all resources or related services over areas large enough to provide for periodic adjustments in use to conform to changing needs and conditions. In some cases the BLM makes use of some land for less than all of the resources. In other cases the BLM manages a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and non-renewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values. The final goal is the harmonious and coordinated management of the various resources without permanent damage to the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return.

### N3

**Comment:** Table 2-20 indicates that the preferred alternative, Alternative B, makes the most acres available for oil and gas leasing of any alternative (i.e. 96 percent of the BFO mineral estate lands or 649,367 acres), even more than Alternative D which generally provides for greatest levels of resource development and least environmental protection of the action alternatives. In general, Alternative B provides for moderate levels of resource development in an apparent effort to balance resource development with environmental protection. It is not clear to us why this perspective of moderation and balancing of resource development with environmental protection appears to change when it comes to oil and gas leasing.

**Response:** The BLM would respond to this comment by first pointing out that Alternative B only makes 43 more acres available for leasing than Alternative D. Of the available acreage 45 percent is available subject to major constraints (No Surface Occupancy stipulations). Fifty two percent is available subject to moderate constraints (Controlled Surface Use or Timing Limitation stipulations). The remainder is available under standard lease terms. In comparison, Alternative D makes 16 percent of the available acreage subject to major con-

straints and 72 percent subject to moderate constraints. While Alternative B makes slightly more land available than Alternative D, it is much more restrictive than Alternative D based on the mix of lease stipulations proposed in the RMP. It is also slightly more restrictive in terms of the mix of stipulations proposed in the RMP than Alternative A.

#### N4

**Comment:** We also recommend a stipulation for Alternative B of a 500 foot no surface disturbance buffer distance for protection of wetlands, natural springs and seeps, reservoirs, lakes, ponds, intermittent or small perennial streams, riparian/wetland areas, natural springs and seeps, and within 1,000 feet of perennial streams and rivers. We believe it is important to avoid placement of roads near streams within riparian areas and wetland areas, and that drilling activities should be sited to avoid activities near such sensitive areas. Exceptions to this buffer distance may be considered for pipelines and short segments of roads.

It is also important that wetlands and riparian areas be avoided as much as possible during pipeline routing, and any pipelines unavoidably placed through wetland areas should avoid dewatering of wetlands during trench construction. Trench drainage plugs can be used to minimize this drainage effect. Pipelines through wetlands and other sensitive areas should also use a minimal narrow width for pipeline right-of-ways.

**Response:** The actions proposed in the comment are in line with BLM policy and regulations. Alternative B contains a No Surface Occupancy stipulation for the protection of wetlands, floodplains, and riparian areas. There is no need for a stipulation in Alternative B for a 500 foot no surface disturbance buffer for protection of wetlands, natural springs and seeps, reservoirs, lakes, ponds, intermittent or perennial streams, and riparian/wetland areas. Regulations at 43 CFR § 3101.1-2 allow the BLM to move a location up to 200 meters (656.16 feet) to mitigate impacts to features proposed for no surface occupancy by the comment. The stipulation listed above would protect and mitigate impacts to perennial streams and rivers. We would also use our authority to move locations up to 200 meters to add additional protection on a case-by-case basis. Alternative B also proposes to stipulate municipal watersheds in the Butte Field Office with a No Surface Occupancy stipulation. Other stipulations for fisheries will indirectly help to mitigate impacts in wetlands, riparian areas, around streams, and other areas.

On BLM-administered lands, pipelines on a lease (or within a unitized area), which are constructed and managed by the lease holder or operator are authorized under an application for permit to drill or sundry notice and lease stipulations applied. On or off lease/unit pipelines constructed and managed by someone other than the leaseholder/operator require a BLM right-of-way and

are governed by restrictions found in the applicable right-of-way. On BLM-administered lands pipelines located off the lease or the unitized area require a right-of-way with its own stipulations.

#### N5

**Comment:** We also recommend that the BLM require that oil and gas operators make maximum use of directional drilling to increase protection of sensitive resources (i.e. require use of directional drilling to reduce risks to sensitive resources such as water quality and important aquatic or terrestrial habitats). New roads should be restricted, and maximum use made of directional drilling and cluster development, with wide spacing of well pads, and few exceptions, modifications or waivers of environmentally protective stipulations.

**Response:** Existing BLM policy, Washington Office Instruction Memorandum (IM) No. 2007-021, emphasizes the use of environmental Best Management Practices (BMPs). This IM directs all field offices to incorporate environmental BMPs into proposed Applications for Permits to Drill (APDs), sundry notices, and associated on- and off-lease Rights-of Way approvals after appropriate environmental review. Environmental BMPs to be considered in nearly all circumstances include the following:

- Interim reclamation of well locations and access roads soon after the well is put into production;
- Painting of all new facilities a color that best allows the facility to blend with the background, typically a vegetated background;
- Design and construction of all new roads to a safe and appropriate standard, “no higher than necessary” (see BLM 9113 Roads Manual) to accommodate their intended use; and
- Final reclamation recontouring of all disturbed areas, including access roads, to the original contour or a contour that blends with the surrounding topography.

Other environmental BMPs are more suitable for Field Office consideration on a case-by-case basis, 1) depending on their effectiveness, 2) the balancing of increased operating costs vs. the benefit to the public and resource values, 3) the availability of less restrictive mitigation alternatives that accomplish the same objective, and 4) other site specific factors. Examples of typical, case-by-case BMPs include, but are not limited to, the following:

- Burying of distribution power lines and/or flow lines in or adjacent to access roads;
- Centralizing production facilities;
- Installing submersible pumps;
- Placing wellheads below ground; and

- Drilling multiple wells from a single pad.

What the comment recommends is already BLM policy applied in Montana.

#### N6

**Comment:** We also note that mitigation plans that use enhancement or creation of off-site wildlife habitat to offset loss or destruction of natural habitats often results in development of habitat of lesser quality than natural habitat. We believe caution should be exercised in allowing adverse impacts to natural habitat and using human-created habitats of uncertain quality to offset loss of natural habitats. This often results in loss of natural ecological functions. Avoidance of impacts to natural habitats should be prioritized over efforts to use human created habitats as compensation for loss of natural habitats.

**Response:** Appendix M of the Proposed RMP/Final EIS provides the stipulations that would be required for a range of species during oil and gas exploration. These stipulations range from timing restrictions to no lease and would be required for all oil and gas exploration activities. Off-site mitigation could be authorized, in some cases, but all measures would be taken to protect natural habitats before off-site mitigation would be allowed.

#### N7

**Comment:** We are also concerned that BLM exceptions, modifications, or waivers may be granted that allowed increased surface disturbance and activity timing that may reduce protection of environmentally sensitive areas if operators submit plans that demonstrate that impacts to resources are “acceptable” or can be “adequately mitigated” (per Appendix L). We are particularly concerned if exceptions are granted to the no surface occupancy buffers for important wildlife and fisheries habitats and municipal watersheds.

We believe that the practice and process for removing environmentally protective restrictions on oil and gas development and for demonstrating “acceptable” levels of impacts or “adequate” mitigation should be more fully described in the Final EIS. There should be very careful review of, proposed exceptions, modifications and waivers to protective restrictions, since exceptions, modifications and waivers to protective stipulations may reduce the level of environmental protection.

**Response:** We have added language to RMP at that point in Appendix L, Fluid Minerals, where the leasing process is explained to address these concerns. However, we have also addressed portions of this comment in our response here.

The Great Falls Oil and Gas Field Station is the BLM office with approval authority for oil and gas activities for the Butte Field Office. During the last two fiscal

years, our Great Falls office has not granted any requests for waivers, exception, or modifications for lease stipulations as none have been requested. However, they have granted a total of 51 waivers, exceptions, or modifications to existing conditions of approval attached to APDs. These approvals affected eagle, big game, and sage grouse timing limitation conditions and conditions of approval imposed due to the Migratory Bird Treating Act (MBTA). The MBTA conditions of approval only affected very small areas in and around well sites or other sites disturbed for oil and gas operations. In all of these cases the areas were physically inventoried before approval of any request for a waiver, exception, or modification. In the case of the wildlife conditions of approval the average time granted for an exception was normally less than two weeks long and just involved one well site. Time frames granted for big game conditions of approval were also for very short periods of time.

In regards to the concerns expressed in the comment over public involvement in the process of granting proposed waivers, exceptions, or modifications the BLM will follow requirements found at 43 CFR § 3101.1-4:

“A stipulation included in an oil and gas lease shall be subject to modification or waiver only if the authorized officer determines that the factors leading to its inclusion in the lease have changed sufficiently to make the protection provided by the stipulation no longer justified or if proposed operations would not cause unacceptable impacts. If the authorized officer has determined, prior to lease issuance, that a stipulation involves an issue of major concern to the public, modification or waiver of the stipulation shall be subject to public review for at least a 30-day period. In such cases, the stipulation shall indicate that public review is required before modification or waiver. If subsequent to lease issuance the authorized officer determines that a modification or waiver of a lease term or stipulation is substantial, the modification or waiver shall be subject to public review for at least a 30-day period.”

These provisions provide for appropriate public involvement.

#### N8

**Comment:** Thank you for directing the RMP/EIS reader to the websites for Best Management Practices (BMPs) for oil and gas operations in Appendix D (page 717). It is our understanding that site-specific BMPs may be negotiated with the operator, and it is not clear if site-specific BMPs will be negotiated with operators above and beyond the standard BMPs identified on the BLM websites. The final RMP/EIS should discuss the potential for development of any site-specific BMPs with oil and gas operators.

**Response:** The BLM has changed the RMP in Appendix M of the Proposed RMP/Final EIS (formerly Ap-

**pendix L** in the Draft RMP/EIS) at the subsection labeled “Conditions of Approval” to better explain the use of BMPs and other conditions of approval (COAs). The commenter is correct about the BLM’s use of BMPs in the oil and gas program. The BLM does negotiate site-specific BMPs as appropriate/needed with operators.

#### N9

**Comment:** We did not see much discussion in the draft RMP/EIS of potential for spills or leaks of petroleum products during oil and gas drilling or production activities, or during pipeline transport. We are concerned about the risk and potential for a spill of petroleum product into the environment, and the serious environmental impacts that may accompany such a spill. We note that small leaks to pipelines or other petroleum transport or storage facilities are often difficult to detect and can allow many thousands of barrels of petroleum product to discharge into the environment before a leak is detected. We believe the potential for spills or leaks of petroleum products to the environment should be evaluated and discussed, and management direction and oil and gas leasing plans should provide for use of state-of-the-art leak detection and monitoring equipment, remote control shut off valves, check valves, etc.

We also suggest that RMP management direction should provide for periodic on the ground inspection of facilities that have potential for petroleum product leakages using hydrocarbon monitoring equipment be considered. All possible actions to reduce the probability of a spill/leak occurring, the magnitude of a spill/leak, and to reduce or mitigate the adverse consequences of a spill/leak should be taken. The CEQ regulations require disclosure of the adverse environmental impacts that cannot be avoided should the proposal be implemented and that appropriate mitigation measures be included (40 CFR 1502.16 and 1502.14).

**Response:** The reasonably foreseeable development (RFD) scenario developed for the Butte RMP does not forecast any oil production on federal lands. It forecasts only gas production on federal lands.

Revisions have been made in **Appendix M** in the Proposed RMP/Final EIS (formerly **Appendix L** in Draft RMP/EIS) to include information on how potential spills or leaks of petroleum products during oil and gas drilling or production activities would be addressed. The determination to require state-of-the-art leak detection and monitoring equipment, remote control shut off valves, and check valves is a site-specific decision and would be made if and when an application for permit to is filed for a well in the Butte Field Office.

#### N10

**Comment:** Are Spill Prevention, Control, and Countermeasure (SPCC) Plans with information on spill response procedures and containment and other counter-

measures to prevent and mitigate oil spills within the Monument [Field Office]? A SPCC identifies specific procedures to control and mitigate potential spills and impacts to surface or ground water, including discussion of the location of equipment and expertise available to respond to environmental cleanup, (see EPA website, <http://www.epa.gov/oilspill/spcc.htm>). Special conditions such as weather impaired and cold weather response procedures should be addressed in SPCC Plans. The final RMP/EIS should clarify that adequate SPCC Plans will be prepared for oil and gas activities within the BFO Planning Area.

**Response:** Spill Prevention, Control, and Countermeasure (SPCC) Plans are a requirement of the Environmental Protection Agency. However, by regulation at 43 CFR § 3162.5-1(d) when reasonably required by the authorized officer (AO) of the BLM a contingency plan shall be submitted describing procedures to be implemented to protect life, property, and the environment. Our Notice to Lessees (NTL-MSO-1-92) governs the reporting of undesirable events with Part IV dealing with contingency plans. That section states that “upon request of the AO, a copy of any Spill Prevention Control and Countermeasure Plan required by the Environmental Protection Agency, pursuant to Title 40 CFR 112 or other acceptable contingency plans, must be submitted. All plans shall provide the names, addresses, and telephone numbers (both business and private) of at least two technically competent company or contract personnel authorized to order equipment or supplies and to expend funds necessary to control emergencies.” The BLM will enforce this requirement as appropriate. The RMP has been changed to acknowledge this.

#### N11

**Comment:** It is important that BLM inspect and monitor oil and gas activities to assure that activities are in compliance with stipulations and BMPs. We note that BLM could also write stipulations for oil and gas development that requires operators to monitor for water quality impacts and for impacts to fish and wildlife. We are also enclosing an article entitled “Federal Wildlife Monitors Oversee a Boom in Drilling” from the February 22, 2006 Washington Post. This article describes concerns in BLM’s ability to monitor wildlife effects of oil and gas drilling. The article appears to support concerns that BLM resources for monitoring and mitigating effects of oil and gas development on wildlife, and perhaps other resources, may be inadequate. How can the effects of oil and gas development activities, particularly cumulative effects, be identified and then mitigated if BLM monitoring resources are so limited?

**Response:** The article cited in the comment provides no information supporting the assumption that BLM monitoring resources in Montana and the Dakotas are limited. The BLM carries out an active inspection and enforcement/monitoring program in Montana and the Dakotas

and will ensure that it would be carried over into the Butte Field Office if oil and gas production is ever established on the public lands or on split estate minerals administered by the BLM. Recently, with the passage of the Energy Policy Act of 2005 additional emphasis has been placed at a national and state level on monitoring and mitigating effects of oil and gas on wildlife and other resources. Beginning with this fiscal year (October 2008), the BLM now uses a workload measure/program element to track oil and gas surface and environmental monitoring including conducting baseline and follow-up inventory and monitoring activities. Oil and gas surface and environmental monitoring is performed to ensure:

- oil and gas lease stipulations and application for permit to drill conditions of approval are achieving the desired outcome;
- environmental impacts of fluid mineral development are identified;
- interim and final reclamation trend and success;
- BLM and operator follow-up actions are identified;
- Adaptive changes are implemented; and
- Desired outcome measures are appropriate.

Finally the BLM has also adopted policy directing that all Field Offices incorporate environmental best management practices (BMPs) into proposed applications to drill, sundry notices for surface disturbing activities, and associated on- and off-lease rights-of-way approvals after appropriate environmental reviews. Some, but not all, of the BMPs that can be considered include the following items:

- installing raptor perch avoidance;
- burying of distribution power lines and/or flow lines in or adjacent to access roads;
- monitoring wildlife by the operator;
- placing seasonal restrictions on public vehicular access; and
- using common utility or Right-of-Way corridors.

These BMPs are meant to minimize impacts to wildlife.

#### N12

**Comment:** We appreciate the inclusion of a section in the draft RMP/EIS regarding anticipated cumulative effects of all resource development activities (pages 480-489), and cumulative effects of travel plans (pages 636-656). We are particularly concerned about the cumulative effects associated with oil and gas drilling and production activities. Appendix L indicates that ancillary facilities would be needed to support oil and gas activities, including well sites, access roads, compressors, and pipelines (Table 2, page 887). We anticipate that in addition to these activities production facilities and

equipment, pump stations, sheds, water disposal pits, ground based communication sites, and powerlines feeding pump stations may be needed. There is not much discussion and disclosure of the cumulative effects of oil and gas wells and the ancillary facilities on wildlife and other ecological resources within the BFO Planning Area. The potential cumulative impacts from these wells and ancillary facilities may be significant and should be more fully discussed and disclosed in the final RMP/EIS. We recommend that Table 2 in Appendix L be reviewed to see that it provides full and comprehensive disclosure of all the ancillary facilities and disturbances associated with the drilling of the estimated 15 exploratory oil and gas wildcat wells, with four well having oil and gas discoveries, two of which would become producers, and the 40 coal bed natural gas wells.

**Response:** The BLM has reviewed the material in **Appendix M** of the Proposed RMP/Final EIS (formerly **Appendix L** in Draft RMP/EIS) on the reasonably foreseeable development (RFD) scenario developed for oil and gas for the RMP and also on the forecasted effects for oil and gas. The RFD scenario has been changed to reflect recent drilling activity by the Bill Barrett Corporation in northern Park County in the Butte RMP Planning Area (but not on federal mineral estate lands). The company recently reached total depth in a deep gas well and has announced that they will be testing the well this fall (2007). A second well has been spud in and is drilling. There are two other permitted locations in the same area. In addition after review, we have revised the information in **Appendix M** dealing with the cumulative impacts of oil and gas development to better portray the potential impacts from a RFD scenario showing 29 total wildcat wells, 12 of which would be discovery wells, and 36 step-out wells. As noted in **Appendix M**, 40 of the total wells are forecast to be coal bed methane. The RFD forecasts seven producing federal wells, all of them deep gas wells.

#### N13

**Comment:** An important aspect of mitigating cumulative impacts is the ability to monitor and detect impacts that are occurring, and then to take actions to mitigate impacts (mitigation means avoid and minimize impacts and then rectify or compensate for unavoidable impacts), such as maximizing distance between well pads, phasing development, minimizing new roads and other ancillary facilities, assuring that well sites for non-producing wells are adequately reclaimed and abandoned wells are properly sealed, adequate oversight and follow-up monitoring of exploration and development activities. What procedures are being used to ensure that leases on producing or non-producing sites are properly monitored? How can the public and other agencies review monitoring information for leases within the BFO area?

**Response:** Producing leases or non-producing leases with drilled and abandoned wells will be monitored and compliance with lease stipulations and any conditions of

approval applied to an Application for Permit to Drill ensured in the same way as the BLM does in parts of Montana and the Dakotas where there is existing oil and gas activity. Beginning with this fiscal year (October 2008), the BLM now uses a workload measure/program element to track of oil and gas surface and environmental monitoring including conducting baseline and follow-up inventory and monitoring activities. We also carry out periodic program reviews of all phases to our oil and gas program to identify strengths and potential weaknesses for improvement. In addition, a monitoring plan, similar to the one developed for the Dillon Field Office, for oil and gas leasing and exploration and development in the Butte Field Office will be included in the Record of Decision for this RMP. That information, excluding proprietary or confidential information, would be available for public review upon request.

#### N14

**Comment:** Montana Wildlife Federation was dismayed to find the Sleeping Giant and Canyon Ferry recognized for high Oil and Gas drilling potential. MWF does not believe the O&G values of these areas surpass their wildland value and requests that leases are not given a high priority.

**Response:** The BLM believes that the commenter is referring to the map in **Appendix M**, Fluid Minerals, of the Proposed RMP/Final EIS (formerly **Appendix L** in Draft RMP/EIS) depicting oil and gas occurrence and development potential in the Butte Field Office. That map identified five areas where conventional oil and gas activity was considered most likely in the Field Office and one area of coal bed natural gas. These areas were described in the appendix and in Chapter 3 under the subheading Leasable Fluid Minerals. Sleeping Giant and Canyon Ferry are in two of the areas identified for conventional oil and gas. In no way is the BLM prioritizing these areas for oil and gas leasing. In the case of the Sleeping Giant area we would point out that a major portion of the general area is in within the Sheep Creek and Sleeping Giant Wilderness Study Areas (WSAs) and as such by regulation cannot be leased for oil and gas as long as these areas retain that classification. If the Sleeping Giant area is ever released from WSA status that portion that is included in the Area of Critical Environmental Concern would be managed under the management plan developed when it gained that status. As such it would be managed for its recreational, scenic, and fish and wildlife values. The existing management plan use constraints for oil and gas would apply which do not allow surface occupancy on BLM lands. In the case of Canyon Ferry lake the Bureau of Reclamation manages approximately 1,800 acres of Federal lands surrounding the reservoir. Leasing decisions (applicable constraints) for these lands are being made with this RMP. However, the BLM would still request the Bureau of Reclamation to review any proposed leases.

It is also noteworthy that none of these areas have “high” potential for oil and gas leasing. They are a mix of “low” and “moderate” potential.

#### N15

**Comment:** With this vast amount of public land being leased out for oil and gas exploration and drilling, it is essential that the leasing process be open and that the public be fully informed before any leases are issued. The RMP is unclear about how the public will be adequately informed about new leases.

**Response:** The BLM notifies the public of lands that will be available for leasing and under what terms during the planning process when we make the required site-specific leasing decisions in the Proposed RMP/Final EIS and then the Record of Decision. During that process the public has the right to comment on our proposed decisions found in the Draft RMP/EIS and offer suggested changes to our proposed alternatives and mitigation measures.

The BLM notifies the public of competitive oil and gas lease sales through several different avenues. First, as required by regulations at 43 CFR § 3120.4, a notice of competitive sale containing the a list of the lands available at that sale and a map depicting those lands is posted in a public place in the Montana State Office, BLM Field Offices in Montana and the Dakotas, and offices of other affected surface management agencies at least 45 days prior to the sale date. Second, the BLM Montana State also posts the sale list on the internet site ([www.blm.gov/mt/st/en/prog/energy/oil\\_and\\_gas.html](http://www.blm.gov/mt/st/en/prog/energy/oil_and_gas.html)) at least 45 days before the sale date. Finally, any member of the public may request that the BLM mail them a copy of the sale notice on either an individual sale or by establishing an account with us having all sale notices mailed to them.

In addition to general public outreach described above, it is BLM policy to carry out the following after a land use plan is finalized to better contact surface owners over federal mineral estate when that mineral estate is being offered for lease:

The BLM will use widely available media, such as newspaper, radio, and television, to inform the public of the BLM websites that host lease sale information.

The BLM will work through local forums to maintain a dialogue on local leasing activity. Where practical, the BLM will identify areas of leasing interest.

Oil and Gas Competitive Sale Notices should include links, where available, to sites that offer information regarding surface ownership and leasing information.

#### N16

**Comment:** Sufficient information about proposed energy leases and development must be provided to the pub-

lic and sufficient time for public comment should be allowed based on the complexity of the proposal.

**Response:** The Butte RMP is making those decisions required by the BLM planning handbook, H-1601-1, for oil and gas. These decisions are found in Appendix C of the Handbook beginning at page 23 of the Appendix. The following specific decisions required by this handbook were made for the BLM administered oil and gas estate. The RMP identifies:

1. Areas open to leasing, subject to existing laws, regulations, and formal orders; and the terms and conditions of the standard lease form.
2. Areas open to leasing, subject to moderate constraints such as seasonal and Controlled Surface Use restrictions.
3. Areas open to leasing, subject to major constraints such as No Surface Occupancy stipulations.
4. Areas closed to leasing. Identify whether such closures are discretionary or nondiscretionary; and if discretionary, the rationale.
5. Resource condition objectives and specific lease stipulations and general/typical conditions of approval and best management practices to be employed to accomplish these objectives in areas open to leasing.
6. For each lease stipulation, circumstances for granting an exception, waiver, or modification are identified. The RMP also identifies the general documentation requirements and any public notification associated with granting exceptions, waivers, or modifications.
7. The RMP identifies whether leasing and development decisions also apply to geophysical exploration.
8. Whether constraints identified in the land use plan for new leases also apply to areas currently under lease.
9. Long-term resource condition objectives for areas currently under development to guide reclamation activities prior to abandonment.

The decisions in the Butte RMP to open the lands to leasing represents the BLM's determination, based on the information available that it is appropriate to allow development of the specific BLM lands in the planning area consistent with the terms of the lease, specific stipulations, laws, regulations, and orders, and subject to reasonable conditions of approval.

The Butte RMP meets BLM guidance for oil and gas leasing and development and includes a reasonably foreseeable development scenario for oil and gas, identification of oil and gas potential within the planning area, and the site-specific identification of lease stipulations to be used. It also identified a range of alternatives with varying levels of constraints. Further, the document also identifies a range of conditions of approval to be used to mitigate impacts from oil and gas leasing and development. It also reflects consideration of public, other agency, and interdisciplinary team input.

Opportunity for public input has been ongoing throughout the development process for the Butte RMP beginning with initial scoping for the RMP. Other opportunities for public comment occurred during development of the travel plans described in the RMP. Finally, the Draft RMP/EIS was released to the public for a 90 day public comment period on June 8, 2007, which was extended to 120 days ending on October 9, 2007. During that period the BLM accepted written comments and also held public meeting in six communities within the boundaries of the Field Office.

**N17**

**Comment:** An evaluation of impacts from energy development and a specific "conservation strategy" should be completed for each energy field or project before leases are issued which identifies the wildlife, vegetative, historic, geologic and recreational resources. The conservation strategy should provide specific recommendations for actions to minimize impacts on fish and wildlife, while establishing plans for mitigation and detailed monitoring. Only with a thorough analysis will the right stipulations be attached to the leases which genuinely protect wildlife and other resources and values.

**Response:** The BLM is unsure what the commenter means by the phrase "conservation strategy." However, we believe that the Butte RMP has evaluated the impacts from reasonably foreseeable oil and gas development in the Butte Field Office. The RMP identifies and describes all resources and resource uses in the Butte Field Office including, but not limited to, wildlife, vegetative, historic, geologic, and recreational resources. In the four alternatives the RMP provides specific recommendations for actions to minimize impacts to fish and wildlife through the development of a range of oil and gas lease stipulations. Oil and gas lease stipulations were developed to mitigate impacts to a total of 23 different classes of fish and wildlife habitat. Other stipulations were developed to help mitigate impact to vegetation wetlands, riparian areas, and water quality. In addition to these stipulations a wide range of other stipulations have also been developed to mitigate impacts to other resources in the Butte Field Office. The RMP also identifies potential conditions of approval that may be used on a site-specific basis to mitigate impacts for approved wells or other surface disturbing activities. The BLM has also included information our use of best management practices in the oil and gas program. Information in the Draft RMP has been expanded in **Appendix M** of the Proposed RMP/Final EIS to note that it is the BLM's policy to use best management practices and that we will develop local best management practices as needed.

**N18**

**Comment:** According the map displaying areas of "reasonably foreseeable development" and drilling activity, it appears that the Sleeping Giant ACEC is included

as an area with some potential for exploration and drilling activities. In keeping with the plan for managing ACECs, oil and gas exploration and drilling activities would seem to be incompatible with the values for they are supposed to be managed. Therefore we ask that no new oil and gas leases be issued for exploration and drilling activities, or if they are, that they only be issued with a “no surface” and “no surface disturbance” stipulation.

**Response:** The commenter is correct in noting that the Sleeping Giant ACEC is located in an area of reasonably foreseeable development and drilling activity. This is based on a review of the geology of the area. It is not a determination that drilling and other development will occur in the ACEC. Most of the Sleeping Giant ACEC is located within the boundaries of the Sheep Creek and Sleeping Giant Wilderness Study Areas (WSAs). By regulation any lands within the boundaries of a Wilderness Study Area cannot be leased as long as they are subject to that designation. The small area outside of the two Wilderness Study Areas will be managed under the existing ACEC management plan which would require a No Surface Occupancy stipulation for oil and gas leasing. If Congress removes these two WSAs from wilderness consideration, management of the total area encompassed by the WSAs would revert to the existing management plan for the ACEC. As noted earlier this would mean that any new leases issued for lands within the boundaries of the ACEC would carry a No Surface Occupancy stipulation.

#### N19

**Comment:** Mineral development and utility corridors would be inappropriate 'nuisances' here; so we support making the Scratchgravels a 'no-lease' area and an 'exclusion' area respectively. (The oil & gas potential in the batholith probably insignificant; and with all the surrounding roads, and existing towers in the north hills, Spokane Hills, Boulder Hill, MacDonald Pass, etc., there's no need to trash the Scratchgravels.

**Response:** This comment is stating an opinion and provides no justification for placing the area in a no-lease status. In order to close lands for leasing the BLM has to determine that other land uses or resource values cannot be adequately protected with even the most restrictive lease stipulations; appropriate protection can be ensured only by closing the lands to leasing.

Finally the comment is correct in stating the Scratchgravel Hills are within the boundaries of the Boulder Batholith which is an area of very low potential for oil and gas occurrence. Due to this the BLM forecasts a very low potential for oil and gas development, if any, in the future in this specific area.

#### N20

**Comment:** The No Surface Occupancy (NSO) stipulations in the Final RMP need to specify that NSO in this case means not only that surface occupancy is prohibited, but ground disturbances including road building, stream crossings, and pipeline placement are likewise prohibited through no surface occupancy/no ground disturbance (NSO/NGD) stipulations.

**Response:** A brief description of lease stipulations is given in Chapter 2 of the RMP at the section Leasable Fluid Minerals – Management Common to All Alternatives. That explanation contains a reference to **Appendix M** of the Proposed RMP/Final EIS (formerly **Appendix L** in Draft RMP/EIS) where there is a section titled Lease Stipulations. That section contains further description and definition of No Surface Occupancy stipulations that may be required on leases. As noted in **Appendix M** a No Surface Occupancy (NSO) stipulation means “use or occupancy of the land surface for fluid mineral exploration or development is prohibited to protect identified resource values.”

On BLM-administered lands pipelines, access roads, and utilities located on a lease (or within a unitized area), which are constructed and managed by the lease holder/operator can be authorized under an application for permit to drill or sundry notice. In this case any NSO stipulation part of lease would be applied. On or off lease/unit pipelines, roads and utilities constructed and managed by someone other than the leaseholder/operator require a BLM right-of-way and are governed by other restrictions found in the right-of-way. On BLM-administered lands pipelines, access roads, and utilities located off the lease or the unitized area require a right-of-way with its own stipulations.

#### N21

**Comment:** In the Draft EIS, lands known as split estate - where BLM manages the mineral estate while the surface is under separate ownership – are not identified. A map of these lands needs to be provided in the Final RMP EIS and stipulations developed that would accompany any of these split estate lands should the BLM lease them for oil and gas development. While it is true that the BLM does not have the authority to manage the surface of these lands, as the mineral estate manager, BLM should include as part of any lease contract sold, applicable stipulations identical to those that BLM managed lands are subject to that, if violated, would nullify the contract with the lease holder, voiding the lease. Whereas, a lease for split estate lands is nothing more than a contract between BLM and a lease holder, the BLM has the authority to impose such a provision in split estate leases and Montana Trout Unlimited feels very strongly that it is the BLM's responsibility to manage all mineral estates that BLM controls uniformly for the protection of our public fish, wildlife, and streams.

**Response:** The RMP addresses split estate minerals when talking about oil and gas leasing and development. Within the Decision Area (refer to Decision Area definition in glossary), BLM will make decisions for fluid minerals, oil and gas, and geothermal energy where the surface and minerals are administered by the BLM as well as for federal minerals where the surface owner is a separate entity. This includes lands where the surface is privately owned and approximately 65,000 acres of surface lands administered by the State of Montana. These lands are identified on Maps 42 through 45 in the Draft RMP/EIS.

The lease stipulations developed in the RMP are applicable to both public domain lands and split estate lands as the BLM has legal responsibilities for oil and gas leasing and operations on split estate lands. The BLM has responsibilities under the Federal Land Policy and Management (FLPMA). In the case of FLPMA, the BLM is required to indicate in RMPs how the federal mineral estate would be managed, including identification of lease stipulations. In order to meet the consistency requirements of FLPMA the BLM has applied the same standard of environmental protection to split estate lands as to federal surface. Second, the BLM also has responsibilities under the National Environmental Policy Act because the issuance of a lease and potential approval of applications for permit to drill are federal actions. Third, the BLM has responsibilities under the National Historic Preservation Act (NHPA) on split estate lands. The BLM's responsibilities commence with a proposed action that requires BLM's approval. If activities to be conducted on split estate lands under the terms and conditions of a federal oil and gas lease would result in adverse effects to historic properties, the BLM has the authority to impose appropriate avoidance or mitigation measures. Finally, oil and gas leasing and operations on split estate lands constitute federal actions under the Endangered Species Act (ESA). As such, the requirements and procedures of the ESA apply to split estate lands just as they do to federal lands including, as appropriate, preparation of biological assessments and conduct of consultations.

## N22

**Comment:** The Reasonably Foreseeable Development (RFD) analysis only looks at certain areas (Areas 1, 2, 3, 4, and 5) in which the BLM expects there to be development potential within the planning area. Should leases be nominated by the industry outside of Areas 1, 2, 3, 4, 5, BLM needs to conduct a Supplemental NEPA Analysis to determine if the variables used to determine the RFD have changed, why these parcels have been nominated, and if the RFD - and environmental consequences derived from it in the Final EIS - are still accurate, and if additional stipulations need to accompany the proposed parcels. This should be conducted before proposed parcels outside of the RFD areas are sold to prevent a NEPA violation.

**Response:** The commenter is mistaken in believing that the reasonably foreseeable development RFD scenario only applies to the five numbered areas described in both Chapter 3 and **Appendix M** of the Proposed RMP/Final EIS (formerly Appendix L in Draft RMP/EIS). In Chapter 3, the RMP under "Leasable Fluid Minerals" in a section referred to as "Reasonably Foreseeable Development", the following passage can be found:

"The Reasonably Foreseeable Development (RFD) scenario is an estimate of oil and gas activity expected because of resumed oil and gas leasing in the PA [Planning Area]. The scenario is hypothetical in that drilling may occur anywhere in the PA where an oil and gas lease allowing surface occupancy is issued. Actual drilling proposals that result from leasing, if any, will likely differ in location from those anticipated by this RFD scenario. It is also possible that leasing could result in either more or fewer drilling proposals than presented in the scenario."

The passage above is very specific in noting that the RFD scenario acknowledges that drilling may occur anywhere in the planning area (PA) which consists of the Butte Field Office where surface occupancy is allowed. The RMP also makes it clear that actual drilling proposals, if any, will likely differ from the scenario in the document. The five numbered areas identified in the RMP are strictly the areas that the BLM believes have the highest reasonably foreseeable chance for development in the planning area. They are not the only areas that might see development in the future.

**Appendix M** in the Proposed RMP/Final EIS has a more detailed description of the RFD scenario than that found in Chapter 3. It notes that the RFD scenario is an attempt to portray the most reasonable and likely number of wells expected from a leasing decision on the Butte Field Office Planning Area. It also points out that development potential is not a prediction of precise future drilling locations and should not be used as a gauge of future interest or lack of interest in leasing. **Appendix M** has been clarified to explain that the five numbered areas are those with the highest potential for development. They are not the only areas that may see development.

## N23

**Comment:** In the RFD, BLM believes that coal bed methane (CBM) development may occur in the Livingston and Trail Creek coal fields. The impacts relative to CBM development need to be analyzed and specific stipulations developed to protect fish, wildlife, and hunting and angling opportunities in these areas with potential for CBM exploration and development. Because an EIS is required to disclose for the public baseline conditions and potential impacts of a proposed action, the BLM needs to fully evaluate the potential harm CBM development could impose through a complete, professional, and enumerated inventory of the aquatic com-

munities and wildlife that could be affected by CBM development in the planning area. CBNG development is currently occurring throughout the West, thereby providing BLM plenty of opportunities to study how this development is affecting fish and wildlife and provide a rigorous evaluation of development impacts and potential stipulations and mitigation measures relative to CBM development.

**Response:** In Chapter 3 of the RMP, in the discussion of leasable fluid minerals in the section titled Coal Bed Natural Gas, the RMP notes that the coal fields in question are not located on BLM administered public lands and that there are only isolated tracts of BLM split estate minerals in the area. The narrative further notes that all of the coal bed natural gas wells drilled in the area would likely not be BLM wells based on the small percentage of BLM administered split estate mineral ownership in the area (most of the federal lands in the area are administered by the Gallatin National Forest which cannot lease at this time). The same comments are made in **Appendix M** in the section titled Drilling Activity Forecast. The BLM does not believe that there is a reasonably foreseeable chance at this time that coal bed natural gas development will occur on federal lands in the Bozeman Pass area due to the small amount of split-estate lands and due to the fact that the Gallatin National Forest is not able to authorize oil and gas leases at this time. However, the oil and gas lease stipulations and other mitigation measures developed in the RMP would apply if development did occur in the future on the very small acreage of split estate lands on Bozeman Pass. We have analyzed an extremely low level of development on federal lands in the area.

#### N24

**Comment:** McMaster Hills: It's a small area, surrounded by ever increasing residential development, with some really unique natural features, like Spokane Creek bay and the little drainage in the eastern portion. You should pursue acquisition of as much of the remaining private lands in Sec. 6 as possible, to facilitate hiking in the area and to permit public access to the neat draws in the center of that section. This area should be developed for walking and nature/wildlife appreciation. It's really too small to appeal to mountain bike or stock use. And there's a crying need for restoration - especially around Spokane Creek bay. Like with the Ward Ranch, your Alt. B is a good start. It's very important to keep ORV use, especially by neighborhood kids, from getting started there. And this should be a "no-lease" area - as with the Scratchgravel, any kind of oil & gas exploration or development would be untenable - a gigantic "nuisance" - in such a suburban setting. I'd like to see more in-depth planning done, with a focus on the Bay and on community/neighborhood involvement. For example, should all signs of the old campground be removed or not? Should access to the west side bluffs (i.e., a bridge across the creek) be provided or not?

**Response:** In terms of priorities for future land acquisitions for Butte Field Office lands, under all action alternatives the BLM would place a high priority on areas with special designations such as Areas of Critical Environmental Concern or Wild and Scenic Rivers, or areas with habitat for special status and priority species. However, future acquisition of lands in Section 6 would be dependent on interest on the part of any willing landowners as well as other acquisition priorities within the BFO.

The McMasters Hills property was acquired primarily with Land and Water Conservation Funds. To provide management in keeping with the intent of LWCF acquisitions, in the Preferred Alternative the BLM is proposing that McMasters Hills be a "no lease" area for oil and gas. Additional issues mentioned in the comment relate to site-specific implementation decisions that would be made outside the scope of the RMP. Future implementation decisions would be consistent with the finalized Butte RMP.

#### N25

**Comment:** Table 1-5 in the draft RMP/EIS (page 11) includes a minerals and energy goal stating that exploration and development of mineral resources will be conducted in an "environmentally sound" manner. We note that the mineral and energy resources goal does not mention "environmentally sound" exploration and development of energy resources. It is important that oil and gas exploration and development, as well as mineral exploration and development, occur in a manner that protects the environment. The final RMP/EIS should clarify that oil and gas are included in the mineral resources for which environmentally sound exploration and development would occur. We recommend that BLM make it clear that oil and gas exploration in the BFO Planning Area will be done in an environmentally sound manner that avoids and minimizes adverse environmental impacts. For example, "The BLM's goal is that oil and gas exploration and development will occur in a manner that avoids and minimizes adverse environmental impacts."

**Response:** The BLM believes the goal statement adequately addresses the concerns raised by the comment. As written, the management direction for minerals and energy at "2)" applies to the development of federal minerals for both energy and non-energy uses.

#### N26

**Comment:** We also recommend that BLM write stipulations for oil and gas development that requires operators to monitor for impacts to water quality and fish and wildlife habitat.

**Response:** The BLM normally does not write stipulations that require oil and gas lessees/operators to monitor for impacts to resources or resource uses. Normally, the

BLM conducts all required monitoring for lease activities. However, on a case-by-case basis we have the authority under terms of the lease form at Section 6 to require lessees or operators to complete inventories or special surveys to monitor impacts from their lease operation. These requirements would be incorporated as best management practices/conditions of approval applied to either applications for permit to drill or surface disturbing sundry notices.

#### N27

**Comment:** Minerals (Oil and Gas): Alternative B as shown on Map 43 would be improved with the following amendments. 1. Land in the Boulder Mountains and Elkhorns be rated “No Surface Occupancy”. While AWL prefers no minerals activities be conducted in this area, no surface occupancy restrictions, seasonal closures during fall and spring, and an adaptive management plan are recommended as lease requirements for these areas. 2. AWL suggests removing the term “Standard Lease” from the area Northwest of Helena and restricting the area to sub-surface mining with no additional surface occupancy. While AWL prefers no minerals activities be conducted in this area, no surface occupancy restrictions, seasonal closures during fall and spring, and an adaptive management plan are recommended as lease requirements for these areas. 3. Mining in the area southwest of Butte should be removed, reduced or should at the very least include timing restrictions as this area is an important movement area for wildlife. While AWL would prefer no minerals activities be conducted in this area, no surface occupancy restrictions, seasonal closures during fall and spring, and an adaptive management plan are recommended as lease requirements for these areas.

**Response:** The BLM response is itemized by numbered items corresponding to those in the comment.

1. Under Alternative C, the majority of the Boulder Mountains and Elkhorns administered by the BLM are designated as not available for oil and gas leasing and impacts of making those and other extensive discretionary no lease decisions in the Planning Area were fully analyzed in the RMP. In addition to Alternative C there were three other alternatives analyzed in detail in the RMP for impacts to all resources and resource uses. After review of the impacts it was determined to adopt Alternative B, which uses a combination of controlled surface use and timing limitations with some areas being under no surface occupancy stipulations in the referenced area, as the preferred alternative as it provided the least restrictive mix of constraints that meet resource protection objectives. The Elkhorn Tack-on Wilderness Study Area is not available for lease under any alternative. Only very small areas in the Boulder Mountains and Elkhorns would be leased under standard terms.

2. Under Alternative C, the majority of the BLM administered lands northwest of Helena, except for the

Scratchgravel Hills, are designated as not available for oil and gas leasing and impacts of making those and other extensive discretionary no lease decisions in the Planning Area were fully analyzed in the RMP. The Scratchgravel Hills would be leased with no surface occupancy stipulations. The small area directly northwest of Helena shown in the Draft RMP/EIS as being available for lease under Standard Lease Terms under Alternative C is Fort Harrison. (Between release of the Draft RMP and the Proposed RMP/Final EIS the BLM has determined that this area has been withdrawn and the BLM therefore has no mineral estate there. These lands are not shown as federal mineral estate in the Proposed RMP/Final EIS.) In addition to Alternative C there were three other alternatives analyzed in detail in the RMP for impacts to all resources and resource uses. After review of the impacts it was determined to adopt Alternative B, which uses a combination of controlled surface use and timing limitations with some areas being under no surface occupancy stipulations in the referenced area, as the preferred alternative as it provided the least restrictive mix of constraints that meet resource protection objectives. The lands under withdrawal for Fort Harrison have been deleted from Maps 42 through 44 in the RMP because the RMP does not make leasing decisions for the Department of the Army.

3. Under Alternative C, almost all BLM administered lands southwest of Butte are designated as not available for oil and gas leasing and impacts of making those and other extensive discretionary no lease decisions in the Planning Area were fully analyzed in the RMP. The Humbug Spires Wilderness Study Area is not available for lease under all alternatives in the RMP. In addition to Alternative C there were three other alternatives analyzed in detail in the RMP for impacts to all resources and resource uses. After review of the impacts it was determined to adopt Alternative B, which uses a combination of controlled surface use and timing limitations with some areas being under no surface occupancy stipulations in the referenced area and one area that is closed to lease as the preferred alternative as it provided the least restrictive mix of constraints that meet resource protection objectives while providing for oil and leasing.

#### N28

**Comment:** While it appears that the potential for oil and gas development in the BFO area is somewhat limited, (i.e. the Reasonably Foreseeable Development Scenario (RFD) estimates that 15 exploratory oil and gas wildcat wells will be drilled in the BFO Planning Area in the next 15-20 years, with four wells having oil and gas discoveries, two of which would become producers, and 40 coal bed natural gas wells, Appendix L, page 884), we believe there are additional areas that should be considered for withdrawal from availability for oil and gas leasing in order to protect environmentally sensitive areas (e.g. sage grouse winter/spring range, lands within 0.5 mile of sage grouse leks, municipal watersheds and

source water protection areas, lands within 1 mile of bull trout, Yellowstone cutthroat trout and arctic grayling habitat, and habitat of genetically pure westslope cutthroat trout habitat). We recommend that areas with fragile or environmentally sensitive resources be stipulated as No Lease (NL), or at a minimum at least have "No Surface Occupancy" (NSO) stipulations. Table 2.21 (beginning on page 93) identifies lease stipulations by alternative, and Appendix L (beginning on page 903) describes lease stipulations. As noted above, we recommend that a no lease or at a minimum no surface occupancy stipulation be applied to environmentally sensitive areas such as sage grouse winter/spring range, lands within 0.5 mile of sage grouse leks, bull trout habitat, Yellowstone cutthroat trout habitat, 99-100 percent pure westslope cutthroat trout habitat, Class I fisheries, and municipal watersheds and source water protection areas.

**Response:** The BLM believes that the measures proposed in the Butte RMP will provide adequate protection for the resources listed in the comment without applying a blanket no lease decision or blanket no surface occupancy stipulations to the resources you refer to. Components of the Preferred Alternative in this RMP recognize that with few exceptions, mineral exploration and development (including oil and gas exploration) can occur concurrently or sequentially with other resource uses. The policy of the BLM is to use the least restrictive oil and gas stipulations that effectively accomplish the resource objectives established in the plan.

The BLM believes that we have analyzed a broad array of stipulations and other related mitigation measures in the RMP that would provide the appropriate mitigation to the listed resources. Impacts to winter/spring sage grouse habitat were analyzed with timing limitation stipulations in the Preferred Alternative, and in the most restrictive alternative (Alternative C) there would be a no lease decision. Impacts to leks were analyzed with a range of no surface occupancy stipulations in Alternatives A, B, and D, and in the case of Alternative C a no lease decision was considered within a ½-mile buffer around leks. Municipal watersheds were examined for impacts with standard lease terms, a controlled surface use stipulation, no lease, and no surface occupancy in the Preferred Alternative analyzed as proposed mitigation measures. In the case of bull trout, Yellowstone cutthroat trout, and Arctic grayling the BLM also analyzed mitigation for the three species ranging from a controlled surface use stipulation for bull trout under Alternative A, to a no surface occupancy within a one mile buffer zone under Alternative C, with the Preferred Alternative featuring a no surface occupancy within a ½-mile buffer zone for all three of these species. For genetically pure westslope cutthroat trout habitat, the BLM analyzed stipulations ranging from no surface occupancy within a ¼-mile buffer, to no lease within ½-mile of habitat in the most restrictive alternative, with the Preferred Alternative featuring no surface occupancy within ½-mile. For class one fisheries the Preferred Alternative

entails no surface occupancy within a ½-mile buffer zone. However, in Alternative C the BLM did analyze no surface occupancy within a one mile buffer.

In addition to the lease stipulations analyzed by alternative in the RMP, the BLM has identified in the RMP that environmental best management practices (BMPs) and other site-specific conditions-of-approval (COAs) will be used on a site-specific basis to mitigate potential impacts. **Appendix E** and **Appendix M** of the Proposed RMP/Final EIS provide further information on the BLM's use of BMPs and COAs. Conditions-of-approval and BMPs are mitigation measures that provide for restrictions in light of site-specific conditions. General guidance for conditions of approval and surface operating standards can be found in the fourth addition of "Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development" published by the BLM in 2007.

#### N29

**Comment:** Global Climate Change: The BLM needs to conduct an assessment of vulnerable aquatic game species and natural systems that will be adversely impacted by global climate change. The BLM should manage vulnerable systems and their tributaries to prevent them from experiencing regime shifts brought on by the impacts of climate change and remove other stressors from those systems by thoroughly analyzing cumulative impacts that the RMP may authorize, including leasing for – and in turn development of – oil and gas resources . The impacts of closures to angling, and relationships between land use decisions such as oil and gas leasing by the BLM and the impaired nature of coldwater fisheries leading to closures in the planning area needs to be analyzed. This analysis should culminate in appropriate stipulations, lease terms, and/or decisions not to lease in these vulnerable habitats.

**Response:** This comment raises generalized concerns about climate change and the potential cumulative impacts of oil and gas development on vulnerable aquatic species. While the conditions the comment observes are likely related to the long term drought conditions experienced by the intermountain west, the analysis of direct, indirect, and cumulative impacts to climate change from oil and gas leasing and development in the Butte Field Office would likely be very low based on the low level of activity forecast in the reasonably foreseeable development scenario.

The assessment of greenhouse gas emissions and climate change is in its formative phase; therefore, it is not yet possible to know with confidence the net impacts to climate. However, the Intergovernmental Panel on Climate Change (IPCC 2007) recently stated that "warming of the climate system is unequivocal..." and that "most of the observed increase in globally average temperatures since the mid-20<sup>th</sup> century is very likely due to the

observed increase in anthropogenic [man-made] greenhouse gas concentrations.”

The lack of scientific tools designed to predict climate change on regional or local scales limits the ability to quantify potential future impacts. For example, potential impacts to air quality resulting from climate change are likely to be varied. If global climate change results in a warmer and drier climate, increased particulate matter could occur as a result of increased windblown dust from drier and less stable soils. Cool season plant species’ ranges could potentially move north and due to the potential loss of habitat, or from competition from other species whose ranges shift northward, the population of some animal species could change.

Many of the models needed to make effective decisions at the local and regional levels have not been developed. The Department of the Interior is exploring whether global and regional climate modeling can be scaled to the point that it can be used to manage parks and refuges. When further information on the impacts to climate change is known, such information would be considered in the implementation of this plan as appropriate.

**N30**

**Comment:** All known and future identified drainages containing pure (90-99 percent pure) populations of westslope or Yellowstone cutthroat trout, arctic grayling populations and crucial habitat for bull trout are identified as class 1 fisheries by Montana Department of Fish, Wildlife, and Parks. Under the Preferred Alternative (B), streams harboring conservation populations of westslope cutthroat trout have a ½-mile NSO buffer. Whereas, poor land use management quite literally flows downhill, this NSO stipulation needs to be increased to the entire watershed in order to meet the intent of the Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout and Yellowstone Cutthroat trout in Montana (April, 2007) – (Montana Cutthroat Trout MOU) to which Montana BLM is a party – and lists as Objective 1: “Maintain, secure and/or enhance all cutthroat trout populations designated as conservation populations, especially the genetically pure components.”

For Yellowstone cutthroat trout, streams with genetically pure populations of these native trout are proposed in the Preferred Alternative to receive a ½-mile NSO buffer; as with westslope cutthroat trout, this buffer needs to be extended to the entire watershed and specify that all ground disturbance and occupancy is prohibited through NSO/NGD stipulations. Additionally, it is important to note that all conservation populations (>90 percent pure) need to be granted this stipulation, not just genetically pure populations.

As with Yellowstone and westslope cutthroat trout, oil and gas leasing stipulations meant to protect bull trout and fluvial and adfluvial arctic grayling habitats need to

be expanded to include watershed wide NSO/NGD stipulations.

**Response:** The Preferred Alternative (Alternative B) would only establish a ½-mile no surface occupancy buffer zone along streams for protection of conservation populations of westslope cutthroat trout, Yellowstone cutthroat, fluvial Arctic grayling, and bull trout. The BLM has modified the Yellowstone cutthroat trout stipulation in the Preferred Alternative to include all populations with 90 percent or greater genetic purity. For genetically pure populations of westslope cutthroat trout, and for Yellowstone cutthroat trout, the BLM proposed a no lease zone one-half mile in width from their habitats in the most restrictive alternative (Alternative C) of the RMP. A no surface occupancy stipulation of one mile within bull trout habitat was proposed in this same alternative.

The BLM believes that the no surface occupancy (NSO) stipulations in the Preferred Alternative will provide adequate mitigation for impacts from reasonably foreseeable oil and gas exploration on BLM lands in the Butte Field Office in any area with occupied habitat by any of these species. The NSO stipulations for these species, combined with additional NSO fisheries stipulations for blue ribbon fisheries streams will protect the areas within one-half mile on either side of the center line of important streams in the Decision Area. Additionally, the no surface occupancy stipulations for wetlands, floodplains, and riparian areas; municipal watersheds; and rivers suitable for wild and scenic designation will provide additional protection of all aquatic habitats. Finally, the controlled surface use stipulation for erosive soils will help mitigate potential for sedimentation in important fish habitat. Approximately 181,943 acres (28 percent) of the Decision Area in the Butte Field Office is protected by the overlapping no surface occupancy stipulations mentioned above. The controlled surface use stipulation for steep slopes provides protection from erosion for an additional 195,984 acres (30 percent) of the Decision Area.

In addition to lease stipulations, the BLM will use environmental best management practices on a site-specific basis to mitigate impacts from oil and gas development that might affect important fish habitat. If an application for permit to drill was filed, during processing the BLM would consider BMPs to reduce unnecessary disturbance. Some, but not all, of these BMPs include:

- Avoiding locating well pads, roads, and pipelines on or adjacent to steep slopes;
- Constructing the minimum sized road required;
- Completing interim reclamation;
- Minimizing topsoil removal during operations;
- Using the minimum sized well pad needed;
- Using oak mats for pads and roads; and

- Co-locating wells on one pad.

Environmental BMPs will also be considered for producing locations, if any are developed, on federal lands. Some but not all of these include:

- The use of secondary containment, such as dikes, around locations;
- Good housekeeping on locations; and
- Proper erosion control.

### N31

**Comment:** While stipulations meant to protect existing populations of native trout are included in the Draft RMP EIS, an important issue overlooked is that of streams with restoration potential. Under the guidance of Objective 3 of the Montana Cutthroat Trout MOU “Seek collaborative opportunities to restore and/or expand populations of each cutthroat trout subspecies into selected habitats within their respective historical ranges.” BLM should include in the Final Butte RMP EIS a list of streams with suitable habitats for potential restoration efforts and protect these watersheds with NSO/NGD stipulations.

All areas identified as potential sites for westslope cutthroat trout replication (as indicated in the westslope cutthroat management plan) should have an NSO stipulation attached for the entire drainage (not just ½ mile) or be unavailable for leasing,

**Response:** The BLM agrees with the comment. While there are no streams where additional native trout restoration is currently being planned in the Butte Field Office, an additional stipulation (no surface occupancy within ½-mile) has been added to the Preferred Alternative that calls for protection of streams with restoration potential for all special status fish species as they are identified in the future. Because Butte Field Office lands are highly fragmented, native fish restoration efforts by the BLM are most often done in conjunction with Montana Department of Fish, Wildlife, and Parks (MFWP) based on MFWP priorities. As a result, the BLM has not identified any additional streams with restoration potential at this time, but may do so in the future in conjunction with MFWP.

## Out of Scope, Staffing, Budget

### O1

**Comment:** BLM presented no information on the need for accurate affordable public land recreation maps and proposals for updated the maps we have. BLM must emphasize the importance of accurate recreation maps available to the public.

**Response:** Development of recreation maps is beyond the scope of the Butte RMP. The Record of Decision for

the Butte RMP will indicate decisions that will need to be incorporated into public maps in the future.

### O2

**Comment:** We recommend that the West side of Elkhorns be further investigated, as it has high rates of tree encroachment, forest in-filling, and wildlife affects on private property.

**Response:** Site-specific data collection is an implementation level decision that is beyond the scope of the Butte RMP. The BLM’s potential role in such data collection in the Elkhorn Mountains would be determined within the context of the partnership for management of the Elkhorn Mountains.

### O3

**Comment:** It is recommended a biological study be done to determine if there are reproductive diseases affecting the Elkhorn herd units.

**Response:** The BLM’s role in a potential biological study of elk herds in the Elkhorn Mountains is beyond the scope of the Butte RMP. The BLM’s potential role in such a study would be determined through interactions within the context of the partnership for management of the Elkhorn Mountains.

### O4

**Comment:** Every planning action "re-invents" the line weights, color, and line styles for the different motorized and non-motorized road and trail designations. This is very confusing to the public and, once again, puts motorized recreationists at a disadvantage. A national mapping standard for travel planning actions must be developed starting with proposed action in order to address this inadequacy and the environmental justice issue associated with it.

**Response:** It is beyond the scope of the Butte RMP to establish national mapping standards. The BLM has done its best to provide readable, understandable travel planning alternative maps for the public during the Butte RMP revision process. Both a hard copy option, as well as a more detailed electronic PDF map option were provided to give the public two different means of viewing travel plan alternatives.

### O5

**Comment:** If the loss of motorized routes cannot be mitigated within the project area, then a Motorized Access and Recreation Mitigation Bank must be established. This mitigation bank would keep an overall accounting of the miles and acres of motorized access and recreational opportunities closed and the new motorized access and recreational opportunities created to offset that loss. It would be the responsibility of a cooperative group of public land management agencies to monitor

the balance sheet and work towards no net loss/closure of motorized access and motorized recreation. Similar to other mitigation banks, motorized access and routes closed to motorized use would be replaced with equivalent routes on a one to one basis.

**Response:** Establishment of such a bank is outside the scope of the Butte RMP and would require commitments within the BLM and other agencies at the national level.

**O6**

**Comment:** We request that an adequate number of agency staff be licensed and safety trained to operate OHVs, have an adequate number of OHVs for their use, and spend an adequate amount of time riding OHVs along with OHV recreationists so that they can adequately understand the needs associated with motorized access and motorized recreationists.

**Response:** Many BLM personnel are licensed and safety trained to operate OHVs and do so on a regular basis as part of their jobs. It is not the policy of the BLM to require its employees to spend a specified amount of time riding along with OHV recreationists as part of their jobs.

**O7**

**Comment:** A quantification of the level of public understanding and participation in the NEPA process has never been undertaken. Additionally, a quantification of the level of public acceptance of the NEPA process has never been undertaken. We request that the significant negative impact on the majority of the public resulting from the lack of information, education, training, understanding, and acceptance of the NEPA process be evaluated and that the cumulative negative impacts which have become significant on the public be adequately mitigated.

**Response:** All members of the public have the same access to information on the NEPA process. For the Butte RMP, guidance has been provided to the public via press releases, newspaper articles, the website, presentations at public meetings, and personal communication with BLM staff on how to participate in the NEPA process.

**O8**

**Comment:** We request the significant impact that national foundation funding to environmental groups has on motorized recreationists be adequately evaluated and considered including:

- (1) the impact that foundation funding has on the NEPA process,
- (2) the impact that foundation funding has on the decision-making, and

- (3) the impact that foundation funding has on the NEPA process through significant use of legal challenges to nearly every decision involving multiple-use proposals for public lands. In addition, the document and decision-makers should evaluate the cumulative negative impact national foundation funding has had on all past NEPA actions involving multiple-use and motorized recreation.

**Response:** There is no requirement for the BLM to evaluate the issue identified. Furthermore, the BLM would have no way of acquiring information on funding sources of commenters on the Butte RMP.

**O9**

**Comment:** Note that an OHV Trust Fund should be set up to collect and hold OHV gas tax monies paid by OHV recreationists in the past but not returned to them. This trust fund could also be used in the event of delays in the start-up of OHV Programs and to accommodate the scheduling of NEPA actions for on-the-ground OHV projects.

**Response:** Setting up an OHV Trust Fund is beyond the scope of the Butte RMP

**O10**

**Comment:** Our vision for motorized recreation includes opportunities such as the Great Western Trail and Oregon Back Country Discovery Route, and other regional opportunities that include connections between forests and adjoining states. A system of OHV back country discovery routes and OHV byways could provide loops and interconnecting trails to points of interest including lakes, streams, rivers, ghost towns, and scenic overlooks. This system of OHV routes could also include connections to small towns for access to motels and restaurants and could be a significant source of economic revitalization for the project area. OHV recreation and tourism could be a significant boost to many local economies. This potential has yet to be recognized and tapped. Examples of OHV tourism can be found at:

- [www.visitid.org/Outdoor/ATV.html](http://www.visitid.org/Outdoor/ATV.html)
- [www.marysvale.org](http://www.marysvale.org),
- [www.trailscout.com](http://www.trailscout.com),
- [www.transamtrail.com/main.htm](http://www.transamtrail.com/main.htm),
- [www.motorcycleexplorer.com](http://www.motorcycleexplorer.com), and
- [www.visitnorthidaho.com/wallace.html](http://www.visitnorthidaho.com/wallace.html).

We request that the positive benefits of OHV recreation and tourism be considered as part of the evaluation and implemented for this action.

**Response:** While BLM routes could be incorporated into expansive trail routes described in this comment, such routes are beyond the scope of the Butte RMP itself and would entail cooperative planning between the BLM and many other entities.

**O11**

**Comment:** OHV recreation and tourism has not been promoted or supported by Montana Department of Fish, Wildlife and Parks (MDFWP) as aggressively as recreation and tourism associated with fish and wildlife programs. We request that MDFWP actively promote OHV recreation and OHV tourism. We also request that MDFWP increase the level of OHV management to a level that addresses the needs of motorized recreationists, enthusiastically promote OHV recreation opportunities, and enthusiastically develop OHV tourism.

**Response:** This issue is outside the scope of the Butte RMP. The BLM has no authority over Montana Department of Fish, Wildlife, and Parks priorities.

**O12**

**Comment:** Motorized recreationists are very concerned that a reasonable alternative will not be adequately addressed in the environmental document and decision-making and that the process is predisposed. To prevent this from happening again, we request a Multiple-Use Review Board be established to assure that the decision-making reflects the multiple-use management goals and the needs of the public. We request that a Multiple-Use Review Board look into all past travel management decisions within public lands to determine whether all decisions have adequately considered the needs of multiple-use and motorized recreationists. Where decisions have not adequately considered the needs of multiple-use and motorized recreationists, we request that the reasons be identified and that corrective actions be taken.

**Response:** Development of a Multiple-Use Review Board is beyond the scope of the Butte RMP. The BLM considers the range of multiple uses, including the needs of motorized recreationists as well as the needs of non-motorized recreationists and resource protection, in its decisions.

**O13**

**Comment:** Ruts caused by ATVs in corners are often due to the solid drive axles which do not allow the wheels to turn at different speeds due to the difference in between outside and inside curve radiuses. These ruts could be significantly reduced by encouraging all manufacturers to develop machines with differential axles that allow the outside and inside tires to turn at different speeds.

**Response:** It is outside the scope of the Butte RMP for the BLM to recommend vehicle specifications to manufacturers.

**O14**

**Comment:** Agencies are encouraged to publish all Travel Plan maps in the same format and in an easy to

read format. The Travel Plan map and Visitors map should be the same. All visitors need to clearly understand what areas, roads or trails are open for motorized travel and what areas, trails, or roads are closed to motorized travel. Current maps lead to misunderstandings by both non-motorized and motorized visitors.

Agencies are encouraged to make Travel Plan maps more readily available. Vending machines could be placed in areas that are accessible at any time of the day or week at BLM and FS offices.

**Response:** The format and availability of travel plan maps would be decided upon during the actual implementation of site-specific travel plan decisions described in the Proposed RMP/Final EIS. This issue is outside the scope of the RMP itself.

**O15**

**Comment:** I agree with the proposed designation of "Closed" for the Iron Mask property. My understanding is that this will mean that no motorized use will be allowed.

**Response:** In the Proposed RMP/Final EIS, the Travel Management and Access section of Chapter 2, under Management Common to Action Alternatives, wording has been adjusted to reflect that the newly acquired Iron Mask property is proposed for a "Limited" area designation for travel planning. After finalization of the Butte RMP, site-specific travel planning will be done in this area (as an amendment to the Elkhorns travel plan) to determine route-specific management.

**O16**

**Comment:** The Jimmy Gulch area has very high potential for hosting an economic deposit. Pegasus Gold and FMC had a joint venture in this area about 15-20 years ago, during a period of time when considerable exploration was taking place in Montana. They used the Jimmy Gulch road to access the patented claims sometimes known as the "Satellite" group. I also know that this road is the only practicable access to that property of around 75 acres, owned by a certain individual. Therefore I would urge the BLM and USFS to make access through the Jimmy Gulch road available at least to owner of said property and her designees. I oppose the closure of the Jimmy Gulch Road.

**Response:** This comment is outside the scope of the Butte RMP revision. The area in question is outside the five travel planning areas being addressed within the RMP revision. Site-specific travel planning within the area in question will be addressed in the future after finalization of the Butte RMP. Until that time, the landowner could seek a right-of-way with the BLM for road access to the property in question.

**O17**

**Comment:** I urge the following: Add the Sleeping Giant/Sheep Creek Wilderness Area to the Gates of the Mountains Wilderness Area to include the 3.1 miles of river and lake (Holter) below Hauser.

Add 16,572 acres to the FS 11,009 Gates of the Mountains Wilderness. Designate the Sleeping Giant wilderness - BLM of 36,204 acres.

**Response:** The BLM has no authority to designate wilderness. Only Congress has the authority to designate wilderness areas. The BLM is obligated to manage its Wilderness Study Areas for wilderness values until Congress decides to either designate them as wilderness, or remove them from wilderness consideration. Management direction described in the Butte RMP meets that obligation.

**O18**

**Comment:** The Butte RMP does not adequately address the cumulative effect that the proposed [road] closures will have when added to past closures. The following list clearly shows that over the past few years multiple users are the user group that is continually being locked off of federally managed public land.

List of Current and Immediate Past Actions Affecting Multiple-Use Recreation

United States Court Of Appeals for the Ninth Circuit, No. 01-35690 D.C. No, CV-96-00 152-DWM

Every Resource Management Plans and Planning Actions

(Interagency) Grizzly Bear Recovery Plan

(Interagency) ICBEMP

(Interagency) Northern Rockies Lynx Amendment

(Interagency) 3-States OHV Strategy

B-DNF Continental Divide Trail near Jackson. MT

B-DNF Whitetail Pipestone Travel Plan

B-DNF 200 3 Forest Plan Update

B-DNF Analysis of the Management Situation

B-DNF Continental Divide trail near Feely

B-DNF Continental Divide trail near Whitetail-Pipestone

B-DNF Social Assessment

B-DNF Mussigbrod Post Fire Roads Management

B-DNF & BLM Flint Creek Watershed Project

BLM Blackleaf Project EIS

BLM Dillon Resource Management Plan

BLM Headwater Resource Management Plan

BLM Arizona Strip Travel Plan

BLM Bruneau Resource Area Travel Plan

BLM Escalante Grand Staircase Monument

BLM Missouri Breaks Monument

BLM Moab Resource Management Plans

BLM National OHV Strategy

BLM National Mountain Biking Strategic Action Plan

BLM San Rafael Travel Plan

BLM Sleeping Giant Travel Plan

BLM Whitetail/Pipestone Rec. Management Strategy

BLM Lake Havasu RMP

BLM Sustaining Working Landscapes Initiative

BLM Rocky Mountain Front Scenery Evaluation Project

BLM Kanab Resource Management Plan

Bitterroot NF Fire Salvage EIS

Bitterroot NF Post-fire Weed Mitigation EIS

Bitterroot NF Sapphire Divide Trail

Bitterroot NF Forest Plan Revision

Caribou NF Travel Plan

Custer National Forest Travel Plan

EPA Tenmile Creek Watershed Plan

Flathead NF Robert Wedge Post Fire Project

Flathead NF West Side Reservoir Post Fire Project

Flathead NF Forest Plan Revisions

Flathead NF Moose Post Fire Road Closures

Flathead NF Spotted Bear Road Closures

Gallatin NF 2002 Travel Plan Update

Helena NF Blackfoot Travel Plan

Helena NF Blackfoot Water Quality Plan

Helena NF Cave Gulch Fire Salvage Sale

Helena NF Clancy-Unionville Plan

Helena NF North Belts Travel Plan

Helena NF North Divide Travel Plan

Helena NF Noxious Weed Plan

Helena NF South Belts Travel Plan

Helena NF South Divide Travel Plan

Helena NF Continental Divide National Scenic Trail

Humboldt Toiyabe NF Charleston-Jarbidge Road

Humboldt Toiyabe NF Spring Mountains NRA

Kootenai NF Bristow Restoration Project  
 Kootenai NF McSwede Restoration Project  
 Kootenai NF Forest Plan Revisions  
 Lolo NF Forest Plan Revision  
 L&CNF Judith Restoration Plan  
 L&CNF Rocky Mountain Front Travel Plan  
 L&CNF Snowy Mountain Travel Plan  
 L&CNF Travel Plan update  
 Montana State Wolf Plan  
 Montana State Trail Grant Program PEIS  
 Montana State Trail Plan PEIS  
 Montana FWP Statewide Outdoor Recreation Plan  
 Nez Perce NF Travel Plan Revisions  
 NPS Salt Creek Road Closure  
 NPS Yellowstone Winter Plan (SI10\IDobe le closure)  
 Payette NF Travel Plan Revisions  
 Sawtooth NF Travel Plan Revisions  
 USFS National OHV Policy and Implementation  
 USFS Forest Plan Amendments for Grizzly Bear Habit  
 at Conservation  
 USFS National Strategic Plan 2003 Update  
 USFS Roadless  
 USFS Road less Rule II  
 USFS Roads Policy  
 USFS National Land Management Plan Revisions  
 USFWS Bull Trout Recovery Plan  
 USFWS Westslope Cutthroat Trout ESA  
 USFWS CMR National Wildlife Refuge Road Closures  
 USFWS Sage Grouse Plan

The reduction in available multiple use access will have an adverse effect on the remaining resource as more use is concentrated into smaller areas, CBU requests that the BLM take a hard look at the previously listed actions when evaluating cumulative effects on multiple use recreation in the Butte RMP.

**Response:** While there is no requirement for the BLM to consider decisions from all of the management plans and actions listed in the comment, the BLM believes it has adequately considered cumulative effects of local management decisions from various agencies within and adjacent to the Butte RMP planning area as related to travel planning. These effects are described in Chapter 4, Volume II, in the Travel Management and Access subsection of the Cumulative Effects of Travel Plans at the Planning Area Scale section.

## O19

**Comment:** We need more communication and cooperation as far as this draft RMP goes. More accountability on money spent for range improvements, money spent to increase and expand recreational values, wildlife habitats, and fisheries. Also, show where cooperative agreements with FWP, state agencies, DNRC, and the Forest Service are concerned.

**Response:** The BLM has provided multiple opportunities and avenues for communication and cooperation with the public in the context of the Draft RMP/EIS. Accountability on money spent is beyond the scope of the RMP. The RMP does provide for a wide range of recreational values and improvements to wildlife habitats (primarily through vegetation treatments) and fish habitat as described in Chapter 2. Cooperative and coordination efforts with Fish, Wildlife, and Parks, the Forest Service, and other agencies is described in many different locations particularly in Chapter 2 sections on: Noxious Weeds within the Vegetation Communities section; Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species; Travel Management and Access; and Recreation Management.

## O20

**Comment:** I realize money is always a huge factor, but would it be possible to require schooling at the time an off-road vehicle is licensed, similar to hunting? I think a lot of the problem is ignorance.

**Response:** It is beyond the scope of the Butte RMP and beyond the jurisdiction of the BLM to require schooling at the time of off-road vehicle licensing. Such a requirement would be the responsibility of the State of Montana.

## O21

**Comment:** Terminology: We have identified inconsistencies in some of the definitions included in the Butte RMP glossary relative to those defined in the Helena National Forest Plan glossary. We would like the opportunity to work with the Butte Field Office staff between the draft EIS and the final EIS to develop a terminology set that facilitates consistent management between both agencies.

**Response:** The BLM will gladly meet with the Helena National Forest to resolve issues of consistency and common terminology. However, given the scheduled timeframes for completion of the Butte RMP, the BLM is unable to do so before release of the Proposed RMP/EIS, but may be able to do so before finalization of the Butte RMP in the Record of Decision.

## O22

**Comment:** I hope this management assessment reveals the need for more emphasis on the botanical sciences,

wildlife sciences, and environmental studies in the preparation of Bureau of Land Management employees whose job requirements put them in the field.

**Response:** BLM personnel have appropriate formal educational backgrounds and training for the specific positions and job duties for which they are responsible. Upon issuance of the Record of Decision for the Butte RMP, BLM personnel will be required to become familiar with the provisions of the approved RMP as it pertains to how they do their particular jobs.

**O23**

**Comment:** Regardless of what Travel Plans get chosen, we are concerned for the successful implementation and enforcement of any travel plan changes that are proposed. Without strong commitment to the financial and personnel resources necessary to affect and maintain on-the-ground change, even the most thoughtfully devised travel management plan will not work.

**Response:** The BLM agrees that travel plan implementation requires considerable budget and labor expenditures to ensure proper implementation and enforcement. While this issue is beyond the scope of the Butte RMP, the BLM will do its best to receive appropriate funding to properly implement travel plans.

**O24**

**Comment:** What about the fishing access sites developed under the BLM wildlife challenge cost share program with local TU, Skyline Sportsmen, and Anaconda Sportsmen's Club? Not even mentioned by BLM as well as the Wildlife Challenge Cost Share access road in Sawmill Gulch with the Anaconda Job Corps. Boat ramps on the Bighole River were also funded with this program such as by Divide and Jerry Creek and above Dickie Bridge. Does BLM have the Challenge Cost Share program anymore?

**Response:** Site-specific projects such as those mentioned in the comment are implementation level decisions, not RMP decisions, and thus beyond the scope of this land use planning document. The Challenge Cost Share program does still exist and the BLM uses it where possible to implement projects on the ground.

**O25**

**Comment:** We are especially concerned about the lack of accountability for the wildlife and recreation funding that you receive in your annual budgets - we don't feel that this money is being spent to benefit public access and recreational opportunities. BLM has been engaged in pooling these funds and using these funds to support the land exchange program and other programs such as realty. That is not the purpose of earmarked wildlife and recreation money to BLM. We need to have an accounting of all monies received for wildlife and recreation and

how you plan to improve wildlife habitat and recreational opportunities in the final EIS.

**Response:** Specific programs are held accountable for meeting budget-based accomplishment targets within each program annually. The Vegetation Communities and Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species sections of Chapter 2 of the Butte RMP describe activities that would be accomplished to benefit wildlife. The Recreation Management section of Chapter 2 describes activities and management that would benefit recreational opportunities. An accounting of monies for any specific program is outside the scope of the RMP.

**O26**

**Comment:** I hope you will make a strong argument on behalf of BLM staff to increase your budget for additional personnel. To monitor and maintain the acreage under your responsibility, you MUST HAVE THE RESOURCES AND PEOPLE.

**Response:** While this issue is outside the scope of the Butte RMP revision, the BLM continuously works to receive appropriate levels of funding and staffing to ensure quality land use plan implementation. These efforts will continue after finalization of the approved Butte RMP.

**Process, Public Involvement, and Editorial Issues**

**P1**

**Comment:** I do not support most of the alternatives and question why BLM did not consider hardly any the suggestions offered by the public during the group meetings? Also, why does BLM continue to insist on an "All or Nothing" approach and not a combination of the best of all ideas?

**Response:** The BLM believes it has fairly considered public comments received during the scoping process for the Butte RMP by incorporating public comments into RMP or travel plan alternatives where feasible. The BLM believes it has developed alternatives that provide varying degrees of balance between resources and resource uses.

**P2**

**Comment:** For a process that was purported to be for recreational planning, there are sure a lot of non-recreational issues included.

**Response:** The Butte RMP revision has been portrayed by the BLM as an all-encompassing land use planning process since the beginning of the process. Recreation is one of many different resource uses addressed during the RMP revision.

**P3**

**Comment:** NEPA requires adequate disclosure of the potential impacts of a proposed action as stated in CEQ Sec. 1500 .1. “It shall provide full and fair discussion of significant environmental impacts and shall inform decision makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment.”

**Response:** The BLM acknowledges this requirement of NEPA and believes it has conscientiously met the intent of this regulation in development of the Butte RMP.

**P4**

**Comment:** The Bureau of Land Management (BLM) is commended for using the SIMPPLLE model (state of the art landscape-level planning tool) to aid in their planning efforts to predict change and vegetation dynamics over time. However, the document mainly provides relative comparisons of the alternatives rather than detailed analytical information that would allow the public to make more informed comparisons.

**Response:** One inherent difficulty in being quantitatively specific in describing environmental consequences associated with RMP alternatives is that most proposed activities necessarily lack absolute quantities or site-specificity at the scale of the RMP. These features would be determined at the project level during implementation of projects under the RMP. However, Chapter 4 of the Proposed RMP/Final EIS provides a combination of data comparisons (where feasible) and relative comparisons of alternatives.

**P5**

**Comment:** BLM makes it appear that they are not responsible to the very law BLM must comply with and an accurate description of each. We want to see these laws all listed in the Plan and explained in such a way the OMB will be happy and so that the public can see all the pieces before any 20-year plan is reached. BLM must operate under numerous federal land laws as well as the Freedom of Information Act (FOIA) and Federal Data Quality Act (DQA). BLM is also subject to Title 18, The False Statements Act. BLM must comply completely with the Federal Data Quality Act (FDQA) and Criminal Code title 18, Chapter 47-1001 which is listed even on grazing leases.

**Response:** The Proposed RMP/Final EIS includes an appendix (**Appendix B**) that synthesizes key attributes of pertinent laws.

**P6**

**Comment:** BLM lands typically occur as somewhat discrete blocks of land with isolated parcels of varying sizes, and varying access constraints, around them. It seems to me that an important and legitimate planning

concern relates to the size and access of the individual parcel. For example, should there be any active management of small parcels or of parcels with no public access; and if so, what kinds of management and why?

**Response:** Specific management activities on site-specific parcels are determined in implementation decisions outside the RMP process. Such decisions regularly consider issues such as those raised by the comment in the context of any proposed management for a particular area. After finalization of the RMP, the RMP will be used as guidance on prioritizing types of work and geographic areas for such project level planning.

**P7**

**Comment:** Many of the differences between the current alternatives rest with how much of what kind of management activity is planned to occur. Presumably your budget requests then seek to fund the adopted levels of activity. But if and more likely when your appropriations are too low to completely fund the plan, what then? Where I'm going with this is the idea that your alternatives should talk about priorities - when faced with limited funding, which activities and which specific areas should be funded.

**Response:** RMP decisions will be implemented based on budget and workforce availability in the future. Future BLM budget requests will be based on decisions made with the RMP. For some resource areas, such as vegetation management, Chapter 2 of the Proposed RMP/Final EIS discusses priority vegetation types, geographic locations, and acreages for treatments (Table 2-23). The Travel Management and Access section of Chapter 2 describes priorities for implementing travel plans. Special Recreation Management Areas in the Recreation section of Chapter 2 identify priority areas where recreation funding would be applied.

**P8**

**Comment:** Ward Ranch: This property needs its own in-depth management plan. What's going to happen with the residence? What values & uses should be emphasized? (Historic, recreation, scenic, ecological restoration) I'm not sure myself; but I am sure it needs and deserves more attention than it can get in this RMP.

**Response:** Management issues raised by this comment are implementation decisions that will need to be made in activity plans after finalization of the RMP.

**P9**

**Comment:** The process used puts the average working class citizen at a great disadvantage. The process is inordinately confusing, cumbersome, and intimidating to the members of the public who are not organized or experienced which is the majority of the public. A 300+ page draft environmental document is too much for the general public to understand and participate in. Coupled

with the current number of other ongoing actions the situation is overwhelming. The size of the environmental document is being used as a mechanism to overwhelm the public and allow the agency to effectively ignore the needs of the public for motorized access and motorized recreation. Council on Environmental Quality regulations for the proper implementation of NEPA can be found at [ceq.eh.doe.gov/nepa/regs/ceq/toc\\_ceq.htm](http://ceq.eh.doe.gov/nepa/regs/ceq/toc_ceq.htm). Sec. 1502.7 Page limits. The text of final environmental impact statements (e.g., paragraphs (d) through (g) of Sec. 1502.10) shall normally be less than 150 pages and for proposals of unusual scope or complexity shall normally be less than 300 pages. The agency is ignoring the page limit guidance and the documents produced are way beyond what the public can process.

**Response:** The rigors of producing credible and defensible NEPA documents has increased in recent years such that document lengths have increased to adequately address all issues. For the Butte RMP, efforts to make the process as user-friendly as possible for the public have included RMP and travel plan-specific public scoping meetings with comment forms available to provide written comments; a website for the Butte RMP; readily available contact information for the BLM project manager to allow the public to have personal contact if desired; six public meetings during the comment period for the Draft RMP/EIS; a 30-day extension of the original 90-day public comment period on the Draft RMP/EIS; and opportunities for the public to comment via email, hard copy letters, or fax. The length of the Proposed RMP/EIS is longer than 300 pages due to the fact that in addition to the RMP/EIS for the Butte Field Office, the document also includes the equivalent contents of five separate Environmental Assessments to address site-specific travel planning for five areas.

#### P10

**Comment:** Positive impacts to the environment in areas such as fisheries, wildlife habitat, sediment reduction, and noxious weeds are largely based on personal judgment or predictive models. These models are not calibrated or based on data from the study area. All models are wrong, so honest modelers first report the expected uncertainty of the model and then the predictions. There are no case histories and very little data to back up any of the predictions.

**Response:** Other than the SIMPLLE (Simulative Landscape Patterns and Processes at Landscape Scales) model used to provide general guidance on vegetation management proposals, no predictive models were used in the development or prediction of environmental consequences associated with the Butte RMP.

#### P11

**Comment:** Impacts should be evaluated in a fair and unbiased manner and with a relative sense of magnitude. Natural conditions should be used as the benchmark for

the test of impacts on natural resources. For example, if natural events including floods, wildfires, and their associated impacts are natural and acceptable as stated by some agency personnel and environmental groups, then (in order to be consistent and equitable) impacts from OHV recreation should be compared in relative magnitude to the impacts associated with floods, wildfire, and other natural events.

**Response:** The locations, severities, and magnitudes of impacts from natural events such as floods or wildland fires are not highly predictable and therefore often cannot be accurately depicted. This makes it impossible to credibly describe site-specific impacts from OHV recreation in the context of natural events. Generalized effects of natural events are discussed in the Cumulative Effects sections for each resource in the Environmental Consequences of Five Site-Specific Travel Plans section of Chapter 4 (Volume II of the RMP). In addition, the BLM cannot control effects of natural events. BLM can control effects of human activities and indeed assessing the effects of human activities is the essence of analyzing effects of the BLM's proposed management activities. Relative contributions of human activities to resource impacts can be more credibly described. Introductory information included at the beginning of Chapter 4 in the RMP provides the framework and describes the approach and assumptions used in this planning process to disclose impacts.

#### P12

**Comment:** Presently, very few agency staff members are OHV enthusiasts and can represent OHV recreation interests in day-to-day operations and long-term management decisions. OHV enthusiasts understand how to educate, manage, and meet the needs of OHV recreationists. Agency personnel are not able to relate to the needs and challenges of OHV recreationists because they are not familiar with OHVs nor are they typically OHV recreationists. There is an inherent bias on management teams that do not include OHV enthusiasts. We request that the staff on each project team include an adequate number of OHV enthusiasts in order to adequately represent and address the needs of OHV recreationists. The test for an adequate number of OHV enthusiasts on a team should be based on the percentages of visitors. Information from NVUM, USDA, and CTVA cited earlier document that OHV recreationists represent from 25 to 60 percent of the visitors and the management team should also reflect these percentages.

**Response:** There are no requirements for BLM planning teams to be made up of certain percentages of enthusiasts of any particular interest. Planning teams include a wide range of professionals with training and experience to address their appropriately assigned areas of specialty, including OHV recreation.

**P13**

**Comment:** In the past many of the impacts associated with motorized recreation were based on opinions about the impacts on wildlife. The courts have clearly established the prevailing standard for evaluating scientific evidence in *Daubert vs. Merrell Dow Pharmaceuticals Inc.* (DAUBERT v. MERRELL DOW PHARMACEUTICALS, INC., 509 U.S. 579 (1993)) ([http://caselaw.lp.findlaw.com/scripts/printer\\_friendly.pl?page=us/509/579.html](http://caselaw.lp.findlaw.com/scripts/printer_friendly.pl?page=us/509/579.html)), in which the U.S. Supreme Court ruled that expert testimony must be based on a testable theory or method that has passed peer review, has a known error rate and has reliable results. Peer reviewed reports and recommendations are mandatory in order to protect the public from personal opinion. We request that an adequate peer review plan and process be used for all impact analyses.

**Response:** Many impacts on wildlife described in the Proposed RMP/Final EIS are based on cited, peer-reviewed scientific literature. After being drafted by the interdisciplinary team, the document (including its impact analyses) has been reviewed by BLM specialists in the Montana State Office as well as the Washington Office prior to finalization.

**P14**

**Comment:** Scientists may come from within federal or state agencies, or the general public, and may hold a variety of important and influential positions. The study team should:

- 1) Require minimum standards and criteria for qualifications which must be met before a scientist can be deemed an "expert";
- 2) Provide minimum standards and criteria for determining when a scientist may be deemed "independent"; and
- 3) Provide a minimum amount of public notice and opportunity to object whenever any such scientist is considered for such participation, whether such position is permanent or temporary, full time, or part time, voluntary or compensated. Such notice should include the qualifications of the individual, the role which the individual will have in such participation, and the type and duration of the position. Review and participation by independent scientists is a good thing, provided the process require standards which assure that such scientists are in fact qualified and independent, and provide the public the opportunity to review such factors.

Independent scientists should review and participate in all aspects of planning, broad-based assessments, local analysis, and monitoring.

**Response:** Chapter 5 of the Proposed RMP/Final EIS includes the list of preparers along with their educational qualifications and areas of responsibility for the Butte

RMP. While the planning process includes several opportunities for public involvement (scoping, alternative development, and comments on a draft document) it does not provide for public notice and review of hiring staff positions within the agency. Although the BLM used an independent contractor to assist with preparation of the Butte RMP, there is no requirement for independent scientists to participate in the RMP revision process.

**P15**

**Comment:** Decisions should be based on:

- (1) accurate and unbiased information,
- (2) fairness to all members of the public and their needs,
- (3) the principles of sharing and tolerance, and
- (4) an equitable distribution of benefits to all interests.

**Response:** The BLM considers these factors in the context of its multiple-use mission to provide for the needs of people to use resources, in concert with the need to provide for and protect resources.

**P16**

**Comment:** Collaborative sessions or other types of negotiations often result in undue benefits for environmental groups because they have manipulated the process. The decision-making process should be solidly founded on the principles of unbiased information and public need.

**Response:** Due to the often inherent conflict between public members with differing viewpoints related to resource management, the BLM does value consensus-based recommendations from collaborative working groups made up of a balanced mix of resource user types. The BLM does not believe that consensus-based recommendations derived from such collaborative working groups favor one interest over another, or that environmental groups have manipulated the process associated with the Butte RMP.

**P17**

**Comment:** The current precedent is that legal actions and appeals are the most effective way to influence decisions on how public land is to be managed. Unfortunately, the true public need for management of public lands for multiple-uses is not adequately defended because agencies are so focused on countering the massive legal attack by environmental groups.

**Response:** Legal actions and appeals associated with BLM NEPA documents arise from a wide range of sources. The BLM does its best to stay focused on its multiple-use mission as these processes proceed.

**P18**

**Comment:** Agencies are encouraged to seek outside review and input by OHV recreationists on all proposed management decisions affecting motorized recreation opportunities including closures. Agencies are encouraged to establish greater credibility with motorized recreationists by having motorized recreation planners on the interdisciplinary team and a board of motorized recreationists.

**Response:** OHV recreationists have the same opportunities as everyone else in the general public to participate in and provide input on any proposed management decisions made by the BLM. The BLM does include recreation planners to address motorized recreation on its interdisciplinary teams. While the BLM has sought the assistance of county-sponsored community-based working groups (which included motorized recreation advocates) to provide input on travel plan alternatives for the Butte RMP, the BLM cannot include a board of motorized recreationists on interdisciplinary teams because this would be a violation of the Federal Advisory Committee Act.

**P19**

**Comment:** I do not believe that the preferred alternative identified (B) is in keeping with the concept of multiple use and does not address the need to provide dispersed use of the “Public Lands” which should ultimately help reduce the environmental impact on any one location. If the BLM finds it absolutely necessary to reduce the number of roads in these travel plan areas, implementing Alternative D in each area would provide a realistic gauge as to whether or not more restrictive measures are actually necessary. This approach combined with increased educational programs could actually provide desired results without significantly reducing access to the areas in question.

**Response:** The BLM does believe that Alternative B provides for multiple use of the wide range of resources in the Butte Field Office. Maximizing dispersion of human activity does not necessarily reduce environmental impacts for all resources. For example, maximizing dispersion of human activity would tend to maximize impacts to wildlife species that are prone to abandoning their habitats when disturbed by human activity. Alternative B has been modified in the Proposed RMP/Final EIS for some travel planning areas to increase motorized access based on specific comments provided by the public.

**P20**

**Comment:** A major concern with your proposed alternatives is the lack of an alternative that maintains or increases recreational opportunities for motorized and/or mechanized recreationists. In one breath you recognize the increased use of motorized recreation but in your

alternatives you only show a “major” reduction in recreational opportunities for the majority of recreationists. The alternatives brought forward in this RMP lack any fairness or provide proof that your agency is actually devising a plan that meets the needs of the public that actually use this public land.

**Response:** Alternative A maintains current motorized use for all travel planning areas considered in the RMP. The BLM believes the alternatives presented meet the needs of the public in the context of multiple use management. It is not the BLM’s mission to solely meet the needs of any particular interest or land use preference in the public. Multiple use entails balancing the needs of resource uses along with the needs for resource protection.

**P21**

**Comment:** Many motorized recreationists, who traditionally recreate on public land, may not participate in a formal NEPA process. The process is both time consuming and confusing. Multiple-use interests often times struggle to provide active participants due to many other time commitments. At the same time, non-motorized groups, well funded by foundations, have organized, trained, and experienced paid staffers that are readily available to participate in the NEPA process and collaborative sessions. These groups are able to participate on a wide front of actions from travel management to timber sales to non-motorized designations.

The magnitude of foundation funding available to non-motorized groups tends to amplify their limited-use interests in comparison to the needs of the public. This setting often results in non-motorized interests getting undue benefits by creating and manipulating the process. This setting is not based on the principles of addressing public need and technical merit. We ask that the effectiveness and impact of foundation-funded organizations versus the needs of all citizens be evaluated and factored into the planning process.

**Response:** The BLM provided the same opportunities to everyone in the public to participate and comment during the Butte RMP revision process. The BLM considered all comments received regardless of their source. An evaluation of the source of comments is not required by the NEPA or BLM planning regulations and guidance.

**P22**

**Comment:** We also recommend that direction regarding reduction of road/ transportation system effects on water quality/fisheries/wildlife be included in and/or repeated in the Travel Management section on the RMP, since we are concerned that the BLM staff responsible for managing and maintaining roads may not know, understand and/or follow the management direction in other resource sections of the RMP. Some redundancy in

the RMP may promote improved understanding and implementation of management direction.

**Response:** Final decisions will be described in the Record of Decision which will be accompanied by an Approved Plan. This document will be release following publication of the Proposed RMP/Final EIS and will be the one that BLM employees will regularly use as the RMP. Specific considerations on how to structure the approved RMP will be made in the future.

### P23

**Comment:** Management direction in the draft Butte RMP in general appears to be less prescriptive than many land management plans we review. Management alternatives include general management goals and desired future conditions and guidance for managing land use, travel, recreation, vegetation, grazing, oil and gas leases, etc. However, there appear to be only a few Standards with more binding limitations on land management. The only more binding Standards that we saw were in the Standards for Rangeland Health in Appendix E, along with the oil and gas lease stipulations (Appendix L).

We believe management direction would be more protective of the environment and ecosystems within the BFO Planning and Decision Areas if additional more binding and protective direction were included. We recommend that the BLM consider development of additional limitations on land uses and activities and more protective management direction to provide increased levels of protection, restoration, and enhancement of the environment (see specific comments and recommendations in our subsequent comments).

**Response:** In some cases the BLM has modified proposed management to make it more specific in the Proposed RMP/Final EIS. Overall the BLM believes the level of specificity of proposed management provided in the RMP is appropriate to provide for appropriate levels of resource protection and site-specific project level flexibility to address the wide range of conditions that exist on Butte Field Office lands.

### P24

**Comment:** Nowhere in any of the documents did BLM mention coordination/cooperation with sportsmen's organizations, FWP biologists, youth organizations, and better involvement of BLM with the public including field trips to examine our public land.

**Response:** Chapter 1 describes public scoping efforts including six public scoping meetings, six additional public scoping meetings specifically for site-specific travel planning, two additional public scoping meetings associated with the extended scoping for the Proposed Planning Scenario, and ten briefings provided to organizations and county commissions after solicitation by the BLM. Chapter 5 describes solicitation of various state

and federal agencies, tribal governments, local governments, and the governor's office as cooperating agencies for the Butte RMP. The BLM attempted to specifically engage biologists from Montana Fish, Wildlife, and Parks (MFWP) by specifically soliciting that agency to become a cooperating agency on the Butte RMP. MFWP never chose to become a cooperating agency but informal contact and coordination between the BLM planning team and MFWP biologists occurred throughout the process of preparing the Draft RMP/EIS. With the release of the Draft RMP/EIS, BLM advertised and provided six public open houses that featured presentations on key contents of the RMP and information on how the public could provide input. Also upon release of the Draft RMP/EIS, organized groups were invited via newspaper articles from press releases to have the BLM provide them specific briefings on the Draft RMP/EIS. No organizations responded to the BLM's invitation during the public comment period for the Draft RMP/EIS.

### P25

**Comment:** The environmental document should evaluate how the number of policy proposals over the past several years has overwhelmed the public. There is no way that the public could evaluate and comment on each proposed action. The cumulative negative impact of the overwhelming number of proposals has been decision-making that does not provide for the needs of the public and a significant reduction in multiple-use and motorized access and recreation opportunities. We request that this cumulative negative impact be adequately evaluated and factored into the decision-making for this action. Additionally, we request that an adequate mitigation plan be included as part of this action to compensate for past cumulative negative impacts on the public associated with the overwhelming number of NEPA actions.

**Response:** Evaluation of the impact that the number of policies established over the past several years or the number of different management proposals has had on the ability of the public to respond is beyond the scope of the Butte RMP. There is no requirement for the BLM to evaluate this. However, the public comment period for the Butte RMP was extended from 90 to 120 days, providing the public more time than usual to comment on the management proposed in the Draft RMP/EIS. The BLM believes this is adequate time for the public to comment.

### P26

**Comment:** We are very concerned that motorized recreationists must identify and inventory specific routes that we want to remain open. These resources are there now and they are being used by the public and in almost all cases, it is entirely reasonable type and level of use. Motorized recreationists should not have to identify and inventory motorized routes as part of the process. This is

the work of the agency. No other visitor group is saddled with this requirement. Our concern is that the agency is using public involvement in a discriminatory way to establish which motorized routes will remain open.

**Response:** In developing travel plan alternatives for the Butte RMP, BLM personnel did inventory motorized routes and develop the baseline for each of the five travel plan areas analyzed (as depicted on travel plan area maps in the RMP). The BLM did not ask nor request the motorized recreation community to conduct a road and trail inventory for the project area. The BLM conducted this work on its own, using a combination of professional knowledge, GPS data, and aerial and digital photography interpretation. Prior to the Butte RMP revision, there was no inventory of motorized routes in these areas. Throughout the scoping process and public comment period on the Draft RMP/EIS, the public was welcome to provide input on specific routes not included in BLM's inventory presented, or to provide input on travel route-specific management of routes in the BLM inventory. As a result of public feedback, the BLM was able to correct several minor errors and provide better maps.

**P27**

**Comment:** We have also observed from past NEPA travel management processes that the lack of participation by motorized recreationists has been due to the cumulative effect of confusing and poor documentation of the proposals, which included maps that did not have clearly defined characteristics, landmarks, trails, roads, routes and historical sites that would be removed from communal use by the proposed closure action. We are concerned that this lack of understanding will lead to resentment and poor support of motorized closures by the community. We request that the travel management process seek out and document the needs of all motorized visitors including those who traditionally use the primitive roads and trails, plus the handicapped, elderly, and physically impaired as required under 40 CFR 1506.6.

**Response:** For the Draft RMP/EIS, travel plan alternative maps were provided in two contexts within the Butte RMP in effort to address concerns associated with potentially confusing maps. Hard copy maps were provided to give the opportunity to look at a physical map of the travel plan alternatives. The supplementary CD contained PDF files of more detailed maps with landmarks and route numbers to provide the public opportunities for more detailed viewing and comment on travel plan alternatives. The BLM believes it has conscientiously followed 40 CFR 1506.6 in providing public outreach and soliciting public input on the Butte RMP through various means including public scoping meetings for the RMP, scoping meetings specifically for travel planning, extended public scoping for the Proposed Planning Scenario, and an extended public comment period on the Draft RMP/EIS. In addition, the

Butte RMP website provided opportunities for the public to stay informed and to contact the BLM to provide input.

**P28**

**Comment:** We request that the process adequately meet public involvement requirements with respect to motorized visitors. The process should include methods of public involvement that effectively reach motorized visitors and methods to account for the needs of citizens who may not participate for diverse reasons. Some public involvement methods that would be effective include; (1) the use of trail rangers (who are motorized enthusiasts) to count and interview visitors using the travelways and distribute Travel Management materials to them, (2) publication in the newsletters of motorized association, (3) attendance at motorized club meetings, (4) posting of information packets at motorized trail head areas, and (5) mailing to OHV enthusiasts and owners.

**Response:** All members of the public were provided the same opportunities to participate in the Butte RMP revision through scoping efforts described in Chapters 1 and 5.

**P29**

**Comment:** Clearly, comments under NEPA were intended to bring issues and concerns to the attention of the team preparing the environmental document and the decision-makers. NEPA did not suggest that comments were to be used as a voting process to indicate support of alternatives. Nor did NEPA anticipate that the scoping and citizen input would be dominated by well-funded special interest groups. NEPA did not intend citizens to comment on every possible NEPA as a requirement to protect their interests, needs, and quality of life. This misuse of the comment process has resulted in agencies overlooking the needs of all citizens and decisions have been made that do not adequately address the needs of the public.

NEPA requires decision-making that adequately addresses the needs of all members of the public. This direction was stated in Title 1, Sec. 101 of NEPA Policy Act of 1969 as "achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities..." Under NEPA, decision-makers have a responsibility to seek out, determine, and make decisions that address the needs of all citizens and not just those that submit comments.

**Response:** The BLM agrees that comments are intended to bring up substantive issues and concerns (regardless of the source and its funding levels) and that the comment process is not a "voting" process. The BLM does not misuse the comment process as a "voting" process. Inherent in the NEPA process however is the

reality that in order to address specific concerns in specific areas, citizens need to comment on proposed activities there. The BLM believes it has met the cited direction from Title 1, Sec. 101 of NEPA. The BLM notes that this section also includes direction other than that cited by the commenter and the BLM believes that its responsibility is to meet all aspects of this section, and that no one item within this section is intended to take precedence over any other.

### P30

**Comment:** The NEPA process is complicated and unapproachable to most of the public yet there has never been a program to inform, educate, and increase the public's awareness and ability to work with the NEPA process. The lack of widespread information, education, awareness, and NEPA skills has contributed to extremely low participation in the NEPA process by some sectors of the public. Public participation for even the most controversial proposed action (roadless rule) has involved less than 1 percent of the affected public. Additionally, the general lack of understanding of the NEPA process has resulted in poor acceptance and opinions of the process by the public.

**Response:** Throughout the Butte RMP revision process, the BLM has attempted to guide the public on how to provide meaningful input to the NEPA process. Chapter 1 of the RMP describes public scoping efforts including six public scoping meetings, six additional public scoping meetings specifically for site-specific travel planning, two additional public scoping meetings associated with the extended scoping for the Proposed Planning Scenario, and ten briefings provided to organizations and county commissions after solicitation by the BLM. With the release of the Draft RMP/EIS, BLM advertised and provided six public open houses that featured presentations on key contents of the RMP and information on the public could provide input. In each case of these public involvement opportunities, BLM personnel provided information on how to provide substantive input on the RMP.

### P31

**Comment:** We have been told that motorized recreationists must participate in the travel management process and/or collaborative sessions in order to realize future motorized recreational opportunities. While we agree that motorized recreationists have the opportunity to participate in the NEPA process, the level and effectiveness of participation should not be the deciding factor when making decisions about who gets what recreational opportunities within public lands. NEPA does not identify the quality and quantity of individual and group participation as a decision-making criterion. The network of influence groups has a significant advantage over common citizens in areas including funding, staffing, training, and advertising through radio, television,

web sites, and newspapers. This setting allows environmental groups to get undue benefits by manipulating the NEPA process. This setting does not address the principles of meeting public need. NEPA and other laws do not intend for independent individuals who are less organized to give up their life's amenities to better-organized and funded groups.

**Response:** The BLM cannot require or control the participation of any group or individual in its planning processes. The BLM agrees that the level and effectiveness of advocacy group participation is not the deciding factor when making decisions about resource management on BLM land. Any group or individual can participate in the process and consideration given to any input is based on the substantiality of the input regardless of the entity and its resources for getting its particular viewpoint heard. The BLM considers public comments based on the extent to which they are substantive and relate to inadequacies or inaccuracies in the analysis or methodologies used; identify new impacts or recommend reasonable new alternatives or mitigation measures; or involve substantive disagreements on interpretations of significance (BLM NEPA Handbook H-1790-1 (USDI-BLM 2008)). However, it should be noted that without participation, any group or organization's concerns or issues may simply not be identified and therefore not considered when making management decisions. Conversely, the redundant raising of issues or preferences does not ensure a particular RMP outcome or land use decision.

### P32

**Comment:** The establishment of recreational opportunities on public lands should be based on public need. Other government entities are directed to address and meet the needs of the public. For example, cities provide water and sewer systems based on public need. Highways are constructed based on public need. The need for these facilities is not based on the level of citizen involvement. The need for these facilities is based on an assessment of need developed by water and sewer usage, traffic counts, etc. The public has a basic expectation that agencies will look out for all of their interests and the best interests of the public are met when agencies respond to the needs of the public in this manner. If members of the public did not comment on the upgrade of a water treatment plant or the construction of a highway does not mean that their water is shut off or that they can't drive to Bozeman. We request that the use of public participation in decision-making for this proposed action be monitored to assure that it does not obscure the needs of all citizens who rely on the project area for their recreation and livelihoods.

**Response:** Chapter 5 of the Proposed RMP/Final EIS documents the consultation and coordination processes used for public participation. The BLM believes it has conscientiously considered public input received on the

Butte RMP. Due to the inherent nature of conflicting input from different members of the public, RMP decisions cannot possibly reflect all management suggestions received from all members of the public.

**P33**

**Comment:** Both sides would be further down the trail towards measurable protection of the human and natural environment if multiple-use, motorized access and motorized recreation were accepted at a reasonable level and we all focused our energy on visitor education, site-specific problems and site specific mitigation measures. Consensus and collaborative processes cannot by nature produce reasonable results and motorized recreationists should not be forced into these processes where they are guaranteed to lose.

**Response:** The BLM believes that the Butte RMP contains alternatives that provide reasonable levels of motorized access. Educational activities and mitigation projects are implemented at the site scale after RMP and travel plan decisions are made. The BLM does not force any entity into participating in any collaborative processes. However, the BLM does value consensus-based recommendations from collaborative working groups made up of public members that represent a balanced mix of perspectives on resource management issues.

**P34**

**Comment:** While collaborative agreement on a travel management plan between two opposing interests is a desirable solution from an Agency's perspective, the reality of the current setting is that collaborative sessions have failed because a reasonable allocation of recreational opportunities that would meet the needs of all citizens never stays on the table. The lack of a reasonable multiple-use alternative combined with the significant cumulative negative effects that motorized recreationists have experienced (loss of over 50 percent of motorized recreational opportunities during the past 35 ± years) precludes motorized recreationists from accepting any additional unbalanced proposals coming out of collaborative sessions. The collaborative approach must produce reasonable multiple-use alternatives for all (100 percent) of the remaining lands intended for multiple-use.

**Response:** The intent of establishing collaborative working groups, such as those used to assist in development of travel plan alternatives for the Butte RMP, is to identify solutions that best strike a balance for the wide range of perspectives that exist throughout the public on how best to manage multiple-use lands. The makeup of the working groups used for site-specific travel planning addressed with the Butte RMP was intentionally set to prevent one particular interest, such as motorized enthusiasts or non-motorized enthusiasts, from dominating the

process and biasing working group recommendations with their own agendas.

**P35**

**Comment:** CBU did not find that your agency engaged the local government in developing the Butte RMP. Federal law does require the BLM to coordinate and cooperate with state and local governments.

**Response:** Chapter 5 of the Butte RMP describes coordination efforts undertaken by the BLM. For the Butte RMP the BLM offered and provided multiple briefings to county commissions within the Planning Area. For the extended scoping associated with the Proposed Planning Scenario, five of the eight county commissions received briefings on initial management proposals (the other three county commissions did not respond to solicitations for briefings). During the public comment period for the Draft RMP/EIS, all eight county commissions received briefings by the BLM. State agencies as well as local governments were solicited for interest in becoming cooperating agencies for the Butte RMP. None of these entities signed on as cooperators.

**P36**

**Comment:** The cover letter for the RMP invites readers to review and comment on the Draft RMP/EIS. It goes on to say that comments will be most helpful if they are specific and address one or more of four criteria. I can see where this is helpful but in my quick review of the travel plans I could not find where the Draft RMP/EIS gives the same specific reason or information for each of the roads that are slated for closure.

**Response:** The direction provided in the cover letter to the Draft RMP/EIS on how best to provide public comments applied to any and all public comments anyone may have wanted to provide on proposed management in the RMP or the site-specific travel plans. The direction was not intended for a particular interest within the public on a particular issue.

**P37**

**Comment:** Maps 26-30 are too large of scale to allow for any meaningful comments.

**Response:** The BLM apologizes for any difficulty encountered while reviewing maps. The dispersed distribution of BLM lands addressed by the Butte RMP made it difficult to select a more user friendly map scale without driving up document printing costs to prohibitive levels. However, all maps were made available in PDF format at BLM's Butte RMP website where reviewers could zoom in on areas of interest.

**P38**

**Comment:** It also would benefit the reader if detailed analytical information could be presented in tables sup-

plemented by a more limited discussion of that information.

**Response:** The Butte RMP employs a combination of tabular display of analytical data as related to various resources and resource uses, in concert with discussion of data presented. Efforts were made to limit discussion of data presented to the extent practicable. The complex nature of proposed RMP management and associated environmental effects require extensive discussion of effects in some cases.

### P39

**Comment:** It would be very helpful if you provided a "table of comparisons" of the amount of Dry Forest treatment per decade of the four alternatives. These forest management activities are major to the health of the forest and a visual presentation of these data would be very helpful.

**Response:** Table 2-23 in Chapter 2 lists ranges of proposed treatment acres by alternative for all major vegetation types, by major watershed, by RMP alternative.

### P40

**Comment:** Who wrote the plan and what are their qualifications?

**Response:** Chapter 5 lists the preparers, their educational backgrounds, years of professional experience, and areas of responsibility in working on the Butte RMP.

### P41

**Comment:** The really meaningful stuff, which I call the 'science', mostly ends up so buried that it's inaccessible to the public (and to decision makers??) So I'd suggest the following: have the section on 'environmental consequences' explain the science behind the various possible and proposed management activities, with no reference to the various alternatives, and organized by management activity rather than by impacted resource. (This seems to me to be the critical decision framework - whether or not to do something proactive, and if so, what & how. That requires comparing the effects, across all resources, of your options (e.g., to burn, to cut, or to leave alone); so organize the discussion by those options.) Then have sections devoted to each planning area that explore the impacts of the various alternatives on them.

**Response:** While the BLM generally followed the format for the environmental consequences section (Chapter 4) outlined in Appendix C of the BLM Land Use Planning Handbook (H-1610-1), careful consideration was given on how Chapter 4 was structured as related to addressing effects of proposed RMP management versus effects of site-specific travel plan alternatives. In effect, this structure led to the portion of Chapter 4 contained in

Volume I of the RMP describing effects of RMP level decisions. The portion of Chapter 4 in Volume II describes effects associated with site-specific travel planning alternatives, organized by each of the five travel planning areas. This structure was followed so as to allow interested members of the public who might be solely interested in one (or more) specific travel planning area to turn to the section for that travel planning area and see all the environmental consequences described in one location for that area.

### P42

**Comment:** It would be very useful to include a map in the document that shows the location of the various planning areas and sub areas, and the names you use for them. (E.g., it's not obvious to me that "Lewis & Clark County NW" means the Marysville area, nor that McMaster Ranch North means the ground east of Spokane Bay.)

**Response:** Within the Travel Management and Access section of Chapter 2, under the subheading Activity Level Planning for Five High Priority Travel Planning Areas, there is a further subheading for each travel planning area (Helena TPA, East Helena TPA, Lewis and Clark County NW TPA, Boulder/Jefferson City TPA, and Upper Big Hole River TPA). Introductory text for each of these travel planning areas describes which hard copy maps in the document correspond to which sub-areas (by sub-area name) on the electronic maps for each travel planning area.

### P43

**Comment:** First, a couple of 'typos': p. 271, the bird list is riddled with repetition, and p. 295, Table 3-30, the data on acres recommended for Wilderness are wrong.

**Response:** In the Proposed RMP/Final EIS, text has been modified to address repetition of bird species names in the areas in question. The acreages reported as being recommended for wilderness vary slightly from acreages used in past documents because during the RMP process GIS calculations were used to characterize these acreages. The BLM believes that the GIS-calculated acreages are more accurate than the original acreages identified for the Wilderness Study Areas being recommended for wilderness designation.

### P44

**Comment:** Site-specific analysis should be provided for every road and trail so that the benefits of keeping each motorized travel way is adequately addressed and accounted for in the decision. Site-specific questions will need to be discussed during the process. We request that the mapping be sufficient to allow site-specific analysis.

**Response:** The process described in **Appendix A** was followed on a route-specific basis to develop travel plan alternatives for each of the five travel planning areas

analyzed in the RMP. Records of how specific routes rated out for various resources and resource uses are part of the administrative record for the Butte RMP. Electronic maps provided in PDF format on the supplementary CD in the RMP provide route numbers and landmarks to allow for site-specific analysis.

**P45**

**Comment:** The Draft EIS and the maps are not user friendly. None of the proposed route changes have any route designation applied to them. They need better identification in order to comment on specific routes and areas. It is very difficult for the public to orient themselves and to interpret the proposed action for each specific road and trail. Therefore, the public cannot adequately evaluate the proposal and cannot develop comments with reference to specific roads and trails.

**Response:** Maps for travel plan alternatives are provided in two formats in the RMP. Hard copy maps are designed to provide the reader with a “big picture” view of each travel plan alternative. These maps lack route numbers out of necessity because they would be virtually unreadable if route numbers were applied. Travel plan maps in PDF files on the supplementary CD provide a finer scale look for each travel plan area, including more site-specific landmarks than are found on the hard copy maps, as well as route numbers used by the BLM during travel planning efforts. The BLM received a number of route-specific comments from the public during the public comment period.

**P46**

**Comment:** The draft has some serious shortcomings and some blatant misprints, for example, what is a “peregrine hawk”?

**Response:** Text has been modified in the Proposed RMP/Final EIS to address this editorial mistake.

**P47**

**Comment:** Page 146 - Table 2-23 under the heading "Management Concerns: Minerals - Locatable Minerals" and the sub-heading "Management Common to All Alternatives" the last bullet point contains the statement "the Elkhorn Mountains ACEC would not be proposed as a withdrawal under any alternative." This statement appears to be inconsistent with the text that immediately follows regarding the same subject but with the additional heading "withdrawals."

**Response:** While the statement in question in Table 2-23 was intended to express that the Elkhorns ACEC on the whole would not be proposed for a mineral withdrawal under any alternative, this statement is confusing because approximately 180 acres within the Elkhorns ACEC (Muskrat Creek) was proposed for withdrawal under Alternatives B and C in the Draft RMP/EIS. In the Proposed RMP/Final EIS, this proposed 180-acre with-

drawal has been eliminated from the Preferred Alternative. Appropriate adjustment to RMP text and Table 2-23 have been made to reflect this change and eliminate confusion about the point made by the comment.

**P48**

**Comment:** Areas that have historically provided OHV opportunities are now proposed for non motorized use. The Scratch Gravel Hills offers opportunities in close proximity to Helena. The map of Alternative B shows the trails closed yearlong while page 62 text states the "entire Scratchgravel Hills area would be closed to motorized vehicle use after dark year long". We recognize the maps state "intended for display purposes" but the general public will obtain most of their information from the maps provided.

Page 52, table 2-9 shows wheeled motorized routes open: 13.6 miles, with 38.6 miles of non-motorized trails. The conflict between the statements and the map should be addressed.

**Response:** The Preferred Alternative for the Scratch-gravel Hills portion of the Helena Travel Planning Area has been changed from the Draft RMP/EIS to the Proposed RMP/Final EIS. The revised Preferred Alternative would close the Scratchgravel Hills to wheeled public motorized use yearlong, 24 hours/day, with the exception of several routes with rights-of-way to homeowners as well as a few other known routes needed by local residents to access their homes. This closure would negate the need for a nighttime closure and should eliminate the confusion expressed by the comment.

**P49**

**Comment:** The areas with current travel plans are described as "limited" (page 268) is misleading. With the exception of the Whitetail-Pipestone that actually provides trail opportunities for the OHV community, the other limited areas would be described as extremely limited.

**Response:** In the context used, the term “limited” means designated areas or trails where the use of off-road vehicles is subject to restrictions, such as limiting the number or types of vehicles allowed, dates and times of use (seasonal restrictions), limiting use to existing roads and trails, or limiting use to designated roads and trails.

**P50**

**Comment:** Omission: Description of Issue 2 in Table 1-5 as well as language about how Issue 2 will be addressed. Earlier text indicates that Issue 2 addresses Wildlife, Wildlife Habitat, Special Status and Priority Plant and Animal Species. This heading should have been written down in Table 1-5.

**Response:** This was a printing error that occurred after the BLM sent the document out for printing. The BLM

has attempted to ensure this error was not repeated in the Proposed RMP/Final EIS.

#### P51

**Comment:** Maps did not have adequate reference such as corner section numbers, which made it difficult to analyze information.

**Response:** The BLM acknowledges the lack of features on RMP maps. Maps were intended to convey various specific information and in their development the BLM was concerned about packing too much information on any given map. In the case of site-specific travel plan maps, more detailed mapping of travel plan alternatives is provided in PDF format on the CD enclosed with Proposed RMP/Final EIS. Township and Range lines have been provided on maps in the Proposed RMP/Final EIS.

#### P52

**Comment:** Recreation Opportunity Spectrum: All the tables in this section (p. 63) indicate that there are 302,000 acres being considered within the RMP. However, Appendix H indicates that 311,000 acres exist within the planning area with respect to surface lands (and 656,000 acres of federal mineral estate). This leaves 9,000 acres unaccounted and will likely lead to misunderstanding. This is an area equal to 14 square miles and should be properly allocated within all tables in the RMP.

**Response:** Due to land ownership changes between the Draft RMP/EIS and Proposed RMP/Final EIS, the surface acreage managed by the Butte Field Office is now approximately 308,000 acres while total area of federal mineral estate is approximately 654,000. These corrections have been made where needed throughout the Proposed RMP/Final EIS.

#### P53

**Comment:** Page ii. TOC is incorrect in designating Appendices H and I.

**Response:** This has been corrected in the Proposed RMP/Final EIS.

#### P54

**Comment:** Page S-11 and supporting locations in document; the management of the Elkhorn Tack-on as an ACEC if it is released from further review by congress as a wilderness area is inconsistent with Appendix H that does not included the Tack-on as an ACEC (See Figure 3 App H), only the original Elkhorn WSA. The continued management as an ACEC statements needs to be removed.

Maps 33 and 34 (p 69 & 73) have ACEC boundaries in the Elkhorns (specifically the Elk Horn Tack-on in Golconda Gulch) inconsistent with Appendix H. The Maps

need to be revised to be consistent with the Figure 3 in 2006 study in Appendix H.

Page 79 Management Common to Action Alternatives (B, C and D); The management of the Elkhorn Tack-on as an ACEC if it is released from further review by congress as a wilderness area is inconsistent with Appendix H that does not include the Tack-on as an ACEC, only the original Elkhorn WSA. The continued management as an ACEC statements need to be removed.

**Response:** The Elkhorns Tack-on Wilderness Study Area (WSA) would be managed as ACEC as indicated on Figure 3 of **Appendix H** of the Draft RMP/EIS (now **Appendix I** of the Proposed RMP/Final EIS). In Figure 3 the potential Elkhorns ACEC is indicated by a cross-hatch pattern on lands potentially included. This figure does indicate inclusion of the Elkhorns Tack-on WSA in that cross-hatch pattern (and did so in the Draft RMP/EIS). Related maps and text referenced in the comment regarding this issue were all correct in the Draft RMP/EIS and have been carried forward into the Proposed RMP/Final EIS.

#### P55

**Comment:** We are concerned about ACEC designations. Manage all non-wilderness land as multiple use.

**Response:** FLPMA requires the BLM to examine its lands for consideration as Areas of Critical Environmental Concern (ACECs) during the land use planning process. Specific management of ACEC lands is described in the Proposed RMP/EIS and varies by ACEC to include a range of multiple uses with limitations applied in some cases.

#### P56

**Comment:** First, and very important, was the mandate to manage lands under the principles of Multiple Use. Second was the preservation of valid existing rights, including grazing rights, mining claims, oil and gas leases, water rights and rights of access. The third element was specific instructions to the Secretary of the Interior to formulate land use plans that are consistent with State and local plans. The fourth element of FLPMA consists of very specific instructions regarding Wilderness. We simply ask that all of the instructions and requirements of the law as agreed to under the Federal Land Policy and Management Act be honored and applied to this project.

**Response:** The BLM believes it is meeting the requirements of FLPMA in the development of the Butte RMP. Throughout the Butte RMP process the BLM has coordinated with state agencies, tribal governments, and local governments to get their input on proposed management. While there is no wilderness within Butte Field Office lands, the BLM is following appropriate procedures in maintaining current management of Wilderness Study Areas until congress makes decisions about them.

The RMP includes proposed “fall back” management of each Wilderness Study Area to be implemented in the event that congress releases them from wilderness consideration.

#### P57

**Comment:** Social issues: There are already huge blocks of the RMP area that are non-motorized, the plan does not have to take away all of the motorized trails. This goes against the objective of multiple use, on public lands.

**Response:** Of the approximately 308,000 acres of BLM lands in the Butte RMP Decision Area, approximately 31,500 acres would be closed to motorized use (10.2 percent), 283 acres (0.1 percent) would be open to on and off-road use, and approximately 276,217 acres (89.7 percent) would be open to motorized use on designated routes under all action alternatives in the Proposed RMP/EIS. None of the alternatives in the Proposed RMP/EIS propose closing all of the motorized routes.

## Recreation

#### Q1

**Comment:** Under Recreation Management Common to All Alternatives (page 60) it is stated that the BLM would solicit, train and support volunteers. Without analysis of the effectiveness of such activities in the plan, the reader is left to assume that volunteers and employees are interchangeable. Yet, organizations, including most, if not all, companies, typically do not rely on unpaid workers to provide service. Thus it is logical to presume that quality would suffer if the public were served by an unpaid BLM workforce, which runs contrary to Recreation Management Goal 2 (page 60). Either this is a discrepancy in information, or this plan should analyze why there is a need for volunteers and whether or not they would be as good as, or better than, BLM employees in enhancing Recreation.

**Response:** The BLM has a long standing volunteer program and encourages field offices to utilize volunteers to carry out numerous supportive tasks where appropriate. The intent of the volunteer program is to supplement the work of the existing professional staff not replace them. The primary use of volunteers in the Butte Field Office is for campground hosts. These volunteers are used to assist with visitor information, light maintenance, and use compliance. They are generally retired, experienced campers that enjoy interacting with visitors. Other uses for volunteers whether groups or individuals have been for small maintenance projects such as fencing, painting, picnic table assembly, trail maintenance, resource inventories and field monitoring.

#### Q2

**Comment:** Allowing travel up to 300 feet off of a designated route, both roads and trails, is an absolutely necessary opportunity for reasonable use of the area by the public. This access is needed for retrieval, woodcutting, and to reach dispersed campsites and the public’s use of the area would be unreasonably compromised without this access. The use of this access can be qualified to restrict it in situations where it results in unreasonable resource damage.

**Response:** The Butte Field Office followed the Record of Decision in the 2003 Statewide Off-Highway EIS/Plan Amendment for addressing motorized uses off existing routes. The decision of Statewide Amendment and this Proposed RMP is to only allow motorized wheeled travel up to 300 feet for the purpose of establishing dispersed campsites. Exceptions for firewood retrieval can be established by creating temporary area designations. Game retrieval can be accomplished with wheeled hand carts or by foot.

#### Q3

**Comment:** Dispersed campsites are very desirable camp sites. Closure of these sorts of dispersed campsites would have a very significant impact on the public and we request that they remain open. If water quality concerns are the basis for these closures, then there are reasonable alternatives to mitigate these concerns, such as allowing only self-contained camping units to use them. Additionally, a sense of magnitude needs to be applied when assessing the water quality impacts from camping. For example, it appears that cattle grazing along the stream have a much greater impact than any camp site that we observed. Now don’t get us wrong, we support all reasonable multiple-uses of the forest including cattle grazing. We are concerned that the incremental impacts on the public of closing dispersed camp sites are relatively significant while the real improvement to the environment will be relatively insignificant. Again, we request that all reasonable camp sites located along water courses remain open.

**Response:** The 300-foot rule provides numerous opportunities for establishing motorized accessible campsites off existing routes. The BLM strongly endorses the Leave No Trace principle of establishing dispersed campsites at least 200-feet from existing streams. However, except for within developed recreation sites and designated closed areas, all BLM land is open to dispersed camping.

#### Q4

**Comment:** If dispersed camp sites are to be closed based on water quality concerns, then we request that the decision include a water quality monitoring program to establish the baseline water quality prior to the closure of dispersed camp sites and continue that program after

the closure to establish whether any significant water quality improvement was realized. The decision should also include a provision to re-open closed camp sites when no significant improvement in water quality was realized by the closure.

**Response:** The BLM does not have funding or work-force available to monitor water quality changes associated specifically with closing dispersed campsites. The BLM notes that many variables contribute to water quality conditions within any particular water body and that in most cases the existing water quality is often a cumulative result of the effects from land uses and management in a watershed. Water quality monitoring in most cases would be providing information on water quality condition and trends in the context of these cumulative effects, rather than the effects of one particular action.

#### Q5

**Comment:** In general there is a very high demand for camp sites and especially dispersed camp sites. If a dispersed camp site is closed, then we request that the closure be mitigated by creation of new camp sites on at least a 1:1 basis in order to avoid a significant cumulative effect on the public of too few camp sites.

**Response:** This concern is compensated by the 300-foot provision that allows users the opportunity to drive off routes in order to establish suitable dispersed campsites.

#### Q6

**Comment:** Hiking, cross-country hiking and wilderness uses also cause trail impacts yet these impacts are seldom acknowledged. For example, the USDA FS Intermountain Research Station Research Paper INT-450 "Changes on Trails in the Selway-Bitterroot Wilderness, Montana, 1978-89" and dated 1991 found that many trail segments changed markedly, depending on site and use.

**Response:** The BLM agrees that non-motorized user trails do create impacts to other resource values. However, the magnitude of impacts is generally lower than motorized trails given the reduced width of the trail bed, amount of soil displaced or channeled, higher life expectancy of water bars, reduced gradients, and the lower overall maintenance costs. In addition, noise-related impacts from non-motorized users are generally lower.

#### Q7

**Comment:** Why are there so many double-standards in the impact analyses and decision-making? If the issues surrounding motorized travel are significant enough to justify closures, then, in order to avoid introducing a bias to the evaluation and process the same issues and restrictions should also be applied to hiking, mountain climbing, cross-country hiking, wilderness users, etc.

**Response:** A primary goal of resource management is to allocate uses that are compatible with landscape set-

tings, public demands, management capabilities and other important resource values and objectives. In some cases impacts associated with motorized travel pose greater resource concerns than non-motorized uses due to resource sensitivity levels such as vegetation, soil stability, water quality, wildlife security areas, riparian areas, route maintenance costs, and public safety.

#### Q8

**Comment:** The Recreation Opportunity Spectrum (ROS) for motorized recreationists should consist of an equivalent number, type and quality of opportunities as compared to non-motorized recreationists including access to backcountry recreation areas, long distance back country discovery routes, back country airstrips and destinations including historic areas, lakes, vistas, streams and rivers.

**Response:** Under the Preferred Alternative, 88 percent of the BLM land within the Butte Field Office is proposed for varying motorized opportunities that range from Semi-Primitive to Rural type settings. This is described in Chapter 2 of the RMP in the Recreation Opportunity Spectrum section for Alternative B.

#### Q9

**Comment:** Issue 4: The vision is to provide a range of quality recreation opportunities. Closures of access to several routes and areas, is not providing a good mixture of quality opportunities.

**Response:** With this RMP revision, intensive trail riding opportunities would be retained for the three primary OHV areas in the Butte Field Office and motorized access is provided to major attraction areas. In some areas route closures (seasonal and yearlong) are proposed to protect resource values; enhance non-motorized opportunities; provide habitat security so big-game populations are more likely to remain on public lands during the hunting season; reduce maintenance costs and improve safety considerations. Given the varying proposed designations/allocations in Recreation Opportunity Spectrum settings, Visual Resource Management classes, Special Recreation Management Areas, developed vs. undeveloped recreation sites, OHV travel areas, route availability and Special Designations, the BLM believes that a broad range of quality opportunities would be provided under the Butte RMP revision.

#### Q10

**Comment:** The directives separating different visitor use referring to "user conflict" is out of touch with reality. Education and a directive to set expectations for multiple uses on the trail systems should a goal. Fair, diverse, and equitable solutions should be a goal. Rather than perpetuate the "user conflict" that the organized quiet trails community has advertised for the past 15 years. Rather than dispel the "conflict" scenario with

workable solutions, the current land management mind set seems to adopt the concept of separating uses, in essence, using area closure as a management technique.

The statement made on page 469; the "overall effect of reducing opportunities available for motorized recreation" would be "The quality of the experience may increase because separating uses would reduce conflicts between user groups" is unacceptable. The documentation showing any increase in quality is totally lacking. Report FHWA-PD-94-031, Conflicts on Multiple-Use Trails, 1994 has many management suggestions. The focus of the document is "how to improve trail sharing by avoiding and resolving conflicts. Quoted from the Executive Summary: "Conflict in outdoor recreation settings (such as trails) can best be defined as "goal interference attributed to another's behavior" (Jacob and Schreyer 1980, 369). As such, trail conflicts can and do occur among different user groups, among different users within the same user group, and as a result of factors not related to users' trail activities at all. In fact, no actual contact among users need occur for conflict to be felt. Conflict has been found to be related to activity style (mode of travel, level of technology, environmental dominance, etc.), focus of trip, expectations, attitudes toward and perceptions of the environment, level of tolerance for others, and different norms held by different users. Conflict is often asymmetrical (i.e., one group resents another, but the reverse is not true)."

**Response:** Conflicts between motorized and non-motorized users have been identified as a major issue of concern by the public via both oral and written comments on the Butte RMP. Conflict concerns raised include noise intrusions, speed of travel, dust, safety, wildlife displacement, etc. These concerns are typically expressed more often by non-motorized users because their sensitivity to noise and higher speed uses is much greater. Multiple use trails do maximize opportunities for all users however; they do not ensure quality recreation experiences for those who seek quiet, natural settings.

In this planning effort, the Butte Field Office is committed to providing a diverse array of both opportunities and quality user experiences. In order to achieve this, allocations with regard to travel management, recreation settings (Recreation Opportunity Spectrum), special recreation management areas (SRMAs) and Visual Resource Management have been made so that visitors can identify areas that will meet their experience expectations.

#### Q11

**Comment:** The "displaced" motorized community is facing a situation of few or no places to go. If every land management plan simply "manages" motorized recreation by closure and displacement, the consequence will be catastrophic. A recently released Forest Service Study states that motorized recreation is increasing, with 29.1% of Montana's general population describing

themselves as OHV enthusiasts and use OHVs for recreation. This is a significant portion of the population whose desires for access to public lands are not being addressed. (See "Off-Highway Vehicle Recreation in the United States, Regions and States: A National Report from the National Survey on Recreation and the Environment (NSRE), June 2005.

**Response:** Under the Butte RMP, intensive trail riding opportunities are retained for the three primary OHV areas in the Butte Field Office and an extensive network of primitive roads is available in the Limestone Hills area. The BLM recognizes the public demand for motorized travel opportunities and considered additional opportunities in this planning process.

#### Q12

##### Comment:

- Elimination of organized, motorized events (page 444) will not correct management problems (existing or perceived). 'Organized' group events have rules and influence over participants.

- Each event, motorized or non-motorized should be evaluated on its own merits with consideration for the location requested and the group/sponsor accountability. Again, multiple use rather than exclusive use.

- Montana Trail Vehicle Riders Association has held the annual State Ride in the Pipestone vicinity on 3 separate occasions. Members attending worked on trail projects, visited, rode, and enjoyed the opportunity. The event in 2006 was held under a USFS permit at \$50. An event request for BLM permit was quoted at \$4.00 per day per rider.

- In the summer of 1985, a National trials event was held in the Whitetail-Pipestone area. The event was a rare chance for Montana people to watch National riders compete. The area lends itself to a trials type of activity, whether on motorcycles or bicycles. Competitive events come in many sizes and types. This type of activity should not be severely limited.

**Response:** The Alternative B (Preferred Alternative) language regarding organized competitive motorized events has been changed in the Proposed RMP/Final EIS. Existing management for the Whitetail-Pipestone travel planning area does allow for consideration (subject to case by case evaluation) for competitive and non-competitive uses in the Pipestone OHV recreation area. In addition to making this correction, the BLM has been modified Alternative B to allow for additional consideration of organized motorized competitive event opportunities outside Pipestone, subject to management restraints.

The BLM notes that BLM's Special Recreation Permit Administration policy and guidelines, including the fee schedule, vary from USFS management.

**Q13**

**Comment:** The Presidents Council on Environmental Quality just issued a statement that hunting opportunities must be increased on federally managed public land. CBU believes that the Butte RMP severely reduces hunting opportunities with the closure of multiple use trails. The closure of trails prevents direct game retrieval of harvested animals and a study conducted in 2004 by CBU showed limits on game retrieval negatively affected 85% of the respondents to the survey. CBU finds this information important when developing travel plans.

**Responses:** Hunting access and the quality of hunting experiences were issues that were considered during the development of alternatives and later analyzed in Chapter 4 under Recreation effects. These issues influenced many travel plan alternatives with regard to routes available to motorized uses. The primary considerations were route availability, seasons of use, elevational access, hunter disbursement opportunities, game retention on public lands, conflicts between non-motorized and motorized users and game retrieval.

**Q14**

**Comment:** One concern that was not expressed was the extended camping requests on a case by case basis in semi developed camping areas on the BLM public lands. Unfortunately, there seems to be no set criteria for issuing these permits and the decision is left up to the area manager.

**Responses:** In Chapter 2, under Recreation Management, Alternative B (Preferred Alternative) has been modified in the Proposed RMP/Final EIS to allow for variance consideration to the 14-day camping rule under stipulated conditions for appropriate uses in low impact locations throughout the Butte Field Office. The 14-day limit also corresponds to what is allowable for commercial outfitters without additional analysis. Preference will be given to developed recreation sites after the high use season (Memorial Day weekend to Labor Day weekend) that provide hardened camping units, toilet facilities and good access for non-commercial, extended hunting camps during the hunting season.

**Q15**

**Comment:** Recreation Management: Executive Order 13443, Facilitation of Hunting Heritage and Wildlife Conservation, was enacted on August 17, 2007. The purpose of this order is to “direct Federal agencies that have programs and activities that have a measurable effect on public land management, outdoor recreation, and wildlife management, including the Department of the Interior and the Department of Agriculture, to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.” It is our hope that this Order, together with recommendations called for in the Hunter Behavior

Advisory Council Final Recommendations will be addressed within the RMP.

**Responses:** Hunting access and the quality of hunting experiences are issues that were considered during the development of alternatives and later analyzed in Chapter 4 under Recreation effects. These issues influenced many travel plan decisions with regard to routes available to motorized uses. The primary considerations were route availability, seasons of use, elevational access, hunter disbursement opportunities, game retention on public lands, conflicts between non-motorized and motorized users and game retrieval.

**Q16**

**Comment:** Under the discussion of the preferred alternative for Recreation Management you state your intent to issue an Annual Recreation Permit in order to receive a fair economic return from commercial fishing and floating outfitters/guides. Your discussion should mention the possibility of collaborative special recreation permitting as we have initiated on the Madison River with the Dillon Field Office. I would suggest that a collaborative approach would result in benefits that include less duplication of agency effort and one stop shopping for the commercial users. I would further recommend that this section be amended to recognize the value of partnering with FWP on permitting commercial uses, especially on the portion of the Big Hole River that falls within the Butte Resource Area.

**Responses:** The BLM fully agrees with this comment and will coordinate with FWP on all appropriate waterways where public river access sites are located. This management action is described in Chapter 2 of the RMP, in the Recreation Management section under Management Common to Action Alternatives. In addition, the Preferred Alternative has been modified in the Proposed RMP/Final EIS to include the following statement, “BLM would continue to coordinate with MFWP to enhance river/corridor land management and to develop a multi-agency fee system for the commercial uses of river access sites wherever feasible.”

**Q17**

**Comment:** Scratchgravel Hills - The key concerns are public health & safety, limiting public nuisances and maximizing recreational opportunities. Regarding public health & safety, fire is the over-riding concern, followed by shooting (still a problem, but minor compared to what it used to be.) The major 'nuisances' now are ORV use and late night 'parties.' So I strongly urge you to 'close' the entire area to use after dark.

**Response:** The Preferred Alternative for the Helena Travel Planning Area has been modified in the Proposed RMP/Final EIS so that all interior roads in the Scratchgravel Hills would be closed to public motorized travel yearlong at the five proposed trailheads, with the excep-

tion of a few perimeter right-of-way routes and routes to private residents. This change will negate the need for the dusk to dawn closure since the use of motorized vehicles will not be allowed during any time of the day.

**Q18**

**Comment:** We suggest that management direction for recreation include specification that campground facilities and concentrated public recreational uses should be located away from ecologically sensitive areas, such as riparian areas and wetlands or areas with erosive soils as much as possible. We encourage restricting motorized access to camping sites in ecologically sensitive areas, and identifying and designating camping sites to avoid sensitive areas and/or to encourage camping or concentrated public use in areas that are more resilient and can more easily recover from impacts and/or accommodate public use with less impact. We believe recreational uses should be directed and encouraged toward more resilient areas where they would cause the least environmental harm. For example, including management direction language such as, “BLM will avoid locating campground facilities and concentrated public recreational use areas near ecologically sensitive areas, and will strive to locate such facilities in areas that are more resilient and can more easily recover from impacts and/or accommodate public use with less impacts.”

**Response:** The BLM believes that the last two paragraphs in Chapter 2 of the RMP, Recreation Management, under Management Common to Action Alternatives (B, C, and D) addresses these concerns. Some limited flexibility was included so that existing and future fishing access sites (typically located in riparian areas) could continue or be considered, provided a high public need could be demonstrated. Prior to establishing any new site, BLM is required to complete a NEPA document for public review that analyzes all resource impacts including riparian and wetland areas.

**Q19**

**Comment:** AWL recommends the amendments to Alternative C:

- Change roads designated as “natural roads” to “semi-primitive modified” in the Elkhorns.
- Change roads designated as “roaded natural” to “semi-primitive modified” in the area west of Helena.
- Change roads designated as “roaded natural” to “semi-primitive modified” in the Highlands.

Designating these roads “semi-primitive modified” should enhance security and population connectivity.

**Response:** The Recreation Opportunity Spectrum (ROS) system has established criteria for each setting that must be followed in order to maintain national integrity. This system assesses areas, not roads, and there

are size guidelines that must be followed. The BLM believes that the preferred ROS settings are appropriate based on the characteristics of these areas within the Elkhorns.

**Q20**

**Comment:** I am thrilled that you are considering Wild and Scenic River status for the Missouri River 3.1 miles below Holter Dam. This is a very scenic, free flowing stretch of the Missouri and it deserves protection. And please designate it as non-motorized to provide a Quiet Trail on the river.

**Response:** The BLM corridor lands are designated Semi-primitive under the ROS system. No designations have been for the river or the adjacent Forest Service lands at this point for it is beyond the legal scope or decision making authority of this document. The Forest Service will classify its lands when it completes its pending study in their next Land Use Plan. River use issues such as motorized vs. non-motorized travel could be decided by Congress as part of its designation decision or more likely through a specific WSR management plan should the area be designated.

**Q21**

**Comment:** BLM needs to revisit and show valid reasons for the proposed reduction of boat-in camping opportunities. This will create more demand on the few camping areas you are designating. In turn this will create more user conflicts. The plan does not address this subject in detail as it should.

**Response:** The proposed decision is to designate specific sites that may be used for dispersed camping along the Sleeping Giant shoreline of Holter Lake/Missouri River and to evaluate the need to do likewise on Hauser Lake. Established recreation sites on these lakes would not be affected. The Butte Field Office recognizes that there is a high demand for dispersed boat-in camping sites on Holter Lake and that the Beartooth Wildlife Management Area is closed to camping. In addition the Forest Service is considering limiting camping to Coulter Campground only. BLM believes closure of some sites on Butte Field Office lands is necessary in order to protect important wildlife use areas (nesting sites, natural big-game watering sites, etc) cultural resources, riparian areas, etc. Chapter 4 of the RMP does address impacts related to implementing this action.

**Q22**

**Comment:** You do have a recreation plan that includes aircraft don't you? Since we lost the Ming Bar and Ox Bow landing strips along Holter Lake, a suitable replacement should be made available. Such a replacement area is available in Section 23, Township 14 N, Range 3 W. I challenge you to provide the pilots of Montana with the opportunity to create a new airstrip along Holter

Lake in Section 23. It is not wilderness and is surrounded on three sides with recreational activities.

**Responses:** Establishment of aircraft landing strips is beyond the scope of this planning document. Applications for these types of uses are handled through the Lands program. The land identified by the comment in Section 23 is not suitable for such a use since it is within the Sleeping Giant Wilderness Study Area and subject to the non-impairment criteria.

### Q23

**Comment:** MWF supports nighttime travel closures in the Scratchgravel Hills trail system to discourage parties and vandalism. MWF requests some latitude for hunters who may still be afield after dark taking care of downed game or early entry into BLM lands to be afield before the sun rises. Take note that normal hunting hours are ½ hour before sunrise to ½ hour after sunrise and plan closed periods accordingly. Rather than a sunrise opening and sunset closure, perhaps adjust it to 1 hour previous to sunrise and 1 hour after sunset as deadlines which will have the exact same effect at controlling destructive activities.

**Response:** The Preferred Alternative for the Helena Travel Planning Area has been modified in the Proposed RMP/Final EIS so that all interior roads in the Scratchgravel Hills would be closed to public motorized travel yearlong at the five proposed trailheads, with the exception of a few perimeter right-of-way routes and routes to private residents. This modification is due to the high degree of user conflicts and illegal activity taking place in this area. This change will negate the need for the dusk to dawn closure since the use of motorized vehicles will not be allowed during any time of the day.

### Q24

**Comment:** Visual and other impacts associated with motorized trails have been cited as significant negative impacts. Many non-motorized trails have environmental impacts similar to motorized trails. Existing wilderness and non-motorized areas include many trails that are visually and functionally similar to primitive motorized roads and motorized trails. For example, the Mount Helena trails, and the main trails into the Bob Marshall and Scapegoat Wilderness at Benchmark, Holland Lake, and Indian Meadows and the main trails into the Anacoda Pintler Wilderness are similar visually and functionally to many primitive motorized roads and motorized trails. Additionally, trails resulting from activities including wild animals and Native Americans have always been a part of the natural environment. We request that the existence of trails be considered part of the natural landscape and that the visual appearance of motorized trails and non-motorized trails be recognized as equal in most cases and that the environmental impacts of motorized and non-motorized trails be addressed fairly and equally.

**Response:** Visual impacts associated with motorized and non-motorized trails did not influence route restrictions or closures in the Butte RMP alternatives. All human created trails are considered unnatural intrusions on the landscape and the degree of their visual impact depends on the noticeable contrast a specific trail has on the affected landscape.

## Riparian Habitat

### R1

**Comment:** In the Elkhorn Mountains, re-establish proper riparian function through the use of various management techniques including but not limited to prescribed fire, mechanical treatment, and restoration of riparian areas (e.g. re-establish historic stream flow, encourage willow and aspen development, reduce headcutting, and increase the area of wetland). All prescriptions should be based on an analysis of existing condition in order to ensure that site-specific techniques are used to achieve the desired effect of improving riparian function.

**Response:** The BLM agrees that riparian function should be maintained or improved throughout the Butte Field Office using a variety of management activities. The Vegetation Communities section (Management Common to All Alternatives - Riparian) in Chapter 2 of the RMP provides direction for riparian areas. Additional discussion on management of riparian habitats is found under Management Common to Action Alternatives in Chapter 2 (Vegetation Communities – Riparian) as well as under the different alternatives.

Site-specific riparian restoration projects will address the existing condition, the type and extent of management practices appropriate for that area, and effects from management actions.

### R2

**Comment:** FWP has identified riparian and wetland areas as Tier I communities in our Comprehensive Fish and Wildlife Conservation Strategy (CFWCS). We also understand that BLM policy requires consideration of the habitats and species identified by the CFWCS that were approved by the USFWS in 2005. As such we strongly urge the BLM to consider the treatment of riparian areas with the greatest measure of protection that can be afforded. For example, protection from new roads due to mineral development as outlined in Alternative C, page 144, should be strongly considered. Similar such protections should be incorporated into any alternative selected in the ROD.

**Response:** The Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species section of Chapter 2 (Management Common to Action Alternatives) states that all Tier I and Tier II species and ecotypes from Montana's Comprehensive Fish and Wildlife

Conservation Strategy would be considered “priority species and habitats” in the RMP. Priority species and ecotypes would be given additional consideration during site-specific project planning and/or project development. All riparian habitats in the Butte Field Office would be considered “priority habitats” including those identified in the Conservation Strategy (Big Hole and Jefferson Rivers) and, under Alternative B, would be given a substantial increase in protection and emphasis compared to the existing condition.

### R3

**Comment:** Wetlands and riparian areas increase landscape and species diversity, support many species of western wildlife, and are critical to the protection of water quality and designated beneficial water uses. EPA considers the protection, improvement, and restoration of riparian areas and wetlands to be a high priority. Potential impacts on riparian areas and wetlands include: water quality, habitat for aquatic and terrestrial life, flood storage, ground water recharge, and discharge, sources of primary production, and recreation and aesthetics. The draft RMP/EIS says that 42 condition of riparian areas in the Decision Area (or 147 miles) are functioning-at-risk (FAR), and 12 percent (or 40 miles) are non-functioning (NF, page 224, 324), with only 43 percent of the riparian areas (or 150 miles) in proper functioning condition (PFC). This high percentage of BFO riparian areas that are not in proper functioning condition (56 percent of riparian areas), evidences the need to improve BLM BFO management to restore riparian areas and promote healthy aquatic ecosystems.

We support the RMP's stated goal of managing wetland and riparian area to move toward or remain in PFC, and support healthy, diverse, and abundant populations of fish and associated aquatic and riparian dependent species, (page 17), and the emphasis for protection and restoration of riparian areas (page 18), and the statement that, "authorized activities in riparian areas would strive to maintain and restore riparian structure and function , benefit fish and riparian-dependant species, enhance conservation of organisms that depend on the transition zone between upslope and the stream, and maintain or improve the connectivity of travel and dispersal corridors for terrestrial animals and plants" (page 20).

**Response:** As acknowledged in the Butte RMP, riparian conditions could be improved on BLM lands in some cases. In the Preferred Alternative, the BLM has proposed establishment of riparian management zones where the focus of management would be on improving riparian ecological conditions. The BLM believes this should increase the percentage of riparian areas in the Butte Field Office that would meet proper functioning condition (PFC). The BLM notes that in many cases where riparian areas do not meet PFC, the causes for this are beyond the BLM's control (such as county roads in

valley bottoms, management activities on private lands, etc.).

### R4

**Comment:** Since portions of the BFO jurisdictional area are located west of the continental divide (i.e. within the Clark Fork River drainage, and thus, Interior Columbia Basin), it is relevant to note that EPA evaluates land management activities proposed within the Interior Columbia Basin for consistency with the provisions of the Interagency Memorandum of Understanding between the Forest Service, BLM, EPA, USFWS, and NMFS for Forest Service implementation of the Interior Columbia Basin Strategy on National Forest lands (referred to as the ICB Strategy, <http://www.icbemp.gov/html/icbstrat.pdf>; and “A Framework for Incorporating the Aquatic and Riparian Habitat Component of the ICB Strategy into BLM and Forest Service Plan Revisions,” <http://www.icbemp.gov/html/agripfrm7804.pdf>).

Riparian Conservation Areas are an important management element in the ICB Strategy to maintain and restore the health of watersheds, riparian, and aquatic resources to sustain aquatic and terrestrial species and provide water of sufficient quality and quantity to support beneficial uses. It is important that proposed harvest be consistent with the riparian management objectives described in the ICB Strategy, which include:

- Achieve physical integrity of aquatic ecosystems;
- Provide an amount and distribution of woody debris sufficient to sustain physical and biological complexity;
- Provide adequate summer and winter thermal regulation;
- Provide appropriate amount s and distributions of source habitats for riparian- or wetland-dependent species; and
- Restore or maintain water quality and hydrologic processes.
- Restore or maintain naturally functioning riparian vegetation communities.

This gives further support for the need for riparian protections to be consistent with the ICB Strategy at least for BLM lands within the Interior Columbia Basin (west of the continental divide).

**Response:** Management proposed for the Butte Field Office in Chapter 2 is consistent with the ICB strategy. The Missoula Field Office manages 932 acres (0.75 percent) of Butte Field Office land within the Blackfoot watershed under an MOU with the BFO. These lands with their associated riparian areas and forests are managed under conservation plans to implement recovery of special status species including bull trout and westslope cutthroat trout. The management and conservation plan for bull trout incorporates the principles of the Inland Native Fish Strategy and the riparian man-

agement objectives of the ICB strategy. The riparian reaches in this area are currently in Proper Functioning Condition (PFC).

The Butte Field Office manages 649 acres (0.12 percent of Butte Field Office total) in the American Gulch area within the Upper Clark Fork watershed. Approximately 232 of these acres are classified as forest types. Adjacent to the forested areas are two small riparian reaches totaling less than 1 mile with approximately 5 acres of associated riparian/wetland habitat. These areas are primarily grass/sedge/shrub communities with limited forest influence. In the Preferred Alternative for the Butte RMP, these riparian areas would be managed under the direction outlined for Riparian Management Zones in Chapter 2. The RMZs would meet the direction outlined in the ICB strategy. The two reaches in this area are currently in Functioning-At-Risk (FAR) condition with upward trends.

#### R5

**Comment:** Wetlands in particular have experienced severe cumulative losses nationally. Potential impacts on wetlands include: water quality, habitat for aquatic and terrestrial life, flood storage, ground water recharge and discharge, sources of primary production, and recreation and aesthetics. Executive Order 11990 requires that Federal Agencies “take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency’s responsibilities...” and agencies are further directed to “avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds

(1) that there is no practicable alternative to such construction, and

(2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use...”

In addition national wetlands policy has established an interim goal of No Overall Net Loss of the Nation’s remaining wetlands, and a long-term goal of increasing quantity and quality of the Nation’s wetlands resource base. The EIS should describe how the alternatives will meet the wetland protection goals in E.O. 11990.

We believe the RMP should also include direction to assure that project s tiered from the management plan adequately assess potential impacts on wetland functions; avoid or minimize wetlands impacts wherever possible; and compensate for unavoidable impacts through wetland restoration, creation, or enhancement. We encourage the BLM to assure that projects tiered to the RMP delineate and mark perennial seeps and springs and wetlands on maps and on the ground before disturbance so that disturbance to such areas can be avoided. Also, as noted in the discussion below on Travel Management and OHV Use, we recommend that manage-

ment direction restrict OHV use on ecologically sensitive riparian areas and wetlands.

**Response:** The RMP recognizes that wetlands are ecologically important areas and takes several steps to ensure they are adequately considered when the RMP and subsequent project level planning are implemented. These areas are included in Riparian Management Zones (RMZ) where maintaining and/or restoring riparian and wetland functions is the primary emphasis. The RMP also implements a Riparian and Wetland Land Health Standard, which requires that these areas are either at Proper Functioning Condition (PFC) or making progress towards PFC. The special management area designation and standard would ensure that wetland areas are adequately considered when planning any action that could potentially impact these resources. This includes travel management and any ground disturbing activity. If wetlands (including seeps and springs) are found during implementation they will be protected under the wetland standard.

Chapter 2 of the RMP, under Vegetation Communities, Management Common to All Alternatives, Riparian subheading (Page 21 paragraph 1 right column in Draft RMP/EIS) clearly states the BLM’s position with regard to existing regulations: “Riparian and wetland management would be consistent with all state and federal laws and regulations. Actions would be taken to cooperatively conserve riparian/wetland habitat, minimize the impacts, loss or degradation of wetlands, and preserve values served by floodplains where occurring on public land while reducing hazards to human safety.” All state and federal laws and regulations include Executive Order 11990.

#### R6

**Comment:** We support the proposed goal for Livestock Grazing to manage for sustainable levels of grazing while meeting or progressing toward Land Health Standards, and to maintain, restore or enhance rangeland to meet Land Health Standards is good (page 17). We note that while the Land Health Standards (Standards for Rangeland Health and Guidelines for Livestock Grazing Management Butte District Appendix E) are generally good and address stream channel hydrology, erosion/deposition, and stream bank vegetation, they do not appear to address aquatic habitat fragmentation and connectivity issues, nor do they fully address structure, composition, and functions of aquatic ecosystems. We recommend that additional management direction be considered to maintain and restore habitat connectivity for fisheries and other aquatic life (fish passage through culverts, etc.), and to maintain and restore structure, composition and functions of aquatic ecosystems within historic ranges of variability. For example we suggest adding goals and objectives as follows, “BLM will maintain and restore hydrologic connectivity within and

between watersheds to provide for aquatic habitat needs and connectivity of aquatic habitats.”

“BLM will maintain and restore structure, composition, and functions of aquatic ecosystems within historic ranges of variability.”

We also note the need to assure that the Land Health Standards are adequately monitored and enforced by BLM. It is not clear to us if there is adequate monitoring and oversight of implementation of these grazing Standards, and enforcement of grazing permits when Rangeland Health Standards and State Water Quality Standards are not being met. It would help if this were clarified in the final RMP/EIS.

**Response:** The distribution of Butte Field Office lands is highly fragmented such that it is not practical or implementable for the Butte RMP to include management direction associated with ensuring hydrologic and aquatic habitat connectivity. Management direction for Riparian Management Zones (Chapter 2, Vegetation Communities section, Alternative B – Preferred Alternative subsections, Riparian Management Zones) provides management direction that focuses on riparian values in the Butte Field Office. In addition to the requirement to meet or move toward meeting the Land Health Standards (Appendix F in the Proposed RMP/Final EIS), and the management direction for riparian vegetation in Chapter 2, specifically there are management prescriptions in the Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species section which address aquatic habitat and ecosystem function.

The Bureau believes there is adequate monitoring and oversight of implementation of Land Health Standards. As of the end of fiscal year 2006, approximately 229,000 acres (90 percent) of a possible 253,000 acres of currently permitted allotments had been assessed for Land Health Standards. Of the acres assessed, 113,000 acres were meeting standards (49 percent), 80,000 acres were not meeting standards but appropriate action has been taken to ensure significant progress toward meeting standards and livestock is a significant factor (35 percent), 3,000 acres were not meeting standards and appropriate action had not been taken yet to ensure significant progress toward meeting standards and livestock is a significant factor (1 percent), and 34,000 acres were not meeting standards due to causes other than livestock grazing (15 percent). Furthermore, the Bureau regularly monitors allotments on a scheduled basis; i.e. higher priority allotments are monitored annually whereas lower priority allotments are monitored every 3 to 5 years.

#### R7

**Comment:** We support the greater distances for riparian protection as afforded in Alternative C than any other action alternative.

**Response:** The Butte Field Office believes the distances for riparian management afforded by the RMZs outlined under Alternative B in Chapter 2 are adequate to enhance and, where necessary, to protect riparian resources.

#### R8

**Comment:** Include commitments in the RMP to achieve proper functioning condition (PFC) or a strong upward trend in riparian conditions during the planning period. For example, to increase PFC riparian areas from 43 percent to 80 percent; decrease FAR from 42 percent to 20 percent; and NF from 12 percent to 0 percent. We also recommend establishing interim objectives to move currently functioning-at risk and non-functioning riparian areas to PFC during each 5 years of the planning period (this is important since 56 percent of the BFO riparian areas are not in PFC).

**Response:** Chapter 2 of the Butte RMP/EIS outlines BLM’s goal to manage riparian and wetlands communities to move toward or remain in proper functioning condition to the extent practicable. Additionally, the Land Health Standards included in **Appendix F** in the Proposed RMP/Final EIS reiterate that all uses on public land should achieve or make significant progress toward having riparian and wetland areas in proper functioning condition. However, a review of Butte Field Office riparian reaches reveals that at least 40 percent of reaches in functional-at-risk (FAR) or non-functioning (NF) conditions are subject to factors beyond BLM’s management control such as upstream dewatering, the location of highway and county roads, and historic or active mining operations. Furthermore, the fragmented ownership pattern of Bureau lands in the Butte Field Office also affects the ability to effect any significant management change on many of these reaches. Given these limitations, we have not established numerical thresholds over time for riparian improvement. The BLM, however, does work with other parties where feasible to resolve impacts or issues beyond our inherent control. BLM will also continue to monitor riparian and wetland conditions as part of land health assessment work and/or project implementation to ensure actions that BLM has and can take are resulting in moving toward or attaining proper functioning condition.

### Social Conditions

#### S1

**Comment:** Dr. Martin E.P. Seligman has identified that learned helplessness or the belief that your actions will be futile is an epidemic affecting the nation (page 70, ISBN 0-671-01911-2). The evaluation of social issues must also include an evaluation of conditions contributing to learned helplessness including the lack of recognition and attention to the needs of motorized recreation-

ists and the significant social problems that result from these conditions.

**Response:** Potential effects to motorized users are discussed for each alternative in the travel management, recreation, social, and cumulative sections of Chapter 4. Many of these effects are social in nature. The effects for each of the individual travel planning areas are discussed in Environmental Consequences of Five Site-Specific Travel Plans in the latter part of Chapter 4. In addition, this plan incorporates by reference the Off-Highway Vehicle EIS and Plan Amendment for Montana, North Dakota and portions of South Dakota, which discusses off highway travel in great detail. The Preferred Alternative of this plan attempts to balance the needs of users with different goals.

## S2

**Comment:** We are concerned about the protection of our western culture. This culture is characterized by access to the land for multiple-uses, friendliness, good neighborliness, tolerance, and sharing. Motorized access to the land provides opportunities for sightseeing, exploring, weekend drives and picnics, hiking, rock climbing, skiing, mountain biking, riding horses, camping, hunting, target shooting, fishing, viewing wildlife, OHV recreation, snowmobiling, accessing patented mining claims, gathering of firewood, rocks, natural foods, etc. and physically challenged visitors who must use wheeled vehicles to visit public lands. Both our observations and the Social Assessment for Beaverhead-Deerlodge National Forest found that these multiple-use visitors represent over 97% of the total visitors and that these visitors rely on motorized access. We are fortunate to have extensive public lands to support the western culture. While mechanized and multiple-use recreationists are tolerant of others as noted by the District Ranger, this does not mean that non-motorized interests should be allowed to dominate resource allocation decisions. We request that multiple-use management principles be used to protect western culture and values including access to the land for multiple-uses, friendliness, good neighborliness, tolerance and sharing.

**Response:** The activities described in this plan would not affect the western culture of the area as the BLM manages only 4.2 percent of the surface acres and access in the RMP Planning Area. The Preferred Alternative attempts to balance the needs of users with different goals.

## S3

**Comment:** Motorized visitors have had to devote the majority of their available energy and time addressing local and national level travel management actions. The combination of these actions has created a significant cumulative negative effect on motorized visitors by consuming their free time and money, and significantly impacting their quality of life. Additionally, this cumula-

tive negative effect has led to the loss of opportunity for motorized recreationists to further the awareness and education of other motorized visitors in areas such as proper riding ethics, safety, and environmental protection. This cumulative negative effect has also reduced the opportunity for motorized recreationists to improve and maintain existing motorized opportunities. This cumulative negative impact includes reduced maintenance of trailheads and trails and reduced ability to undertake mitigation projects to protect the environment and public safety. We request that these cumulative negative effects be addressed in the analysis, preferred alternative, and decision-making.

**Response:** The BLM believes that the Chapter 4 sections Cumulative Effects on Social and Economic Conditions and Cumulative Effects of Travel Plans at the Planning Area Scale adequately address the cumulative effects associated with land management decisions related to motorized uses. All publics interested in the plan have the same opportunities to participate during the planning process.

## S4

**Comment:** On page 480, volume 1, Social Conditions: "Other federal land management agencies in the Planning area are following a trend of reducing motorized access." This statement is especially disconcerting. First, just because another agency is following the motorized closure trend does not make it right! Secondly, the cumulative effects of the motorized closure trend are being ignored by all agencies and this is very wrong and out of compliance with NEPA guidelines.

**Response:** The statement cited that other federal land management agencies are following a trend of reducing motorized access, is simply stating a trend. It is not endorsing the trend. The BLM believes that the Chapter 4 sections Cumulative Effects on Social and Economic Conditions and Cumulative Effects of Travel Plans at the Planning Area Scale adequately address the cumulative effects associated with land management decisions related to motorized uses.

## S5

**Comment:** The evaluation must adequately consider the growing popularity of motorized recreation, the aging population, and their needs for motorized access, and the increased recreation time that the aging population has and looked forward to enjoying public lands in their motor vehicles.

**Response:** The available research suggests that participation in outdoor activities changes as people age. However, we have little understanding of how the leisure sequence will unfold at the "baby boomer" population ages. We do not know if former backpackers and/or hikers will become OHV users? Therefore it is unclear how the analysis should be adjusted to take the aging

population into consideration and no adjustments have been made.

### S6

**Comment:** The negative social and economic impact experienced by motorized recreationists when motorized recreational opportunities do not exist in nearby public lands must be adequately evaluated and considered in the decision-making. This is especially significant now that fuel is over \$2.00 per gallon. These impacts include the complete loss of recreational opportunities and the cost of having to travel farther and farther in search of fewer and fewer motorized recreational opportunities in times of increasing travel costs. For example, the lack of adequate OHV systems in the Helena National Forest requires us to travel at least 180 miles to adjacent national forests and many more miles to other states including Idaho and Utah. A 180 mile roundtrip costs at least 3 hours and \$70 and that cost will increase substantially in the future. This added cost is a waste of time and energy resources and has not been adequately considered by the agency. Additionally, OHV routes in adjacent forests are being reduced at an alarming rate and are compounding the cost in time and energy even further. We request the evaluation of the economic cost of fewer motorized recreation opportunities on motorized recreationists and the significant cumulative negative effect of all travel management decisions that contribute to these social and economic impacts on motorized recreationists.

**Response:** Potential effects to motorized users are discussed for each alternative in the Travel Management, Recreation, Social, and Cumulative Effects sections of Chapter 4. Many of these effects are social in nature. In addition, effects for each of the individual travel planning areas are discussed in the Environmental Consequences of Five Site-Specific Travel Plans section in the latter part of Chapter 4. Since BLM manages only 4.2 percent of the surface acres and access in the Butte Planning Area, the extent of effects to motorized access is not great.

### S7

**Comment:** Identification of "high social, cultural, or economic value" and "desired" levels are subjective and requires an assessment and balancing of public values. For example, a particular species may have a high social value to a particular segment of the population, but a low social value to another. Similarly, a species may have significant economic value for a particular use (trees cut for timber), but have high social value in the context of an entirely different use (trees observed by hikers). Furthermore, these conflicting values may require entirely different "desired" levels. Despite these extremely complex and subjective determinations, the proposed alternative provide virtually no explanation or guidance regarding how these levels and values were established. This

extreme discretion is not allowed by the Organic Act, MUSYA, and NFMA, which require that forests be managed for a variety of uses.

**Response:** It is true that a particular species may have a high social and/or economic value to one segment of the population and little social and/or economic value to another segment. However, it is unclear what specific parts of the document the comment is referring to. The Organic Act, MUSYA and NFMA are Forest Service management requirements and do not apply to BLM, although we may have similar requirements. The social analysis contained in the Butte RMP/EIS identified impacts to groups that place value on certain resources or uses and how a general emphasis on one type of management or another would affect that group.

### S8

**Comment:** Evaluations and decisions have been limited to natural resource management issues. Issues associated with motorized access and motorized recreation must be adequately addressed during the evaluation and decision-making including social, economic, and environmental justice issues. We are concerned that issues cannot be restricted to just those associated with natural resources. Access and recreation on public lands are essential needs of the public in Montana and we respectfully request that issues associated with the human environment be adequately addressed.

**Response:** Potential effects to the human environment are discussed for each alternative in the Travel Management, Economic, Recreation, Social, Environmental Justice and Cumulative Effects sections of Chapter 4. These sections comply with the guidance in BLM's Planning Handbook.

### S9

**Comment:** Montana ranks very low for social conditions (44th state per Fordham Institute for Innovation in Social Policy,) and social issues are relevant to this action. Motorized recreation is a healthy social activity. These types of issues are associated with motorized access and recreation in the project area and these issues must be adequately addressed. Social issues must be adequately evaluated per the SOCIAL IMPACT ANALYSIS (SIA): PRINCIPLES AND PROCEDURES TRAINING COURSE (1900-03) (<http://www.fs.fed.us/emc/nepa/includes/sia.html>) and Environmental Justice issues per Departmental Regulation 5600-2. The evaluation and resulting decision must adequately consider and address all of the social and economic impacts associated with the significant motorized access and motorized recreational closures.

**Response:** The training course referred to in this comment is a Forest Service course. The social analysis contained in the Butte RMP/EIS complies with all BLM guidance for social assessment. The Environmental

Justice regulations are Department of Agriculture regulations and BLM is a part of the Department of Interior. The social analysis complies with Department of Interior guidance regarding Environmental Justice.

### S10

**Comment:** In the past 30 years, the prevalence of overweight and obesity has increased sharply for both adults and children. Between 1976–1980 and 2003–2004, the prevalence of obesity among adults aged 20–74 years increased from 15.0 percent to 32.9 percent. This increase is not limited to adults. Among young people, the prevalence of overweight increased from 5.0 percent to 13.9 percent for those aged 2–5 years, 6.5 percent to 18.8 percent for those aged 6–11 years, and 5.0 percent to 17.4 percent for those aged 12–19 years. (Reference: <http://www.cdc.gov/nccdphp/dnpa/obesity>). This disturbing trend has prompted the President to promote a health and fitness initiative (<http://www.whitehouse.gov/infocus/fitness/toc.html>) and OHV recreation is an activity that meets the physical requirements of the President’s fitness program. Recent research by the Ontario Federation of Trail Riders studied 12 off-road motorcycle enthusiasts and found that the physical exertion was on the order of 60 percent of VO<sub>2</sub>max, or 80 percent HRmax, or 9.3 METS which is slightly greater than jogging (Characterizing the Physical Demands of Off-Road Motorcycling, Executive Summary, Jamie Burr, Norman Gledhill, Veronica Jamnik, Ontario Federation of Trail Riders, February 2007, [http://www.oftr.org/OFTR\\_Fitness\\_Study.pdf](http://www.oftr.org/OFTR_Fitness_Study.pdf)). While jogging is considered a very healthy activity it is not that appealing to everyone and OHVs are very popular form of recreation and physical workout. We request that the evaluation include adequate recognition of the serious physical fitness problem affecting all age groups of our population. We also ask that the tremendous value of OHV recreation for both mental and physical health benefits (equivalent to jogging) be recognized in the evaluation and used to justify an increase in motorized recreational opportunities.

**Response:** Addressing the obesity problem in the US population is outside the scope of the Butte RMP.

### S11

**Comment:** We believe that federal environmental justice compliance requirements as initiated by Executive Order 12898 should be applied immediately to correct the disproportionately significant and adverse impacts that motorized recreationists have been subjected to. In order to accomplish this we request that this proposed action comply with U.S. Forest Service Departmental Regulation 5600-2 (<http://www.usda.gov/da/5600-2.pdf>) including the DEFINITION of environmental justice provided therein. While some of the guidance published on environmental justice refers to specific minority and low income populations, the intent of the

guidance must be taken in a broader sense as recommended by the EPA in order to avoid discrimination or unfair treatment of any significantly impacted sector of the public. For example, motorized recreationists working full-time plus jobs and simply looking to get away and recreate in the forest on the weekends are pitted against full-time paid representatives for non-motorized interests that are visiting agency staff on a regular basis during the week.

**Response:** The discussion that motorized recreationists should be identified as an environmental justice-covered population is not valid. Executive Order 12898 specifically deals with low-income and minority populations as the subject of this order. Other groups that would be affected are discussed in the Social Conditions sections of this document.

### S12

**Comment:** We request that the proposed action comply with the Council on Environmental Quality (<http://ceq.eh.doe.gov/nepa/regs/ej/justice.pdf>) recommendations in order to correct the disproportionately significant and adverse impacts that motorized recreationists have been subjected to.

**Response:** The discussion that motorized recreationists should be identified as an environmental justice-covered population is not valid. Executive Order 12898 specifically deals with low-income and minority populations as the subject of this order. Other groups that would be affected are discussed in the Social Conditions sections of this document.

### S13

**Comment:** The process should not allow well-organized and funded groups to take opportunities away from less-organized and funded individuals. This certainly is an environmental injustice. Moreover, the development of measures as required by environmental justice regulations to mitigate the disproportionately high and adverse impacts that have affected motorized recreationists have not happened. We request a corrective action and over-arching mitigation plan that will undo the significant impact that all cumulative motorized access and motorized recreational closures has had on motorized recreationists over the past 35 years. We also request a monitoring program be provided by an unbiased third-party to assure that this correction occurs within our lifetime.

**Response:** The BLM sees no indication that “well-organized and funded groups” are taking away opportunities from anyone with the Butte RMP revision. The point that motorized recreationists should be identified as an environmental justice-covered population is not valid. Executive Order 12898 specifically deals with low-income and minority populations as the subject of this order. The BLM does not agree that disproportio-

nately high adverse impacts would occur to motorized recreationists due to the Butte RMP revision. The BLM notes that there are three intensive OHV riding areas in the Butte Field Office that would be carried forward, and motorized uses will continue to be available in the site-specific travel planning areas being addressed with this RMP revision.

#### S14

**Comment:** Motorized recreationists cannot hold full-time jobs and, at the same time, be able to compete with the paid staff of non-motorized for recreational resources. Unfortunately, the agency has adopted the expectation that motorized recreationists must demonstrate a level of involvement equivalent to the involvement of paid staff from non-motorized groups in order to get a reasonable allocation of recreational resources. We have been told that we are politically insignificant by forest supervisors, district rangers, and BLM managers. There are many socio-economic and environmental justice issues associated with this setting if it is not adequately addressed by this action ranging from the allocation of near-term motorized recreational opportunities and the level of human health that it promotes to the ultimate elimination of motorized recreation from public land in the long-term.

**Response:** In association with the Butte RMP revision, the BLM has not told anyone in the public that they are politically insignificant. While the BLM is unclear about the meaning of some aspects of the comment, the suggestion that motorized recreationists should be identified as an environmental justice-covered population is not valid. Executive Order 12898 specifically deals with low-income and minority populations as the subject of this order. The BLM has not proposed to eliminate motorized recreation under any alternative with the Butte RMP.

#### S15

**Comment:** Any significant closing of motorized routes in the project area does not meet the basic requirement of the NEPA act of 1969 as stated in “Sec. 101 (b) (5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life’s amenities”. High standards of living and a wide sharing of life’s amenities should include recognizing and meeting the need for motorized access and recreation opportunities in the project area. All visitors should be expected to share the project area with others and to tolerate the presence of others. We have met very few hikers on the multiple-use roads and trails that we use. We have not perceived any problems with the non-motorized visitors that we have met. We ask that the analysis and decision-making be based on sharing and tolerance and to avoid unreasonable accommodation of visitors to public lands that are not reasonably tolerant and sharing.

**Response:** Potential effects to motorized users are discussed for each alternative in the Travel Management, Recreation, Social, and Cumulative Effects sections of Chapter 4. Many of these effects are social in nature. The Preferred Alternative does attempt to balance the needs of users with different goals.

#### S16

**Comment:** The environmental document should be an issue driven document as required under NEPA and the Council on Environmental Quality guidelines. The driving issue is the development of a reasonable travel management alternative that addresses the needs of the public. NEPA requires that agencies “Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated” [40 CFR 1502.14(a)]. We request that the environmental document adequately addresses the social, economic, and environmental justice issues associated with multiple-use access and motorized recreation. We request that the environmental document include a travel management alternative for the project area that adequately responds to these issues and the needs for multiple-use access and recreation.

**Response:** Potential effects to motorized users are discussed for each alternative in the Travel Management, Recreation, Social, and Cumulative Effects sections of Chapter 4. Many of these effects are social in nature. The Preferred Alternative does attempt to balance the needs of users with different goals.

#### S17

**Comment:** The use of the existing network of motorized roads and trails is part of local culture, pioneer spirit, heritage, and traditions. All of these values have ties to the land. Visitors to public lands benefit from all of the motorized roads and trails that exist today. The quality of life for the multiple-use public is being impacted by the cumulative negative effects of all motorized and access closures. The significant closing of motorized routes in the project area does not meet the basic requirement of the NEPA act of 1969 as stated in “Sec. 101 (b) (5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life’s amenities”. We request that the criteria for high standards of living and a wide sharing of life’s amenities include the preservation of motorized roads and trails based on the recognition of the values (ties to the land) that they provide to local culture, pioneer spirit, heritage, traditions, and recreation.

**Response:** The activities described in this plan would not affect the western culture of the area as the BLM manages only 4.2 percent of the surface acres and access in the Butte RMP Planning Area. The Preferred Alterna-

tive attempts to balance the needs of users with different goals.

## Soils

### T1

**Comment:** Concerning soil erosion in burned areas, I am concerned with your statement on page 322 of the “draft” that Alternative B would have more soil impacts than Alternative C. I would suggest that you use BAER (Burned Area Emergency Restoration) funds, requested at the time of the wildfire, to provide for rehabilitation of the soils and vegetation. If erosion occurs later, rehabilitation funds should be requested through normal funding channels using wildlife, fisheries, and vegetation budget codes.

**Response:** Alternative B would require erosion control practices in burned areas where sedimentation had been documented to be definitively impacting streams; however, erosion control practices could be employed at other locations within a burned area. Erosion control practices applied to promote soil stability where needed is allowed under all alternatives as stated in Chapter 4, Soil Resources section under Effects Common to Action Alternatives. The intent of Alternative B would be to direct erosion control practices to sites that would produce the most benefit, first. That would be particularly important when large fires make broad-scale erosion control impracticable.

### T2

**Comment:** The report "Erosional Impact of Hikers, Horses, Motorcycles, and Off-Road Bicycles on Mountain Trails in Montana", Mountain Research and Development, Volume 14, No. 1, and published in 1994 found that multiple comparison test results showed that horses and hikers made more sediment available than wheels, and this effect was most pronounced on pre-wetted trails.

The report "Keeping Visitors on the Right Track - Sign and Barrier Research at Mount Rainer", Park Science 14(4) published in 1994 found that off-trail hiking is a major source of impact that creates trails and erosion throughout the several thousand acres of sub-alpine meadows.

**Response:** The purpose of the RMP is to provide basic program direction, as described in Chapter 1, Purpose and Need. Assessing sedimentation resulting from specific activities would occur at the activity level, or when preparing project specific plans. Site-specific Best Management Practices (BMPs) would be implemented for surface disturbing activities to minimize sedimentation, to the extent possible. Site-specific soil impact assessments and BMPs would reflect local site characteristics, such as soil texture, slope, climate, natural disturbances, and other attributes. This land management ethic is in

keeping with the findings of the authors of the study who note that their results are complicated and difficult to decipher. Although the authors note that it would be challenging to extrapolate their small sample plot studies to other locations and larger areas, their finding that wet soil is more susceptible to erosion does reflect the BLM's concern about soil erosion. This concern played a role in recommending some routes have seasonal travel restrictions.

### T3

**Comment:** We support a stipulation [for oil and gas leasing] to control surface use on steep slopes (>30%) and unstable land areas with active mass soil movement.

We recommend that the proposed Alternative B stipulation (page 911) for controlled surface use on steep slopes and Boulder Batholith soils also include unstable land areas and areas with active mass soil movement in the stipulation.

**Response:** This stipulation has been revised in the Preferred Alternative to now read: “Prior to surface disturbance on areas of active mass wasting, unstable land areas, or slopes of greater than 20 percent on Boulder Batholith soils, or 30 percent on non-Boulder Batholith soils, an engineering/reclamation plan must be approved by the authorized officer.”

## Special Designations – Areas of Critical Environmental Concern

### U1

**Comment:** Doesn't the ACEC process require more specific effort and documentation than what is offered here? The data or lack of data here does not seem to support the desire to further restrict these areas. There is some obvious “in office” work done, but there didn't appear to be much field/on the ground real data. The ACEC designation and such should be determined through a separate process and more appropriate process than this one.

**Response:** Section 202(c) (3) of FLPMA mandates the BLM to give priority to the designation and protection of ACECs in the development and revision of resource management plans. Evaluation of potential ACECs for the Butte RMP is documented in **Appendix I** of the Proposed RMP/Final EIS (formerly **Appendix H** in Draft RMP/EIS). For areas that meet relevance and importance criteria in 43 CFR 1610.7-2(a), BLM policy is to develop management direction to protect the relevant and important values in the resource management planning process. The BLM believes it has done so adequately for the Butte RMP as required under FLPMA and as per BLM policy.

**U2**

**Comment:** The Ringing Rocks proposed Area of Critical Environmental Concern (ACEC) is fully supported and will enhance economic development opportunities. Signage near the I-90 Pipestone interchange should be included as part of the plan.

**Response:** The BLM has included the Ringing Rocks potential ACEC in its Preferred Alternative for the Butte RMP. Decisions about signage are implementation decisions that would be considered after the final RMP decision on whether or not to designate this area as an ACEC.

**U3**

**Comment:** High Ore Creek ACEC: The High Ore BLM lands provide an important connection between the Continental Divide and both the Whitetail-Pipestone and the Bull Mountains and thus to connecting mountain ranges beyond such as the Tobacco Root Mountains and the Highland Mountains. This constitutes part of an important linkage route between the Northern Continental Divide Ecosystem and the Yellowstone ecosystem; routes that are called for in the Grizzly Bear Recovery Plan Supplement (March 2007). The Habitat Based Recovery Criteria for the Yellowstone Ecosystem calls for enhancing linkage connections between Yellowstone and other ecosystems. BLM lands throughout the Resource Management Area are essential to the continuity of linkage connectivity north to the Northern Continental Divide Ecosystem and the Yellowstone Ecosystem.

Although the RMP does not call for ACEC designation for High Ore, MFWP believes that such designation would encourage management of the High Ore area to facilitate wildlife movement. Currently this area is severely impaired because it is lacking adequate travel management. Even Alternative C, the most restrictive travel management alternative still allows a major loop road through the area, and its implementation would require consistent, diligent management and enforcement to regain some of the linkage values that this area is capable of providing for wildlife. One of the Relevance Criteria listed in Appendix H with respect to ACEC designations states:

“Special management is typically needed when one of the following conditions is met:

Current management or management activities proposed in the alternative are not sufficient to protect the relevant and important resource values;

The needed management action is considered unusual or outside of the normal range of management practices typically used; or

The change in management is difficult to implement without ACEC designation.” It appears all of the above criteria are being met, and particularly the first one.

Additionally, the Importance Criteria list 5 items, and at least the first 3 have merit with respect to High Ore and its value for wildlife movement through the landscape and linkage of ecosystems for threatened (grizzly bear, Canada lynx), endangered, or sensitive (wolverine) wildlife. All of these species occur within the planning area.

**Response:** The BLM is required to consider designation of Areas of Critical Environmental Concern (ACECs) as part of its land use planning process. This is done either during the development of the Draft RMP/EIS or as a plan amendment. In so doing, the BLM is required under 43 CFR 1610.7-2 to publish a notice in the Federal Register listing each proposed ACEC and specifying the resource use limitations, if any, which would occur if it were formally designated. Such a notice must provide a 60-day public comment period on each proposed ACEC designation.

During scoping for the Butte RMP, the Butte Field Office solicited ACEC nominations from the public so that review and consideration could take place during the preparation of the Draft RMP/EIS. The ACEC proposal in the comment identifying the particular relevant and important values was not submitted prior to the release of the Butte Draft RMP/EIS. Therefore, consideration of this ACEC at this time would require an additional Federal Register notice along with an additional 60-day public comment period, as well as a supplemental Draft RMP/EIS for public review. Due to the additional costs and timeframe extension for the Butte RMP associated with this requirement, this ACEC proposal will not be considered in the current Butte RMP revision. However, the BLM would encourage the commenter to resubmit this ACEC proposal for consideration after finalization of the Butte RMP. If designation of this potential ACEC is found to be warranted, it could be done with a RMP amendment.

**U4**

**Comment:** It is not clear why all potential ACECs would not be designated under Alternative D. If the relevant and important values for designating these areas currently exist, then management direction for Alternative D should protect them.

**Response:** Not all potential Areas of Critical Environmental Concern (ACECs) would be designated under Alternative D because this alternative was developed with the intention of providing for fewer resource use restrictions than other alternatives.

**U5**

**Comment:** The Draft Plan is woefully inadequate in connection with its analysis of what is described as the Elkhorn Mountains nominated "Area of Critical Environmental Concern" (hereinafter "ACEC") particularly as it applies to the Limestone Hills area utilized by

Graymont and the Guard. Without any analysis of the practical realities in the Limestone Hills, Alternatives B and C include the entire area of the Limestone Hills in a proposed ACEC. The evaluation of the "relevance criteria" and the "importance criteria" contained in Appendix H appears to be focused on other areas of the Elkhorn Mountains and do not relate to the characteristics of the Limestone Hills. There is no evidence contained in the Draft Plan to support a designation of the Limestone Hills as an area where special management attention is required to prevent irreparable damage to fish and wildlife resources.

**Response:** Inclusion of the Limestone Hills area within the potential Elkhorn Mountains ACEC boundary was an inadvertent oversight in the Draft RMP/EIS. Under the Preferred Alternative (Alternative B) in the Proposed RMP/Final EIS, the potential ACEC boundary has been modified to exclude the Limestone Hills area.

#### U6

**Comment:** The BLM was a working partner in the Sage Grouse Strategy (MSGs), yet the protection and enhancements in the Butte RMP is no more developed or more proactive than the Dillon Office RMP was, and as such falls short of the proactive promises given in the MSGs. Given the tentative nature of Sage grouse existence within this management area, MWF advocates a reevaluation and consider protection afforded by an ACEC designation for remaining Sage grouse supporting habitat. They meet the ACEC requirement of being relevant, important, and in need of management especially in the Butte FO managed lands since opportunities to salvage a declining population are few in number and as such increase their intrinsic value.

**Response:** ACEC nominations were solicited during public scoping conducted for the Butte RMP. The BLM is required to consider designation of Areas of Critical Environmental Concern (ACECs) in draft RMPs or plan amendments. In so doing, the BLM is required under 43 CFR 1610.7-2 to publish such consideration in a notice in the Federal Register listing each proposed ACEC and specifying the resource use limitations, if any, which would occur if it were formally designated. Such a notice must provide a 60-day public comment period on each proposed ACEC designation. The ACEC proposal in the comment was not submitted prior to the release of the Butte Draft RMP/EIS. Therefore, consideration of this ACEC at this time would require an additional Federal Register notice along with an additional 60-day public comment period, as well as a supplemental Draft RMP/EIS for public review. Due to the additional costs and timeframe extension for the Butte RMP associated with this requirement, this ACEC proposal will not be considered in the current Butte RMP revision. However, the BLM would encourage the commenter to resubmit this ACEC proposal for consideration after finalization of the Butte RMP. If designation of this potential ACEC

is found to be warranted, it could be done with a RMP amendment.

#### U7

**Comment:** BLM manages several parcels near Mullan Pass in Greenhorn and Skelly Creeks as well as other parcels near the Continental Divide near Marysville. These areas are within Canadian Lynx core areas identified in the Northern Rockies Lynx Planning Area map developed by the US Forest Service. Mullan Pass itself is located at the north end of a narrow pinch-point in a wildlife linkage area recognized by the US Forest Service (2007) as highly important for Canada lynx dispersal. Models completed by Craighead and Walker (2002) indicated that this area is one of the last, best linkage areas between the Northern Continental Divide ecosystem and the Elkhorn Mountain Range which has the potential to reconnect otherwise isolated populations of Canadian Lynx and other Special status species such as Grizzly Bears, and Wolverines to the Greater Yellowstone ecosystem. Recent winter tracking studies confirmed the usage of the general area within 2 miles of these named parcels. As development of nearby private lands increases, available land for wildlife purposes will accordingly be reduced. ACEC designation for these pieces categorically fit the stipulations of relevance, importance and need for management for the increased wildlife security in conjunction with Forest Service lands.

**Response:** ACEC nominations were solicited during public scoping conducted for the Butte RMP. The BLM is required to consider designation of Areas of Critical Environmental Concern (ACECs) in draft RMPs or plan amendments. In so doing, the BLM is required under 43 CFR 1610.7-2 to publish such consideration in a notice in the Federal Register listing each proposed ACEC and specifying the resource use limitations, if any, which would occur if it were formally designated. Such a notice must provide a 60-day public comment period on each proposed ACEC designation. The ACEC proposal in the comment was not submitted prior to the release of the Butte Draft RMP/EIS. Therefore, consideration of this ACEC at this time would require an additional Federal Register notice along with an additional 60-day public comment period, as well as a supplemental Draft RMP/EIS for public review. Due to the additional costs and timeframe extension for the Butte RMP associated with this requirement, this ACEC proposal will not be considered in the current Butte RMP revision. However, the BLM would encourage the commenter to resubmit this ACEC proposal for consideration after finalization of the Butte RMP. If designation of this potential ACEC is found to be warranted, it could be done with a RMP amendment.

## U8

**Comment:** AWL suggests designating additional BLM lands adjacent to United States Forest Service lands as ACECs, especially those near the Mount Haggin Wildlife Management Area and Mullan Pass northwest of Helena, Montana. Inclusion of these areas as ACECs would prove highly advantageous to wildlife. Designating lands as ACEC near the Mount Haggin Wildlife Management Area provides special management for wildlife within a greater block of land. With continued residential expansion of Butte, the I-90 corridor to the north, and an already prolific off-road motorized system in place on nearby forest lands, it is important to create large, secure blocks of wildlife habitat. Recent work performed by AWL indicated that this area was key to future connectivity between the Northern Continental Divide and the Greater Yellowstone grizzly bear populations. This area was also identified as important for the dispersal of wolverines. Mullan Pass is at the north end of a narrow pinch-point in a wildlife linkage area recognized by the US Forest Service (2007) as important for Canada lynx dispersal. Models completed by Craighead and Walker (2002) indicated that this area is one of the last best linkage areas between the Northern Continental Divide ecosystem and the Elkhorns which ultimately could reconnect wildlife populations to the Greater Yellowstone ecosystem. Recent winter tracking studies in an area roughly two miles to the south further confirm that the area is used by ungulates along with both rare and common forest carnivores (Wild Things Unlimited, 2007). While the BLM land may not be along the Continental Divide, evidence from telemetry done on elk by Montana Fish, Wildlife and Parks indicates a seasonal movement up and downslope from the Continental Divide, and that this general area is important for wintering elk. Development of private lands around this area is increasing thus reducing overall available land for wildlife. Special designation of any land in and around this area as an ACEC would further increase wildlife security and preserve wildlife habitat is encouraged.

**Response:** ACEC nominations were solicited during public scoping conducted for the Butte RMP. The BLM is required to consider designation of Areas of Critical Environmental Concern (ACECs) in draft RMPs or plan amendments. In so doing, the BLM is required under 43 CFR 1610.7-2 to publish such consideration in a notice in the Federal Register listing each proposed ACEC and specifying the resource use limitations, if any, which would occur if it were formally designated. Such a notice must provide a 60-day public comment period on each proposed ACEC designation. The ACEC proposal in the comment was not submitted prior to the release of the Butte Draft RMP/EIS. Therefore, consideration of this ACEC at this time would require an additional Federal Register notice along with an additional 60-day public comment period, as well as a supplemental Draft RMP/EIS for public review. Due to the additional costs and timeframe extension for the Butte RMP associated

with this requirement, this ACEC proposal will not be considered in the current Butte RMP revision. However, the BLM would encourage the commenter to resubmit this ACEC proposal for consideration after finalization of the Butte RMP. If designation of this potential ACEC is found to be warranted, it could be done with a RMP amendment.

## U9

**Comment:** Referring specifically to Alternative B, the preferred alternative, the Elkhorn's potential ACEC is identified as containing 53,439 acres. In this alternative, the proposed ACEC would extend East to what appears to be Old Woman's Grave Road within the area of the proposed Guard withdrawal and would contain the entire extent of Graymont's mining area. Graymont submits that there is nothing within the "area" of the Limestone Hills that meets the definition of area of critical environmental concern. The analysis of both the relevance criteria and the importance criteria as contained in Appendix H and as utilized throughout the Draft Plan is inadequate because the unique characteristics and present uses of the Limestone Hills are not isolated and adequately examined. The Draft Plan must be modified prior to adoption by the BLM in order to eliminate any consideration of the Limestone Hills for ACEC designation.

With regard to Alternative B and the text beginning at page 70 regarding the Elkhorn's potential ACEC, the inconsistencies between the Guard's proposed withdrawal, Graymont's operations, and the proposed ACEC become apparent. None of the items mentioned under the heading "Recreation Opportunity Spectrum" appear to apply to the Limestone Hills. Under "Motorized Travel Management" none of the headings appear to apply to the Limestone Hills. Similarly, under the heading "Landownership/ Adjustment" the bullet points would appear to be inconsistent with both Graymont's operations and the content of the recently published LEIS. Again, none of the "major management categories" seems to apply to the Limestone Hills Area and therefore the area occupied by both Graymont's mining operations and the Guard's military activities should be eliminated from all alternatives of the Elkhorn Mountains proposed ACEC.

**Response:** In the Preferred Alternative of the Proposed RMP/Final EIS, the Elkhorns ACEC boundary has been modified to exclude the Montana Army National Guard proposed withdrawal, as well as the Graymont Mine operation, including the Graymont Mine proposed expansion.

## U10

**Comment:** We also ask that in the final RMP, the Sleeping Giant ACEC be expanded so that it includes a portion of the proposed ACEC "Extension." According to the draft RMP, the ACEC Extension was not carried

forward to the preferred alternative because it did not meet the relevance criteria. The roaded upper half of the ACEC Extension probably doesn't fully meet the relevance criteria, but the lower roadless half (Sheep Creek roadless area) is largely indistinguishable from the existing ACEC and therefore it needs to be evaluated separately. No alternative considered just the roadless portion of the Extended ACEC. The overall terrain of the Sheep Creek roadless area is highly natural and scenic views exist. It also provides habitat for many of the important wildlife species including elk, black bear, mule deer, furbearers, and a variety songbirds and raptors. Although sections of private land break up the ACEC, the landscape is clearly connected and it would be incongruous to manage this land in a manner which is incompatible with the existing ACEC. We ask that in the final RMP, you consider an ACEC Extension that analyzes just the Sheep Creek roadless area.

**Response:** ACEC nominations were solicited during public scoping conducted for the Butte RMP. The BLM is required to consider designation of Areas of Critical Environmental Concern (ACECs) in draft RMPs or plan amendments. In so doing, the BLM is required under 43 CFR 1610.7-2 to publish such consideration in a notice in the Federal Register listing each proposed ACEC and specifying the resource use limitations, if any, which would occur if it were formally designated. Such a notice must provide a 60-day public comment period on each proposed ACEC designation. The ACEC proposal in the comment was not submitted prior to the release of the Butte Draft RMP/EIS. Therefore, consideration of this ACEC at this time would require an additional Federal Register notice along with an additional 60-day public comment period, as well as a supplemental Draft RMP/EIS for public review. Due to the additional costs and timeframe extension for the Butte RMP associated with this requirement, this ACEC proposal will not be considered in the current Butte RMP revision. However, the BLM would encourage the commenter to resubmit this ACEC proposal for consideration after finalization of the Butte RMP. If designation of this potential ACEC is found to be warranted, it could be done with a RMP amendment.

#### U11

**Comment:** Elkhorn Mountains ACEC: MFWP endorses the proposed the ACEC designations for the Elkhorn Mountains as described in Alternative C, rather than Alternative B, primarily because the wildlife linkage values the additional lands on the east side of the Elkhorns provides to the Big Belt Mountains. Appendix H recognizes this linkage (p. 778).

**Response:** The BLM has modified the boundaries of the Elkhorns potential ACEC in the Preferred Alternative (Alternative B). This boundary now excludes the Graymont Mine permitted area as well as the currently proposed expansion boundaries. Also, the Montana

Army National Guard proposed withdrawal area is now fully excluded. The recently acquired Iron Mask property has been included in the Preferred Alternative.

#### U12

**Comment:** Sleeping Giant ACEC Extension: Appendix H indicates that the Sleeping Giant ACEC extension does not have any of the wildlife values exemplified by the primary ACEC area, but we do not agree. We think all species that occur within the ACEC area also occur within the proposed extension, and together, both areas constitute a vital linkage for wildlife between ecosystems and island mountain ranges. For these reasons FWP recommends that the extension is included.

**Response:** The proposed Sleeping Giant ACEC extension as described in **Appendix H** (now **Appendix I** in the Proposed RMP/Final EIS) includes areas that are substantially roaded, including being bisected by Interstate 15, where wildlife habitat is reduced in value compared to that within the existing ACEC. In recent travel planning efforts in the area immediately east of I-15, the BLM acknowledged this locality's importance as a wildlife linkage area and reduced open road densities to some degree during that travel planning effort (Sleeping Giant Travel Plan). Some portions of the proposed ACEC extension do have unroaded characteristics and may provide habitat of similar value to that in the existing ACEC. However, the BLM continues to believe this proposed extension on the whole does not meet relevance criteria for wildlife values.

#### U13

**Comment:** The area which was a major corridor for Native Americans for millennia has high historic, recreation, wildlife, and scenic value. The "Bears Tooth" (Sleeping Giant) was one of the few landmarks Lewis and Clark knew about as they planned their expedition through Montana. Members of the Corps of Discovery explored and camped below the Sleeping Giant. They were also awed by the rising cliffs and steep ramparts encountered as they traveled up the Missouri through the Gates of the Mountains – a name given to the area by Lewis and Clark.

The area is home to a spectacular array of wildlife: elk, mule deer, antelope, bighorn sheep, mountain goats, black bear, and grouse. Resident and migrating raptors also inhabit the area and the southern portion of the Gates addition provides critical winter range for elk, turkey, and whitetail deer.

This unique treasure of the big sky state is a source of pride for our region and our family. It seems everyone who visits Helena has the Giant pointed out to them. Folks who have had the experience of hiking to the 'top of the nose' further understand the significance of this landmark. The adjoining lands are largely the same

today as they were when our forbearers, the Synness family, arrived to homestead the area in the 1880s.

Most folks we talk to recognize that Montana is changing very quickly. In order to preserve the existing historic landscape, wildlife corridor and conservation values we support expansion of the Sleeping Giant Area of Critical Environmental Concern

**Response:** ACEC nominations were solicited during public scoping conducted for the Butte RMP. This comment lacks specificity in its geographical description of the suggested expansion of the Sleeping Giant ACEC. The BLM would encourage the commenter to more specifically describe the area in question for ACEC expansion (providing a detailed map is recommended) and resubmit this proposal for consideration after finalization of the Butte RMP. If designation of this potential ACEC is found to be warranted, it could be done with a RMP amendment.

### Special Designations – National Trails/Wild and Scenic Rivers/ Wilderness Study Areas

#### V1

**Comment:** The management consideration of User Conflicts is puzzling w/respect to the Continental Divide Trail. Alternative A notes the winter user conflicts on the Divide between motorized and non-motorized uses. However, Alts B and C note that rerouting the Continental Divide Trail would actually enhance conflicts. Does this mean both Alts B and C would result in closure of the existing Trail to snow machine use?

**Response:** The Continental Divide National Trail segment above Marysville follows a secondary road along the north-south ridge that would remain open to motorized wheeled vehicles yearlong and snowmobiles from December 2 to May 15 (snow conditions permitting). Coordination efforts are currently underway with the Forest Service to identify options for re-routing this trail to enhance user experiences, reduce acquisition costs, and remove conflicts associated with the motorized road. See Volume 1, Chapter 2, Special Designations, National Trails, Management Common to Action Alternatives (B, C, and D) in the RMP.

#### V2

**Comment:** Wild and Scenic Rivers: Guidelines for inclusion of river segments in National Wild and Scenic River System are not arbitrary or capricious, as is suggested by this proposed plan when it claims a river's listing would depend on the alternative selected. Because suitability studies have already been conducted, the BLM should be able to conclude at this time if a particular river segment is currently eligible and suitable. Thus, designation is not dependent on the actions or alternatives proposed by this plan. Furthermore, actions should not be included in this plan, across all alterna-

tives that would degrade currently eligible and suitable river segments.

**Response:** BLM policy is to evaluate river segments within the resource management planning process to determine eligibility, tentative classification, protection requirements, and suitability under the Wild and Scenic Rivers Act. The Wild and Scenic River Suitability Study for the river segments being considered in the Butte RMP revision was developed as part of this RMP revision. The RMP process is used to identify suitable river segments that the BLM recommends to Congress for designation as Wild and Scenic Rivers. BLM Manual 8351, Wild and Scenic Rivers, (page 0.33c) stipulates that one RMP alternative shall provide for designation of all eligible river segments. Another alternative shall provide for no WSR designations. The No Action alternative defers suitability determinations and provides for on-going management to protect all eligible segments. The Record of Decision for the RMP will identify the suitable segments (if any), whose Outstandingly Remarkable Values would then be protected indefinitely under the RMP until Congress acts on the BLM's recommendations. Only Congress can actually designate river segments.

#### V3

**Comment:** I agree with many closures; however the proposed Missouri river closures to motor boats from Hauser dam to Holter Lake I don't agree with. Reasons being is those water flows are regulated by dams which were already mentioned in the Helena IR. That is such a small stretch of river that closing it down to boats wouldn't have a big impact on the environment especially with lakes on each end. There are also many residents in the American Bar subdivision that use boats upstream. I myself also own a jet boat and I enjoy that area on a regular basis. That small stretch of river is the main reason that I purchased that boat. I know that there is controversy and complaints about speeding boats in that area and I have witnessed this myself and have also turned in several of individuals to the local game wardens for not following the no-wake law from Beaver Creek up to Hauser dam which is about 1.5 miles. I will agree that a sign should be put up as a reminder to the boaters who don't read the regulations, however in the end it is there responsibility. I agree that certain areas need protection but for such a small section between two large lakes that are regulated by dams, have old dam structure everywhere on the banks and in the water, and permanent houses built next door to each other, doesn't sound all that wild and scenic.

**Responses:** No designations will be made by the Butte RMP for the river or the adjacent Forest Service lands. The Forest Service will study its lands for suitability in their next Land Use Plan. River use issues such as motorized vs. non-motorized travel could be decided by Congress as part of its designation decision or more likely

through a specific Wild and Scenic River management plan should the area be designated. Closure of motor boat uses on the Missouri River immediately below Hauser Dam within the preliminarily suitable Wild & Scenic River segment is not proposed at this time and is beyond the scope of this RMP Revision.

#### V4

**Comment:** Consideration is being given to declaring the stretch of Missouri River between the Hauser Dam and the Gates of the Mountains be designated a wild and scenic river status thus outlawing any type of motor use on the river. This is a very popular area for local fishermen with boats and the older I get the more difficult it is for me to hike long distances to enjoy that portion of the river. Thus, taking a boat there is the only viable means for me to access that area. The area, although very beautiful, is hardly wild in that there are numerous residences in the lower section of the river and numerous old structures closer to Hauser Dam, including the power plant and residences just below the dam. Also with no viable means to launch a drift boat in that area, it would become strictly a walk in area except for the access at Nelson. I agree with maintaining our wilderness areas but this just isn't one of them so please do not restrict motor boat access to that area.

**Responses:** The Butte Field Office has found 3.1 miles of the Missouri River below Hauser Dam downstream to the end of the BLM boundary in T12N, R3W, Section 13 to be preliminarily suitable for inclusion in the National Wild and Scenic Rivers System. No designations have been made for the river or the adjacent Forest Service lands at this point for it is beyond the legal scope or decision making authority of this document. The Forest Service will study its lands for suitability in their next Land Use Plan. River use issues such as motorized vs. non-motorized travel could be decided by Congress as part of its designation decision or more likely through a specific Wild and Scenic River management plan should the area be designated. Closure of motor boat uses on the Missouri River immediately below Hauser Dam within the preliminarily suitable Wild & Scenic River segment is not proposed at this time and is beyond the scope of this RMP Revision.

#### V5

**Comment:** EPA encourages the BLM to also consider recommending the Upper Big Hole River and Moose Creek for wild and scenic river designations. The information presented in the Wild and Scenic Rivers Suitability Study (Appendix I) appears to show that these river segments possess eligible characteristics for wild and scenic river designation, and we believe that such designation would promote improved long-term protection of these river segments.

**Response:** The BLM considers these river segments eligible for Wild and Scenic River designation. However

the BLM continues to consider these rivers not *suitable* for designation based on management difficulties and challenges associated with suitability criteria described in **Appendix I** of the Draft RMP/EIS (**Appendix J** in Proposed RMP/EIS).

#### V6

**Comment:** Segment between Upper Holter and Lower Holter Lake: MWA urges the BLM to also assess the segment of river between Upper Holter Lake, through the Gates of the Mountains, to lower Holter Lake for inclusion in the NWSRS. This segment of the Missouri River deserves careful consideration because it:

- (1) is “free-flowing” as that term is defined and understood in the Wild & Scenic Rivers Act (“WSRA”) and Interagency Guidelines (47 Fed. Reg. 39455); and
- (2) contains many of the same, if not more, outstandingly remarkable values than the segment below Hauser.

Indeed, this segment of the Missouri River is bounded almost entirely by public lands, most of which already have a protective designation, including the Sleeping Giant Wilderness Study Area, Sleeping Giant Area of Critical Environmental Concern, the Beartooth Wildlife Management Area, and the Gates of the Mountains Wilderness Area. Most of the river corridor remains primitive with little evidence of human activity. The only exceptions are the campgrounds in the Gates of the Mountains, and some developed cabins on the west side of Oxbow Bend, accessible only by water, on the boundary of Sleeping Giant WSA. MWA therefore asks that BLM carefully study whether this segment is both “eligible” and “suitable” for inclusion in the NWSRS.

**Free-Flowing:** While it is true that the Missouri River is controlled and the dam below Holter Lake affects the natural “flow” of the river (just as it does on other segments of the river including the Wild and Scenic segment between Fort Benton and Kipp Landing), such control does not affect the segment’s qualification for inclusion in the NWSRS. The segment still qualifies as “free flowing” under the Wild and Scenic Rivers Act (WSRA) and Interagency Guidelines. The definition of “free-flowing” in section 16 of the WSRA (16 USC 1286) explicitly states that a river segment qualifies as free-flowing flows between large impoundments. There are no specific requirements in the Act concerning the length or flow of an eligible river segment. In fact, a river need not even be “boatable or floatable” in order to be eligible. The eligibility criteria only requires that a river segment be of sufficient length if, when managed as a wild, scenic, or recreational river area, the outstandingly remarkable values are protected. As such, we ask that the BLM carefully review and follow the interagency guidelines and manual in determining whether this segment of river is free-flowing.

Data obtained from the U.S. Geological Survey (“USGS”) (“Real-Time Data for Montana: Streamflow”

web site) indicates that the river has a substantial flow. USGS gauges located below Hauser Dam show that the long-term median flow is 3,050 cfs and the gauge located below Holter Dam shows that the long-term median flow is 3,910 cfs. While there are no other water gauges between these two locations, according to Larry Dolan, a hydrologist at the Water Management Bureau, Montana Department of Natural Resources and Conservation, the river flow in between the two gauges should be similar to the flow recorded at the two gauges. According to his calculations, a typical discharge for the Missouri River below Hauser Dam might be about 4,000 cubic feet per second (cfs). All of the water that flows out of Hauser Dam must ultimately move downstream. Discharge is a product of the channel area times velocity. Dividing the 4,000 cfs flow rate by the above computed X-sectional area results in an average water velocity through the section of 0.32 feet per second (4,000 ft<sup>3</sup>/sec /12,500 ft<sup>2</sup>). This is a slow velocity compared to what might typically occur prior to the construction of the dams, but the important point is that there is a flow in this segment of the river between Upper and lower Holter Lake.

**Outstandingly Remarkable Values:** MWA believes that this segment of the Missouri River includes four outstandingly remarkable values: scenic, historic/cultural, recreation, and wildlife. As outlined below, both individually and in the aggregate, these values make this river segment an exceptional candidate for consideration as a Wild and Scenic River. Designating this segment of the Missouri as Wild and Scenic would help ensure that river corridor's outstandingly remarkable values remain special and that the future management of the river corridor will be compatible with the adjacent protective designations.

**Scenic Values:** The Sleeping Giant is a BLM Wilderness Study Area which was studied and recommended for Wilderness in 1991. The 1991 BLM Wilderness Study Report describes the Sleeping Giant WSA as "providing outstanding scenic values within the unit. Offsite vistas of the surrounding landscape are outstanding." Lewis also named the Gates of the Mountains, another widely recognized landmark along the Lewis and Clark Historic Trail. In mid-July, 1805, when Captain Meriwether Lewis first viewed the Gates of the Mountains, he described the area in his journal as follows:

"We entered the most remarkable cliffs that we have yet seen. These cliffs rise from the water's edge on either side perpendicularly to the height of 1,200 feet. Solid rock for the distance of 5.75 miles." This view is still available for today and it looks virtually the same as when Capt. Lewis and his Corps of Discovery first laid eyes upon it. The canyon area through the Gates of the Mountains is only accessible by water or traveling more than a dozen miles over trails through the Helena National Forest and Gates of the Mountains Wilderness Area. A pamphlet describing the boat tour of the Gates

of the Mountains describes the tour's main attraction as the "inexhaustible scenery – wooded slopes, rugged rock formations, and the placid beauty of the timeless Missouri." Across the river from the Sleeping Giant is the Beartooth Wildlife Management Area which is managed by the State of Montana. In addition to providing valuable wildlife habitat, this primitive area provides a scenic backdrop comparable to the Sleeping Giant WSA.

**Historic/Cultural:** Along the shoreline, Indian pictographs painted on the rock wall are visible, indicating that indigenous people lived in the area and used the river long before the arrival of the first white explorers. Two sons of Chevalier Vendrye, the French explorer, for instance, passed through the area known as the Gates of the Mountains as early as 1742. They were probably the first white men to gaze upon its precipices. However, the Corps of Discovery explored and camped below the Sleeping Giant when they traveled through Montana in 1805 and Lewis left a record of his passage through the Sleeping Giant/Gates area. This segment of the river is one of the few remaining sections of the Lewis and Clark National Historic Trail that has changed very little since 1805-06. Evidence of the early white settlers also exists. In the Sleeping Giant Wilderness Study Area there are several deteriorating structures near the river which provide a glimpse into their lifestyles.

The area also features more contemporary history. Mann Gulch in the Gates of the Mountains Wilderness is the site of the raging forest fire that killed 13 smokejumpers 50 years ago. The tragedy was the main subject matter of Norman Maclean's book "Young Men and Fire." A popular guided boat tour provides interpretation of historic and cultural events in the area.

**Wildlife:** A diversity of important wildlife species live in the Sleeping Giant WSA, including a thriving population of mountain goats that occupies the high outcroppings. Other common species include elk, black bear, bighorn sheep, mule deer, osprey, and golden eagles. Across the river from the Sleeping Giant WSA is the Beartooth Wildlife Management Area, the purpose of which is to provide wildlife habitat for a variety of species, especially elk. All of Montana's big game animals live on or visit the Beartooth Wildlife Management Area at various times. Upland game birds, songbirds, raptors, furbearers and numerous small mammals can be found through much of the year. In the Gates of the Mountains, Bighorn sheep and Mountain Goats scamper in the rocks high above the water. Ospreys, eagles (bald and golden), vultures, and falcons (peregrine and prairie) still soar on the updrafts. The canyon is also home to otters, deer, squirrels, ermine, beaver, mountain lions, black bears, and other wild creatures. The life list for bird species is over 120.

**Recreation:** High quality recreation opportunities associated with the river corridor include bird watching, hunting, hiking, horseback riding, picnicking, swimming, tent camping, wildlife viewing and fishing. Hunt-

ing for big game and grouse accounts for about half of the use of the Gates of the Mountains Wilderness, along with hiking, backpacking, and horseback riding. Wildflowers are also considered a star attraction.

A stated purpose of the Beartooth Wildlife Management Area is to provide recreational opportunities. It is a popular area for big game hunting and wildlife viewing. The Sleeping Giant also provides a non-motorized backcountry hunting experience. The river provides an important means for the public to access the surrounding protected public lands. It is frequently used to access or return from the Gates of the Mountains Wilderness trail system and it provides the only public access to the Gates of the Mountains Wilderness Study Area. The river also provides access to the canyon's few campgrounds and picnic sites. This segment of the river corridor attracts people from across the nation because of its unique scenic beauty and the historic, wildlife, and recreation values associated with the river corridor. It would make a strong candidate for inclusion in the National Wild and Scenic River System.

**Response:** While the BLM agrees with the commenter that the area in question has many values as described in the comment, the BLM ultimately considers the area from Upper Holter Lake down to Holter Lake to be impounded. The BLM acknowledges that water is certainly moving through the impounded portion of the Missouri River in this area as described in the comment, but such is the nature of many impounded lakes and reservoirs. The BLM continues to consider this area ineligible for Wild and Scenic River designation due to the impoundment at Holter Dam. The BLM notes that existing management of the Sleeping Giant WSA combined with management of the Gates of the Mountains Wilderness Area provide for protective management of the values described in the comment.

#### V7

**Comment:** Based on the public concern for protecting the primitive values of the area that has arisen during past studies of the Sleeping Giant area, many local citizens have expressed support for a Wilderness bill to finally provide this area with permanent Wilderness protection. In order to preserve these Wilderness Study Areas so that they can be considered for Wilderness protection, I urge the BLM to retain the current non-motorized character of these areas in the updated Resource Management Plan. To further preserve the primitive qualities of this area, I urge the BLM to provide the same protection for the roadless area southwest of the Sheep Creek Area and to recommend Wild and Scenic River status to all eligible nearby sections of the Missouri River.

**Response:** The BLM is required to continue managing for wilderness values in the Sleeping Giant area (Sheep Creek and Sleeping Giant WSAs) until Congress decides whether or not to designate these areas as wilderness.

The roadless area southwest of Sheep Creek is not contiguous with the Sheep Creek Wilderness Study Area, nor does it meet minimum size criteria of 5,000 acres to potentially stand on its own as a Wilderness Study Area. While the Butte RMP revision will retain the non-motorized character of these areas, the BLM cannot recommend any additional Wilderness Study Areas in this RMP revision. The BLM has identified the segment of the Missouri River from below Hauser Dam to the upper end of Upper Holter Lake as suitable for Wild and Scenic designation, pending Forest Service concurrence.

#### V8

**Comment:** BLM presented only proposals for more road closures and wilderness study areas with no public access.

**Response:** Chapter 2 of the RMP presents proposed management for a wide range of resources and resource uses. While some road closures are proposed under various alternatives, and management of existing Wilderness Study Areas is addressed, there are no proposals for additional Wilderness Study Areas in the Butte RMP.

#### V9

**Comment:** Issue 5: Protect WSAs: The BLM IMP, H8550-1 JULY 1995, does not preclude motorized use in the area. Any road/trail in the area that is in use now could be recovered to wilderness character if and when Congress decides to designate them as wilderness.

**Response:** The BLM agrees that vehicle travelways existing during the intensive inventories and establishment of the wilderness study area are available for continued motorized use unless specific land use travel plan decisions have been completed since that time. There are no open vehicle ways in the six existing WSAs except for several routes in the Black Sage WSA that lack public access due to land ownership patterns, and one route through a corner of the Humbug Spires WSA. No new trails are permitted in existing WSAs unless they are needed to meet minimum necessities for public health and safety and to protect wilderness resource values.

#### V10

**Comment:** The national BLM policy bans bicycles from Wilderness Study Areas. This is wrong as a blanket policy, and should be applied selectively. I saw no WSA area in the Butte District of concern for bike riders, but I could be wrong.

**Response:** There is no national BLM policy that bans bicycles from Wilderness Study Areas (WSAs). Bicycle use in WSAs is limited to motorized vehicle ways existing at the time of inventory. There are no open vehicle ways in the six existing WSAs except for several routes in the Black Sage WSA that lack public access due to land ownership patterns, and one route through a corner of the Humbug Spires WSA.

**V11**

**Comment:** After watching what happens to the land, the air, the wildlife, the burden on taxpayers, as well as firefighters, I believe the “let-it-burn” policy for the wilderness areas, is insanity. Our family has decided we have no choice but to oppose the proposed wilderness designation for the Sleeping Giant. The Sleeping Giant is now categorized as ACEC (Area of Critical Environmental Concern) which fully protects its ecosystems and long term ACEC values (naturalness, primitive and unconfined forms of recreation, solitude experiences, visual resources, native wildlife, and cultural resources).

**Response:** The BLM has no authority to designate wilderness areas. Only Congress can designate wilderness. The BLM is required to continue managing Wilderness Study Areas (such as Sleeping Giant) so as not to preclude wilderness designation until such time as Congress decides to either designate them as wilderness, or release them from further wilderness consideration.

**V12**

**Comment:** Wilderness Study Areas: management for wilderness character would be enhanced through Alternative C in that stipulations would benefit wildlife. MFWP endorses Alternative C for all four Wilderness Study Areas: Sleeping Giant, Sheep Creek, Humbug Spires, and Elkhorns Tack-on.

**Response:** Management of the four identified WSAs would be same under both the Preferred Alternative and Alternative C. Management for these WSAs is presented in Chapter 2, under sections identified as Wilderness Study Areas and ACECs. These WSAs under both alternatives would be managed under the Interim Management Policy and Guidelines for Lands under Wilderness Review until Congress decides to either designate them as wilderness or release them from further wilderness review. These four areas would be managed as ACECs should Congress release them from further wilderness review. ACEC management for these four WSAs does not change under either Alternative.

**Special Status Species**

**W1**

**Comment:** Thank you for providing information on the Special Status species in the BFO area (Table 3-15, pages 241-245). We are pleased that RMP management direction for Special Status Species promotes T & E and sensitive species protection and recovery (pages 40-41). If proposed management direction could affect threatened or endangered species, the final EIS should include the Biological Assessment and the associated USFWS Biological Opinion or formal concurrence for the following reasons:

(1) NEPA requires public involvement and full disclosure of all issues upon which a decision is to be made;

(2) The CEQ Regulations for Implementing the Procedural Provisions of NEPA strongly encourage the integration of NEPA requirements with other environmental review and consultation requirements so that all such procedures run concurrently rather than consecutively (40 CFR 1500.2(c) and 1502.25); and

(3) The Endangered Species Act (ESA) consultation process can result in the identification of reasonable and prudent alternatives to preclude jeopardy, and mandated reasonable and prudent measures to reduce incidental take. These can affect project implementation.

EPA recommends that the final EIS and Record of Decision not be completed prior to the completion of ESA consultation. If the consultation process is treated as a separate process, the Agencies risk USFWS identification of additional significant impacts, new mitigation measures, or changes to the preferred alternative. If these changes have not been evaluated in the final EIS, a supplement to the EIS would be warranted.

**Response:** The BLM has worked closely with the U.S. Fish and Wildlife Service throughout the development of the Butte RMP. As discussed in the Formal Consultation Section of Chapter 5, a representative from the U.S. Fish and Wildlife Service was a member of the planning team during development of the plan to adequately address and discuss the effects of management actions on listed and proposed species and their critical habitats. Early drafts of alternatives were also provided to the U.S. Fish and Wildlife Service for discussion and review. A draft biological assessment that evaluates the impacts of the preferred alternative on federal threatened and endangered species was submitted concurrently with the public release of the Draft RMP to the U.S. Fish and Wildlife Service. **Appendix G** in the Proposed RMP/Final EIS includes the U.S. Fish and Wildlife Service’s biological opinion.

**W2**

**Comment:** Biodiversity has become a significant issue in the northern Rocky Mountains (e.g. diversity and uniqueness of flora and fauna, connectivity of habitats, gene pools, species diversity, etc.). Maintenance of biodiversity can minimize the need for listing species as threatened or endangered. Upland and stream corridors and special habitats (i.e. wetlands, threatened and endangered species habitat) in the planning area may need to be maintained to protect genetic diversity. The state of the art for this issue is changing rapidly. CEQ prepared guidance entitled, “Incorporating Biodiversity Considerations into Environmental Impact Analysis under the National Environmental Policy Act,” <http://tis.eh.doe.gov/nepa/tools/guidance/Guidance-PDFs/iii-9.pdf>. We encourage the BLM to include improved evaluation and discussion of biodiversity considerations in the RMP and EIS.

**Response:** Biodiversity of vegetation (including forests, grasslands, shrublands, and riparian vegetation) and native animal species were identified as issues during the development of the RMP. From these issues, goals were developed that also emphasized biodiversity of native plants and animal species.

Vegetation management prescriptions in Chapter 2 also emphasize the concept of maintaining or improving biodiversity across the landscape. Although the acres of restorative treatments differ by action alternative, the emphasis of all action alternatives is on maintaining and restoring healthy, diverse, and productive native plant communities. All action alternatives would actively restore vegetation on the landscape level to conditions more consistent with landform and climate as well as with the biological and physical components of the ecosystem. Vegetation structure, density, species composition, patch size, pattern, and distribution would be managed to provide habitat for a variety of wildlife species. Management actions would maintain or mimic natural disturbance regimes to provide for diverse and sustainable ecosystems.

The Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species section of Chapter 2 also emphasizes maintaining and supporting healthy, productive, and diverse populations and communities of plant and animal species. There would also be an emphasis on conserving federally listed and sensitive species. As described under Management Common to Action Alternatives, the BLM would maintain suitable habitat conditions and minimize fragmentation of linkage corridors in areas occupied by special status species. The intent would be to maintain the function and diversity of all habitats in large “patches” across the landscape. All action alternatives would stress maintaining diverse, healthy, and productive and well distributed aquatic habitats and communities.

General biodiversity principles and considerations were also applied to each step of the NEPA analysis associated with developing Montana/Dakotas Standards for Rangeland Health and Guidelines for Livestock Grazing (BLM, August 1997). During the scoping process for Rangeland Health and Guidelines for Livestock Grazing, BLM identified biodiversity issues and opportunities to meet biodiversity goals and objectives. Standards of physical and biological conditions or degree of function required for healthy sustainable ecosystems and guidelines for livestock grazing management were established. These standards and guidelines for grazing management for the Butte Field Office have been incorporated into the Butte RMP (Goals Common to All Alternatives for All BLM Activities). The Land Health Standards would not only be applied to rangelands but would also be applied to all habitat types and for all BLM authorized activities.

### W3

**Comment:** RMP management direction should also include standards, guidelines and procedures that ensure threatened, endangered and sensitive species are considered whenever the use of pesticides are contemplated. Language should be included in Special Use and other permits (i.e. grazing, recreation, etc.) that require the permittee to present requests of all use of pesticides on Federal lands to the BLM for review and approval.

Montana Water Quality Standards do not identify numerical criteria for aquatic life protection for many herbicides, however, it should be recognized that the research and data requirements necessary to establish numerical aquatic life water quality criteria are very rigorous, and many herbicides and weed control chemicals in use are toxic, although numerical aquatic life criteria have not been established. The Montana Water Quality Standards include a general narrative standard requiring surface water to be free from substances that create concentrations which are toxic or harmful to aquatic life. The National Pesticide Telecommunication Network (NPTN) website at <http://nptn.orst.edu/tech.htm> which operates under a cooperative agreement with EPA and Oregon State University, has a wealth of information on toxicity, mobility, and environmental fate on pesticides which may be helpful (phone number 800-858-7378).

**Response:** The BLM follows all requirements and recommendations as outlined on herbicide/pesticide labels. The use of herbicides and their affect on the environment has been analyzed in the Vegetation Treatment on BLM Lands in Thirteen Western States Final EIS. This document addresses the use of herbicides on BLM lands. The BLM uses the direction in the Vegetation Treatment on BLM Lands in Thirteen Western States EIS as well as the herbicides labels to provide for proper application of herbicides to protect the environment, birds, wildlife (including threatened, endangered, and sensitive species), and aquatic species. Since public release of the Draft RMP/EIS, the Record of Decision (ROD) has been signed for Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States. The Preferred Alternative in the Proposed RMP/Final EIS has been revised to indicate that this ROD is the guiding and authorizing document for invasive vegetation species management.

The use of any proposed pesticide (to kill insects or other pests) would require site-specific analysis before application that would identify the effects to birds, wildlife (including threatened, endangered, and sensitive species), and aquatic species. The BLM appreciates the information provided by the commenter and will take this into consideration when addressing the use of pesticides. The BLM will use the direction on pesticide labels to provide proper application of pesticides to protect birds, wildlife, and aquatic species.

**W4**

**Comment:** We are pleased that the goal under Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plants and Animal Species indicates that impacts would be minimized to riparian areas and wetlands (page 40), but recommend more specific guidance be provided to assure that riparian and wetland functions are considered and protected. We recommend that the RMP include direction that assures that projects tiered from the management plan adequately assess the potential impacts on riparian conditions and functions, and protect riparian conditions and functions. We suggest that it would be appropriate to include management direction focused on restoration of riparian functions and conditions, consistent with the ICB Strategy, since this Strategy provides for improved restoration and maintenance of riparian functions.

For example:

“The BLM will restore and/or maintain riparian structure, composition, and processes, including physical integrity of riparian ecosystems, amount and distribution of woody debris to sustain physical and biological complexity, adequate summer and winter thermal regulation, water quality and hydrologic processes, distribution and diversity of riparian vegetative communities and source habitats for riparian dependent species.”

**Response:** The BLM agrees with the comment and has added the following wording to the goal in Chapter 2:

“The BLM would restore and/or maintain riparian structure, composition, and processes, including physical integrity of riparian ecosystems, amount, and distribution of woody debris to sustain physical and biological complexity, adequate summer and winter thermal regulation, water quality and hydrologic processes, distribution and diversity of riparian vegetative communities and source habitats for riparian dependent species.”

**W5**

**Comment:** BLM discussed threatened and endangered species, not a BLM responsibility. BLM is responsible for HABITAT and SPECIES MANAGEMENT is with other agencies. BLM did not mention that the gray wolf as well as the grizzly bear is undergoing a delisting process by the USFWS now. Populations are fully recovered under the USFWS recovery plans.

**Response:** BLM requirements for management of federally listed and proposed species come from the Endangered Species Act of 1973 (ESA). There are a total of 18 sections within the ESA, 9 of which contain requirements or authorizations for the BLM. Section 7 of the ESA requires the BLM to look at the impacts to threatened, endangered and candidate species from proposed actions on Federal lands.

In addition, BLM Manual 6840 (Special Status Species Management) identifies that the BLM will conserve

listed species and the ecosystems upon which they depend and also ensures that all actions authorized, funded, or carried out by the BLM are in compliance with the ESA.

The proposed de-listing of the gray wolf and grizzly bear are not discussed in the RMP because, even when de-listed (such as with the Yellowstone population of the grizzly bear), these species will stay on Montana BLM’s sensitive species list. As outlined under the Wildlife section in Chapter 2 of the RMP, management actions will promote conservation of special status (sensitive) wildlife species and the ecosystems on which they depend. The BLM is required to conduct monitoring and assessment of de-listed species under BLM Manual 6840.

**W6**

**Comment:** Hikers and wolves impact wildlife more than OHV use yet hikers and wolves are unrestricted.

**Response:** The BLM has found no evidence that hikers and wolves impact wildlife more than OHV use. The influence of high open road density on grizzly bear, wolverine, elk, and sage grouse, and wildlife in general, are well-documented in the scientific literature. Avoidance of otherwise suitable habitat, habitat fragmentation, mortality from collisions, increased disturbance, and loss of security habitat are all factors that effect how roads influence wildlife use of an area as well as the quality of wildlife habitats.

**W7**

**Comment:** The Agency must support any claim that various recreational activities (e.g., off-highway vehicle use, camping, equestrian use, hunting etc.) pose significant threats to endangered species. Claims that are highly speculative and based on little or no reliable data should be excluded from the environmental analysis.

The Agency must establish much more than a causal connection between recreation activities and any perceived declines in the population of any threatened or endangered species known to reside in the project area. At most, the technical data shows that some recreational activities, in some areas, have the potential to displace some species on a very local level. This, however, cannot establish that recreational activities pose a substantial threat to an entire population or subpopulation of a particular plant or animal.

**Response:** There are three wildlife species that are listed under the Endangered Species Act found in the Field Office; gray wolf, Canada lynx and the Northern Continental Divide population of grizzly bear. Of these listed species, the grizzly bear was identified as the most sensitive to open roads. The Special Status Species section of Chapter 4 (Alternative A), as well as the Wildlife section in the Lewis and Clark County NW Travel Plan Area in Chapter 4 of the RMP provide a discussion on

the effects of open roads to grizzly bear. The influence of open roads on grizzly bear is well documented in the scientific literature and research has found that grizzly bear avoid areas adjacent to open roads and areas with high road densities. A target of one mile of open road per square mile or less has long been used for evaluating habitat effectiveness for grizzly bear and is routinely used by Montana Fish, Wildlife and Parks, US Forest Service, U.S. Fish and Wildlife Service and the BLM.

#### W8

**Comment:** AWL praises the BLM's recognition of the importance of ecological corridor restoration and recommends that the BLM go one step further: the South Fork study by Mace and Manley (1993), the Selkirk/Cabinet-Yaak study by Wakkinen and Kasworm (1997) and two studies cited in the DEIS (on page 559: Mace et al. 1996; McLellan and Shackleton (1989) found that grizzly bears underutilized habitat with >1 mile/mile<sup>2</sup> of open roads and >2 miles/mile<sup>2</sup> of total roads. AWL suggests the BLM actually set a standard for open road density at 1 mile/mile<sup>2</sup> or lower and total road density of 2miles/mile<sup>2</sup> or lower in important grizzly bear corridors, as identified by Craighead et al (2002).

**Response:** The BLM is concerned about movement corridors for a variety of species including the grizzly bear, and believes this issue is adequately addressed in the Butte RMP. The Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species section (Management Common to Action Alternatives) of Chapter 2 describes the BLM's proposal to maintain suitable habitat conditions and minimize fragmentation in wildlife linkage corridors occupied by special status species.

The BLM will also continue to apply the appropriate level of protection to grizzly bears based on peer reviewed scientific literature, recommendations of the U.S. Fish and Wildlife Service and the Grizzly Bear Management Plan for Southwest Montana (2002).

#### W9

**Comment:** Lewis and Clark TPA: This area is recognized by the United States Forest Service as an important corridor for lynx dispersal by the Lynx Management Direction, adopted by the Forest Service in July 2007/ (USFS 2007). AWL would suggest the BLM consider yearlong or seasonal closures above and beyond those presented in Alternative C in light of the importance of this area to lynx.

**Response:** Lynx habitat was taken into consideration during travel planning. The BLM believes that the Preferred Alternative adequately considers lynx habitat and other resource and management needs.

The BLM will continue to follow the Lynx Conservation Assessment and Strategy and work with the U.S. Fish

and Wildlife Service on how to best protect or restore habitat for lynx in this area.

#### W10

**Comment:** We are pleased that a goal has been included to protect, maintain, or restore sagebrush habitat in occupied or historic sage grouse habitat (page 40). The 2005 Management Plan and Conservation Strategies for Sage Grouse in Montana are recommended for further guidance.

**Response:** As stated in the Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species section (Management Common to All Alternatives) in Chapter 2 of the RMP, management activities would be designed and implemented to be consistent with the National and Montana Management Plan and Conservation Strategies for Sage Grouse in Montana (2005).

#### W11

**Comment:** Some interests are pushing the wildlife corridor concept as a reason to close areas to motorized use. We have not seen adequate documentation or reasoning to justify this position and suspect that it is being used inappropriately as a reason to justify de facto wilderness by non-motorized interests. Significant issues must be answered before this concept can be given any credibility. Issues include:

1. Why would wildlife follow physically challenging basin divides where food and water is scarce versus other corridors? They don't. This is easily verified by open areas such as McDonald Pass or the jagged areas of the continental divide where we have never observed any significant number of wildlife crossings versus great numbers of wildlife crossings that we have observed in other areas that are more favored by wildlife.
2. There is no data or credible documentation that the continental divide or other basin divides are favored for wildlife migration. Especially theories that purport that wildlife will migrate from Mexico to Canada. This is counter to the types of habitat that different species require in order to survive. There is a significant lack of credible evidence to support the wildlife corridor hypothesis.
3. The lack of authorization or mandate from congress for this sort of designation and use of public land.

**Response:** The BLM has not limited the discussion on movement corridors to the Continental Divide. Chapter 3 of the RMP (Wildlife Section) discusses the importance of wildlife corridors that vary in size and importance depending on the species and the how the habitat is being used. Movement corridors are described as areas of predicted movement between blocks of suitable habitat. A corridor can function at several scales. It can allow

seasonal movements for a species such as elk migration between summer and winter range or provide for dispersing juveniles such as a subadult cougar who have to leave fully occupied habitat of other adult cougars.

Movement corridors may be small, such in the case of amphibians or small mammals, or large such as with grizzly bear or big game species. If a patch of habitat is too small to support a population over time, corridors connecting patches of habitats can provide a larger habitat structure, and thus support a larger effective population. Movement corridors can also be critical for the flow of genetic material between populations.

Although it may be difficult to know the exact route an animal may take, the importance of movement corridors is documented in the literature and is a pertinent wildlife issue that should be addressed at the landscape level. Therefore the Butte RMP provides discussion and analysis of movement corridors.

#### W12

**Comment:** Conservation Actions for Grizzlies (p.737) north portion in Lewis & Clark Co and Jefferson County are connected more to the Northern Continental Divide Ecosystem than to the Yellowstone Ecosystem. The Butte RMP area provides critical connections between ecosystems.

**Response:** The BLM agrees with the commenter. With the delisting of the Yellowstone population of the grizzly bear, this section of **Appendix F** from the Draft RMP/EIS (now **Appendix G**) has been deleted in the Proposed RMP/Final EIS.

#### W13

**Comment:** Alternative D – Oil & Gas Stipulations (p.927) does not provide for grizzly bear at all.

**Response:** The stipulation for threatened, endangered, and special status species would provide protection to grizzly bear and grizzly bear habitat during oil and gas exploration. Under this controlled surface use stipulation, the BLM could require modifications on those exploration and development proposals that contribute to the listing of a sensitive species (such as the Yellowstone population of grizzly bear). This stipulation would also require modifications to or disapprove a proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed species or result in the destruction or adverse modification of critical habitat. While two additional Controlled Surface Use stipulations specifically for grizzly bears were inadvertently omitted from **Appendix L** in the Draft RMP/EIS, their proposal for use under Alternative D was included in Chapter 2 (Table 2-21 of Draft RMP/EIS). These stipulations have been added to the fluid minerals appendix for Alternative D (now **Appendix M**) in the Proposed RMP/Final EIS.

#### W14

**Comment:** The west-slope cutthroat trout does not qualify for listing [federal listing under Endangered Species Act].

**Response:** Although it is unclear what the comment is referring to, the Butte RMP refers to westslope cutthroat trout as a special status or sensitive species. The U.S. Fish and Wildlife Service found westslope cutthroat trout were not warranted for listing under the Endangered Species Act. However, to prevent listing under the ESA and to promote the conservation and recovery of this species, a Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout and Yellowstone Cutthroat Trout in Montana was signed by multiple agencies (including the BLM). This Memorandum of Understanding was updated in July, 2007.

#### W15

**Comment:** Several times within the EIS analysis of the Bozeman, Livingston, and Helena [oil and gas] areas, the RMP/EIS states that habitat for Arctic Grayling and Bull trout doesn't exist in the planning area. MWF believes these statements are categorically in error. Admittedly, much of their historic habitat is currently unoccupied; it is disingenuous and unprofessional to claim that the habitat does not exist; perhaps this is an oversight and can be corrected in the final. MWF believes the waters near Livingston and Bozeman still retain high potential for grayling restoration and that any and all options for reestablishing fluvial grayling in the state must be given elevated priority. At the very least, to be a viable portrayal of the biological reality on the ground, the RMP should refer to the waters here as potential grayling habitat even if the habitat is unoccupied.

**Response:** Although the BLM agrees that suitable habitat may be present in the areas identified by the comment and that re-introductions of certain fish species could be likely in the future, oil and gas stipulations focus on protecting habitat occupied by a species (such as arctic grayling and bull trout) and not potential habitat. The BLM based the mapping of these species on data from Montana Fish, Wildlife Parks (MFISH). When site-specific leases for oil and gas are identified, the BLM will again verify the presence of all fish species in the proposed lease area to determine the appropriate stipulations that should be applied to that lease. **Appendix M** of the Proposed RMP/Final EIS describes the process for oil and gas leases.

#### W16

**Comment:** In regard to streamside or riparian management buffer zones, we believe riparian buffers should be wider where there are steeper slopes and more erosive soils, and forested streamside buffer zones need to protect canopy cover and shade to buffer water temperatures, and to provide a sustainable source of large woody

debris needed for instream channel structure and aquatic species habitat. Adequate riparian buffer zones also are needed to protect ephemeral and intermittent streams to protect both these streams and their downstream tributaries.

A greater level of the riparian protection is provided for in the Forest Service's Inland Native Fish Strategy (INFS) than is proposed with the preferred alternative (Alternative B) in the draft RMP/EIS. The INFS provides for riparian management zones (RMZs) for forested fish bearing streams that consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance (600 feet, including both sides of the stream channel), whichever is greatest.

The proposed RMZ for Alternative B, however, only includes a proposed RMZ distance equal to the height of two site potential trees.

Alternative B does not include the additional language stating, "...or to the outer edges of the 100-year floodplain, or 300 feet slope distance, whichever is greatest."

We believe the riparian protections included in Alternative C are closer to providing the appropriate level of riparian buffer protection for fisheries, and should be included in the preferred alternative, particularly for any surface waters with populations of threatened bull trout within the jurisdiction of the BFO (e.g., Blackfoot River, page 230). We also note that while the Interim Bull Trout Habitat Conservation Plan Strategy (USDI-BLM 1996) is identified among the Plans that need to be considered (page 14), we do not see a clear commitment to provide adequate riparian protections for bull trout in Alternative B. We believe the Alternative C riparian protections are needed at a minimum for bull trout habitat protection.

We also recommend that Alternative C riparian buffers be considered for waters with populations of native westslope cutthroat trout and Yellowstone cutthroat trout and arctic grayling and Class I fisheries (e.g., for Clark Fork, Upper Missouri, Madison, Jefferson, Gallatin, Boulder, and Big Hole Rivers and their tributaries with native westslope cutthroat trout populations, page 219, and especially Muskrat/ Nursery Creek with its genetically pure population of westslope cutthroat trout, page 95, and Upper Yellowstone River and its tributaries with native Yellowstone cutthroat trout). The Alternative C or INFS riparian protection guidelines are more protective of stream resources and promote recovery of native fish populations, and are recommended for consideration by BLM wherever there are important native fish populations that need protection and/or recovery.

**Response:** The BLM provided for a range of riparian management strategies in the Butte RMP. The riparian

management zones under Alternative C follow the more "protective" approach of management consistent with this alternative. The BLM believes that Alternative B provides adequate prescriptions for management of riparian zones in this specific planning area.

The BLM will follow the Interim Bull Trout Habitat Conservation Plan Strategy (USDI-BLM 1996) in occupied bull trout habitat. To make this clearer in the document, reference to the Interim Bull Trout Habitat Conservation Plan has been included under the Wildlife, Fish, Wildlife habitat, Special Status and Priority Plant and Animal Species section in Chapter 2 of the Proposed RMP/Final EIS. It should be noted that the Missoula Field Office administers the limited lands that contain bull trout habitat under an administrative agreement with the BFO.

#### W17

**Comment:** We support low road density in watersheds with native trout populations, particularly in bull trout watersheds. Salmonids are sensitive to the direct, indirect, and cumulative effects of roads, and bull trout are exceptionally sensitive to road effects. The USFWS in its 1998 Bull Trout Interim Conservation Guidance identified the importance of road densities for bull trout conservation showing general exclusion of bull trout in watersheds with high road densities (e.g. over 1.7 mi/mi<sup>2</sup> of roads), and showing bull trout strongholds to have low road densities (e.g. on average 0.45 mi/mi<sup>2</sup> of roads). We also recommend that road densities within crucial winter ranges and along migration corridors be reduced. It would be of interest to identify in the EIS the existing and future road density that would result following road closure and restoration of user-built roads.

We recommend management direction that addresses the adverse effects of high road densities and many road stream crossings upon watershed condition and aquatic health. At the very least it should be assured that roads are not contributing adverse amounts of sediment to waters with sensitive or listed fish species. We encourage BLM to consider including direction that would promote road densities protective of water quality, bull trout and westslope cutthroat trout, and critical wildlife habitats. For example, "In watersheds with native trout population, road density would be at a level that is favorable to water quality and indigenous trout populations, and critical wildlife habitats."

**Response:** Travel planning under the five site-specific travel plan areas did address the effects of roads on watershed function, riparian function, aquatic habitats and species, fragmentation of habitats, movement corridors, big game winter range, calving habitat, security habitat and disturbance as well as the direct and indirect effects of roads on a variety of wildlife and aquatic species. All action alternatives propose a reduction in road densities in important wildlife habitats. Any future travel planning would also address the above mentioned fac-

tors and existing travel plans could be modified to provide additional protections or improve wildlife habitats when new information becomes available.

The Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species Section (Management Common to Action Alternatives) of Chapter 2 of the RMP states that the negative effects of the transportation system on fish would be reduced. To the extent possible, roads would be located, designed, and maintained to reduce sedimentation, remove barriers to fish passage and to restore or maintain riparian vegetation.

## Travel Management - General

### X1

**Comment:** The 3 state 01 OHV Rule also provides for and states: “Motorized cross-country travel by the most direct route would be allowed to retrieve a big game animal that is in possession only in the following field units in Montana: Miles City (FO), Billings (FO), Malta (FO), Lewistown (FO) with the exception of the Great Falls Field Station, and the Custer National Forest with the exception of the Beartooth Ranger District.” Does the Butte RMP recognize the need for big game retrieval and identify appropriate cross country travel areas?

**Response:** Motorized cross-country travel for game retrieval was allowed and analyzed under three of five alternatives in the 3 state OHV EIS. However, in the Record of Decision signed in June 2003, cross-country travel for game retrieval is prohibited with few exceptions on BLM land in Montana and the Dakotas.

The Butte RMP provides for big game retrieval on existing routes, but no cross-country motorized use would be allowed for the retrieval of big game.

### X2

**Comment:** Coordination with affected counties is essential in protecting the counties’ property and resources. Many of the counties that will be affected by the Butte RMP have expressed concerns about additional closures of roads and trails to multiple use. The future management activities of federally managed public lands depend largely on the ability to access these lands. Emergency rescue, trail and road maintenance, fire suppression and access to leased areas of mineral, gas and cattle allotments are all important for the health, safety, and welfare of county residents.

**Response:** In an effort to help the BLM develop site-specific travel management alternatives, two community based collaborative working groups were established. The working groups represented a wide range of public land users and were managed under the sponsorship and involvement of the Lewis and Clark County Board of Commissioners. One working group was assigned to assist with travel planning for the Helena and East Helena Travel Planning Areas while the other group assumed

responsibility for travel planning in the Lewis and Clark County NW Travel Planning Area. Each group held a series of five or six meetings and group recommendations for route-specific management were based on consensus.

All counties were invited to be cooperating agencies with the Butte BLM on the RMP. In addition, all counties were briefed on the Draft RMP/EIS, which included travel planning.

### X3

**Comment:** The 2005 legislature passed HJ18 which clearly stated: “Be it resolved that the United States Congress be urged to adopt legislation that would require the U.S. Forest Service and the BLM to not arbitrarily close roads and access to Montana's public lands and to instead that these agencies be properly funded and maintain the current means of access to and on Montana's public lands, trails, and streams.” This was a clear mandate from the legislature of the State of Montana to the public land management agencies of the Federal Government that the arbitrary closures of access to federally managed public land in Montana be stopped and current levels of multiple use access be protected. Governor Schweitzer signed HJ18 in April of 2005 as he agreed with the actions of the 2005 Montana House and Senate.

The Montana House and Senate are standing with the citizens of this state to say that enough is enough. The actions by the BLM in the Butte RMP does not follow the mandate set forth in HJ18 or HJ31 and CBU requests that the BLM coordinate with the Montana legislative branches, as required by federal law, when road and trail closures are being proposed. The Montana legislature and Montana citizens have a very large stake in the resources of this state and they are rightfully concerned with the management practices of both the Forest Service and the BLM in recent years. Closures must only be considered as a last resort and then only after resource damage has been identified and mitigation measures have failed. CBU finds it unacceptable that any road and trail closures by your agency are made prior to attempts to mitigate identified resource damage.

**Response:** The BLM does not arbitrarily close roads and trails in the Butte Field Office. As outlined in **Appendix A** of the RMP, the BLM follows a comprehensive travel planning process to determine how roads and trails are used as well as how natural resources are impacted by those routes. This process, along with input from the public and other government agencies, allows the BLM to determine the appropriate road and trail system for a particular travel plan area.

### X4

**Comment:** The proposed Pipestone Special Recreation Area (SRA) is a good proposal that meets a need for the

increased OHV popularity. The sustainment of the hill climb in the Pipestone area for open use also meets the needs for individuals interested in this growing popular recreation opportunity. This proposed new RMA is adjacent to a much larger area managed by the Forest Service and should be coordinated with their proposed travel management plans to maximize the potential benefit from this proposal and ensure that future management plans are not in conflict.

**Responses:** The Butte Field Office will continue to stress the importance of this riding area and will strive for collaborative management with the Forest Service so that priority funding and attentive management continues to be a mutual objective.

The BLM believes that the different alternatives as described in the Activity Level Planning for Five High Priority Travel Planning Areas of Chapter 2 provide a suitable range of closed, open, and seasonally restricted roads to meet multiple objectives. The BLM is a multiple use agency and does not manage land for the sole benefit of any one type of use.

#### X5

**Comment:** Because there are two levels of management with respect to Travel, definitions describing how management will be conducted for the “Field Office Level” is important. Page 46 indicates that “travel management would be conducted in a manner that would meet, or move toward meeting, Land Health Standards.” Time frames should be attached to the “moving toward” statement.

**Response:** Because of the variables associated with land management, such as budgets, priorities and agency direction, it is difficult for the BLM to attach timeframes with the above mentioned statement. As identified in the Travel Management and Access section of the RMP, travel planning for “high priority” areas is supposed to be initiated within two years of the Off Highway Vehicle Record of Decision. The highest priority travel planning areas in the Butte Field Office are being completed concurrently with the RMP. The four remaining travel plan areas (Missouri River Foothills, Jefferson County Southwest, Broadwater County South, and Park/Gallatin) are considered “moderate priority” and travel planning will be completed for these areas after the RMP is completed. Indeed all of these travel management plans are designed to meet or move towards meeting Land Health Standards. Additionally, during routine monitoring and implementation of these plans, if problems are discovered, management actions are implemented to ensure that progress is being made towards meeting Land Health Standards.

#### X6

**Comment:** We concur with the statement on page 48, “BLM would provide for interagency travel manage-

ment consistency and route connectivity with adjoining public lands”, however there is sometimes a lack of continuity in management between adjoining public land ownerships in some BLM/FS areas within the RMP. For example, the existing BLM travel plan for Clancy-Unionville (Sheep Mountain) does not conform to this statement in that the surrounding National Forest lands have route densities at levels that are substantially less than what occurs on BLM lands. In order to bring this area into conformance with Forest Service travel management, and into alignment with other areas of the RMP, we recommend that this area be reevaluated under the RMP provision stating, “Throughout the course of implementing the RMP, site-specific route management decisions may need to be reevaluated and adjusted by BLM in order to accommodate interagency (Forest Service) connectivity.” (p. 48)

**Response:** During this RMP planning process, the BLM did not re-visit decisions made under existing travel plans. Site-specific modifications and changes to existing travel plan areas could be made in the future.

#### X7

**Comment:** We request that the significant negative and inequitable impacts that Executive Orders 11644 and 11989 have imposed on motorized recreationists be adequately evaluated, and factored into the preferred alternative. We request that the decision-making provide for actions necessary to provide responsible use of these two Executive Orders. We request that revisions to Executive Orders 11644 and 11989 be made in order to return equitable guidance to federal land-use managers.

**Response:** Executive Orders are instituted by the President. BLM has no authority to revoke such orders. BLM is required to abide by these Executive Orders. These orders were initiated many years ago in order to ensure that the use of off road vehicles on public lands would be controlled and managed to protect natural resources, promote the safety of all users, and minimize conflict among the various uses of those lands. The BLM supports motorized use, but must take into account resource protection objectives and opportunities for non-motorized use as well. The BLM has no authority to revise executive orders.

#### X8

**Comment:** The use of RS 2477 rights-of-way over nearly a century has resulted in an extensive body of case law in the state and federal courts, in which owners of various types of rights-of-way have competed with holders of RS 2477 rights-of-way and in which the availability of those various rights-of-way has been decided by the courts, including the modern State Supreme Court as well as the federal 9th Circuit Court of Appeals, in such cases as *Robertson v. Smith*, Supreme Court Montana Ten., 1871; *Butte v. Mikosowitz*, 39 Mont. 350, 102 P. 593, (1909); *Moulton v. Irish*, 67

Mont. 504, 218 P. 1053 (1923); and *Shultz v. Dept. of Army*, 10 F.3d 649 (9th Cir. 1993).

RS 2477 rights-of-way have been given a liberal interpretation by state and federal courts in those judicial decisions interpreting what constitutes a “highway” within the meaning of RS 2477, those judicial opinions holding that even the barest foot trail could qualify as a “highway” and that no particular way across federal lands has even been identified, it being sufficient that travelers used an area of federal land as a method of access between two geographic points. After 110 years of public use of RS 2477 rights-of-way, the U.S. Congress repealed the most recent version of RS 2477, 43 USC. 932, but that repeal was, by 43 USC. 1701, specifically made subject to valid rights-of-way existing as of the date of repeal which was 1976.

Schiller, chairman of the High Desert Multiple-Use Coalition, told the Kern County Board of Supervisors at a meeting held on February 19, 2002 to address RS 2477 issues that “the roads represent our custom, our culture, our economy, and our family traditions. I know it's been argued that this is about OHV uses and off-highway vehicles,” said Schiller. “It is really about access”. We request that any routes proposed for closure and in existence before 1976 be considered as having RS 2477 rights-of-way in order to provide citizens with access to public lands.

**Response:** Current BLM guidance on recognition of RS 2477 right-of-way claims is contained in Washington Office Instruction Memorandum 2006-159: Non-Binding Determinations of RS 2477 Right-of-Way Claims. Briefly, this guidance states that the BLM does not have the authority to make binding determinations on the validity of RS 2477 right-of-way claims. The BLM may, however, make informal, non-binding determinations for its own land use planning and management purposes. A non-binding determination that the right-of-way exists is required before completing consultation with states or counties on any proposed improvements to a claimed RS 2477 right-of-way, i.e., any work beyond routine maintenance. A non-binding determination may also be appropriate before taking action to close or otherwise restrict the use of a claimed RS 2477 right-of-way. Such determinations must be based on the particular laws of each state in which a claimed right-of-way is situated.

#### X9

**Comment:** In Table 4-110 we are not aware of 151 miles of motorized trails in the Elkhorn Mountains after that action. This number must either be in error (which must be corrected and publicly announced) or it is a blatant attempt at misrepresentation of the facts for the purpose of justifying motorized closures (which must be corrected and publicly announced).

**Response:** The information regarding the Elkhorn Mountains came directly from the “Decision Notice and Finding of No Significant Impact for the Elkhorn Mountain Travel Management Plan” document (August 1995). According to the Decision Notice, there are 151 miles of motorized trail system available on both BLM and Forest Service lands under the selected alternative, Alternative 4-Modified. According to Table 1, page 9, 60 miles of motorized trails are Open from 5/16-10/14, 56 miles are Open from 10/15-12/1, and 35 miles are Open from 12/2-5/15; for a total of 151 miles of available trail. In Alternative 4-Modified, motorized trails that have no width restrictions are also included in the motorized road system miles since they may be used by full-sized motorized vehicles as well as trail vehicles.

#### X10

**Comment:** In order to adequately evaluate and disclose motorized and non-motorized recreational resource and opportunity information to the public, the following information using tables and maps must be used and presented in an accurate and concise manner.

1. The miles of non-motorized recreational opportunities available in the project area including all possible cross-country routes and the number of acres available for cross-country non-motorized recreation under the existing condition (it is infinite),
2. The miles of roads and trails and number of acres to be closed to non-motorized recreationists in the proposed condition,
3. The miles of existing motorized roads, ATV trails, and motorcycle trails in the project area meeting the 3-States OHV decision definitions,
4. The acres within the project area open to motorized recreationists under existing and proposed conditions,
5. The percent of motorized and non-motorized recreational opportunities in the project area,
6. The miles of ATV trails, motorcycle trails and roads and acres closed to motorized recreationists under both existing and proposed conditions,
7. The cumulative miles of roads, ATV trails, motorcycle trails meeting the 3-State OHV definitions and number of acres closed to motorized recreationists over the past 35 years at 5 year intervals in both the project area and regional area. Once this information is adequately and concisely presented, one can easily see that motorized recreational opportunities are limited in the existing condition and then severely reduced in the proposed condition. This information must be presented in order to understand the significant imbalance of recreational opportunities that exists and the decision is deficient without this information.

**Response:** The BLM believes the information presented in the Butte RMP is adequate for public analysis. Tables 2-6 through 2-13 provide a full range of summary information for proposed management of BLM routes at the Field Office level and for the five activity level decision areas. Information presented includes area availability for wheeled motorized use; area availability for snowmobile use; miles of motorized routes available for various uses, and miles of non-motorized trails available (includes Closed routes). The maps, particularly the electronic versions, also help illustrate the existing situation and range of alternatives.

### X11

**Comment:** When roads are closed to motorized recreationists, then they in reality become a non-motorized recreational resource and they must be disclosed as such. Unfortunately this procedure has not been practiced to date and the miles of recreational resources have been understated in favor of non-motorized recreationists. All planning projects should disclose the added benefit to non-motorized recreational resources resulting from the closure of roads by adding the miles of closed roads to the miles of existing non-motorized trails. We request that this procedure be used by this project and all future agency projects. Additionally, we request that the cumulative negative impact on motorized recreationists resulting from this lack of adequate accounting be evaluated and adequately mitigated.

**Response:** Table 2-6, Field Office Level Route Management Summary, in Chapter 2 of the RMP discloses the miles of closed roads proposed under each alternative. Depending on their location, however, some closed roads may be of interest to non-motorized users, while others may provide no interest, and with non-use, eventually fade into obscurity. Some non-motorized users, such as horseback riders and mountain bike riders, may enjoy using closed roads as a convenience form of travel. Others, however, will avoid closed roads, preferring to hike cross-country in a more primitive setting. While closed roads may technically be available for non-motorized use, they do not offer the same quality experience as a trail designed for non-motorized use. This distinction is also shared by motorized users, who prefer to recreate on developed OHV trail systems, rather than on roads, which are often referred to as “troads”.

### X12

**Comment:** In many cases illegal trails are created in response to the lack of adequate motorized opportunities. If there were an adequate number of OHV trail systems, then the need to create illegal trails would be greatly diminished. Therefore, the catch-22 of the closure trend is that in the end it feeds the illegal activity. In other words, it would be a more advantageous and equitable situation to proactively manage motorized recreation.

**Response:** Illegal trails are created by individuals who have made a conscious decision to violate the law and disregard the BLM’s management of public lands. Illegal activity undermines, rather than promotes the future of motorized recreation; in some cases leading to more restrictive management due to ongoing concerns about such activity. The BLM believes that the Preferred Alternative provides adequate opportunities for motorized recreation.

### X13

**Comment:** Agencies are encouraged to avoid trail closures associated with other actions including timber sales, mining, and livestock grazing. Corrective action should be taken where trail closures in the past have resulted from these sorts of past actions. Loss of motorized trails because of past timber sales should be mitigated by connecting old and new travelways to create looped trail systems. Connector trails should be constructed to avoid dead-end trails. These systems could provide recreation opportunities for a variety of skill levels and visitors.

**Response:** Temporary road and trail closures are sometimes necessary for public safety during commercial operations, such as timber sales or mining. With regards to permanent closures, when large scale projects (such as timber sales) are proposed in an area with no existing travel plan, the NEPA analysis for the project will often-times incorporate travel planning as well. As with any travel planning effort, the analysis looks beyond the impacts and duration of the immediate project, and takes into account a broad range of resource impacts and human use needs for the overall area. The final analysis may result in either more, or less motorized opportunities throughout the travel planning area.

### X14

**Comment:** Some of [the factors contributing to growing OHV popularity] are:

- greater public interest in unconfined outdoor recreational opportunities;
- rising disposable income ...
- advances in vehicle technology
- the rapid growth of the West’s cities and suburbs ...
- a population with an increasing median age with changing outdoor recreational interests.

**Response:** The BLM recognizes the growing popularity of OHV recreation. During the past 10 years, the Butte Field Office has spent the majority of its travel plan implementation funding on OHV trail and facility development. In addition, the BLM has successfully received funding from many Montana OHV Trail Ranger grants used to help develop and manage OHV recreation.

**X15**

**Comment:** The reason often given by the agency that motorized trail projects including those using OHV grant money cannot be undertaken is that there is a current travel planning process under way or one about to begin or that NEPA compliance must be undertaken. There is a continuous cycle of travel planning undertaken and the public is not able to undertake NEPA compliance. The result is that motorized RTP funding is often under-utilized. At the same time, there is a tremendous need for projects on motorized routes. We need to find a way to break this Catch-22 situation.

**Response:** With some exceptions, federal law prohibits BLM from implementing any earth disturbing activity, such as OHV trail/facility development, or travel plans (area/route designations) until the proper NEPA documentation has been completed. Once a NEPA decision has been finalized, BLM may move forward with implementation work.

The Butte Field Office has four existing (NEPA compliant) travel management plans. Over the past 10 years, in addition to agency funding, the BLM has successfully applied for and utilized Montana OHV Program Trail Ranger Grants in order to help implement and manage these plans. Five additional plans are being addressed at the activity plan level, concurrent with this RMP revision. Once decisions for these plans have been approved, implementation work can proceed, but not before then.

**X16**

**Comment:** A new standard for motorized recreational trails could be developed that would be more beneficial for the environment and motorized recreationists. This new standard would be as nonlinear as possible. The original system of roads and trails was constructed with the shortest distance from point A to point B in mind. The new standard for motorized recreational trails would not necessarily follow the shortest distance and would include many curves to keep the speed down. Advantages of this approach would include: routes could easily be moved to avoid cultural resources and sensitive environmental areas; less visible on the ground and from the air; aesthetically pleasing; lower speeds and greater safety; and greater enjoyment by motorized recreationists. These sorts of trails could be built as mitigation for any motorized closures required as part of an action. Please contact Doug Abelin for more information on the non-linear approach to trail construction.

**Response:** The BLM agrees that motorized recreation trails should be designed as described in the comment, subject to NEPA and approved travel management plans. The Butte Field Office uses this approach as much as possible for designated OHV trail systems where appropriate.

**X17**

**Comment:** Provide open or play areas for motorized recreation opportunity and trials bikes where acceptable in selected areas.

**Response:** The Preferred Alternative includes two Open designated riding areas, Radersburg, and a motorcycle hill climb located in Whitetail-Pipestone.

**X18**

**Comment:** The integrity of the “loop” trail system should be maintained. Loop systems minimize the number of on-trail encounters because non-motorized trail users don’t encounter motorized users going both directions, as they do on non-loop trails. Loop trails also offer trail users a more desirable recreational experience. Agencies are encouraged to provide opportunity for “motorized loop trail systems” to lessen impacts and to provide a better recreational experience. Spurs are useful for exploration and reaching destinations.

**Response:** Loop trails were considered during the development of travel plan alternatives, and incorporated where feasible. Loop trails do not prevent two-way traffic, however, unless they are managed as one way only.

**X19**

**Comment:** OHV owners in Montana, as part of their vehicle registration, contribute \$1.50 to a noxious weed abatement program. Non-motorized visitors do not contribute to a weed abatement program. We request that the analysis be based on a balanced discussion of the noxious weed problem. The discussions, decisions, and measures used to mitigate noxious weeds should recognize the relatively minor impact that OHVs have on the noxious weed problem and credit OHV visitors for contributing to a program to control noxious weeds. Additionally, this is another example of predisposition because motorized recreationists have not been given credit for the positive action that they have taken and we have only been penalized for our past cooperation and the initiative taken to control noxious weeds.

**Response:** All Montana vehicle owners (not just OHV owners) contribute \$1.50 of their vehicle registration fees towards the state’s weed abatement program.

**X20**

**Comment:** We request that the over-arching management goals for all multiple-use public lands be to:

- (1) Manage multiple-use lands for the greatest benefit to the public;
- (2) Manage multiple-use lands in an environmentally sound and reasonable manner;
- (3) Manage multiple-use lands in a way that avoids the pursuit of environmental extremism; and

- (4) Manage multiple-use lands in a way that promotes the shared-use that they were intended for versus segregated-use or exclusive-use.

**Response:** The BLM agrees with this comment and believes that it is providing for these concepts with the alternatives presented in the Butte RMP revision.

### X21

**Comment:** We request that the process include consideration of the negative impacts that proposed motorized road and trail closures will have on fire management, fuel wood harvest for home heating, and timber management. The analysis should include an analysis of the benefits to the public from the gathering of deadfall for firewood from each of the roads and trails proposed for closure. These analyses are especially significant following a devastating fire season and a period of rising energy costs. The need for firewood gathering is increasing given the increasing energy costs [http://www.helenair.com/articles/2003/11/02/montana/a01110203\\_05.txt](http://www.helenair.com/articles/2003/11/02/montana/a01110203_05.txt) and we have noticed a significant increase in firewood gathering this past year. The closure of roads and trails is occurring at a large scale on all public lands. Therefore, the analysis should also evaluate the cumulative negative impacts of motorized road and trail closures and the conversion of multiple-use lands to limited-use lands on fire management, timber management, and firewood gathering.

**Response:** The Butte RMP considers impacts of road and trail closures on the wide range of resources and resource uses. These impacts are disclosed in Chapter 4 of the Butte RMP. In implementing the process described in **Appendix A** of the Butte RMP to develop road management proposals, the resource uses referenced in the comment were considered in travel route-specific assessments. Roads identified as “closed” in the Butte RMP would retain roadbeds and could be used in the future to meet needs such as fire suppression and vegetation treatments to reduce wildland fuels buildup. The Butte RMP also provides for firewood gathering throughout the Butte Field Office associated with open routes.

### X22

**Comment:** A reasonable approach to the assessment of equal recreational opportunity would use a comparison of acres and miles of trails per non-motorized visit versus acres and miles of trail per motorized visit. An equal number of acres and trail miles per visit should be the goal but the current management scheme is not achieving this goal. Clearly non-motorized visitors have a significant advantage in acres and miles of trail per visit at this time. Moreover, current management trends are creating more non-motorized acres and trails and significantly adding to the disparity. In order to be responsible to the public, we request that the preferred alternative

address this disparity and reverse the trend by managing all of the project area as motorized multiple-use.

**Response:** The Butte Field Office provides about three times more OHV trails than non-motorized trails and dedicates about 90 percent of its travel funding for the management of motorized uses. In addition to designated trails there are over 415 miles of roads available for riding yearlong or seasonally under the Preferred Alternative in the RMP.

### X23

**Comment:** Agencies are encouraged to keep trails in proposed non-motorized/ wilderness/roadless areas open. Motorized-use on trails in these areas does not detract from the wild characteristics in the proposed non-motorized/wilderness area. Additionally, the Roadless Rule specifically allows for OHV activity in Roadless areas.

**Response:** With the exception of one route through a portion of Humbug Spires Wilderness Study Area, there are no existing motorized routes with public access in any of the six WSAs within the Butte Field Office and therefore this comment is not pertinent. The Roadless Rule applies to Forest Service Roadless Areas on National Forest lands, but does not apply to BLM lands.

### X24

**Comment:** Equal treatment and access to public lands must be provided for all people including motorized visitors. One example of unequal treatment is demonstrated by the agency sponsored hikes. We have never seen an agency sponsored OHV outing. Another example is the number of agency publications and information on agency web sites promoting non-motorized recreation versus the publications and web site information pages provided for motorized recreationists. Non-motorized recreation opportunities are easy to find using agency web sites and printed information. Yet another example is the use of hiking information signs posted along highways at ranger stations and the lack of the same signs and information for OHV recreation. The Condon Ranger Station is one of many examples of this situation. Most often little or no information is provided about motorized recreation opportunities. The one good example of a motorized web site can be found at <http://www.fs.fed.us/r6/centraloregon/recreation/cohvops>. There is a need for every forest and district to have a similar motorized recreation web site. Another example of bias is the fact that signs say “Non-motorized Uses Welcome” and we have never seen a sign that says “Motorized Uses Welcome”.

**Response:** The BLM makes a concerted effort to treat motorized and non-motorized recreation users with equality for program support and interaction. On June 24<sup>th</sup>, 2005, the BLM co-sponsored an OHV ride in the Pipestone area during the Montana Trail Vehicle Rider

Association's three day State Ride. On September 17<sup>th</sup>, BLM led a hike in the Humbug Spires WSA in support of a three day Montana State, Recreation and Parks Association conference. BLM is currently updating its website so that opportunities for OHV riding and non-motorized use are better identified and explained. The three major OHV riding areas within the Butte Field Office are signed and trailhead facilities have been installed to assist motorized riders. Facilities include parking areas, unloading ramps, maps, riding information, signs, and toilets. Overall, if there have been any errors in balance, they have been in favor of motorized recreation.

#### X25

**Comment:** The evaluation team is being strongly directed to seek segregation of visitors for this action. This is not a reasonable goal. We do not seek to separate the public in other public facilities and, in fact, it is illegal. Sharing of public resources among all visitors and especially on multiple-use lands is the over-arching goal that is most reasonable expectation for visitors to those lands. Additionally, segregation of visitors is being used to manipulate recreation resource allocation such that motorized visitors are ending up with a less than adequate and less than representative share of access and recreational opportunities, (miles, acres, and number of quality opportunities). Moreover, the use of segregation as a goal is also a tactic that works against the majority multiple use/motorized recreationists by dividing and conquer the different interests within that large sector.

**Response:** The BLM recognizes the importance of multiple use management and has utilized these principles in developing the preferred alternative. The Butte RMP provides a diverse array of recreational opportunities for all users in the Butte RMP. In addition to providing opportunities, BLM is also responsible for ensuring quality experiences. In order to accomplish this, a spectrum of diverse natural settings has been proposed that promote both motorized and non-motorized experiences. Proposed designations will provide varying levels of motorized uses within 88 percent of the BLM recreational settings.

The planning team for this RMP was directed to conduct travel management planning decisions for five specific areas. The primary emphasis is to designate route and area availability for motorized and non-motorized travel based on access needs, user demands, resource value concerns, public safety, budget constraints, and other resource uses. Providing opportunities for recreation users to distance themselves based on experience preferences is only one of many considerations analyzed in travel planning.

#### X26

**Comment:** Current management trends are attempting to restrict public access to narrow corridors along major

roads. This management trend is widespread among all agencies. If allowed to continue, this trend will concentrate over 95 percent of the visitors to less than 10 percent of the area. The cumulative negative impact from concentrating visitors to narrow corridors will result in poor management of public lands and unreasonable access to public lands and recreational opportunities. We request the evaluation of the cumulative negative impacts from management goals that tend to concentrate visitors to narrow corridors and reduce recreation opportunities for motorized visitors. Other associated negative impacts that should also be evaluated include loss of dispersed recreation opportunities, reduced quality of recreation, loss recreation diversity, and unequal number of recreation opportunities. OHV and other motorized recreationists seek the challenge and sense of exploration that primitive roads and motorized trails provide. The preferred travel management alternative should not restrict motorized access and recreation to narrow corridors along a few major roads. This restriction would not provide for the type of experiences that most motorized visitors are seeking and, therefore, does not meet the needs of motorized visitors. We request that the analysis and decision-making avoid restricting motorized access and recreation opportunities to narrow corridors along major roads.

**Response:** The comment is correct in that the Preferred Alternative does restrict motorized wheeled travel to designated roads and trails and as a result concentrates use along corridors, though not all these corridors are along "major roads". This action is supported by the 2003 Statewide Off-Highway EIS/Plan Amendment decision. Limiting motorized wheeled vehicles to designated routes promotes the sustainability of healthy ecosystems and the overall natural qualities in non-traveled areas. OHV uses have now grown to the point where impacts from cross-country riding can no longer recover naturally. The Butte Field Office will continue to manage the Radersburg Area for open riding and the Pipestone and Clancy/Ohio Gulch areas for high density trail riding. The preferred designated route system does provide access to popular walk-in areas, known attractions, trailheads, and higher elevation destinations for hunters with the goal of distributing users throughout the public lands.

#### X27

**Comment:** Inadequate attention and passive support of OHV recreation by agencies in a position to support and manage OHV recreation has contributed to the issues impacting OHV recreationists. Again, motorized access and motorized recreation including OHV recreation are the most popular, fastest growing, and most fundable forms of recreation and should be given a much higher priority. We request that the cumulative negative impact on OHV recreation resulting from less than adequate and enthusiastic support from managing agencies be ade-

quately evaluated in the document and adequately considered during the decision-making.

**Response:** The BLM does not believe it has paid inadequate attention to OHV recreation with the Butte RMP. OHV recreation has been considered adequately in the context of other resource uses and resource protection throughout the Butte RMP and associated travel planning. The BLM notes that regulations found at 43 CFR§8342.1 indicate in part that in designating areas and trails for OHV use, that “all designations shall be based on the protection of the resources of the public lands, the promotion of the safety of all the users of the public lands, and the minimization of conflicts among various uses of the public lands.”

### X28

**Comment:** We would like to see more funding for building roads around uncooperative landowners and developers, and better land swaps etc.

**Response:** The Butte Field Office will continue to prioritize easement acquisitions and land exchanges that best meet the access needs of the public, enhance recreation opportunities, and provide needed resource protection benefits. These actions will continue to be undertaken where there are willing sellers subject to available funds and staff capabilities.

### X29

**Comment:** Pg. S-8: Issue 3: Alt B does not allow any competitive motorized events. This should be looked at and allowed.

**Response:** The Alternative B (Preferred Alternative) language regarding organized competitive motorized events has been changed in the Proposed RMP/Final EIS. Existing management for the Whitetail-Pipestone Travel Planning Area does allow for consideration (subject to case by case evaluation) for competitive and non-competitive uses in the Pipestone OHV recreation area. In addition to making this correction, BLM has modified Alternative B to allow for additional consideration of organized motorized competitive event opportunities outside Pipestone, subject to management restraints.

### X30

**Comment:** This is not a fair and equitable use of the Butte RMP District. Leaving access open to only non-motorized trail-heads is biased in favor of non-motorized users. The loss of 50 percent of the previous, historical, route use, to motorized users, is not acceptable and needs to be readdressed in a new alternative.

**Response:** The RMP provides a reasonable range of alternatives that take into account resource protection, and motorized and non-motorized recreational opportunities. Of the action alternatives, Alternative D is the least restrictive in regards to motorized use, and provides

approximately 76 percent of the existing opportunities (as represented by Alternative A). Alternatives B and C are more restrictive in regards to motorized use, but still provide for approximately 66 percent and 59 percent of the existing motorized opportunities, respectively.

### X31

**Comment:** MSA feels that you need to create an Alternative that addresses the needs of all users, motorized and non-motorized equally and not just close routes and areas because of perceived social issues.

**Response:** Non-motorized recreation uses are among the multiple uses the BLM is expected to provide for public land users. Alternative B strives to provide a balanced approach, addressing the needs of both motorized and non-motorized recreational users. Road and trail closures are not intended to prevent reasonable public access. In addition to addressing a full range of recreational needs, they help achieve desirable road densities for wildlife, help reduce the spread of weeds, and help prevent the kinds of resource damage commonly associated with roads, such as erosion, stream sedimentation, etc.

### X32

**Comment:** The emphasis of a balance of motorized and non-motorized recreation and access opportunities in Alternative B compared to Alternatives C & D totally misleads the public. It is not a balance when looking at Alternative A or conditions that now exist. An Alternative should be developed and brought to the public allowing more access and more opportunities. Then a 'balance' might be achieved. The 'current condition' is viewed by the land managers as bad and in need of change. If those conditions meet the needs and are providing quality recreational opportunities, change is not needed. Changes usually needed are management based: education by signing trails, outreach to the public, trail head signing, and a presence on the ground. Enforcement which is sadly lacking but without a managed system and education, enforcement is inadequate. We ask that you develop a preferred alternative that preserves and enhances multiple-use interests and motorized recreation.

**Response:** The BLM believes that the alternatives described in the RMP for the five site-specific travel planning areas represent a range of opportunities for different types of public land users.

The action alternatives are intended to help achieve desirable road densities for wildlife, reduce the spread of weeds, provide reasonable opportunities for recreation, and prevent the other kinds of resource damage more typically associated with roads, including erosion, stream sedimentation, damage to riparian habitats, and damage to cultural resources. The routes designated open to motorized travel are intended to provide reason-

able public access. The BLM believes Alternative B represents the most appropriate compromise to address the diverse interests of the public as well as address important resource issues.

**X33**

**Comment:** Agencies are encouraged to utilize all trail maintenance and upgrading management techniques, such as, bridging, punchon, realignment, drains, and dips to prevent closure or loss of motorized trail use. Trails should not be closed because of a problem with a bad section of trail. The solution is to fix the problem area or reroute the trail, not to close it. If funding or manpower is a problem, then other resources should be looked to including local volunteer groups, state, or national OHV funding.

**Responses:** The BLM uses the travel management planning process to determine road and trail availability. Once these decisions are made then the transportation program is responsible for periodically conducting condition and maintenance assessments. Routes managed under the transportation program can be temporarily closed due to washouts or other natural causes that pose safety or resource concerns, but are not permanently closed. BLM will continue to utilize partnership contributions, volunteer groups, and state OHV grants to help off-set maintenance costs.

**X34**

**Comment:** Agencies are encouraged to clear trails early in the year to insure maximum availability and reduction of diversion damage caused by routing around obstacles.

**Response:** Although the annual timing of trail maintenance is outside the scope of the RMP, the BLM agrees that early prevention and correction is important for mitigating resource damage, promoting public access, and reducing future maintenance costs. The Butte Field Office routinely performs maintenance work from April through October each year with funding provided through state grants, contributions, and the BLM Challenge Cost-Share program. Maintenance workloads are prioritized annually. Major considerations include water bars, signing, brush clearing, blading, adding fill materials, noxious weed control, bridges, cattle-guards, gates, and fencing.

**Travel Management – Multiple Use/Public Access**

**Y1**

**Comment:** Nowhere in the 11# documents is one proposal for more access to public lands. All you read is more closures and restrictions. The maps are so poor and such a large scale they are useless for any review. BLM did not mention RS2477 or present one proposal for more public land access. Now BLM is proposing more

closures and retrieve hours like Sawlog it hasn't worked in Pole Canyon except exclude us from using public land for sport hunting. Where is one BLM proposal for more access such as a new road around private land to connect to another BLM roads such as was accomplished in the Hogback south of the Bighole River by persuadable sportsmen?

**Response:** The BLM believes that the Preferred Alternative provides adequate opportunities for motorized and non-motorized access. As indicated in the Management Common to All Alternatives subsection of the Travel Management and Access section (Chapter 2 of the RMP), the BLM will continue to identify and pursue private property easement agreements as needed to gain agency and public access to important BLM lands.

Due to size and scale limitations, the hard copy travel plan maps in the RMP do not include route numbers or snowmobile management, and cover relatively large portions of the Planning Area. The electronic PDF file maps however, (located on CD, at the back of Volume 1) provide a better scale for the site-specific travel planning areas, as well as numbering of individual routes numbering and delineation of proposed snowmobile management.

Regarding RS2477, current guidance is contained in Washington Office Instruction Memorandum 2006-159: Non-Binding Determinations of R.S. 2477 Right-of-Way Claims. Briefly, this guidance states that the BLM does not have the authority to make binding determinations on the validity of R.S. 2477 right-of-way claims. The BLM may, however, make informal, non-binding determinations for its own land use planning and management purposes. A non-binding determination that the right-of-way exists is required before completing consultation with states or counties on any proposed improvements to a claimed R.S. 2477 right-of-way, i.e., any work beyond routine maintenance. A non-binding determination may also be appropriate before taking action to close or otherwise restrict the use of a claimed R.S. 2477 right-of-way. Such determinations must be based on the particular laws of each state in which a claimed right-of-way is situated.

Site-specific routes managed for Game Retrieval, rather than yearlong Closure, provide hunters with reasonable access. Although public compliance needs improvement, the BLM believes these routes offer a reasonable compromise to the hunting community.

**Y2**

**Comment:** What is lacking in the draft RMP is no improvements in public access - no new roads, no improvements in wildlife habitat. To the contrary more public access and public recreational opportunities will be forfeited for the sole benefit of cattle grazing, sage brush burning, etc.

**Response:** In Chapter 2, in the Travel Management and Access section, under the Alternative B – Preferred Alternative heading, the RMP indicates that the BLM would actively seek agency and public easement agreements in order to maintain current access for popularly traveled routes, and seek additional site-specific opportunities as needed. In terms of improvement in wildlife habitat, the Vegetation Communities section of Chapter 2 describes proposed vegetation treatments that would be designed to improve wildlife habitat. The Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species section of Chapter 2 describes additional proposed management designed to improve conditions for wildlife.

### Y3

**Comment:** Motorized recreationists endorsed and accepted millions of acres of area restriction under the Off-Highway Vehicle Environmental Impact Statement and Proposed Plan Amendment for Montana, North Dakota and South Dakota (3-State OHV) decision (<http://www.mt.blm.gov/ea/ohv/FSROD.pdf>) and the Travel Management; Designated Routes and Areas for Motor Vehicle Use, Final Rule (<http://www.fs.fed.us/recreation/programs/ohv/final.pdf>) as a positive action to control environmental impacts. We accepted area restriction and not area closure. Area closure is permanent. Area restriction allows flexibility as needed to address site-specific conditions. Each motorized road and trail exists because it serves some multiple-use need. Every road and trail is important to some individual for some purpose. Each motorized road and trail must have adequate site-specific analysis to determine all of its values including motorized recreational value. Motorized recreationists gave up 97 percent of the area historically available to them under both the 3-State ROD as the ultimate act of mitigation so that we would continue to have use of existing motorized routes that cover or provide access to an area estimated at less than 3 percent of the total area. Now motorized recreationists have been given almost no credit for our cooperation during that action and we have only been penalized for our past cooperation by a resource management plan that seeks to close 50 percent of the existing motorized routes. This outcome was not part of the 3-State OHV and this level of closure is not acceptable to us for that reason. The 3-State OHV agreements were not made with the intention of massive closures beyond that agreement. We ask that the BLM include proper recognition of the agreement behind the 3-State OHV and allow continued use of the existing networks of motorized roads and trails without massive motorized closures.

**Response:** With some exceptions, prior to the 2003 Statewide Off-Highway Vehicle Record of Decision (ROD), interagency travel management allowed for yearlong cross-country wheeled motorized travel on public lands. Coupled with the dramatic increase of OHV use, advances in OHV technology, and changes in

population/demographics, this relatively unrestricted management led to adverse resource impacts, as well as increased conflict between motorized and non-motorized users. The ROD is a comprehensive response to these concerns. In addition to the initial wheeled OHV cross-country travel restriction, the ROD requires cooperating agencies to identify, prioritize, and conduct site-specific travel plans for their respective resource areas. During site-specific planning, all roads and trails are to be analyzed, and identified as open or closed to various types of use. As a result, some existing roads and trails may not remain available for motorized use. The BLM notes that the Preferred Alternative in the Butte RMP would entail closure of approximately 34 percent of existing routes, rather than 50 percent as mentioned in the comment.

### Y4

**Comment:** We are asking for continued use of routes that are legitimately recognized by the agencies including those defined by the 3-State OHV decision and route definitions (or similar definitions), RS-2477 access laws, all agency mapping including current travel plan mapping and historic and current visitor mapping. It is not fair to represent routes as “unauthorized” or “illegal” when they were created in times when it was appropriate. We would like this point corrected in the final document and appropriate changes made to the historic routes proposed for closure because of this reason.

**Response:** Alternative A represents all existing routes, whether historic, agency created, or user created. None of these routes have been portrayed as unauthorized or illegal in this document, since there was no prohibition against their development. However, unless specifically authorized by the BLM, all user routes known to have been created subsequent to the 2003 Statewide OHV decision are illegal, and as such, were not included as part of the roads and trails inventory.

### Y5

**Comment:** The proposed plan does not create any new OHV routes nor does it create any motorized loops and destinations which are considered very valuable to motorized recreationists. In other words routes are proposed for closure when they could be connected to make OHV loops that would provide much needed public recreation.

**Response:** The BLM believes it has provided for and accommodated motorized loops within travel plans where practicable in the context of balancing the needs for motorized travel opportunities while minimizing resource impacts and providing opportunities for non-motorized users. For example, the Preferred Alternative for the Upper Big Hole River Travel Planning Area provides for an OHV loop that spans a considerable distance on BLM and adjoining Forest Service lands.

**Y6**

**Comment:** The existing level of motorized access and recreation cannot be dismissed because it is only associated with the No Action Alternative. The existing level of motorized access and recreation is a reasonable alternative and an alternative other than No Action must be built around it.

**Response:** Alternative A, the No Action alternative, has been considered in the context of travel planning. While this alternative is not being brought forward by the BLM as the Preferred Alternative, in some geographic sub-areas of the travel planning areas analyzed in the Butte RMP, the Preferred Alternative intentionally matches the No Action alternative. The BLM notes that many changes have occurred since the completion of the last RMP (1984) that require updating travel management. Until the current planning effort, the BLM has never actually conducted its own travel planning and analysis within the five travel planning areas being analyzed within the Butte RMP.

**Y7**

**Comment:** It is not environmentally and socially responsible to squeeze motorized recreationists into the small possible numbers of areas and routes, yet this is the goal being pursued by the Butte RMP. There is also a significant public safety aspect associated with squeezing everyone into a small area as accidents will increase with too many motorized recreationists on too few routes. We request that these significant issues be adequately addressed and corrected in the preferred alternative.

**Response:** The BLM believes the Preferred Alternative provides adequate opportunities for motorized recreation. Given the overall availability of BLM and other interagency routes (USFS), crowding is not generally an issue. However, as with any form of recreation, popular riding areas such as Pipestone and Clancy can become more crowded during holiday weekends, especially during permitted organized events. Riders are encouraged to avoid these areas during peak use. As a basic part of Tread Lightly ethics, all riders are expected to maintain "situational alertness" for other riders and non-motorized users whenever they ride.

The BLM has received no reports of accidents that have occurred as a result of crowding. However, if safety becomes a problem, either on BLM's dual use routes, or at popular designated OHV riding areas, BLM may need to consider more intensive management, or use allocation.

**Y8**

**Comment:** Note that non-motorized recreationists can use routes that are both open and closed to motorized recreationists including roads and the evaluation of the opportunities available to non-motorized recreationists

must be based on the total of all existing roads and trails. Additionally non-motorized recreationists can use an infinite amount of cross-country opportunity and motorized recreationists can not. This detail must be adequately considered in the allocation of recreation resources.

**Response:** Non-motorized recreation uses are among the multiple uses the BLM is expected to provide for public land users. The evaluation of opportunities available for non-motorized use is based on those areas or routes restricted to non-motorized use only, not for roads or trails open to both types of use. While non-motorized users can choose to recreate on motorized roads or trails if they wish, most choose not to, given their recreational preference.

**Y9**

**Comment:** These surveys and data demonstrate the significant popularity of motorized and OHV recreation and the tremendous public support and need for motorized and OHV recreational opportunities. We maintain that motorized recreationists are the main group of visitors out of the total population of visitors to the national forest visiting the forest five or more days per year. The needs and support of motorized recreationists must be adequately addressed in this planning effort by preserving all reasonable existing motorized recreational opportunities. This planning effort must also adequately address the increasing popularity by creating new motorized recreational opportunities. OHV and dual-sport registrations in Montana grew by at least 24 percent from 2004 to 2005 ([http://www.snowtana.com/News/Stories/OHV\\_register.html](http://www.snowtana.com/News/Stories/OHV_register.html)). These numbers demonstrate the immense popularity of OHV recreation. These numbers demonstrate that there are not enough existing motorized recreational opportunities. These numbers demonstrate that the agency's motorized closure trend is contrary to the needs of the public. The magnitude of the number of motorized recreationists is real. The misrepresentation of visitor numbers must be discontinued. Proper emphasis must be given to motorized recreation. Additionally, the agency must understand and accept that many motorized recreationists do not participate in the NEPA process. Therefore, the agency should not be driven by the number of perceived participants and comments received. As originally envisioned and stated in law, the NEPA process should be driven by issues and needs and motorized recreationists have significant issues and needs. Motorized recreationists believe and hope that the BLM as a public agency will look out for their issues and needs in an even-handed way. In other words, the agency must not be overly influenced by the comment writing and legal campaigns of organized non-motorized groups and adequately emphasize the needs of lesser organized and funded motorized recreationists. The current proposal does not meet these needs in a multiple-use area that is ideal for motorize use.

**Response:** There are many surveys and data sources available, such as the National Forest Visitor Use Monitoring Program, that document the popularity and importance of both motorized and non-motorized recreation to the public. The BLM has a commitment to provide for a full range of recreational opportunities, regardless of the level of interest or enthusiasm displayed by any particular interest group. While the number of public comments for a particular issue may be indicative, they are not treated as “votes”. The content of each comment is more important to BLM than the number received for any particular issue.

The BLM believes the Preferred Alternative for travel planning in the Butte RMP represents a balanced travel plan that takes into account resource protection, and the divergent interests of both motorized and non-motorized recreational users.

#### Y10

**Comment:** Given the demonstrated underutilization of existing wilderness areas, we conclude that there are few quiet visitors even though they make a lot of noise at Forest Service meetings. Given that vast areas of our forests have been set aside for the exclusive benefit of this tiny group of quiet visitors, it is not reasonable to set aside more areas and trails for their needs.

**Response:** Non-motorized recreation uses are among the multiple uses the BLM is expected to provide for public land users. Non-motorized recreation represents a significant percentage of use on both BLM and USFS managed wilderness and non-wilderness lands. As such, some areas must be identified for non-motorized users to enjoy their recreational pursuits. However, the BLM does not propose to set aside more areas for non-motorized use with the Butte RMP.

#### Y11

**Comment:** There is a serious inaccuracy between the agency’s representation of motorized versus non-motorized trail use and actual trail use that must be resolved. The routes in the project area are predominantly used by motorized recreationists. We see this actuality every weekend. Site specific trail use observations such as ours must be used and will easily justify motorized use of all existing routes.

**Response:** The BLM did not include any actual trail use data (motorized, non-motorized) in the Butte RMP. However, there are many surveys and data sources available, such as the National Forest Visitor Use Monitoring Program, that document the popularity and importance of both motorized and non-motorized recreation to the public. Although some non-motorized users (such as mountain bikers) do not mind sharing areas or trails with ATVs or motorcycles, most prefer the quiet recreational experience provided under non-motorized management. As such, surveys (or observations) conducted in moto-

rized areas are most likely to record a high percentage of motorized use. BLM observations (professional knowledge, recreation staff, Trail Rangers) indicate a wide range of recreational use activity throughout the project area.

#### Y12

**Comment:** A poll conducted by the Blue Ribbon Coalition [http://www.sharetrails.org/uploads/PL/GMUG/GMUG\\_Survey\\_Key\\_Findings.pdf](http://www.sharetrails.org/uploads/PL/GMUG/GMUG_Survey_Key_Findings.pdf) found that the public widely opposed any further reductions in recreational access to the national forest. “Fully 73 percent of local residents say the Forest Service should not reduce public access on local National Forests. Sportsmen are particularly opposed, as 81 percent of the hunters and 76 percent of the anglers say the Forest Service should not change regulations to reduce access or increase roadless areas.”

**Response:** The BLM has no authority to manage USFS lands. The BLM does, however, provide for interagency route connectivity and flexibility for both current and future USFS travel management plans.

#### Y13

**Comment:** Resource allocation must include access to an equal number of quality recreational opportunities including alpine lakes, rivers, streams, and overlooks. We are not aware of any law that precludes motorized recreationists from enjoying equal access and allocation of the same resources that non-motorized recreationists enjoy. Equal opportunity laws, case law precedents, and agency guidance have clearly established that the goal for the agency should be equal opportunity for all visitor groups. Motorized recreationists should have a reasonable allocation of quality recreational opportunities but they do not under existing conditions and the disparity must not be worsened by the proposed action.

**Response:** The BLM agrees in principle that a full range of quality recreational opportunities should be provided for both motorized and non-motorized recreation users. The BLM believes that the Preferred Alternative would accomplish this goal.

#### Y14

**Comment:** If light use is being used as a criterion to close motorized routes, then it would also seem fair to convert non-motorized trails that see light use to motorized routes in order to address the concern of overusage and shortage of motorized routes. We ask for your consideration of this reasoning.

**Response:** The level of use a motorized route receives is only one criterion among many that has been taken into account during the route management analysis process. Considered with other factors, (resource impacts, human use needs) light use has sometimes helped support a proposal for closure, but has not been used as a

stand alone criterion. Non-motorized recreation uses are among the multiple uses the BLM is expected to provide for public land users. Converting non-motorized trails into motorized trails would not only lead to user conflict as well as undermine resource management goals for the area, such as the establishment of desirable road densities for wildlife.

#### Y15

**Comment:** The planning team should formulate an Alternative that maximizes all existing recreational opportunities, as well as anticipates and plans for an increase in recreational use in the future. None of the Draft Alternatives maximize recreational alternatives and most of them fail to provide adequate recreational opportunity to meet the current need.

**Response:** The BLM believes that the Preferred Alternative, Alternative B, represents a balanced travel plan that takes into account resource protection, while accommodating the divergent interests of recreational users to the greatest extent possible. The Preferred Alternative strives to maximize all types of recreation use, rather than maximizing one type at the expense of another.

#### Y16

**Comment:** The public wants the existing roads and trails left open to vehicle use. The existing network of roads and trails in the planning area should be considered an inventory with which to develop recreational trail systems. The Planning Team should look for management alternatives that provide for mitigation instead of closure. Options other than closure should be emphasized in each alternative. Alternatives, or management guidance, directives etc that require closure as the first or only option when resource impacts are identified should be avoided. The Planning Team should carefully consider displaced use. Assuming that closures are eminent in some areas, one could calculate approximately how much existing motorized will be displaced to other areas. The Planning Team should develop alternatives that allow for additional access and additional recreational opportunities in suitable areas in order to properly manage the displaced use. The Planning Team should avoid overly restrictive management prescriptions that limit the land manager's ability to respond to changing recreational patterns.

**Response:** Public opinion varies widely concerning travel management. Some members of the public want existing roads and trails left open to vehicle use, however, others do not. The existing inventory of roads and trails is represented by Alternative A. However, Alternative A is not being brought forward as the Preferred Alternative. The project team utilized a range of route management options (Open Yearlong, Open/Restricted, Closed, Game Retrieval, etc.) for alternative development. The BLM believes that the Preferred Alternative

(Alternative B) provides a balance of quality recreational opportunities for both motorized and non-motorized recreation users. In addition, the BLM believes the Preferred Alternative also provides adequate dispersion, within their respective areas of use, for both motorized and non-motorized recreation.

#### Y17

**Comment:** Mountain bikes and motorcycle use should be considered compatible uses. Both are mechanized and both prefer a single-track or narrow trail. Additionally, motorcyclists have been keeping single track trails that mountain bikers have recently discovered, open for many years.

**Response:** There is a fundamental difference between motorcycles and mountain bikes. Motorcycles are a form of motorized travel, while mountain bikes are a form of non-motorized, mechanized travel.

In general, the experiences sought by non-motorized users are different from those being sought by motorized users. Many non-motorized users seek as natural and primitive an experience as possible when recreating on public lands. Having clean air and water, seeing wildlife, listening to the sounds of nature, and escaping from the noise of everyday life are essential parts of their experience. As such, some places must be identified for non-motorized users to enjoy their recreational pursuits.

#### Y18

**Comment:** The need for more non-motorized hiking trails has not been demonstrated or documented. Non-motorized hiking trails in the project are not over-used. At the same time there is need for more motorized access and motorized recreational opportunities yet the dominant thinking within the agency is to close motorized roads and trails and increase non-motorized recreational opportunities.

**Response:** Non-motorized recreation uses are among the multiple uses the BLM is expected to provide for public land users. There are many surveys and data sources available, such as the National Forest Visitor Use Monitoring Program, that document the popularity and importance of both motorized and non-motorized recreation to the public. The BLM believes the Preferred Alternative represents a balanced travel plan that takes into account resource protection, and the divergent interests of both motorized and non-motorized recreational users.

#### Y19

**Comment:** We live in this area and accept the economic compromises of living here so that we can access and recreate on our public lands. We are fortunate to have an abundance of public lands and there is no valid reason why we should not have reasonable opportunity to enjoy them. Our local culture is built on the foundation of

access to visit and use these lands. Now travel planning and other initiatives are severely restricting that access and recreational opportunities. We have only one lifetime to enjoy these opportunities and these opportunities are being systematically eliminated. The impacts of lost opportunities on motorized recreationists are significant and irretrievable and irreversible. We won't be living this life again. NEPA requires adequate evaluation and consideration of irretrievable and irreversible impacts. We request that the evaluation and decision making adequately identify and address these impacts. NEPA also requires adequate mitigation of irretrievable and irreversible impacts. We request that the decision-making provide for adequate mitigation to avoid the irretrievable and irreversible impacts of lost opportunities on motorized recreationists.

**Response:** Because of the wide range of public perspectives related to travel management, it is unlikely that everyone will agree on the ideal composition of motorized and non-motorized recreation opportunities. However, the BLM believes the Preferred Alternative provides adequate opportunities for motorized recreation. Potential impacts to motorized users associated with reduced open road miles are neither irretrievable nor irreversible. Closed roads can be re-opened in the future and new roads can certainly be built in the future as well.

#### Y20

**Comment:** Our public lands are a tremendous national resource both in total area and features. Public lands should be available for conflict-free use and enjoyment by everyone. Unfortunately public lands have been turned into a conflict zone by non-motorized fanatics. What is right about this situation? It is a great disservice to the public. We request a management initiative be introduced that will return public lands for the use and enjoyment of everyone for once and for ever.

**Response:** The BLM agrees that public lands should be available for conflict-free use and enjoyment by everyone. That is why in addition to addressing resource impact issues, the BLM has strived to offer a range of recreational opportunities for everyone's enjoyment. We believe the Preferred Alternative in the Butte RMP achieves this goal.

#### Y21

**Comment:** Agencies are encouraged to align non-motorized area boundaries so that they do not encroach or eliminate trails located at the edge of the boundaries.

**Response:** Areas identified for non-motorized management are not established by drawing boundaries on a map. They are established through comprehensive travel planning; that has subsequently led to spatial opportunities for non-motorized use. Likewise, analysis and management of roads and trails adjacent to non-motorized

areas is based on comprehensive travel planning, rather than proximity to non-motorized areas.

#### Y22

**Comment:** Agencies are encouraged to provide for motorized trails and vista points on the boundaries outside of the non-motorized areas so the motorized visitors can view those areas.

**Response:** The BLM believes the Preferred Alternative provides adequate opportunities for motorized users to view these areas.

#### Y23

**Comment:** Agencies should recognize that many roads and trails were not originally laid out with recreation in mind and that changes should be made in some road and trail segments to address environmental and safety problems. In most cases, problems can be mitigated to a reasonable level and closures can be avoided.

**Response:** Site-specific road and trail closures proposals are most often made to achieve a range of resource protection objectives, such as establishing desirable road densities for wildlife, reducing the spread of weeds, preventing soil erosion, stream sedimentation, etc.; and sometimes to help resolve social conflicts. Depending on overall analysis, mitigation measures, water bars, culverts, minor re-routes, etc.; may or may not tip the scales when determining route management. Mitigation is always applicable to roads and trails routes managed as Open Yearlong, or Seasonally Restricted.

#### Y24

**Comment:** Agencies are encouraged to treat hiking, horses, and mountain bikes as a form of transportation, just as motorized recreation is a form of transportation.

**Response:** The BLM considers hiking, horseback riding, and mountain biking as non-motorized forms of travel.

#### Y25

**Comment:** There are several opportunities when working with your local clubs to provide ecological and economically sound trail systems for the OHV community. There is the simple fact of promoting or educating the non-motorized community of the thousands of acres available to them that is non-motorized already.

**Response:** The BLM continues to work closely with local and state motorized recreation organizations. Much of the planning and implementation efforts for the Whittetail Pipestone and Clancy designated OHV Recreation areas were completed with the assistance of these groups. The BLM provides a full range of information (websites, recreation maps, brochures, etc.) that help direct diverse recreation users to areas managed for their respective use.

**Y26**

**Comment:** Most of the, motorized, closures, are being driven, by perceived social issues of the non-motorized community and not resource issues.

**Response:** The majority of motorized closures have been based on resource protection criteria, rather than social issues. Resource protection criteria include: establishing desirable road densities for wildlife, big game winter range, reducing the spread of weeds, preventing soil erosion, stream sedimentation, etc.

**Y27**

**Comment:** Issue 3: The vision is to provide a range of quality motorized and non-motorized opportunities and reasonable access for management while protecting natural resources. This vision is sound but flawed, in that it does not meet the motorized definition of a quality experience. There aren't any motorized trails, designated in the EIS, single track, for motorcycle or ATV. Closing 317 miles of road and trail and other large blocks of land only is not conducive to your vision. We request that the process include a reasonable multiple-use alternative.

**Response:** The BLM recognizes the needs of OHV recreational users. As such, the RMP includes 40.5 miles of quality, designated OHV trails being brought forward under all alternatives. Approximately 30.5 miles of trail are located in the Pipestone designated OHV recreation area, and 9.0 miles in the Ohio Gulch OHV designated recreation area (with an additional 2 miles pending development). Another 2.2 miles of OHV (only) trail has been proposed within Alternative D for the Lewis and Clark County NW TPA. The BLM believes the Preferred Alternative, which provides approximately 66 percent of the existing motorized routes, represents a balance of opportunities for both motorized and non-motorized recreation users.

**Y28**

**Comment:** Issue 4: The vision is to provide a range of quality recreation opportunities. Closures of access to several routes and areas, is not providing a good mixture of quality opportunities.

**Response:** The vision is to provide a range of quality recreation opportunities, for all users, motorized and non-motorized alike. As such, some places must be identified for non-motorized use to allow this rather significant segment of the recreating public to enjoy their recreational pursuits.

**Y29**

**Comment:** There are very few access routes, very few motorized loops, and very few motorized destinations such as mines and overlooks. The level of closure is excessive. A more reasonable approach would be to close selected routes and mitigate by completing loops

and destination routes to create more overall opportunity and a higher quality opportunity. Unfortunately none of the alternatives present this reasonable approach and we request that this deficiency be corrected in the preferred alternative.

**Response:** The BLM believes the Preferred Alternative, which provides approximately 66 percent of the existing motorized routes, represents a balance of opportunities for both motorized and non-motorized recreation users. Approximately 40.5 miles of quality, designated OHV trails are being brought forward under all the action alternatives.

**Y30**

**Comment:** BLM needs to work with private landowners that are closing roads through their lands to public lands. Many roads are being closed arbitrarily and BLM is not doing anything to remedy this when roads are and have been used for over 100 years.

**Response:** The BLM has no control over private roads (privately owned roads located on private land). However BLM works with private property owners to pursue easement agreements as needed to gain agency and public access to important public lands. It is important to note that the BLM has a policy regarding private property owners with land located immediately adjacent to or surrounding BLM land. If a BLM route travels through private land and that private landowner leaves the route open to the public access, the BLM would leave the BLM route open beyond the private property. If a private property owner denies the public access through their private property onto BLM lands, the BLM would close that BLM route to the private landowner.

**Y31**

**Comment:** There are two initiatives that need to be changed: cross country travel and roadless initiatives. There is no evidence that shows motorized use causes permanent damage to wildlife or forest habitat. Signs that say (Do not establish new trails or routes) is all that was needed, instead of no Cross Country travel. This is overkill! The direction of your management is creating the user conflicts. You need to manage the machines, not the people. Manufacturers will adapt their vehicles to the policy or the owners will do so appropriately. These should be horsepower ratings, single track trail, ATV 2 track, and Jeep trail. The noise level standards, (which are not enforced) and perhaps tires with trail friendly treads. The manufacturers are not producing trail friendly machines, because their money is in race machines. Horsepower limits would help in the more primitive and high mountain areas. The motorized users pay trail fees, while no other users do. We are paying for our own closure signs.

**Response:** The effect of roads, motorized trails, and cross-country travel on wildlife and other resources is

well documented in scientific and peer-reviewed literature. The 2003 OHV Statewide ROD, which (generally) prohibits cross-country wheeled motorized travel, recognized and addressed these concerns. BLM management is directed towards decreasing or minimizing user conflicts, such as those that occur between motorized and non-motorized recreation users over competition for space and the pursuit of a quality recreational experience. While technology is part of the equation, effective travel management involves managing human activity, not technology. Currently, the Butte Field Office does not charge user fees at any of its OHV recreation areas.

### Y32

**Comment:** We are concerned about the loss of access and impact on the handicapped, elderly and physically impaired produced by each motorized closure to historic sites and traditional use areas. The proposed closures deny these citizens access to public lands that are especially important to them. We request that all the roads, trails, and features of interest be analyzed for the access and recreation opportunity that they provide for handicapped, elderly, and physically impaired visitors.

**Response:** These concerns were taken into consideration during travel planning analysis. The BLM believes that the Preferred Alternative provides reasonable access to all known important historic sites and destination points. The BLM has conducted numerous public meetings throughout the development of the Butte RMP, during which the public was solicited to review BLM maps and provide feedback regarding missing roads and trails, or comment on specific access needs. As a result, the BLM has added several routes that were inadvertently missed, eliminated others that don't actually exist, and been able to provide more accurate maps. However, the BLM did not receive any site specific information or requests regarding access to important historic sites or destination points.

### Y33

**Comment:** Forest Service and BLM law enforcement has taken the position that OHVs cannot legally ride on forest or BLM roads unless the road is designated dual-use. Cumulative decisions have closed OHV trails to the point that there is not an inter-connecting network of routes. At the same time, the agencies have not designated a functional network of dual-use routes to inter-connect to OHV routes. Dual-use is essential for the family OHV experience. Therefore, these closure decisions are forcing the OHV recreationists to ride non-designated dual-use routes illegally. The proposed action must include these designations in order to provide a network of OHV routes with inter-connections, where required, using dual-use roads in order to be functional. This will allow OHV enthusiasts to operate legally on forest and BLM roads. We request that a system of dual-

purpose roads, and OHV roads and trails that interconnect be one of the primary objectives of the travel management plan and that this objective be adequately addressed in the document and decision. The issue of speed can be adequately and easily addressed by specifying maximum speeds and signing.

The summary dismissal of dual-use designations is neither reasonable nor acceptable per NEPA requirements. Dual-use of routes is a significant issue to us because OHVs cannot use the limited trail system provided by the proposed alternative without traveling on roads. In other words, this part of the proposal alone renders the entire the project area off-limits to OHV use. This outcome is not a reasonable solution for a travel plan and we request that the issue and need be adequately addressed and a revised proposal developed.

**Response:** BLM roads are not classified as public roads, but rather as Administrative roads, and do not require street legal OHVs. Riders less than 18 years of age, however, are still required to wear an approved helmet. Unless otherwise designated (Open Yearlong, Seasonally Restricted, etc.) all BLM roads are open to dual use. This negates the need for a revised travel management proposal suggested in the comment. Should traffic volumes or user conflicts become prevalent and warrant restrictions, then priority would be given to vehicles legally registered to travel on public highways (See Field Office Level - Management Common to All Alternatives in the Travel Management and Access section of Chapter 2 in the RMP).

The BLM has no jurisdiction over USFS roads, but recommends that all motorized users license and equip their vehicles for street legal use, so as to allow for travel on USFS roads or other public roads managed as open to dual use. BLM cooperates with all adjacent land management agencies (especially the USFS) in order to accommodate interagency route and trail connectivity.

### Y34

**Comment:** No dual-use designations means that family oriented OHV recreation in the area will be eliminated. Family OHV recreation is extremely important to us and the southern area of the project provides an ideal setting for family use with fairly easy routes located away from busy traffic areas and vista points. We request that dual-use or unrestricted width trail designation be used for all of the motorized routes except single-track trails. Without the dual-use designation, the proposed action would transform family OHV trips from a healthy family oriented recreation to an illegal activity. This is not a reasonable nor acceptable outcome. The continual closure of motorized trails has forced OHVs to be operated on BLM and forest roads in order to provide a reasonable system of routes and to reach destinations of interest. The lack of dual-use designations on BLM and forest roads then makes OHV use on these routes illegal. The cumulative negative effect of motorized closures and

then combined with the lack of a reasonable system of roads and trails with dual-use designation have not been adequately considered in past evaluations and decision-making. We request that all reasonable routes be designated for dual-use so that a system of roads and trails can be used by motorized recreationists. Additionally, we request that the cumulative negative effect of all past decisions that have adequately considered dual-use designations be evaluated and considered in the decision-making and that this project include an adequate mitigation plan to compensate for inadequate consideration in the past.

**Response:** BLM roads are not classified as public roads, but rather as Administrative roads, and do not require street legal OHVs. Riders less than 18 years of age, however, are still required to wear an approved helmet. Unless otherwise designated, all BLM roads are open to dual use, subject to existing route management (Open Yearlong, Seasonally Restricted, etc.). Should traffic volumes or user conflicts become prevalent and warrant restrictions, then priority would be given to vehicles legally registered to travel on public highways (See Field Office Level - Management Common to All Alternatives in the Travel Management and Access section of Chapter 2 in the RMP).

The BLM has no jurisdiction over USFS roads, but recommends that all motorized users license and equip their vehicles for street legal use, so as to allow for travel on USFS roads or other public roads managed as open to dual use. BLM cooperates with all adjacent land management agencies (especially the USFS) in order to accommodate interagency route and trail connectivity.

The BLM does not agree that OHV trail width should be unrestricted. BLM has adopted the 50" trail width restriction on designated OHV trails, consistent with the USFS. (Wording has been added to this effect in the Travel Management and Access section of Chapter 2 under Field Office Level – Management Common to All Alternatives). All OHV trails located within the planning area have been constructed to this national standard, including all ATV cattleguards. BLM recognizes that OHV manufacturers are producing utility transport vehicles (UTVs) that exceed 50" in width; however these vehicles will be restricted to BLM roads only.

**Y35**

**Comment:** Figure 2.2 and 2.7 on page 14 of Chapter 2 in the 3-State OHV EIS and Decision clearly shows that existing tracks used by motorcycles are to be considered as motorized trails (<http://www.mt.blm.gov/ea/ohv/Chapter2.pdf>). The evaluation did not adequately consider these routes and is in violation of the 3-State OHV agreement.

**Response:** A comprehensive roads and trails inventory was completed that documented all established roads and trails, including single track trails in existence prior to the 2003 Statewide OHV ROD. This inventory did

not yield any motorized single track trails. While the BLM has received several mapping comments regarding "missing" ATV routes, we have received no such comments regarding motorized single track trails.

**Y36**

**Comment:** Motorcycle trail riders enjoy riding single-track trails. Motorized single-track recreation trails are limited at this time and continue to decline. Some BLM and FS districts do not differentiate between ATV and motorcycle trails in their travel plans. Evaluations and travel plans should differentiate between ATV and motorcycle trails. It is critical to preserve the integrity of the existing motorized single-track trails. Single-track trails offer a highly desirable experience for trail bike riders, equestrians, hikers, and bicyclists. They offer a different, more primitive experience than ATV trails or forest roads.

**Response:** The BLM agrees that (motorized) single track trails are important and need to be managed as such in order to preserve their integrity. The Pipestone designated OHV recreation area provides approximately 5 miles of quality single track only trails, many of which continue onto adjacent USFS managed lands.

**Y37**

**Comment:** The evaluation needs to distinguish the difference in trail requirements and impacts between ATVs and motorcycles and use that difference to justify keeping more single track trails open to motorcycles.

**Response:** The evaluation took into account the differences between trail requirements and resource impacts associated with ATV trails (50" maximum width, dual track) and motorized single track trails (single track only). No changes, either closures or additions, have been proposed for motorized single track trails. The roads and trails inventory conducted for the travel plans analyzed with the Butte RMP did not yield any motorized single track trails other than those authorized in pre-existing travel management plans.

**Y38**

**Comment:** We have observed that single-track motorcycle trails require less maintenance for erosion and use. We have also observed that ATV enthusiasts do a good job of clearing downed trees from trails. These characteristics must be adequately considered. Single-track trails that are not appropriate for ATV use should be kept open for motorcycle use.

**Response:** The BLM's motorized single track trails are managed as open to single track use only.

**Y39**

**Comment:** Shared use trails are not something your agency should be shying away from. This is public land

and is to be shared by all. As basic as this may sound, the fact is that all users must learn that their type of recreation is not the only recreation on this public land and they must share.

**Response:** The BLM is not mandated to provide for every possible use on every possible acre (or trail), but instead for a variety of recreation opportunities as appropriate across the landscape. Conflict between motorized and non-motorized users has been one of the most frequent and major issues of concern addressed during public scoping meetings and written comments for this RMP. As such, some places must be identified for non-motorized use to allow this segment of the recreating public to enjoy their recreational pursuits. While most motorized users do not mind sharing the same space (trail, area) with non-motorized users, the reverse is not usually true. In addition to their preferred means of travel (horse, foot, mountain bike, x-country skis, etc.), many non-motorized users are also seeking a quiet, more primitive recreational experience. By its very nature, motorized use is not quiet. While many non-motorized users would not choose to do so, some, such as mountain bike riders, or joggers, have no problem sharing trails with motorized users.

#### Y40

**Comment:** A reasonable alternative instead of all motorized closures is a sharing of resources. A reasonable alternative for accomplishing this can be done by designating alternating weeks for motorized and non-motorized use. The schedule can be communicated to the public by signs at each end of the trail segments, newspaper articles, and through local user groups. This alternative eliminates any reasonable concern about conflict of users (which we think is over-stated and over-emphasized based on reasons discussed elsewhere in this submittal).

**Response:** Although the commenter's suggestion would help mitigate concerns based on user conflict, the BLM believes it would be too complicated for the public as well as too labor intensive and difficult for the BLM to manage and enforce. Also, this alternative would not address other reasons why roads were identified for closure including reducing habitat fragmentation, reducing disturbance to wildlife, increasing security habitat, protecting habitat for listed and sensitive species, improving watershed and riparian functions, improving aquatic habitats and reducing the spread of noxious weeds.

#### Y41

**Comment:** If you truly have to separate the uses and you must "provide" the non-motorized community these large blocks of unique experiences then maybe it is time to provide the motorized community with their unique opportunities without the conflict of different uses.

**Response:** The primary reason for providing separate areas of use for motorized and non-motorized users is to avoid or minimize user conflict, and provide for a quality recreation experience. In addition to their preferred mode of travel (horse, foot, mountain bike, x-country skis, etc.), many non-motorized users are also seeking a quiet recreational experience. By its very nature, motorized use is not quiet. While most motorized users do not mind sharing the same space (trail, area) with non-motorized users, the reverse is often not true.

#### Y42

**Comment:** I feel that for every OHV trail that is closed (not including the boondock recent user-created trails) there should be a new one created for our use.

**Response:** None of the action alternatives propose maintaining the current level of roads and trails for the various reasons described in the document (reducing resource impacts, road density, establishing a balance between motorized/non-motorized recreation opportunities). However, subject to NEPA and other constraints, BLM can consider site-specific proposals for new OHV trails in areas acceptable for that use.

#### Y43

**Comment:** We need game retrieval during certain hours of the day on some of these closed areas.

**Response:** The BLM believes that the alternative for the five site-specific travel plan areas addressed in the RMP provide for a range of access opportunities (including access for hunters) while protecting natural resources. The needs of hunters, including game retrieval, were taken into consideration during travel planning in each of the five site specific travel plan areas.

#### Y44

**Comment:** The level of [road] closure is excessive. It closes 317.5 miles of roads and creates 317.5 miles of new non-motorized routes. This level of closure is excessive. A more reasonable approach would be to close selected routes and mitigate by completing loops and destination routes to create more overall opportunity and a higher quality opportunity. Unfortunately, none of the alternatives present this reasonable approach. I would request that this deficiency be corrected in the preferred alternative.

**Response:** The BLM is required to develop travel plans in a manner that provides for balance between motorized use opportunities while minimizing impacts to resources such as wildlife, water quality, and soils. The BLM believes the Butte RMP provides a range of reasonable alternatives that take into account resource protection, and motorized and non-motorized recreational opportunities.

**Y45**

**Comment:** The proposed plan does not include any ATV routes and, therefore, does not rationally address the needs of the OHV recreationists described above. It is unbelievable that the needs of 29,000 OHV recreationists in the area and 290,000 OHV recreationists in the state and thousands of visitors would be totally ignored. We request that the process include a reasonable multiple-use alternative.

**Response:** The BLM recognizes the needs of OHV recreational users. As such, the RMP includes 40.5 miles of existing designated OHV trails that are being brought forward under all alternatives. Approximately 30.5 miles of these trails are located in the Pipestone designated OHV recreation area, and 9.0 miles are located in the Ohio Gulch OHV designated recreation area (with an additional 2 miles pending development). Another 2.2 miles of OHV (only) trail have been proposed within Alternative D for the Lewis and Clark County NW TPA.

**Y46**

**Comment:** We need a multiple-use alternative that is based on ALL of the existing roads and trails available to the public. The process is required by NEPA to be neutral and a neutral process would include fair presentation of all reasonable alternatives including all existing roads and trails plus new motorized opportunities required to meet the needs of the public. Why isn't this reasonable alternative being presented? We are concerned that the process is manipulating the public to believe that an entirely reasonable alternative based on existing roads and trails cannot be considered. Again, the process is predisposed towards motorized closures right from the start. This is not acceptable.

**Response:** A comprehensive roads and trails inventory was completed that documented all established roads and trails that existed prior to the 2003 Statewide OHV ROD. Throughout the Butte RMP process the BLM has received public input regarding routes that were inadvertently missed, or routes that don't really exist, and map corrections have been made accordingly. The BLM believes the Preferred Alternative represents a balanced travel plan that takes into account resource protection, and the divergent interests of motorized and non-motorized recreational users.

**Y47**

**Comment:** I ask you to review other areas to see if you can open more than one area [for general motorized use by handicapped persons]. One specific area is the Iron Mask Mine property.

**Response:** Due to the land ownership patterns of BLM lands in the Butte Field Office, it is difficult for the BLM to identify large contiguous blocks of land for motorized use by handicapped persons. Site-specific travel planning for the Iron Mask area will be conducted

after finalization of the RMP. At that time, Iron Mask can be considered for motorized use by handicapped persons.

**Y48**

**Comment:** There is no significant impact from the level of dispersed motorcycle trail use in the project area. There is no legitimate or documented conflict of uses between motorcyclists and other uses on single-track trails in the project area. Note that it is not reasonable to define user conflict as merely seeing someone else on a trail. There is a significant need for an adequate number of miles of single-track for existing and future motorcyclists. There is no legitimate reason why the single-track trails in the multiple-use areas of the project should not be shared between motorized and non-motorized recreationists to a much greater extent. This reasonable alternative must be included.

**Response:** Within the Butte Field Office, there are very few single-track routes or routes identified for non-motorized use only within areas designated as "Limited" for travel. The vast majority of routes provide for different types and multiple uses of the routes.

**Y49**

**Comment:** The draft Butte RMP lacks a true "pro-recreation" alternative that adequately addresses motorized recreation. All of the alternatives developed for consideration represent a significant reduction in routes available for motorized use. Not one alternative even sustains the current opportunity. Conversely, the draft RMP has developed many "preservation" alternatives, where a maximum amount of closures are considered. The increasing demand for OHV recreation opportunities on public lands is extensively documented. Therefore, it is incumbent upon the project team to formulate at least one alternative that maximizes motorized recreation, or at least does not reduce motorized recreational opportunities in the planning area.

Therefore, we request that the project team formulate a wide range of alternatives including at least one Alternative that maximizes motorized recreational opportunities in the project area and addresses the following:

- The project team must formulate at least one alternative that emphasizes OHV use in Roaded Natural and Semi-Primitive Motorized opportunity settings for recreation. The pro-recreation alternative should strive to provide for the current and future demand for OHV recreational routes.
- Alternatives should include areas where OHV trails can be constructed and maintained when demand increases.
- Where appropriate, the agency should use this process to analyze the impacts of any future route construction and include those in the decision.

- Direction for the required process to construct new routes should be incorporated into each alternative.
- At least one alternative should maximize the ability to construct new sustainable trails to meet the current and future need.
- The project team should develop management alternatives that allow for proactive OHV management.
- All alternatives should include specific provisions to mark, map, and maintain designated roads, trails, and areas in cooperation with OHV users.
- All alternatives should include direction to engage in cooperative management with OHV groups and individuals.

A reasonable alternative that must be adequately addressed is the existing level of motorized recreational opportunities plus mitigation projects to protect the environment from existing problem areas, mitigation for past motorized closure cumulative effects, and enhancement for growth. The proposed plan does not accomplish this reasonable goal. A reasonable alternative would manage the area for the public instead of from the public and include OHV routes.

**Response:** The BLM believes that the action alternatives described in the Butte RMP for the five site-specific travel planning areas represent a range of access opportunities for a variety of public land users while reducing the impacts to natural resources. Alternative A represents the current availability of motorized travel routes. Through the travel planning process, all routes within each of the five site-specific travel plan areas were identified, mapped, and analyzed to determine their effects on wildlife and wildlife habitats, fish and aquatic habitats, soils and riparian areas. Through the travel plan process, alternatives were developed that reduce habitat fragmentation, reduce disturbance to wildlife, increase security habitat, protect or improve habitat for listed and sensitive species, improve watershed and riparian functions, improve aquatic habitats and reduce the spread of noxious weeds while providing for reasonable public access for motorized and non-motorized uses.

As identified in the Travel Management and Access section of Chapter 2 in the RMP, designated routes would be mapped and signed.

Site-specific analysis will be conducted when new trails are proposed for construction or modification.

#### Y50

**Comment:** National studies have shown the average age of the hunting population is going up. Limited ability of older hunters reflects a definitive need for additional multiple use access. The Butte RMP does not address this issue adequately and CBU requests that an alternative that would increase multiple use trails be provided for the public to comment on. An ageing population

nationwide and the dramatic increase of motorized use of our federally managed public land must be addressed in travel planning decisions. To not provide an alternative that increases motorized opportunities would be acting arbitrary and capricious by your agency.

**Response:** The BLM believes that the alternatives described in the RMP for the five site-specific travel planning areas represent a range of opportunities for different types of public land users. The travel planning process, as described in **Appendix A**, provides for a comprehensive analysis of each road and trail segment and assures that decisions on road and trails are not made in an arbitrary and capricious manner. The routes proposed to be designated as open to motorized travel in the Preferred Alternative are intended to provide reasonable public access.

### Travel Management – Mitigation/ Maintenance/ Closure Methods

#### Z1

**Comment:** A sense of magnitude must be used when making decisions about road closures based on indicators such as sediment production. For example, a route should not be closed because it is estimated to produce 10 cubic yards less sediment. The sediment yield must be compared to naturally occurring conditions which includes fires. The recent fires in the Butte and Helena areas discharged thousands of cubic yards of sediment to the area streams which is more than all of the motorized routes in the project area for the next 100 years.

**Response:** The locations, severities, and magnitudes of impacts from natural events such as wildland fires are not highly predictable and therefore often cannot be accurately depicted. This makes it impossible to credibly describe site-specific sedimentation impacts from motorized uses in the context of natural events. Generalized effects of natural events are discussed in the Cumulative Effects sections for each resource in the Environmental Consequences of Five Site-Specific Travel Plans section of Chapter 4 (Volume II of the RMP). In addition, the BLM cannot control effects of natural events. BLM can better control effects of human activities. Assessing the effects of human activities is the essence of analyzing effects of the BLM's proposed management activities and such assessments lead to various management decisions.

#### Z2

**Comment:** With respect to the comment that there is not enough money to mitigate problems, we can work with the BLM as partners in many different grant applications. Also see our comment in the attachment in regards to the significant levels of funding that are generated by motorized recreationists and would be available if the agency would pursue them and the system was working to distribute them equitably. Basically OHV

recreationists generate a significant amount OHV gas tax. These monies should be used to maintain routes, develop routes, conduct education, and mitigate issues but, unfortunately, it is being diverted elsewhere. This significant issue must be addressed.

**Response:** This RMP does not contain any statements regarding lack of funding for mitigating problems associated with travel planning. The majority of travel management funding for this office has been spent on OHV trail development, trailhead facilities, trail maintenance, and management (Trail Ranger program). In addition to agency funds, the BLM has successfully acquired funding from Montana OHV Program Trail Ranger grants for nearly a decade. To date, very few BLM funds have been spent on non-motorized trail systems or facilities.

BLM has no control over state distribution of OHV gas tax funds, or grants.

### Z3

**Comment:** The environmental document should accurately address the significant negative impacts associated with disturbing existing stable roadways in order to obliterate the existing roadbed. A reasonable alternative would be to reclassify the road to either restricted-width or unrestricted-width motorized trail. We request that the preferred alternative make practical use of this management tool and the benefits that it provides including reduced sedimentation impact, reduced fisheries impact, reduced noxious weed impact, much less construction cost, reduced road inventory, reduced road maintenance and increased opportunities for motorized recreationists. Reclassifying roadways to restricted- or unrestricted-width motorized trail also avoids contributing to cumulative negative impacts on motorized recreationists.

**Response:** A range of best management practices will be utilized to obliterate those routes identified for decommissioning. In most cases, only site-specific portions of routes will be obliterated (such as at stream crossings, or other problematic areas), rather than disturbing the entire road bed.

Converting closed roads to motorized OHV use defeats the purpose of the closures, such as establishing desirable road densities for wildlife, or establishing a balance between motorized and non-motorized recreation. It can be argued that substituting OHV motorized use for full size motorized use will actually lead to a much higher level of use, and negate any differences in resource impacts.

### Z4

**Comment:** Motorized recreationists have historically provided a significant amount of maintenance in order to keep routes open as part of their normal use. Now because of the significant number of motorized closures, the level of maintenance has been significantly reduced. We know of many motorized routes that are now closed

and have become impassable to non-motorized recreationists because of the lack of user provided maintenance.

**Response:** The BLM has not received any complaints or comments from non-motorized users regarding lack of maintenance for closed roads or OHV trails.

### Z5

**Comment:** We request that maintenance actions be taken before closure actions. We believe that this is a viable alternative that would address many of the issues that are driving the pre-determined decision to closure. OHV recreation generates significant gas tax revenue that could be tapped for this purpose. For more background on this issue please refer to our comments on gas tax and funding.

**Response:** Route and trail closures are not pre-determined decisions. They are made through interdisciplinary team analysis, and are made in order to achieve a range of resource protection objectives, such as establishing desirable road densities for wildlife, reducing the spread of noxious weeds, preventing soil erosion, stream sedimentation, etc. In addition to preventing or minimizing resource impacts, some road and trail closures are established to provide a balance between motorized and non-motorized recreation opportunities. While road and trail closures can help reduce maintenance workloads, they have not been proposed for this reason.

### Z6

**Comment:** The lack of money to maintain OHV routes is being used as a reason to close OHV routes and at the same time Recreational Trails Program (RTP) and gas tax money paid by OHV recreationists is not being returned to OHV recreation. There is also unused motorized RTP money available each year. Additionally, the lack of money is used as a reason that new OHV routes cannot be constructed. Motorized recreationists are willing to work in collaboration with the agency to obtain trail and OHV funding for the project area. Additionally, motorized recreationists can be called upon to help with the maintenance of trails in the project area.

**Solution:** The BLM and Forest Service must aggressively pursue and make use of all available forms of OHV trail funding including RTP, and a more equitable return of the gas tax paid by OHV recreationists.

**Response:** Lack of funding has not been cited in the Butte RMP as a reason for closing OHV routes, or for not constructing new OHV routes. Site-specific road and trail closures proposals have been made to achieve a range of resource protection objectives such as establishing desirable road densities for wildlife, reducing the spread of weeds, preventing soil erosion, stream sedimentation, etc. In addition to preventing or minimizing resource impacts, some road and trail closures have been

made to help establish a balance between motorized and non-motorized recreation opportunities.

The BLM has no control over state distribution of Recreational Trails Program (RTP) grants. This office has successfully applied for Montana OHV Program Trail Ranger Grants for nearly a decade, and in conjunction with BLM funding, has developed over 40 miles of quality designated OHV trails and facilities.

#### Z7

**Comment:** The lack of funding is often used as an excuse to avoid addressing problems associated with OHV recreation when in reality there is more than adequate funding. This is another example of the absence of a rational connection between the facts found and the choice made. Furthermore, the diversion of gas tax paid by OHV recreationists to other programs has contributed to many of the problems facing motorized recreationists. We request the evaluation of the impact and cumulative negative impacts that have resulted from the diversion of gas tax paid by OHV recreationists to other programs including impacts associated with reduced OHV safety, education, mitigation, and development programs. Additionally, we request that an adequate mitigation plan be included as part of this action to compensate for past cumulative negative impacts.

**Response:** The Butte RMP does not contain any statements regarding lack of funding for OHV recreation. To date, the majority of travel management funding for this office has been spent on OHV trail development, trail-head facilities, trail maintenance, and management (Trail Ranger program). In addition to agency funds, BLM has successfully applied for Montana OHV Program Trail Ranger Grants for nearly a decade. BLM has no control over state distribution of OHV gas tax funds or grants.

The BLM recognizes the cumulative effects of inter-agency wide travel plans on motorized use, but believes the Preferred Alternative provides OHV users with a range of quality opportunities.

#### Z8

**Comment:** There are cases where OHV gas tax funding has been used to improve a non-motorized trail. There are also cases where OHV gas tax money has been used to improve a trail and then that trail has been closed to motorized use. The use of OHV gas tax funding for non-motorized recreation is improper. We request that these cases be identified and that they be corrected by replacing motorized recreational opportunities that have been closed with new motorized recreational opportunities of equal recreational value.

**Response:** The BLM has not used Montana State OHV grant funds to construct or improve non-motorized trails, nor improve a motorized trail, and then later close it. There have been instances, however, during which illegal or unauthorized motorized trails have been closed (or

decommissioned) during travel plan implementation. In many cases, trails identified for closure have required soil erosion (rolling dips, water bars, etc.) or reclamation in order to prevent recurring damage. This work is consistent with travel plan implementation actions, and not a violation of grant funding.

#### Z9

**Comment:** The magnitude of gas tax paid by OHV recreationists is significant. There is no method for direct return of the federal excise tax to OHV recreationists. Therefore, most of the federal excise tax paid by OHV recreationists on gasoline ends up being used for other programs and not for OHV programs. We request that revisions be made to state and federal programs in order to return to OHV recreationists the full amount of gas tax paid by OHV recreationists in the form of funding specifically earmarked for enhanced and expanded OHV Programs. We request that corrective actions (an adequate mitigation plan) be taken to address to return all past and current off-road gas tax monies to OHV recreationists.

**Response:** Revisions to state and federal programs to return gas taxes paid by OHV recreationists is outside the scope of the Butte RMP. The BLM does not control distribution or redistribution of gas tax monies.

#### Z10

**Comment:** If more trails are needed for non-motorized use, they can be established without closing established roads. If a specific conflict is identified, work on solving it without closing a number of roads. In addition, if there is a specific environmental issue or problem with a specific segment of road or motorized trail, it should be identified, a reasonable solution identified and then implemented for that specific area.

**Response:** The BLM agrees with the comment in principle. However, in most cases, site-specific road and trail closures are made to achieve a range of resource protection objectives, such as establishing desirable road densities for wildlife, reducing the spread of weeds, preventing soil erosion, stream sedimentation, etc; not necessarily to help establish additional non-motorized recreation opportunities. Mitigation is an important tool, but depending on the desired outcome, it is not always applicable.

#### Z11

**Comment:** How does the BLM intend to enforce road closures? Gates and signs to signify road closure is often less than effective (USFWS 1993; Zager and Jonkel 1983). However, permanent barriers such as closely set posts combined with secure fencing, or use of natural features such as large boulders that allow passage of stock or foot travel but prohibit the passage of motorized vehicles are a more effective method for decommis-

sioned roads. AWL would also suggest increased policing of decommissioned closed areas.

**Response:** A range of methods will be employed to effect road closures, including the use of natural materials as described in the comment. Methods that allow access for hikers, horseback riders, and mountain bike riders are taken into consideration, as well as set backs to allow for adequate parking, or camping.

**Z12**

**Comment:** We ask that trails being rerouted not be closed until the reroute is complete so that the public can continue to use the much needed motorized recreational opportunity.

**Response:** As a general rule, the BLM avoids or minimizes road and trail closures whenever possible during project work. However, there may be occasions when closure is necessary to ensure public safety, or prevent continuing resource damage.

**Z13**

**Comment:** Identify any reroutes that are part of the travel plan proposal because the reroutes are often of lesser quality and the reduction in quality needs to be mitigated.

**Response:** The Preferred Alternative incorporates several general provisions (but no current specific proposals) for implementing re-routes. These provisions include: avoidance of cultural sites, providing access around private property, and mitigating resource damage caused by short, site-specific sections of roads or trails.

**Travel Management – Resource Impacts**

**AA1**

**Comment:** We support restrictions on motorized uses in wilderness study areas to protect wildlife and the quality of non-motorized recreational uses in these areas. We are pleased that the draft RMP/EIS indicates that WSAs would be closed to motorized travel except Black Sage and the southern portion of the Humbug Spires, which is limited to established routes (page 461). We also recommend that motorized trails or routes created by cross-country travel in such areas be restored (ripped, scarified and revegetated) with closures policed and enforced.

**Response:** When user created trails are located within Wilderness Study Areas or other areas of the Butte Field Office, the BLM will determine the best course of action for closing these unauthorized routes.

**AA2**

**Comment:** A study of National Park elk habituated to human activity and not hunted were more sensitive to

persons afoot than vehicles (Shultz, R.D. and James A. Bailey “Responses of National Park Elk to Human Activity”, *Journal of Wildlife Management*, v42, 1975). Therefore, hikers disturb elk more than motor vehicles and “disturbance of wildlife” should not be used as a reason to justify motorized recreation and access closures. Additionally, when there are concerns with wildlife disturbance, restrictions on hikers should be given a greater emphasis than restrictions on motorized visitors.

**Response:** The BLM realizes that even though a few studies did not find negative effects to deer or other big game species from motorized uses, the overwhelming preponderance of literature does document the negative impacts to many different wildlife species from roads. It is also important to remember that disturbance to wildlife is only one factor the BLM took into consideration during travel planning.

The literature referenced by the comment described that there may have been two different subpopulations of elk in eastern Rocky Mountain National Park arriving in the study area in October. The late arriving elk may have been those summering highest in the park where human contact is less frequent or they may have been elk exposed to hunting outside of the park. Wildlife can become habituated to human activity when the activity is controlled, predictable, and not harmful to the animal. Because late arriving elk had not been habituated to humans or had experienced harassment by hunting, these animals naturally were more easily disturbed by human encounters than the resident elk. Elk in this study also were subjected to spotlighting by humans on foot. It was suggested that recently arrived elk were more sensitive to spotlighting but gradually adapted to human activity and shining as the season progressed. Although elk were found to be more sensitive to approaching humans on foot than to vehicle traffic, the results were not found to be statistically significant.

**AA3**

**Comment:** The wildlife sections of many travel plan documents tend to promote two underlying themes; (1) wildlife and forest visitors cannot coexist, and (2) there are significant negative impacts to wildlife from visitors to the forest. Observations of wildlife in Yellowstone and Glacier National Parks and the 600 deer that live within the Helena city limits combined with common sense tell us that wildlife can flourish with millions of visitors and motorized vehicles.

**Response:** The BLM does believe that wildlife and forest visitors can coexist. The challenge the BLM faces is identifying the appropriate places for certain activities, such as motorized use, while providing suitable habitat for a multitude of wildlife species, including special status species. In order to successfully manage BLM lands for many different types of activities, the BLM must recognize the impacts to wildlife and wildlife habitat from those activities, including motorized recreation.

The influence of roads on wildlife is well documented in the literature. The Wildlife sections in Chapter 4 of the RMP provide references on the effects to wildlife from roads.

National Parks are managed to protect wildlife and for the enjoyment of the public. National Parks tend to have extremely low road densities and the majority of visitors to National Parks stay on roads or at major attractions. Wildlife, such as deer, elk and bison, can habituate to human activity when the activity is controlled, predictable, and not harmful to the animal. Unlike National Parks, BLM lands do not have predicted or controlled use. Because hunting is allowed on BLM lands, big game and other game species often have a negative association with humans in these areas. BLM lands have higher road densities than National Parks which results in the public having more access to BLM lands. More access results in less predictable use of an area as well as a potential increase in harassment to wildlife.

#### AA4

**Comment:** Road density criteria must be used with reasonable judgment and consider the mitigating effects that an adjacent block of roadless area has on a roaded area that exceeds the desired road density. Oftentimes these areas that exceed the ideal density are very valuable multiple-use motorized areas and border on large roadless areas that provide more than adequate wildlife security thereby effectively mitigating the impacts associated with the roaded area.

**Response:** For some resources, such as big game winter range, wildlife habitat use does not match boundaries of unroaded areas such that wildlife is able to persist by using only the available habitat in unroaded areas. Therefore, it becomes appropriate or necessary for the BLM to reduce road densities in some roaded areas to provide for such resources. This may be done seasonally, as is often the case with big game winter range seasonal road closures, or on a more permanent basis with yearlong road closures.

#### AA5

**Comment:** Road density does not equal motorized trail density. Motorized trails have less impact than roads and this condition must be recognized.

**Response:** Achieving desirable road density levels helps reduce impacts (disturbances) to wildlife by providing non-motorized buffer areas for big game calving, winter range, etc. The BLM agrees that motorized trails often result in lower levels of direct resource impacts (soil erosion, stream sedimentation, etc.) than full-size roads. However in the context of disturbance to wildlife, there may be no difference in impacts between motorized trails and full-size roads. Additionally, in many cases it can be argued that motorized trail use oftentimes exceeds casual use on full-size roads.

#### AA6

**Comment:** Environmental impacts are not unreasonable under the current conditions but environmental impacts will become unreasonable given the agency's current direction to close as many motorized recreational opportunities as possible and that divide will be crossed soon. Therefore, agency management actions are ultimately creating significant unnecessary negative impacts on both the natural and human environment. We are concerned that this unstated goal or policy is not in the best interest of protecting the natural or human environment and ask that goals and policies be modified to allow the public continued use of all reasonable access and recreational opportunities on all multiple-use lands.

**Response:** The BLM disagrees that the Preferred Alternative represents unnecessary negative impacts on both the natural and human environment. Many changes have occurred since the completion of the last RMP (1984) that have led to increased resource impacts and changes to the human environment. The BLM has a responsibility to re-evaluate the affected environment in light of these changes. The BLM believes the Preferred Alternative overall represents a balanced travel plan that takes into account resource protection, and the divergent interests of motorized and non-motorized recreational users.

#### AA7

**Comment:** Non-motorized recreationists traveling cross-country produce similar impacts to cross-country motorcycle travel, i.e. impact on weeds, foot prints, and disturbance of wildlife. Therefore, any areas closed to cross-country motorcycle travel should also be closed to non-motorized cross-country use.

**Response:** Non-motorized cross country travel creates significantly less resource impacts than motorized travel cross-country travel. This is clearly reflected in the 2003 Statewide OHV ROD, which (unless otherwise managed) prohibits all motorized wheeled cross country travel.

#### AA8

**Comment:** Past analyses of the affected environment and environmental consequences have failed to adequately recognize that resources such as fisheries, wildlife, and sediment production are affected far more by nature than by motorized visitors. Relative impact associated with natural events including floods and wildfires is thousands of times greater than impacts associated with timber harvests and OHV recreation, yet proposed action involving timber harvests and OHV recreation are considered to have unacceptable impacts. Drought has a significant impact on fisheries, OHV recreation does not compare. Erosion and other activities of interest such as the spread of noxious weeds occur naturally and at significant rates. Floods, fires, drought, and wildlife diseases have historically created significantly greater impacts

than motorized visitors have. For example, cutthroat trout have never needed to be relocated because of motorized recreation and motorized recreation has never caused a sediment yield anywhere close to 19 tons per acre which both occurred following the Derby fire in 2006

([http://www.helenair.com/articles/2006/11/07/montana/a07110706\\_02.prt](http://www.helenair.com/articles/2006/11/07/montana/a07110706_02.prt)).

**Response:** The BLM agrees that natural events such as earthquakes, floods, wind, etc., can have significant impacts on the environment, both adverse and positive. While the BLM cannot manage or prevent natural events from occurring, it can and must manage human related activity, including motorized use.

#### AA9

**Comment:** The preferred alternative would allow cross-country snowmobile use and travel on all existing routes during the season of use (December 2 - May 15), snow conditions permitting (page 50). Snowmobile use is increasing, and we believe it would be appropriate to include restrictions on snowmobile use where and when such use adversely affects important wildlife habitat, such as grizzly bear and wolverine denning and foraging habitat, and other non-motorized recreational uses. Snowmobile effects on wildlife should be more fully evaluated and if use or timing restrictions are needed to protect wildlife and their habitat additional snowmobile restrictions should be developed. We favor the proposed Alternative C direction that would restrict snowmobile use to designated routes (page 50), rather than use of the unrestricted cross-country snowmobile use allowed in Alternative B.

**Response:** Of the five site-specific travel plans analyzed in the EIS, the Lewis and Clark County NW Travel Planning Area was the only one within the distribution of grizzly bear. The effects to grizzly bear from snowmobile use were identified during travel planning and both Alternatives B and C would restrict snowmobile use to designated routes during the season of use. This restriction would also provide protection to wolverines and their associated habitats.

The effects to wildlife from snowmobile use were analyzed for each of the five site specific travel plan areas and the BLM believes a reasonable range of alternatives was developed.

#### AA10

**Comment:** The impact of OHV recreation on wildlife has been overstated by the agency and wildlife biologists. First, wildlife populations are at all time high (<http://www.mtstandard.com/articles/2005/11/30/outdoors/hjjeijgjcfejb.txt>) at the same time when OHV use is increasing. If there is any impact to be identified, it appears that it should be that the positive impact associated with increasing OHV use and increasing wildlife

populations. Secondly, OHV use does not kill wildlife. Wildlife coexists just fine with OHVs. This was recently confirmed again by a study in Yellowstone Park which found that “Most elk, bison, and trumpeter swans barely reacted last winter to the presence of snow coaches and snowmobiles in Yellowstone National Park, according to a study released Tuesday. Scientists watched more than 2,100 interactions between over-snow vehicles and wildlife last year to try to determine how they responded. Of those, 81percent of the animals had no apparent response or they looked and then resumed what they were doing, the study said.” ([http://www.helenair.com/articles/2005/12/14/montana/a10121405\\_04.prt](http://www.helenair.com/articles/2005/12/14/montana/a10121405_04.prt) and <http://www.nps.gov/yell/technical/planning/winteruse/plan/reports/winterrec05.pdf>).

**Response:** The BLM was not able to find all the articles referenced by the comment and the BLM is unsure which wildlife species the comment is referring to with the statement “wildlife populations are at all time high.”

The BLM acknowledges the article by the Billings Gazette (12/14/05) referenced by the commenter that looked at the interaction between snow coaches and snowmobiles with elk and bison. The BLM located the peer reviewed article in Ecological Applications volume 16(5) 2006 (Behavior Responses of Bison and Elk in Yellowstone to Snowmobile and Snow Coaches). The study focused on elk and bison and only dealt with over the snow travel, not OHV use. This study found that the frequency and intensity of movement responses by bison and elk were small compared to numerous other studies that reported substantially higher degrees of avoidance to snowmobiles by bison, moose, mule deer, and white-tailed deer. For example, a study in Prince Albert National Park in Canada found that 51 percent of bison fled an area due to human presence. The Yellowstone study also reported that the comparatively less frequent and lower intensity responses of bison and elk in Yellowstone suggest that these animals have habituated to snow coaches and snowmobiles. Wildlife can become habituated to human activity when the activity is controlled, predictable, and not harmful to the animal. Unlike BLM lands, snowmobiles in Yellowstone follow the same routes, do not go off designated routes, and are in less of a position to harass elk and bison. Since only a small percent of Yellowstone is roaded and used by snowmobiles and/or snow coaches, wildlife habitat in the park is dominated by secure, high quality habitat. The use of guides in 2004 provided increased protection against harassment of wildlife in Yellowstone.

In many areas throughout the Butte Field Office, snowmobile use has been allowed off designated trails and use is not predictable or controlled. Thus, the impacts to wildlife species on BLM lands would be expected to be more in line with other studies that found higher degrees of avoidance and flight from an area due to snowmobile use.

**AA11**

**Comment:** A study of mule deer found that 80 percent fled in reaction to encounters with persons afoot while only 24 percent fled due to encounters with snowmobiles (David J. Freddy, Whitcomb M. Bronaugh, Martin C. Fowler, “Responses of Mule Deer to Persons Afoot and Snowmobiles”, *Wildlife Society Bulletin*, 1986). A study of the heart rate of elk found that humans walking between 20 to 300 meters from the elk caused them to flee immediately 41 percent of the time while an OHV passing within 15 to 400 meters of the elk caused them to flee 8 percent of the time (Ward, A. L., and J. J. Cupal. 1976. Telemetered heart rate of three elk as affected by activity and human disturbance. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. Laramie, WY. 9 pp.). Therefore, hikers disturb deer more than motor vehicles and “disturbance of wildlife” should not be used as a reason to justify motorized recreation and access closures. Additionally, when there are concerns with wildlife disturbance, restrictions on hikers should be given a greater emphasis than restrictions on motorized visitors.

**Response:** The BLM is aware of the referenced literature and realizes that even though some studies did not find negative effects to deer or other big game species from motorized uses, the overwhelming preponderance of literature does document the negative impacts to many different wildlife species from roads. The BLM also notes that disturbance to wildlife is only one of a number of factors considered during travel planning.

The BLM considered the type and amount of wildlife habitat lost or fragmented due to roads, the introduction of noxious weeds (which reduces the amount of suitable habitat) from roads, loss of connectivity and mortality to wildlife from collision. **Appendix A** in the RMP describes the process used for travel management.

**AA12**

**Comment:** A lynx study completed in the Seeley Lake area found no adverse impact to Lynx from winter snowmobile use. The results of this study and the data that was collected must be used in evaluating areas open or closed to snowmobiles. The closure of any area because of winter motorized impact to lynx is not valid and, therefore, must not be used to initiate closures.

**Response:** Lynx habitat was only one factor considered during travel planning. **Appendix A** of the RMP discusses the process used during travel planning. No roads were recommended for closure based solely on lynx habitat and the alternatives found in the five site-specific travel plan areas provide a full range of open, closed and seasonally restricted roads.

**AA13**

**Comment:** Wildlife can and do effectively coexist with motorized visitors in even the most heavily visited plac-

es. Therefore, concerns with motorized forest visitors and wildlife are often over-stated and over-emphasized which unfortunately demonstrates a predisposition in the process. The wildlife/visitor interaction in national parks demonstrates that the manner in which visitors coexist with wildlife is the most significant factor in the interaction between wildlife and visitors. The manner in which visitors coexist with wildlife in national forest can be shaped by adequate use of mitigation measures including seasonal closures, educational programs, and trail rangers. Therefore, reasonable alternatives to the closure of motorized roads and trails exist and can be used to address wildlife concerns. We request that these sorts of reasonable alternatives to closure of roads and trails to motorized visitors be adequately considered and incorporated into the preferred alternative. The road density criteria is not valid because hundreds of deer in Helena and elk in the Montanan City area exist just fine with road densities far in excess of the targets for the project area. Obviously there are other factors that have a far greater influence on deer and elk populations and the analysis must uncover and use those.

**Response:** The BLM believes that the different alternatives as described in the Activity Level Planning for Five High Priority Travel Planning Areas section of Chapter 2 provide a suitable range of closed, open, and seasonally restricted roads.

BLM offices, including the Butte Field Office provide educational brochures to the public on how to ride OHVs responsibly and ethically. The website <http://www.treadlightly.org> also provides information on safety, riding etiquette, and ethics for motorized recreation. The Butte Field Office had two trail rangers on staff during the summer of 2007. Although the BLM expects to have trail rangers in the future, funding of these positions is dependant upon the BLM’s budget.

Road density has been found to be a significant indicator of the effects to wildlife species. The influence of relatively high open road densities is well documented in the literature for grizzly bear, wolf, elk, wolverine, sage grouse, as well as other wildlife species. The Wildlife Section and the Environmental Consequences of Five Site-Specific Travel Plans (Wildlife) in Chapter 4 of the RMP provides references on the effects of roads on wildlife.

**AA14**

**Comment:** The Northern Continental Divide Ecosystem (NCDE), outside of Glacier National Park, has grizzly bear population densities of about one bear per 20-30 square miles and has human recreation consisting of motorized access, motorized recreation, hiking, fishing, camping, horseback riding, and big game hunting. Glacier National Park annually receives approximately 2-3 million visitors, does not allow hunting, and has grizzly bear population densities estimated at about one bear per 8 square miles. The Yellowstone Ecosystem

(YE) which is comprised of Yellowstone Park and surrounding National Forests, receives more visitation than Glacier Park and has an increasing grizzly bear population estimated at one bear per 30-50 square miles (<http://www.r6.fws.gov/endspp/grizzly/bittereis/deischp2.htm>). All indications are that grizzly bear habitat is fully occupied and that additional road closures and obliteration will not produce any more bears and, therefore, motorized closures are not reasonable or productive. Therefore, grizzly bears can coexist at reasonable population densities with multiple-use recreation and there is no compelling reason to close roads and trails to motorized recreationists to increase grizzly populations because the most significant constraint is their need for so many acres between other grizzly bears.

**Response:** The Yellowstone population of the grizzly bear has been removed from the Endangered Species list. However, the BLM still considers grizzly bears in this ecosystem to be “sensitive.” The BLM will continue to apply the appropriate level of protection to those bears based on peer reviewed scientific literature, recommendations of the U.S. Fish and Wildlife Service and the Grizzly Bear Management Plan for Southwest Montana (2002).

Grizzly bears in the Northern Continental Divide Ecosystem are still listed as “threatened” under the Endangered Species Act and the BLM will continue to coordinate with the U.S. Fish and Wildlife Service as well as Montana Fish, Wildlife and Parks on how to adequately protect bears in this area.

The influence of open roads on grizzly bear is well documented in the literature. In developing alternatives for the Butte RMP, the BLM used peer reviewed scientific studies along with recommendations from the U.S. Fish and Wildlife Service and Montana Fish, Wildlife and Parks. In the Grizzly Bear Management Plan for Southwest Montana (2002), Montana Fish, Wildlife and Parks identifies preferred road densities in grizzly bear habitat as 1 mi/mi<sup>2</sup> or less.

#### AA15

**Comment:** The number of hunters is declining (U.S. Fish and Wildlife Service, 1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. [http://library.fws.gov/nat\\_survey\\_1996.pdf](http://library.fws.gov/nat_survey_1996.pdf) and <http://www.cbsnews.com/stories/2007/09/03/national/printable3228893.shtml>). Therefore, there are no compelling reasons “to elevate the level of elk security in the project area and...enhance elk populations” as frequently suggested by wildlife biologists (example; Fish, Wildlife and Parks letter dated February 27, 2002 to Helena National Forest on the Clancy- Unionville Travel Planning Project, bottom of page 9). Additionally, there are no compelling reasons to justify reduced road densities as a sought-after or necessary wildlife management criterion. Lastly, there are reasonable alternatives including permit hunting and seasonal travel restrictions that

can better accomplish the outcome sought by reduced road and trail densities. NEPA requires consideration and implementation of all reasonable alternatives. Not considering and implementing reasonable alternatives demonstrates a predisposition in the process.

**Response:** BLM is responsible for management of wildlife habitat to provide for stable and self-sustaining wildlife populations for both game and non-game species. Montana Fish, Wildlife and Parks is responsible for the management of game populations. The BLM and Montana Fish, Wildlife and Parks are concerned with the amount of big game security habitat throughout the Butte Field Office to manage for future populations of elk, to distribute elk throughout different areas and to provide for a diversity of hunting experiences. The Montana Statewide Elk Management Plan (2004) (available at <http://fwp.mt.gov>) identifies population objectives as well as habitat objectives (including security habitat) by Elk Management Unit. The BLM will continue to work with Montana Fish Wildlife and Parks during site specific projects to help move toward these goals. The Travel Management and Access section (Management Common to Action Alternatives) of Chapter 2 in the Butte RMP identifies that the BLM will continue to coordinate travel restrictions with Montana Fish, Wildlife and Parks to provide adequate access to meet the harvest goals that they set.

There are many compelling reasons to reduce road densities across the landscape. The influence of high open road densities is well documented in the literature for grizzly bear, wolf, elk, wolverine, sage grouse, as well as other wildlife species. Fragmentation of habitats, avoidance of habitat that would be suitable if not for roads, loss of security habitat, disturbance, and mortality due to collision are all factors that influence how roads influence wildlife and wildlife use of habitats. Noxious weeds are often introduced into areas from motorized travel, causing a serious decline in the quantity and quality of wildlife habitat. The Wildlife Section and the Environmental Consequences of Five Site-Specific Travel Plans Section (Wildlife) sections in Chapter 4 of the RMP provide references of the effects from road density to wildlife.

The BLM believes that the different alternatives as described in the Activity Level Planning for Five High Priority Travel Planning Areas section of Chapter 2 provide a suitable range of closed, open, and seasonally restricted roads.

#### AA16

**Comment:** A recent Grizzly Bear study in the Swan Valley of Montana found that 99 percent of the bears spent 99 percent of their time on Plum Creek property. This property has been heavily logged resulting in undergrowth plant species that support bears. Thick and overgrown timber does not allow for adequate undergrowth. As we now see by this study, critical bear habi-

that is quite different than what was once assumed and this new information must be incorporated into this evaluation. The Forest Service should discard the original “road density guidelines” and develop new guidelines that reflect the habitat most critical for bears as one that is timber harvested and roaded. Old outdated science formulated by assumptions should not be used when true science and actual data is now available.

**Response:** The BLM is not aware of the study referenced by the comment and was not able to locate the study. The BLM is aware of a study on habitat use by grizzly bears in the Swan Mountains from 1997. This study still emphasized the need for roadless core areas for grizzly bears as well as reducing traffic volume.

The effects of open roads to grizzly bears are well documented in the literature. The BLM will continue to use peer reviewed scientific literature, recommendations by the U.S. Fish and Wildlife Service as well as the Grizzly Bear Management Plan for Southwest Montana (2002) to determine how to appropriately manage road densities for the grizzly bear.

#### AA17

**Comment:** Wildlife populations are at all time highs. Wildlife has consistently been given higher priority over motorized recreational opportunities for the past 30 years. This priority has led to significant cumulative effects on motorized recreationists which must now be addressed and mitigated. The project must seek a more reasonable balance of multiple-use and motorized recreation opportunities and a lesser, yet reasonable, priority for wildlife management.

**Response:** One of the reasons that travel planning is necessary is to look at how roads affect many different resources including; soils, vegetation (including vegetation management), wildlife, and fish and aquatic habitats. Another critical need for travel management is to address access for recreation that includes access for both motorized and non-motorized users. **Appendix A** describes the process and criteria used during travel planning. Travel planning in the Butte Field Office began in 1995 with the Elkhorn Travel Plan. The cumulative effects of travel management and access are described in the Environmental Consequences of Five Site-Specific Travel Plans (Cumulative Effects of Travel Management and Access) section in Chapter 4 of the Draft and Final EIS.

The BLM believes that the different alternatives as described in the Activity Level Planning for Five High Priority Travel Planning Areas section of Chapter 2 provide a reasonable range of closed, open, and seasonally restricted roads.

#### AA18

**Comment:** Our observations over decades of trail riding have established that significant wildlife mortality

does not result from OHV activity. We are not aware of any reports of large animals such as deer, elk, or bear being hit or injured by OHV activity. Additionally, it is extremely rare for OHVs to injure any small animals such as squirrels or chipmunks. We request that wildlife mortality from OHV activity be considered minor and that wildlife mortality not be used as a reason to close roads and trails to OHV visitors. OHV use and wildlife can and do coexist. We do not see any evidence in the field that would indicate that summer motorized recreation use is a significant wildlife problem. We support motorized closures where necessary to protect wildlife during the spring calving season and hunting season while maintaining a reasonable level of access during those periods.

**Response:** **Appendix A** of the RMP explains the process used during travel planning. The BLM considered many factors when addressing the effects to wildlife from roads. Although road kill is discussed in Chapter 4 of the RMP under Wildlife (Effects Common to All Alternatives) as well as in Environmental Consequences of Five Site-Specific Travel Plans (Wildlife) sections, this factor was not used when recommending roads for closures during the travel planning process (**Appendix A**).

The influence of roads on wildlife is well documented in the literature. As identified in **Appendix A**, travel planning considered specific factors when developing different alternatives for the EIS. Although the effects to summer habitat was not specifically used during travel planning, many other factors that influence wildlife and wildlife habitats were. These included fragmentation of habitat, connectivity, winter range, calving habitat, habitat for special status species and noxious weeds. The BLM believes that the different alternatives as described in the Activity Level Planning for Five High Priority Travel Planning Areas section of Chapter 2 provide a reasonable range of closed, open, and seasonally restricted roads.

#### AA19

**Comment:** The current analysis does not adequately consider grizzly bear delisting under the Reasonably Foreseeable actions. This action is imminent. At the same time there is so much emphasis on the management of the area and region as a non-motorized area for grizzly bears. First, we do not feel that OHV recreation has a significant effect on grizzly bears and, secondly, the analysis must be based on the impending delisting of grizzly bears. Other pended delisting of endangered species must also be considered.

**Response:** The Butte Field Office is located within two separate ecosystems that provide habitat for the grizzly bear, the Yellowstone Ecosystem and the Northern Continental Divide Ecosystem. Grizzly bears in the Yellowstone Ecosystem were de-listed in March, 2007, but are still considered a BLM sensitive species. As outlined in

Chapter 3 (Special Status Species) of the RMP, the BLM manages less than 1 percent of habitat for the grizzly bear in the Yellowstone Ecosystem. The BLM will continue to apply the appropriate level of protection to those bears based on peer reviewed scientific literature, recommendations of the U.S. Fish and Wildlife Service and the Grizzly Bear Management Plan for Southwest Montana (2002).

Grizzly bears in the Northern Continental Divide Ecosystem are still listed as “threatened” under the Endangered Species Act. The BLM manages roughly 3 percent of grizzly bear habitat in the Northern Continental Divide Ecosystem. The negative impacts to grizzly bear from roads are well documented in the literature. Chapter 4 of the RMP in the Environmental Consequences of Five Site-Specific Travel Plans (Lewis and Clark County NW TPA, Wildlife) section discusses the effects to grizzly bear from roads. The BLM will continue to coordinate with the U.S. Fish and Wildlife Service as well as Montana Fish, Wildlife and Parks on how to adequately protect bears in this area.

The influence of open roads on grizzly bears is well documented in the literature. In developing alternatives for the Butte RMP, the BLM used peer reviewed scientific studies along with recommendations from the U.S. Fish and Wildlife Service and Montana Fish, Wildlife and Parks. In the Grizzly Bear Management Plan for Southwest Montana (2002), Montana Fish, Wildlife and Parks identifies preferred road densities in grizzly bear habitat as 1 mi/mi<sup>2</sup> or less.

Species that become de-listed from the Endangered Species Act (such as the bald eagle) will still be considered BLM sensitive species and subject to special management as long as they are on the BLM’s sensitive species list.

#### AA20

**Comment:** Route management that would most benefit wildlife and habitat is embodied in Alternative C (p. 47, Table 2-6) but the table does not reflect a maximum density of motorized routes even within Alternative C.

**Response:** Table 2-6 provides the miles of all roads across the Field Office, including those areas with completed travel plans (Sleeping Giant, Clancy-Unionville, Elkhorn Mountains and Whitetail-Pipestone), site-specific travel plan areas analyzed under the EIS (Helena, East Helena, Lewis and Clark, Boulder-Jefferson and the Upper Big Hole River) and those areas that will have travel planning at a later time (Missouri River, Jefferson County SE, Broadwater County South and Park-Gallatin). Alternative C only displays differences in miles from the other alternatives based on road closures in the five site-specific travel plans analyzed under the EIS. It may seem that Alternative C in Table 2-6 doesn’t reflect the lowest density of motorized routes. However, when the five site-specific travel plans are compared,

Alternative C does have the lowest density of motorized routes.

Tables 2-9 through 2-13 display the differences between alternatives for each of the five site-specific travel planning areas.

#### AA21

**Comment:** Snowmobiling: From a wildlife perspective (subnivean, sensitive wide-ranging carnivores, or big game wintering) Alternative C would result in less snow compaction over a broad area being managed primarily through designated routes: 69.7 percent compared to 44.5 percent for Alternative B and 43.5 percent for Alternative D. (p. 49,126). However, we would support a melding of the provision from Alternative C, designated routes only areas, into Alternative B.

**Response:** The BLM believes that a reasonable range of alternatives has been developed to address issues associated with snowmobiling. Alternative B would reduce snowmobiling-related effects to wildlife compared to the current condition under Alternative A.

#### AA22

**Comment:** For both motorized and snowmobile routes Alternatives B and D would increase routes and create new loop routes, while Alternative C would have no new road or trail construction. Please consider that research indicates that loop routes are not in the best interest of wildlife habitat and security and their construction is to be avoided (Christensen et al 1993).

**Response:** Future travel planning efforts under both Alternatives B and D could allow some new routes, including loop routes. Analyses for site-specific travel plans, or modifications of existing travel plans would address the effects of new routes, as well as the cumulative effects of existing and proposed road densities on wildlife. The impact from loop routes would be analyzed during site-specific analysis.

#### AA23

**Comment:** There is no documentation or data to support closure of any motorized routes in the project area to improve wildlife connectivity. The existing level of roads and trails does not significantly impact wildlife connectivity, i.e. it functions as such with the existing level of roads and trails, and closing any roads or trails to motorized use would not make any measurable difference. Connectivity is another concept being promoted by extreme green groups such as the Wildlands Project to further their agenda to close all land to the public. Additionally, non-motorized routes would have the same impact on wildlife connectivity as motorized routes and the evaluation must recognize this fact.

**Response:** Connectivity of habitats was only one factor considered during travel planning. **Appendix A** de-

scribes the process and criteria used during travel planning in the five site-specific areas. The influence of open road density on grizzly bear, wolverine, elk, and sage grouse, and wildlife in general, are well-documented in the literature. Avoidance of otherwise suitable habitat, habitat fragmentation, mortality from collisions, increased disturbance, and loss of security habitat are all factors that effect how roads influence the use of an area by wildlife as well as the quality of habitat connectivity across the landscape. A target of one mile of open road per square mile or less has long been used for evaluating habitat effectiveness for elk and grizzly bear, and is routinely used by Montana Fish, Wildlife and Parks, U.S. Forest Service, U.S. Fish and Wildlife Service and the BLM.

#### AA24

**Comment:** It is noteworthy that four of the five BLM site-specific travel plan implementation decisions occur with in the Helena Resource Area of MFWP, because they received the most urgent priority. For all of these areas, a decision of “limited” area designations is encouraged. However, route densities must also be minimized to retain functional wildlife habitat and linkage qualities. Recently adopted travel management in the BLM Clancy-Unionville (Sheep Mountain) (up to 5 miles of routes per square mile in some areas) and Whittail-Pipestone areas, allows for trail densities that are far more dense than what the “limited” designation for these areas would at first lead one to believe.

Habitat effectiveness for wildlife is diminished to 50 percent in areas where route densities approach 2.0 miles per square mile of land (Christensen et al. 1993). Limited designations should in fact “limit” motorized travel to a level that does not severely constrain wildlife usage. It is recommended that 1.5 miles per square mile of land be an upper limit of route density in areas designated as “Limited” (as called for in Alternative C) and where seasonal habitats such as big game winter ranges and grizzly linkage areas occur, management should be at the level of 1.0 (or less) mile per square mile of land as called for in Alternative B and where possible as low as 0.5 as in Alternative C. (p. 44,121)

**Response:** All five of the site specific travel plan areas in the RMP have “limited” area designations. Under the “limited” designation, motorized use would only be allowed on designated roads and trails unless specific areas of off-road use are designated (no off-road use was identified for the five site-specific travel plan areas). This category of use does not provide guidance on how many miles of roads and trails should remain open within an area. Site specific travel planning is the process to determine road use and density.

The BLM is aware of how roads impact habitat effectiveness for wildlife and took this into consideration during travel planning. Tables 4-62, 4-72, 4-81, 4-83, and 4-92 display road densities in elk winter range for

the five travel plan areas by alternative. Although the action alternatives display a range of conditions, all action alternatives would substantially reduce road densities in elk winter range compared to the existing condition. Nearly all action alternatives would reduce open road densities in elk winter range to less than 1 mi/mi<sup>2</sup>. For winter range, the Preferred Alternative would provide for open road densities of 1 mi/mi<sup>2</sup> or less in the five travel plan areas.

Of the five site-specific travel plan areas, occupied grizzly bear habitat is found only in the Lewis and Clark County NW Travel Plan Area. As with winter range, the action alternatives would substantially reduce road densities in grizzly bear habitat compared to the existing condition and the majority of action alternatives would result in road densities less than 1 mi/mi<sup>2</sup>. The Preferred Alternative would result in an open road density in grizzly bear habitat of 0.8 mi/mi<sup>2</sup>.

#### AA25

**Comment:** The estimated reduced annual volume of sediment production attributed to proposed motorized closures versus the annual volume of runoff is an actual reduction in sediment production on the order of 10 or less parts per million. This level of predicted sediment reduction should not be considered significant especially when compared to the baseline sediment production and natural events discussed above. This level of predicted reduction in sediment production should not be used as the basis for motorized closures.

**Response:** The Draft RMP/EIS did not provide any specific sediment production data as related to motorized closures relative to annual volume from runoff. In proposing motorized route closures within the five site-specific travel plans addressed in the Butte RMP, sedimentation was one of several factors considered based on site-specific knowledge and professional judgment of planning team members, as well as mapping of erosion potential for each travel planning area.

#### AA26

**Comment:** The Forest Service Stream Systems Technology Center has found, in a paper published in the July 2000 issue of Stream Notes, that roads and trails can easily be hydrologically disconnected from streams. Therefore, the sedimentation concerns can be easily mitigated and should not be used as a reason to justify motorized recreation and access closures except in exceptional cases that cannot be adequately mitigated.

**Response:** Site-specific Best Management Practices (BMPs) would be implemented to minimize sedimentation from motorized travel, to the extent possible. Site-specific soil impact assessments and BMPs to reduce erosion would reflect local site characteristics and engineering considerations. The findings of the study cited by the comment apply to roads with a particular configu-

ration. Roads in the Butte RMP decision area have a wide range of configurations, some of which may promote sedimentation that cannot be easily addressed. For example, sedimentation from native surface roads on fine-textured soils, with steep gradients, that are out-sloped, and are in close proximity to streams may be very difficult to address. Such conditions must be assessed on a site-specific basis with recommended management being a result from site-specific assessments.

**AA27**

**Comment:** Roads and motorized vehicles are a major source of weed seed dispersion. Motorized vehicles – cars, trucks, ATVs, motorcycles, and even snowmobiles – are a great vector for spread of weeds. Weed seeds are often caught on the vehicle undercarriage in mud and released on public lands. A single vehicle driven several feet through a knapweed site can acquire up to 2,000 seeds, 200 of which may still be attached after 10 miles of driving (Montana Knapweeds: Identification, Biology and Management, MSU Extension Service).

An effective noxious weed control program must include restrictions on motorized uses, particularly off-road uses. Off-road vehicles are designed to travel off-trail, disturbing soil, creating weed seedbeds, and dispersing seeds widely. Weed seed dispersal from non-motorized travel is of lesser concern because of fewer places to collect/transport seed, and the dispersal rate and distances along trails with non-motorized travel are less. Restrictions on motorized uses may also be needed after burning and harvest activities until native vegetation is reestablished in the disturbed areas to reduce potential for weed infestation of the disturbed sites.

It is particularly important to avoid motorized travel in remaining roadless areas, since roadless areas are often reservoirs of native plants, and limitations on motorized travel in such areas can protect such areas from weed invasion and avoid the subsequent need to treat weeds.

**Response:** Roads and other sites that concentrate human and animal activity receive priority evaluation and treatment for weeds. The travel planning areas addressed in the RMP and existing travel plans have put some restrictions on motorized uses which will limit weed seed and weed plant part spread, by motorized vehicles, into difficult to treat areas.

In accordance with the 2003 Statewide Off Highway Vehicle Environmental Impact Statement, under a “limited” designation all cross-country motorized wheeled travel is prohibited unless otherwise authorized. In the absence of other existing travel plan direction, all motorized wheeled travel is restricted to existing roads and trails with some exceptions. Motorized travel is not allowed in roadless areas that have been designated as Wilderness Study Areas.

**AA28**

**Comment:** Roads and motorized vehicles are a major source of weed seed dispersion. Motorized vehicles – cars, trucks, ATVs, motorcycles, and even snowmobiles – are a great vector for spread of weeds. Weed seeds are often caught on the vehicle undercarriage in mud and released on public lands. A single vehicle driven several feet through a knapweed site can acquire up to 2,000 seeds, 200 of which may still be attached after 10 miles of driving (Montana Knapweeds: Identification, Biology and Management, MSU Extension Service).

An effective noxious weed control program must include restrictions on motorized uses, particularly off-road uses. Off-road vehicles are designed to travel off-trail, disturbing soil, creating weed seedbeds, and dispersing seeds widely. Weed seed dispersal from non-motorized travel is of lesser concern because of fewer places to collect/transport seed, and the dispersal rate and distances along trails with non-motorized travel are less. Restrictions on motorized uses may also be needed after burning and harvest activities until native vegetation is reestablished in the disturbed areas to reduce potential for weed infestation of the disturbed sites.

It is particularly important to avoid motorized travel in remaining roadless areas, since roadless areas are often reservoirs of native plants, and limitations on motorized travel in such areas can protect such areas from weed invasion and avoid the subsequent need to treat weeds.

**Response:** Proposed management of the five travel plan areas addressed in the RMP should help to limit weed dispersal and spread by motorized vehicles in addition to the existing travel plan management plans already in place. In accordance with the 2003 Statewide Off Highway Vehicle Environmental Impact Statement, under a “limited” designation all cross-country motorized wheeled travel is prohibited unless otherwise authorized. In the absence of other existing travel plan direction, all motorized wheeled travel is restricted to existing roads and trails with some exceptions. Motorized travel is not allowed in roadless areas that have been designated as Wilderness Study Areas.

**AA29**

**Comment:** Management of public lands to maximize wild game populations at the expense of other uses is not reasonable and does not meet the requirements of multiple-use laws and policies. We support hunting but we question why hunting’s impact on wildlife is acceptable and non-destructive viewing by motorized visitors is not acceptable. We are concerned that public lands that were designated for multiple-use management are not being managed for multiple-use as required under:

1. The Multiple Use Sustained Yield Act of 1960 (16 USC. 528 et seq.) defined Multiple-Use as “The management of all the various renewable surface resources of the national forests so that they are utilized

in the combination that will best meet the needs of the American people...". Outdoor recreation is the first stated purpose of the act.

2. Public Law 88-657 states that "the Congress hereby finds and declares that the construction and maintenance of an adequate system of roads and trails within and near the national forests and other lands administered by the Forest Service is essential if increasing demands for timber, recreation, and other uses of such lands are to be met; that the existence of such a system would have the effect, among other things, of increasing the value of timber and other resources tributary to such roads; and that such a system is essential to enable the Secretary of Agriculture (hereinafter called the Secretary) to provide for intensive use, protection, development, and management of these lands under principles of multiple use and sustained yield of products and services".

3. The Federal Land Policy and Management Act of 1976 (FLPMA) states that "(7) goals and objectives be established by law as guidelines for public land use planning, and that management be on the basis of multiple use and sustained yield unless otherwise specified by law; and, (c) In the development and revision of land use plans, the Secretary shall -- (1) use and observe the principles of multiple use and sustained yield set forth in this and other applicable law;"

4. The BLM Strategic Plan FY 2000 to 2005 states that: "To achieve this mission, the Bureau of Land Management follows these principles: Manage natural resources for multiple use and long-term value, recognizing that the mix of permitted and allowable uses will vary from area to area and over time."

We request careful consideration of the multiple-use needs of the public and implementation of the objectives of multiple-use laws and policies as part of the proposed action.

**Response:** If the BLM were to propose alternatives that maximize wild game populations as suggested by the comment, there would be considerably more road closures proposed than are currently proposed with any alternative in the Butte RMP. The BLM believes that both hunting and motorized uses are acceptable on BLM lands. The BLM believes it has provided viable travel plan alternatives in the Butte RMP that meet the Multiple Use Sustained Yield Act, FLPMA, and the BLM Strategic Plan. The direction mentioned in bullet #2 of the comment does not apply to the BLM.

#### AA30

**Comment:** Pursuing environmental perfectionism is not an equitable goal for management of public lands. "The pursuit of perfectionism often impedes improvement" (George F. Will). The unyielding pursuit of environmental perfection could ultimately lead to radical changes in

environmental laws and reduced public support for protection of the environment. Additionally, the expectation of a static environment is unnatural. Ecosystems have been changing since the beginning of time and they should be expected to continue to change and adapt at both micro and global levels. We are equally concerned about protection of the environment but we request the pursuit of a reasonable and practical course of action, which will do more to protect the environment in the long-term. We request that the impacts associated with the pursuit of environmental perfectionism on the human environment be evaluated and that the cumulative negative impact of environmental perfectionism on the human environment be adequately considered.

**Response:** The Butte RMP does not strive or provide for environmental perfectionism. Problems such as wildland fuels buildup and changing vegetation communities due to long-term fire suppression, changing public demands for resource uses and resource protection, provide much of the rationale for the Butte RMP revision. The BLM has developed a range of alternatives designed to address these circumstances with various resource use and resource impact tradeoffs associated with each alternative.

#### AA31

**Comment:** Improve management direction to address water quality degradation associated with roads/motorized uses. We are concerned about impacts of roads and motorized uses on watersheds, water quality, fisheries, soil integrity, wildlife habitat and security, as well as native plants, and ecosystem functions. The draft RMP/EIS lacks information on the condition of existing roads. This is important since the draft RMP/EIS states that road maintenance is the most frequently listed cause for water quality impairment in the Planning Area. The RMP/EIS should disclose road drainage/BMP conditions on the existing BLM road network, particularly roads that may have poor drainage or erosive conditions that may be contributing to water quality and fisheries impacts, and roads which fragment and adversely impact important wildlife habitat, and identify roads which cannot be adequately maintained within agency budgets and capabilities. We also believe the RMP should include a commitment to reduce the road maintenance backlog. Travel management direction should assure that road impacts to water quality, fisheries and wildlife will be mitigated.

**Response:** During site-specific analysis, erosive soils, excessive grades, and poor drainage are factors that are considered in determining whether a road should be open, closed, or re-routed. These factors are also considered in land health standard assessments during monitoring where subsequent adaptive management principles would be applied to correct problems.

**AA32**

**Comment:** Consider additional road closures and road removal in the preferred alternative, particularly closure and restoration of user created roads. We believe roads which cannot be properly maintained should be considered for closure, with natural landscapes and drainages restored (i.e., culverts removed). We recommend that roads that impact water quality and fisheries and sensitive and listed wildlife species, and roads within wilderness study areas be prioritized for closure and obliteration to maximize ecological benefits.

**Response:** Through the travel planning process, all routes within each of the five site-specific travel plan areas, including user created routes, were identified, mapped and analyzed to determine their effects on wildlife and wildlife habitats, fish and aquatic habitats, soils and riparian areas. Erosion, sedimentation, and impacts to water quality were considered in the route-specific proposals made for each travel plan alternative. Under the Preferred Alternative, a considerable mileage of routes is proposed for closure or decommissioning, including routes that contribute to reduced water quality. The BLM believes that overall the Preferred Alternative strikes the best balance between providing motorized access and reducing road-related impacts to water quality.

**AA33**

**Comment:** Devote additional attention in the final RMP/EIS to the issue of policing and enforcement of motorized vehicle access restrictions. Public recreational access and demand has increased significantly in recent years due to motorized vehicles such as trail bikes, off-road vehicles (ORVs), all terrain vehicles (ATVs), and snowmobiles that can access areas much further into isolated public lands than they could historically. Motorized uses push wildlife onto smaller and smaller patches of habitat; reducing migration corridors; increasing adverse effects to wildlife habitat and security; causing soil erosion and adverse effects to water quality and aquatic habitat and fisheries; and spreading weeds. Demand for recreation opportunities on public land may be exceeding the capability of the land and resources to provide recreation in a manner that is consistent with resource and ecosystem protection. Information about illegal motorized off-road uses within the BFO area, and the ability of the BLM to police and enforce restrictions on motorized uses is lacking in the draft RMP/EIS. The BLM should develop and fund an effective enforcement strategy, to assure that ORVs will not violate motorized vehicle access limitations.

**Response:** Policing and law enforcement issues are beyond the scope of the RMP and are difficult to address in the context of limited and changing budgets. However, the BLM recognizes that education and enforcement are critical to ensure management decisions are followed

and has made efforts as funding has allowed to hire trail rangers.

**AA34**

**Comment:** We are pleased that the management direction in the wildlife and fisheries section says transportation effects on fisheries resources would be reduced, and to the extent possible roads would be located, designed, and maintained to reduce sedimentation (page 43). We recommend, however, that clearer and more specific management direction be provided to better assure that road impacts to water quality and fisheries will be addressed. Road maintenance, BMP upgrades and road drainage improvements are critical to protecting aquatic health. Roads often tend to become wider and rutted with heavy motorized use, creating a continuing need for monitoring road conditions and carrying out needed repair and erosion control.

Suggested management direction for minimizing road impacts to water quality are as follows:

“Roads needed for long-term management and public recreation access will be managed to provide needed access while maintaining or improving watershed condition, and minimizing impacts on water quality, fish and aquatic life, and hydrologic processes.”

“Roads avoid encroachment onto streams and riparian areas in ways that impact channel function or geometry. Sediment delivery from the transportation system would not measurably impact pool frequency, pool habitat, or salmonid spawning habitats.”

“Roads analysis will be used for road management decisions, including upgrading to address water quality degradation, construction of new roads, reconstruction, closure, and decommissioning of roads.”

“Road stream crossings will be assessed to see if they are stable and adequately provide for fish passage, flood flows, and bedload and woody debris transport, and maintain habitat for aquatic communities and restore connectivity of fragmented habitat.”

“Road stream crossings will be stable and simulate natural stream grade and substrate as much as possible in fish bearing streams. Culverts will be properly sized to handle flood events, pass sediment and bedload and woody debris, and reduce potential for washout, and will be properly aligned with the stream channel and designed and placed to allow for fish migration.”

“Undersized culverts will be replaced and culverts which are not properly aligned or which present fish passage problems and/or serve as barriers to fish migration will be adjusted. Bridges or embedded or open bottom culverts that simulate stream grade and substrate and that provide adequate capacity for flood flows, sediment, bedload, and woody debris are recommended to minimize adverse fisheries effects of road stream crossings.”

“Construction of road stream crossings will occur during periods of low stream flow or in the dry where practicable to avoid spawning and incubation periods for important fish, and/or dewatering of the crossing site should occur. Special care will be taken to avoid or minimize impacts to the stream channel and to riparian vegetation during construction. Stream banks disturbed during construction will be revegetated. Operation of equipment within the channels of creeks and rivers only occurs if absolutely necessary and with proper permits and authorizations (e.g., Clean Water Act 404 permits, Montana DEQ 318 authorizations and 401 certification, Montana DFW&P 124 authorizations).”

“Road design will minimize road construction and reduce road density as much as possible to reduce potential adverse effects to watersheds.”

“Roads will be located away from streams and riparian areas as much as possible, minimizing road stream crossings, and should consider road effects on stream structure and seasonal and spawning habitats and allow for adequate large woody debris recruitment to streams and riparian buffers near streams if roads must be near streams.”

“Roads will be located away from steep slopes or erosive soils, and cut and fill slopes will be stabilized.”

Adequate road drainage and control of surface erosion will be provided with measures such as adequate numbers of water bars, maintaining crowns on roads, adequate numbers of rolling dips and ditch relief culverts to avoid drainage running on or along roads and avoid interception and routing sediment to streams.”

“Road maintenance (e.g., blading) will only be conducted:

- 1) when the road surface becomes too rough for the designated vehicle use;
- 2) when the surface becomes a safety hazard; or
- 3) when it is needed to improve road drainage by reducing road surface erosion and sediment delivery from roads to area streams.

Where possible do not remove vegetation growing in ditches draining in sloped roads (since vegetation filters sediment).

Unpaved roads should not be graded (bladed) in a manner that contributes to road erosion and sediment transport to streams and wetlands. Avoid routine general blading of ditch lines on in sloped roads to maintain vegetative cover. Where necessary blade only the ditch segments where blockage problems occur.”

“Road maintenance (e.g., blading) will be focused on reducing road surface erosion and sediment delivery from roads to area streams. Blading of unpaved roads in a manner that contributes to road erosion and sediment transport to streams and wetlands should be avoided, graded material should not be sidecast over the shoulder,

and shoulders should not be widened to encroach upon and have adverse effects upon streams, wetlands, and riparian areas adjacent to roads.”

“Snow plowing of roads later in winter for log haul will also be avoided as much as possible to limit runoff created road ruts during late winter thaws that increase road erosion (i.e., it is best to carry out winter logging before late winter thaws and spring break up create conditions that promote increased road erosion during logging truck use...”

**Response:** In addition to the management direction in the Butte RMP mentioned by the comment, the BLM notes there is additional more specific management direction related to road maintenance in the Transportation and Facilities section of Chapter 2 in the RMP. This direction addresses many of the potential resource impacts intended to be addressed by the suggested additional management direction in the comment. The BLM believes it has provided for adequate management direction for road maintenance.

### AA35

**Comment:** We are pleased that the preferred alternative would close 318 miles of road and decommission 53 miles of road that are currently open to motorized uses (page 637). We especially support road decommissioning, since reductions in road density, especially road stream crossing density, has been correlated with improved aquatic health in many areas. Lower road densities are also often associated with improved wildlife habitat and security. There is also often a relationship between higher road density and increased forest use and increased human caused fire occurrences. Reduction in road density, therefore, may reduce risks of human caused fires, which could be important in an area with high fuels/fire risk and/or wildland/urban interface issues.

While the preferred alternative in the draft RMP/EIS would be an improvement in terms of reducing miles of open roads, Alternative B would still include 87,729 acres of BLM land with "high road density" (i.e., greater than 2 road miles per square mile of area, Table 4-98, page 637). The EPA encourages the BLM to consider additional road closures and road removal in its preferred alternative, particularly closure and restoration roads which contribute to resource damages and that fragment wildlife habitat or threaten wildlife security, and user created roads. There is a need to close and obliterate roads to restore and maintain water quality and critical fish and wildlife habitat, and provide linkages between habitats. Roads that impact sensitive and listed wildlife species and roads within wilderness study areas, and roads that impact riparian areas and streams should be prioritized for closure and obliteration to maximize ecological benefits.

Closures of roads near streams with multiple stream crossings are more likely to have greater water quality benefits than closure/decommissioning of roads on upper slopes and ridges. Roads needed for public access and management need to be properly maintained, and roads which cannot be properly maintained within budgets should be closed and natural landscapes and drainages restored. Road networks within the BFO area should be limited to those that can be adequately maintained within agency budgets and capabilities. We recommend that the BLM consider adding management direction such as,

“Roads not needed for long term management and/or public recreation access, and/or which cannot be adequately maintained within agency budgets or capabilities, will be considered for closure and/or decommissioning.”

“Roads scheduled for decommissioning will be analyzed with site-specific analysis to determine decommissioning and/or closure methods (such as stabilization, revegetation, with natural drainage restored) that best protect aquatic and terrestrial resources.”

**Response:** The BLM believes that the action alternatives described in the RMP for the five site-specific travel planning areas represent a range of access opportunities while reducing the impacts to terrestrial and aquatic habitats referenced by the commenter. The effects of roads and trails on wildlife and wildlife habitats, fish and aquatic habitats, soils and riparian habitats is understood by the BLM, and each road segment was assessed during travel planning to determine how it impacted each one of these resources. Travel planning also addressed the effects to terrestrial and aquatic habitats from the entire road and trail system in each travel plan area. Through the travel plan process, alternatives were developed that reduce habitat fragmentation, reduce disturbance to wildlife, increase security habitat, improve watershed and riparian functions, improve aquatic habitats and reduce the spread of noxious weeds while providing for reasonable public access.

The Wildlife sections in Chapter 4 of the RMP specifically address the effects of roads and trails in the five site specific travel plan areas on big game winter range, security habitat, wildlife corridors, grizzly bear habitat, riparian habitats, aquatic habitats, and watershed function. In nearly every one of these habitats, the action alternatives substantially improve the condition of the environment over the existing condition.

Site-specific analysis will be conducted to determine the appropriate treatment method for roads identified for decommissioning.

**AA36**

**Comment:** We also note that it is difficult to effectively restrict motorized access and protect public lands with simple gated road closures. Road rip-seed-slash (oblite-

ration or full road recontour) is a more effective and thus, preferred method of road closure. We advise removing culverts and restoring stable drainage ways during road removal to address water quality concerns. It is important that adequate attention be directed to culvert removal and ripping, scarifying and seeding disturbed areas with native seed where “natural reclamation” may take an unduly long time. Suggested direction to address this concern would be:

“Roads will be closed in a manner that poses minimal risk to water quality and aquatic ecosystems. Cross drains, ditches, culverts, and other structures will be managed so that they have a minimal risk of failure, and they provide adequate drainage that prevents accelerated surface runoff, erosion, and sediment delivery to streams.”

We also note that adequate budgets need to be provided to close and obliterate roads and restore natural drainages and restore and revegetate natural landscapes.

**Response:** Roads are identified for closure or decommissioning through site-specific travel planning to protect wildlife or aquatic habitats. Site-specific analysis of these road segments will identify the appropriate method for closure or decommissioning.

The Wildlife, Fish, Wildlife Habitat, Special Status and Priority Plant and Animal Species section of Chapter 2 in the RMP identifies that watershed restoration projects (which would include road closures and decommissioning) would be designed and implemented in a manner that promotes the long-term ecological integrity of ecosystems, conserves the genetic integrity of native species and contributes to meeting riparian standards.

**AA37**

**Comment:** Much growth in motorized and non-motorized recreation has occurred since the prior Headwaters Resource Management Plan and the Dillon Management Framework Plan were prepared. Public recreational access and demand has increased significantly in recent years due to motorized vehicles such as trail bikes, off-road vehicles (ORVs), all terrain vehicles (ATVs), and snowmobiles that can access areas much further into isolated public lands than they could historically. Off-highway vehicle (OHV) and all terrain vehicle (ATV) use away from roads and trails, including steep slopes, wet meadows, and around water bodies can cause erosion, rutting, transport of sediment to streams, destruction of riparian and wetland habitat, adverse effects to wildlife habitat and security, and spread noxious weeds. Motorized uses push wildlife onto smaller and smaller patches of habitat; reducing migration corridors; increasing adverse effects to wildlife habitat and security; causing soil erosion and adverse effects to water quality, aquatic habitat, and fisheries; and spreading weeds.

Demand for recreation opportunities on public land may be exceeding the capability of the land and resources to provide recreation in a manner that is consistent with resource and ecosystem protection. It is important that ecosystem protection and sustainability be assured in the face of increasing recreational use of motorized vehicles. Executive Order 11644, "Use of Off-Road Vehicles on Public Lands," requires agencies to ensure that the use of off-road vehicles on public lands will be controlled and directed.

The EPA believes it is important that the RMP Travel Management and Access direction be adequate to maintain and protect ecosystems and other resource values while managing motorized travel to provide recreational experiences. The challenge is in providing adequate access for public recreation and land management while protecting and restoring aquatic and terrestrial ecosystems.

We recommend that management direction include adequate limitations and restrictions on motorized uses to protect against erosion, transport of sediment to streams and degradation of aquatic habitat, spread of noxious weeds, and degradation of wildlife habitat by motorized vehicle uses, especially in wetlands and other environmentally sensitive areas. We are pleased that cross-country motorized, wheeled is prohibited unless otherwise managed in accordance with the 2003 State-wide OHV ROD (page 46). It is important that routes created by cross-country motorized uses (user created roads), which are most likely unmaintained, be closed with natural landscapes restored and revegetated, and with closures policed and enforced. We encourage BLM to include travel management direction to better address impacts from unauthorized user created roads and trails. For example, "The BLM will manage the transportation system to reduce impacts from authorized roads and trails, and stop the development of unauthorized roads and trails, closing and restoring unauthorized user created roads and trails that cause resource damages, with closures policed and enforced."

We also encourage the BLM to include management direction that ensures that motorized access within 300 feet of designated routes to access dispersed campsites does not damage ecologically sensitive resources such as streams, wetlands or areas with rare or sensitive plants. Recreational uses should be directed and encouraged toward more resilient areas where they would cause the least environmental harm.

**Response:** The BLM agrees with the commenter and the following prescription has been added to the Travel Management and Access Section of Chapter 2 in the Proposed RMP/Final EIS:

"The BLM would emphasize management of the transportation system to reduce impacts to natural resources from authorized roads and trails. The BLM would also stress closing and restoring unauthorized user created

roads and trails to prevent resource damage. Ecologically sensitive areas within 300' of roads and trails could be closed to dispersed camping if resource damage is found to be occurring in these areas."

### AA38

**Comment:** MFWP appreciates clear recognition of the following on page 231: "The PA (Planning Area) is an important wildlife linkage area that connects the Yellowstone Ecosystem, the Continental Divide, the Gravelly Mountains, the Tobacco Root Mountains, the Belt Mountains, and the Northern Continental Divide Ecosystem allowing the potential for movement and genetic exchange among geographically dispersed wildlife populations."

- Again, MFWP asserts that BLM lands play a crucial and unique role in connecting segments of functional wildlife habitat throughout the landscape in that these lands often occur at lower elevations, scattered across valleys, and exist as vital links or stepping stones between mountain ranges, OR they are crucial pieces in core habitats such as the Great Divide and Sleeping Giant areas.

- Road density (p. 235) for 11 analysis areas displayed in Table 3-13 reveals that the two areas with the highest road densities occur in the Helena Resource Area of MFWP (Clancy and Granite Butte). The acreage percentage of each that falls within the High Density (2-3 mi/mi<sup>2</sup>) and Very High Density (>3 mi/mi<sup>2</sup>) is 66 and 67 percent, respectively. The Helena Resource Area is clearly in need of assertive and more restrictive travel management if wildlife habitats and corridors are to be sustained.

**Response:** The BLM is already proposing to reduce road densities in this area which should improve wildlife habitats. The Preferred Alternative attempts to balance the needs of providing motorized access while providing for resource protection.

## Travel Management – Travel Plan Implementation

### BB1

**Comment:** Agencies are encouraged to develop OHV programs that address more than law enforcement needs. OHV programs should actively promote the development, enhancement, and mitigation of OHV recreation opportunities.

**Response:** The Butte Field Office has successfully obtained funding from Montana OHV Program Trail Ranger grants for nearly a decade, and in conjunction with BLM funding, has developed over 40 miles of quality designated OHV trails and facilities. Beginning in 2006 (and continuing to date) the focus has begun to shift from OHV implementation to OHV management. Over the past two years, (non-law enforcement) Trail

Rangers have been recruited to assist with OHV management at popular riding areas and continue area-wide travel plan implementation work. Trail Rangers are responsible for a variety of duties and responsibilities, including: greeting riders, providing visitor information (maps, brochures), education, and information about responsible OHV use on public lands, monitoring for compliance with the BLM's travel plan rules and regulations, monitoring for resource damage, monitoring visitor safety, and offering minor first aid in emergencies. In addition to public contact duties, the Trail Rangers are responsible for conducting trail inventories, trail monitoring, sign installation, minor trail maintenance, and assisting with noxious weed management.

### BB2

**Comment:** Considerable trail and environmental mitigation work could be accomplished by programs similar to AmeriCorps and Job Corps if they were given that direction and organized to provide that assistance.

**Response:** Although the comment is outside the scope of the RMP, the BLM agrees. BLM has utilized Montana Conservation Corp and Outward Bound to assist with a variety of motorized and non-motorized travel plan projects.

### BB3

**Comment:** Current management philosophy seems to be that the only way to address a problem is by closing access to public lands. Eliminating opportunities does not solve problems. An approach that is more reasonable to the public including motorized visitors is to maintain recreation opportunities by addressing problems through mitigation measures such as education, signing, seasonal restrictions, user fees, and structural improvements such as water bars, trail re-routing, and bridges. There may be problems with certain motorized roads and trails but we should work to solve and mitigate them and not to compound them by enacting more closures.

We request the agencies to support and use mitigations and education as a means to address and mitigate problems rather than closures. Most problems associated with visitors can be addressed by education. Education should be the first line of action and all education measures should be exhausted before pursuing other actions. There are situations where education is far more effective than law enforcement. The elimination of much needed recreational opportunities is not reasonable without first exhausting all possible means of education to address the problem. Educational programs could include use of mailings, handouts, improved travel management mapping, pamphlets, TV and radio spots, web pages, newspaper articles, signing, presentations, information kiosks with mapping, and trail rangers. Restrictions or closures are not always obvious to the public. Education can also be in the form of measures such as the use of jackleg fences with signs at the end of moto-

rized trails in sensitive areas so that public is made aware of the end of the motorized trail and the surrounding area closure. The use of public education to address problems may require effort and time but it is more reasonable than the use of closures. We request the full use of education to address visitor problems.

Additionally, individual motorized recreationists and groups can be called upon to assist with the implementation of the educational process. An alternative to motorized closures in many cases would be to keep motorized opportunities open and use education on principles such as those found in the Tread Lightly program and Blue Ribbon Coalition Recreation Code of Ethics and Principles to address and eliminate specific issues associated with motorized recreationists. These efforts could include the use of pamphlets, information kiosks, and presentations. Education can also be used to address and eliminate issues associated with non-motorized recreationists by encouraging their use of reasonable expectations, reasonable tolerance of others, and reasonable sharing of our land resources. To date, educational measures have not been adequately considered, evaluated or implemented.

We request that educational measures be incorporated as part of this proposed action and that the cumulative negative impact on motorized recreationists of not using education in all past actions involving motorized recreational opportunities be addressed. Additionally, we request that an adequate mitigation plan be included as part of this action to compensate for past cumulative negative impacts associated with inadequate use of education measures in past actions.

**Response:** The BLM agrees that public education is an important component of motorized recreation management. BLM websites provide a range of OHV information and education (Tread Lightly). The Butte Field Office has a number of OHV information and educational brochures available in the office's public room. BLM recreation personnel, including Trail Ranger staff (weekends/holidays), are available to answer questions regarding OHV use and opportunities. BLM has installed informational bulletin boards, with travel plan maps and other interpretive information, at all popular OHV use areas. Thanks to organized motorized groups, there are opportunities for new users to learn Tread Lightly ethics and skills while recreating with knowledgeable club members.

Education and mitigation (erosion control, etc.), however, won't always preclude the need for road or trail closures, depending on the relative importance of resource concerns, such as providing big game calving habitat, winter range habitat, or reducing road/trail density to address watershed concerns.

**BB4**

**Comment:** The evaluation of a balance of opportunities should also include an accounting and comparison of facilities including trailhead facilities at wilderness areas versus trailhead facilities at OHV areas. Most wilderness trailhead facilities include parking lots, horse handling facilities, kiosks with information, campgrounds, and restrooms and they are funded without any direct connection to the users. Motorized recreationists generate more than adequate gas tax and OHV sticker revenues (over \$500,000 in FY 2003 in Montana, FWP OHV program and RTP) but have few facilities to show for it versus a great need for facilities. Additionally, another \$311,274 that was designated for motorized programs and that could have been spent on badly needed motorized recreational facilities were instead spent on non-motorized facilities. We request an adequate evaluation and consideration of these imbalances be made part of this project and actions taken that will correct these imbalances.

**Response:** It is outside the scope of the RMP to plan for funding of specific recreational facilities. The BLM agrees that development of facilities needs to consider recreational use levels as well as provide a balance for the variety of recreational users within the BFO. The BLM does not agree that motorized recreation facilities in the Butte Field Office have suffered. To date, the majority of travel planning funding (includes several FWP OHV grants) and facility development conducted by the Butte Field Office has benefited motorized use, with the Pipestone and Clancy designated OHV riding areas being prime examples. Following finalization of the RMP, the lack of support for non-motorized recreation facilities will likely be addressed through site-specific planning for additional non-motorized trail systems and facilities.

**BB5**

**Comment:** Where possible, agencies are encouraged to provide trailheads for motorized trails that are convenient to urban areas. Where possible, agencies are encouraged to provide trailheads for motorized trails that are located at the boundary of urban areas and trails that connect urban areas to public lands and form motorized recreation opportunities similar to the Paiute Trail in Utah ([www.marysvale.org/paiute\\_trail/contents.html](http://www.marysvale.org/paiute_trail/contents.html)).

**Response:** Throughout the development of this Plan, there has been considerable public interest and debate regarding OHV use on BLM lands adjacent to urban development (rural/urban interface). Given the high level of interest, the BLM initiated two balanced “community based collaborative working groups” (see **Appendix A**) to assist with the development of travel plans for three such areas. With some minor adjustments, the working group recommendations have ultimately been brought forward in the Preferred Alternative in the Butte RMP.

**BB6**

**Comment:** Agencies are encouraged to implement a standard signing convention that is easily understood. For example, there are often misunderstandings about seasonal motor vehicle restrictions due to the “No” symbol with the actual closure period shown below in small text that is often not seen or understood. In this example, the road or trail is open except during the period below but it is often misinterpreted as closed.

**Response:** The BLM has been participating in an inter-agency cooperative road and trail management agreement since 1997 (USFS, BLM, FWP, Montana Division of Forestry, Plum Creek Timber Company, etc.). The agreement encourages cooperating agencies to use similar signing philosophies, sign formatting, and language in order to provide a clear and consistent message to the public regarding travel management direction. The BLM believes its signing philosophy, sign formatting, and language do provide the public with clear direction. In addition, we are installing informational bulletin boards, with site specific travel planning maps, and in some cases brochure size field maps for convenient public use.

**BB7**

**Comment:** The difficulty of a particular route required can be identified by a signing system similar to ski runs so that recreationists are made aware of the skill levels required and so that a wide variety of routes for all skill levels can be enjoyed. The following sort of motorized trail identification and rating system would be very helpful to the motorized public and would allow users to match up their experience level and equipment to the most appropriate trails. This system is similar to ski trails. Note that the easiest = green, more difficult = blue, and most difficult = black. The original map may be viewed at \_\_\_\_\_.

**Response:** While this comment is beyond the scope of the Butte RMP and associated travel plan decisions, the BLM agrees that a rating system similar to what has been suggested could prove useful to the user. The BLM will consider including this information on future OHV trail maps or through other interpretive means.

**BB8**

**Comment:** Agencies should not use motorized access in areas closed to motorized access by the public because:

- (a) The public will see the tracks and could become upset that the motorized closure is being violated and/or
- (b) The public will see the tracks and conclude that motorized access is acceptable.

**Response:** The BLM has a provision to allow travel variances in order to conduct essential business (refer to **Appendix A**). Travel variances are requests by the pub-

lic, commercial interests, interagency personnel, or BLM personnel to temporarily use motorized vehicles on closed roads, seasonally restricted roads, and cross country (off road) use. Authorized personnel (whether agency or private citizens) are required to keep a copy of the variance with the authorized vehicle (s), and displayed in the window. Variances are processed on a case by case basis and are temporary in nature. This is in contrast to providing motorized access to the public on a daily basis.

**BB9**

**Comment:** The types of variances to travel plans issued for “casual use mineral exploration” (p. 48) needs to be defined.

**Response:** The variance process would be the same for any type of proposed activity, including casual mining exploration. A description of the variance process is found in **Appendix A**.

**BB10**

**Comment:** Additional funding is needed for expanded and enhanced OHV programs to effectively address the concerns and needs of OHV recreationists including programs:

- To provide greater promotion of responsible OHV recreation,
- To provide greater promotion of OHV tourism,
- To provide greater promotion of an OHV Safety program and distribution of safety educational materials,
- To provide greater promotion and distribution of educational materials on land use and visitor ethics,
- To provide greater promotion and distribution of educational materials on OHV and hunting ethics,
- To actively promote and support the development of local OHV organizations in all areas of the state to further promote OHV educational and awareness programs,
- To promote greater registration of OHVs which will produce greater support for the OHV Program,
- To develop and distribute a monthly or quarterly newsletter to all registered OHV owners,
- To develop and distribute OHV information including maps and listings of OHV recreational opportunities,
- To develop multiple-use recreation opportunities on public lands as allowed under existing laws,
- To develop and operate a collection and distribution point for OHV recreational and educational information links to OHV clubs, etc.

- To provide a Trail Ranger program that supports OHV recreationists similar to the State of Idaho’s,
- To mitigate all existing concerns with OHV recreation on public lands in cooperation with federal and state agencies and in conformance with all existing laws and a Memorandum of Understanding dated February 25, 2002 between U.S. Department of Agriculture, Forest Service and the Blue Ribbon Coalition, and
- To develop and promote all reasonable OHV recreation opportunities on public lands in cooperation with federal and state agencies and in conformance with all existing laws and a Memorandum of Understanding dated February 25, 2002 between U.S. Department of Agriculture, Forest Service, and the Blue Ribbon Coalition.

**Response:** The items identified in the comment are all outside the scope of the RMP or do not apply to the BLM. The BLM does implement a number of actions listed as a part of administering the recreation and travel management programs in the Butte Field Office.

**BB11**

**Comment:** Site-specific monitoring of motorized versus non-motorized use must be provided for each route.

**Response:** While monitoring is an important management tool, the BLM is not required to monitor each motorized route (whether road or trail) to determine the respective levels of motorized and non-motorized use. More useful monitoring data would include: use level, trend, trail condition, travel plan compliance, and resources impacts (noxious weeds, erosion, impact to wildlife, etc.).

**Travel Management – Travel Planning Process**

**CC1**

**Comment:** Agencies are encouraged to return trails that used to be on trail inventories to the current inventory. Agencies are encouraged to add all existing road and trails that are not on the trail system inventory to the roads and trail inventory.

**Response:** A comprehensive roads and trails inventory was completed that documented all established roads and trails that existed prior to the 2003 Statewide OHV ROD. Throughout the development of the RMP, the BLM has asked the public to review our maps and provide feedback regarding missing roads and trails, or other mapping issues. As a result, we have added several routes that were inadvertently missed, eliminated others that don’t actually exist, and been able to provide more accurate maps.

## CC2

**Comment:** First and foremost CBU has found a lack of sufficient trail inventory and analysis on all projects we have been involved with in Montana. This very much concerns us as we feel this is required by the 3 state OHV Rule and applies to the Butte RMP. The rule for travel planning specifically states that “Through travel planning, roads and trails would be inventoried, mapped, analyzed and designated as open, seasonally open, or closed. In addition, site specific travel planning would identify areas for trail construction and/or improvement or specific areas where cross country travel may be appropriate.”

We request that your agency provide the public with a complete trail inventory. This inventory should include at the very least but not limited to, length, tread material, slope, maintenance records, any location of resource damage and if found, mitigation for this damage that you would propose. Travel planning is a site specific planning action and should be used by an agency to develop long term, sustainable trail systems. How would one develop a reasonable plan without the information provided with a comprehensive trail inventory and analysis? CBU finds it very difficult to accept the Butte RMP without this information.

**Response:** Analysis of the five site-specific travel plan areas in the RMP began with a comprehensive mapping effort of the road and trail systems. Through the use of existing maps, aerial photo interpretation and on the ground verification, roads and trails were mapped for the five travel plan areas. Each road and trail segment was then analyzed during the travel planning process to assess the impacts of the roads and trails to wildlife and wildlife habitats, fish and aquatic habitats and soils. Analysis of the road and trail systems also addressed the need of the road for human use (including recreational use). From these analyses, different alternatives were formed to provide for a range of access opportunities while protecting or improving soils and habitat conditions for plants, wildlife, and aquatic species.

Refer to **Appendix A** for more information on the travel planning process.

## CC3

**Comment:** A science-based approach to the analysis of forest roads is presented in the Forest Service publication FS-643 Roads Analysis which was published in August 1999. This document includes a comprehensive overview of considerations and issues, suggested informational needs and sources, and analytical tools that should be evaluated during the analysis of forest roads. Many of the considerations and issues presented in FS-643, if evaluated adequately and fairly, would support keeping primitive roads and trails in the project area open for motorized recreation, handicapped, elderly, and physically impaired.

We request full use of the FS-643 Roads Analysis Manual in order to adequately account for the social, economic, cultural, and traditional values that motorized roads and trails provide to the public. FS-643 should be used on every road and trail segment in order to adequately identify and evaluate the needs of motorized visitors and in order to avoid contributing to additional cumulative negative impacts to motorized visitors.

**Response:** There is no requirement for the BLM to use Forest Service publication FS-643 in assessing roads for travel planning. For the Butte RMP, the BLM followed the procedure described in **Appendix A** to assess the resource uses and resource impacts associated with each travel route. This process considered many of the same variables described in the Forest Service publication.

## CC4

**Comment:** A motorized travel plan is a plan that specifically designates roads, trails and areas for motorized use, designates which vehicles will be allowed on which routes and if seasonal restrictions apply. A comprehensive trail designation plan does the same thing except it includes all trail uses, including mountain bike, equestrian and hiking. This is a very important distinction because the anti-access groups will attempt to convince the planning team to develop a "comprehensive" travel plan by using only the existing inventory of motorized routes. They do this by identifying existing motorized trails that are good for mountain bikes, equestrians, bird-watching, or whatever. The current approach is inequitable, because it takes the current motorized route inventory and tries to make it the route inventory for all users. It leaves out the possibility for constructing or otherwise developing non-motorized trails and ignores existing non-motorized trails that exist in both the planning area and adjacent lands. Now, that doesn't mean the agency can't take into consideration the effect each alternative will have on non-motorized visitors. It can - and it should be part of the NEPA analysis. But that is totally different from specifically providing a non-motorized trail system via the existing inventory of motorized routes. We support the creation, designation, and management of non-motorized trails, but not at the expense of motorized visitors.

We request that the agency not use the existing motorized trail inventory for designating non-motorized trails. Instead, if there is a need for non-motorized trails, then the agency should consider options that do not reduce the existing opportunity for motorized users. The draft Butte RMP lacks a true "pro-recreation" alternative that adequately addresses motorized recreation. All the alternatives developed for consideration represent a significant reduction in routes available for motorized use. Not one alternative even sustains the current opportunity. The draft RMP has developed many "preservation" alternatives, where a maximum amount of closures are considered. The increasing demand for OHV recreation

opportunities on public lands is extensively documented. Therefore, it is important for the project team to formulate at least one alternative that maximizes motorized recreational opportunities in the project area.

**Response:** The project team did not use the comprehensive inventory of existing roads and trails (whether motorized or non-motorized) as a basis for creating additional non-motorized trails in the planning area. The team did use the inventory to analyze each route, and compare its respective level of impact to resources versus its importance for agency or public use; which includes providing a balance of motorized and non-motorized recreational opportunities. The BLM did not receive any public comments from non-motorized users advocating closing motorized routes in order to convert them to non-motorized trails. While Alternative A emphasizes motorized recreational opportunities in the project area, the BLM believes that the Preferred Alternative provides for the best balance.

#### CC5

**Comment:** Wilderness criteria and standards should not be applied to these multiple-use lands. The law requires that lands designated for multiple-use by congress be managed for multiple-use.

**Response:** The BLM does not apply wilderness criteria and standards to lands managed for multiple use.

However with regards to multiple use, the BLM is not mandated to provide for every possible use on every possible acre, but instead for a variety of recreation opportunities as appropriate across the landscape. As such, some places are identified for non-motorized use to allow this segment of the recreating public to enjoy their recreational pursuits.

#### CC6

**Comment:** Any measurable impact from OHV use is automatically and incorrectly judged to be significant. OHV impacts are a small fraction of natural actions. Nature should be used as the standard for comparison of OHV impacts.

**Response:** The BLM does not automatically consider impacts from OHV use as “significant”. All resource impacts, whether resulting from OHV recreation, livestock use, camping, etc., are analyzed on a case by case basis, for the scope of the activity. Depending on site-specific circumstances (grade, aspect, soil type, season of use, level of use, etc.) some OHV recreation activities may result in greater resource impacts than other uses. The BLM does not use nature (naturally occurring impacts, such as flooding, wind, wild-land fire, etc.) as a standard for comparison of OHV impacts. The BLM cannot manage effects from natural events; however BLM can manage human caused impacts such as OHV use.

#### CC7

**Comment:** The site specific analysis of each road or trail to be closed must address or identify where the public would go to replace the motorized resource proposed for closure. In other words, the analysis must adequately evaluate the site-specific value of a road or trail proposed for closure to motorized recreationists. It must also quantify the significant negative cumulative impact experienced when motorized recreationists could not find a trail or road with a similar experience in the area.

**Response:** These considerations were taken into account during the travel planning process. The BLM understands the importance of motorized recreation and believes the Preferred Alternative provides adequate opportunities in the project area.

#### CC8

**Comment:** Along with the standardization of signs, there is also a significant need to standardize or simplify seasonal closure dates as much as possible. We suggest that the number of different closures periods should be kept to a maximum of two, if possible, in order to avoid confusion and resulting misunderstandings.

**Response:** The BLM agrees that as much standardization and simplification of seasonal closure dates as possible would promote the most understanding throughout the public. For the Butte RMP this concept was considered as much as possible in developing seasonal closure dates associated with site-specific travel plan alternatives.

#### CC9

**Comment:** Implement seasonal closures, where required, with input and review by OHV recreationists that will:

- (1) provide the maximum amount of OHV recreational opportunity during the summer recreation season in order to disperse all forms of trail use and thus minimize impacts to trail users;
- (2) provide winter OHV recreation opportunities in low-elevation areas that are not critical winter game range;
- (3) provide OHV recreation and access during hunting season by keeping major roads and OHV loops open while closing spur roads and trails necessary to provide reasonable protection of game populations and a reasonable hunting experience; and
- (4) provide OHV recreation opportunities during spring months in all areas where erosion and wildlife calving conditions reasonably allow.

**Response:** These considerations were taken into account during the travel planning process, as well as resource impact analysis and consideration of opportunities for non-motorized recreation. There has been substantial public input and review throughout the planning process.

#### CC10

**Comment:** Existing seasonal closures tend to separate the motorized and non-motorized peak use seasons. One size does not necessarily fit every circumstance but standardize or simplify seasonal closure dates as much as possible. The number of different closure periods should be kept to a maximum of two, if possible, in order to avoid confusion and resulting misunderstandings.

**Response:** The BLM does not agree that seasonal use restrictions tend to separate the motorized and non-motorized peak use seasons. The peak season for most (wheeled) motorized and non-motorized users is the same, spring through late fall (5/15-12/2). The same is true for the winter sports season, with both groups of users active from early winter through early spring (12/1-5/16). The BLM agrees that seasonal restriction periods should be kept to a minimum (such as the above examples), however this is not always possible.

#### CC11

**Comment:** We have also been told that the agency could evaluate new routes at a later date. First, we strongly recommend that the BLM take whatever time is necessary to adequately address the public's needs. The schedule is not an adequate or reasonable amount of time especially considering that the public has been able to access and enjoy this area for decades. Secondly, we have requested the reopening of routes before. The BLM has no history of reopening or creating any new routes for OHV use at a later date. Thirdly, whenever we suggest a new route, the agency is hesitant to reopen or pursue the environmental analysis required to address it. Therefore, we are uncomfortable banking any hopes of mitigation and enhancement on a new project at a later date. And lastly, a later date probably means 10 to 15 years out (if ever) and many of us who are impacted now may not be able to take advantage of any new opportunities at a "later date".

**Response:** The BLM can consider site-specific proposals for new OHV trails in areas acceptable for that use, subject to NEPA documentation and other constraints. However, with the exception of four existing travel management plans, the Butte Field Office has nine additional planning areas it must address in the near future. Five of these are high priority areas, and are being addressed concurrently with this RMP revision. An additional four "moderate" priority travel plans will be initiated following the completion of the RMP.

#### CC12

**Comment:** The environmental document should consider the following visitor profiles in addition to OHV enthusiasts as motorized visitors who use roads and trails within public lands. People out for weekend drives, sightseers, picnickers, campers, hunters, hiking, rock climbing, target shooters, fisherman, snowmobile enthusiasts, woodcutters, wildlife viewing, berry and mushroom pickers, equestrians, mountain bikers, and physically challenged visitors who must use wheeled vehicles to visit public lands. All of these multiple-use visitors use roads and motorized trails for their recreational purposes and the decision must take into account motorized designations serve many recreation activities, not just recreational trail riding.

**Response:** The needs of this wide range of recreational users were taken into account during the travel planning process.

#### CC13

**Comment:** Agency planning including travel management projects should be a process to quantify and address the needs of the public for motorized access and motorized recreational opportunities. Instead, it is approached in just the opposite direction as a closure process that ignores the needs of the public for motorized access and motorized recreational opportunities. Every travel planning process listed in Table 2 has reduced motorized access and motorized recreation. A travel planning process has never resulted in increased recreational opportunities for motorized recreationists. The travel management process as currently practiced is not equitable because: (1) it does not adequately address the needs of the public for multiple-use recreational opportunities including motorized access and motorized recreation, and (2) it is deceptive to represent the process as a travel management process that will address the needs of the public when it is really just the opposite, i.e. a closure process that does not fairly and adequately address the needs of the public. We request that the process either be renamed to "Travel Closure Process" in order to end the deception of the public OR (as we strongly prefer) that the process be redirected to meet the needs of the public for a functional network of motorized roads and trails for access and recreation with practical and reasonable consideration of the environment.

**Response:** The BLM's travel planning process provides numerous opportunities for public input, and takes into account the needs of both motorized and non-motorized recreation users. While it is true that many recent agency travel plans have resulted in fewer motorized opportunities, this trend reflects comprehensive analysis of impacts to wildlife, fisheries, soil, water, forest, rangeland health, and other resources in addition to human needs, including recreation. The BLM also notes that the five site-specific travel planning areas being assessed in the

Butte RMP have never undergone any interdisciplinary travel planning prior to this effort, meaning that the BLM has never previously undertaken an effort to design travel plans in these areas that address resource impacts and user conflicts as described under 43 CFR § 8342.

**CC14**

**Comment:** A reasonable test of significance of impacts from motorized closures on motorized recreationists must be used. A reasonable test would include evaluation of indicators including:

1. Where else can motorized recreationists go within a reasonable distance and with equal recreation value?
2. Do motorized recreationists have an adequate selection of the recreational resources with the proposed motorized closure(s)?
3. What is the balance of recreational opportunities in the area and region as demonstrated by the information developed from the outline shown in Table 1?
4. Are the existing motorized recreational opportunities sufficient for the needs of the public?
5. Are there documented user conflict and can the recreational resources be reasonably shared? Note that it is not reasonable to define user conflict a merely seeing someone else on a trail.
6. What are the cumulative effects of this motorized closure combined with all other motorized closures?

**Response:** These and similar considerations were taken into account for both motorized and non-motorized users during the travel planning process. The BLM believes the Preferred Alternative provides adequate motorized recreation opportunities in the project area.

**CC15**

**Comment:** Why use so many indirect attempts such as public meetings and open houses to gather feedback from motorized recreationists? Why not just go directly to motorized recreationists in the field and at club meetings and ask them? NEPA encourages direct coordination with the impacted public instead of a process tailor made for special-interest environmental groups.

**Response:** Public involvement efforts surrounding this RMP have been numerous and equitable. The BLM has encouraged OHV recreationists and all interests to participate in the numerous scoping and review meetings held during the development of this document. Chapter 5 in this document describes the public involvement portion of this planning effort. In addition, all special interest groups have had a standing invitation to meet with BLM during throughout this process to discuss their

concerns. The latter approach provided opportunities for organized groups to meet individually with the BLM to provide input. As a result, BLM representatives met with several individuals and organized groups to give them more opportunities to provide specific input on the Butte RMP.

**CC16**

**Comment:** Motorized recreationists have not had the opportunity to develop mitigation plans required to address the significant impact resulting from cumulative effect all closures.

**Response:** Any organization or member of the public can provide the BLM with suggested management, including mitigation, associated with proposed management. During the public comment period on the Butte Draft RMP/EIS, a number of individuals, agencies, and organizations in the public provided management suggestions to the BLM on the Butte RMP.

**CC17**

**Comment:** If the present trend continues for a few more years, the loss of motorized access and recreation will be so significant that the collection of meaningful data will be precluded because motorized opportunities will be largely eliminated and motorized visitors will be permanently displaced (absent from public lands). Based on our observations, we estimate that motorized access and recreation opportunities have been reduced by at least 50 percent since the 1960's by the significant cumulative negative effect of wilderness designations, wilderness study areas, national parks, monument designations, roadless designations, non-motorized area designations, travel management, wildlife management areas, and other restrictive management designations.

**Response:** The BLM does not agree that motorized opportunities will be largely eliminated from the project area. BLM will continue to provide a range of recreational opportunities for all recreational users, motorized users included.

**CC18**

**Comment:** With the agency's commitment in the current management plan to the application of "Limits of Acceptable Change" (LAC) for determining management strategies there is an inherent obligation on the agency's part to provide specific direction that certain measures, such as visitor education and the provision of new facilities would be implemented before limiting use. A common thread in LAC application nation-wide is that these regulations apply to all visitors, not to specific groups. Why are motorized recreationists being disenfranchised from this directive? There has not been an adequate attempt by the agency to educate the public that areas and trails in the project area or anywhere else must be shared by all users and that new facilities are

needed to address the needs of motorized recreationists. The decision for this project must correct this deficiency.

**Response:** The travel planning process did not include use of Limits of Acceptable Change (LAC) as an assessment tool during its analysis. LAC is better suited for recreation planning, rather than travel planning. However, some of the concepts embodied in LAC, such as assessing and managing for desired social and environmental conditions, were taken into consideration during travel plan analysis.

With regards to sharing areas and trails, the BLM is not mandated to provide for every possible use on every possible acre or trail, but instead for a variety of recreation opportunities as appropriate across the landscape. In general, the experiences sought by non-motorized users are different from those being sought by motorized users. Establishing separate areas for non-motorized recreation helps reduce user conflict.

### CC19

**Comment:** I do not believe that the preferred alternative identified (B) is in keeping with the concept of multiple use and does not address the need to provide dispersed use of the "Public Lands" which should ultimately help reduce the environmental impact of any one location. If the BLM finds it absolutely necessary to reduce the number of roads in these travel plan areas, implementing Alternative D in each area would provide a realistic gauge as to whether or not more restrictive measures are actually necessary. This approach combined with increased educational programs could actually provide desired results without significantly reducing access to the areas in question.

**Response:** The Preferred Alternative provides a wide range of dispersed recreational opportunities for both motorized and non-motorized users. Multiple use does not mean providing for every possible use on every possible acre or trail, but instead for a variety of recreation opportunities as appropriate across the landscape. The BLM believes the Preferred Alternative represents the best balance of resource protection objectives and diverse recreational opportunities.

### CC20

**Comment:** All of the alternatives developed for consideration represent a significant reduction in routes available for motorized use. Not one Alternative even sustains the current opportunity.

**Response:** The reductions reflected in the action alternatives are the result of comprehensive interdisciplinary analysis that took into account resource protection needs, as well as providing opportunities for motorized and non-motorized recreational users. Alternative B, the Preferred Alternative, provides approximately 66 percent of the existing opportunities, while Alternatives C and D provide 59 percent and 76 percent, respectively.

The BLM believes the Preferred Alternative represents the best balance.

### CC21

**Comment:** The five high priority areas (page 47) that should be under consideration with the guidelines set by the OHV ROD, with all routes identified, mapped, and evaluated are addressed in this plan only by identifying them as non-motorized areas. Once these areas are identified as non-motorized any further consideration for a "balanced approach" has been lost.

**Response:** The five high priority travel planning areas have not been addressed or identified as "non-motorized" areas. Alternatives for these areas are being analyzed in this RMP under the Limited management area designation. The "Limited" management area designation pertains to all forms of motorized use, wheeled and snowmobile. In most cases, travel management under the limited area designation restricts all forms of wheeled motorized use to designated roads and trails, with a range of route management (Open Yearlong, Seasonally Restricted, OHV use only, etc.). As a result, opportunities for motorized or non-motorized recreation vary depending on site-specific travel planning analysis. The remaining four moderate priority travel planning areas in the Butte Field Office will undergo site-specific travel planning under the "Limited" area designation after finalization of the Butte RMP.

### CC22

**Comment:** The areas with current travel plans are described as "limited" (page 268) is misleading. With the exception of the Whitetail-Pipestone that actually provides trail opportunities for the OHV community, the other limited areas would be described as extremely limited.

**Response:** The "Limited" management area designation pertains to all forms of motorized use, wheeled and snowmobile. Depending on site specific travel planning, areas managed under the limited areas may or may not support designated OHV trail systems. It should be noted that the Clancy-Unionville travel plan provides 9 miles of Designated OHV trail system, with an additional 2 miles pending development. And unless otherwise managed, all BLM roads are open to dual use (non street legal OHV travel).

### CC23

**Comment:** Note that the project team does not include any OHV enthusiasts, but does include many non-motorized enthusiasts.

**Response:** The planning team for the Butte RMP included people with a wide range of personal views regarding OHV use, non-motorized recreation opportunities, and resource protection. Regardless of personal bias, planning team members were required to provide

input to the travel planning process based on their respective areas of professional expertise.

**CC24**

**Comment:** Motorized recreationists prefer an interesting assortment of loop and spur routes for a variety of purposes. Each road and trail should be inventoried and viewed on the ground to determine its recreational value and any significant problem areas that require mitigation measures. Each road and trail should be evaluated for its value as a motorized loop or connected route. Many opportunities for connecting routes to create loops and figure 8 routes for access and recreation can be observed by inspecting the Alternative B travel plan maps. However, Alternative B does not include any of these reasonable route alternatives. Each spur road and trail should be evaluated for its value including: a source of dispersed campsite(s), exploration opportunities (especially young riders), destination such as an old mine and viewpoint or as access for all multiple-use visitors. Every problem has a solution. Every impact has a mitigation measure. We request that travel management alternatives be developed with the objective of including as many roads and trails as possible and dressing as many problems as possible by using all possible mitigation measures.

**Response:** The BLM considered loops in the development of the travel plan alternatives within the five site-specific travel plan areas. Where feasible, the BLM incorporated loops, in the context of multiple use management, including the consideration of natural resources.

**CC25**

**Comment:** NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail. Agencies shall focus on significant environmental issues and alternatives and shall reduce paperwork and the accumulation of extraneous background data. Statements shall be concise, clear, and to the point, and shall be supported by evidence that the agency has made the necessary environmental analyses. These requirements have not been met. We request that these deficiencies be addressed by developing a preferred alternative that identifies all of the existing roads and trails available to motorized recreationists including non-system routes and those falling under some undefined definition of “unusable” and those additional routes required to meet the needs of the public.

**Response:** A comprehensive roads and trails inventory was completed during 2003-2004 that made a good faith effort to document all established roads and trails (historic; agency or user created) that existed prior to the 2003 Statewide OHV ROD. Each alternative was analyzed using this comprehensive inventory. Alternative A (the “No Action” alternative) would leave all the cur-

rently open routes open. Alternative A, however, is not being brought forward as the Preferred Alternative.

**CC26**

**Comment:** All roads to be closed to full-size vehicles should be converted to ATV routes. This is a reasonable alternative for all existing roads.

**Response:** Routes analyzed and proposed as closed to motorized use are closed to all forms of wheeled motorized vehicles. This is consistent with providing adequate resource protection, as well as providing for a reasonable balance of non-motorized recreational opportunities.

**CC27**

**Comment:** The road density evaluations must also consider the viable alternative of closing a reasonable number of routes during hunting season and other critical seasons and then opening them during the summer recreation season. This strategy would effectively address road density criteria without nearly as many motorized closures as proposed.

**Response:** The approach described in the comment is a fundamental part of travel planning. Under the Preferred Alternative, many routes would be managed as seasonally restricted (closed December 2 – May 15) during the winter months to provide big game winter habitat or prevent soil erosion, and afterwards are open to summer recreation. However, for some areas, yearlong closures are necessary to provide adequate resource protection and/or provide for non-motorized recreation opportunities.

**CC28**

**Comment:** The roads and trails in the project area are not new or “user created” travelways. These roads and trails have existed for many years. The public has relied on them for access for many years and for many purposes. This pattern of use is well established. A reasonable travel management alternative would use area closure to prevent the creation of unwanted trails by visitors and, at the same time, allow the public to use all of the existing motorized routes. Too many management actions have been enacted without the development of this reasonable alternative.

**Response:** Under Alternative A, all currently open roads and trails would be brought forward and retained under current management. The BLM believes the Preferred Alternative represents a balanced travel plan that takes into account resource protection, and the divergent interests of motorized and non-motorized recreational users.

It is true that many of the routes located within the decision area (BLM lands) were created prior to the establishment of FLPMA (1976). However, many more

routes have been created since then, either initiated or authorized by the agency, or created through public use (wood cutting, OHV recreation, camping, hunting, mining, etc.). Prior to the 2003 Statewide ROD, there were few restrictions regarding motorized use, and the public was allowed to create user made roads and trails at will. Some of these roads and trails have resulted in unacceptable resource impacts, and have been proposed as seasonally restricted, closed, or decommissioned.

### CC29

**Comment:** The statistics in Table 4-110 through 4-113 do not accurately disclose the significant negative cumulative effects on motorized recreationists from past actions in the immediate area. The closure of 328 miles of routes in the Elkhorns was almost 100 percent of the high quality jeep and OHV routes. Also, the miles of non-motorized trails in the Elkhorns can certainly be determined and far outnumber the real miles of motorized trails. The percent closure in the Sleeping Giant is extremely significant with 20 miles out of 29 closed or 69 percent and that number did not include any inventory of single-track or ATV trails. The miles of routes closed to motorized use in the Clancy-Unionville decision was not accurately identified in the ROD and included the closure of an undisclosed number of miles of roads and trails and 28 miles of identified roads including #2001 an extremely valuable OHV route commonly known as the Brooklyn Bridge route. In Table 4-111 210 miles of roads were closed in the North Belts or 57 percent of the existing routes. The following table is a better representation of the motorized closures in the Gallatin National Forest decision. Basically OHV recreationists gain a lot of road miles (80 to 375 miles) which we had already and lost a lot of extremely valuable trail miles (749 to 405).

**Response:** The BLM believes that the data presented in these tables in the Butte RMP accurately characterizes the point being made in the text of the cumulative effects section for travel planning. Recent agency decisions have altered availability of motorized uses in various ways, including reducing availability of routes for some motorized uses.

### CC30

**Comment:** Cumulative effects must include reasonably foreseeable actions including the Badger-Two Medicine and Rocky Mountain travel plan in the Lewis and Clark National Forest, the Little Belts and Crazy Mountains travel plan in the Lewis and Clark, the South Belts in the Helena National Forest, the Beaverhead-Deerlodge Forest Plan, etc. The cumulative effects on motorized recreationists are staggering and are not being adequately disclosed and addressed.

**Response:** In Chapter 4 (in Volume II), in the Cumulative Effects of Travel Plans at the Planning Area Scale section, under Travel Management and Access, the BLM

has considered and described recent travel planning decisions reached by other agencies (including recent BLM site-specific travel plan decisions within the past 10 years) within and adjacent to the Planning Area of the Butte RMP. This includes consideration of recent decisions made by the Helena National Forest for the North Belts travel planning area, the BLM Dillon Field Office, as well as the Gallatin National Forest. Other decisions identified in the comment are either not final decisions (such as the Beaverhead-Deerlodge Forest Plan), or are not adjacent to or near the Butte RMP Planning Area (such as the Badger-Two Medicine and Rocky Mountain travel plan).

### CC31

Motorized closures are being enacted incrementally and without adequate disclosure and consideration of the cumulative effects. Resource Management Plans and Travel plans are created or revised every 10 years. If 25 to 50% of the existing motorized recreational opportunities are closed in each successive plan (a typical range), then over the course of 3 travel planning cycles or about 30 years in a given area, only 13 to 42% of the original motorized recreational opportunities will remain at the end of the third cycle. This trend is being ignored at all levels including the actions listed in Table 2 in CTVA comments dated June 27, 2005. The resource management plan for the Butte area does not adequately recognize and address this trend. The national planning policy does not recognize and address this trend. Therefore, this cumulative effect is being effectively ignored and that failure to notice will result in the ultimate loss of any meaningful motorized recreational opportunities and the creation of de facto wilderness from large blocks of multiple-use lands. Facts do not cease to exist because they are ignored.--Aldous Huxley. We ask that this significant negative cumulative effect on motorized recreationists be adequately recognized, evaluated and mitigated at all levels starting with this project.

**Response:** The BLM believes that the Chapter 4 section on Cumulative Effects of Travel Plans at the Planning Area Scale in Volume II of the Butte RMP adequately addresses the trends associated with land management decisions related to motorized uses. The BLM believes it has provided viable travel plan alternatives within the Butte RMP in the context of following 43 CFR § 8342 to balance motorized uses and opportunities with non-motorized uses and resource protection.

### CC32

**Comment:** There has never been an accounting of the cumulative negative impact of all motorized closures that have occurred over the past 35 years. Actions that have contributed to the significance of the cumulative negative impact on motorized recreation include millions of acres and thousands of miles of roads and trails associated with Endangered Species Act; Continental

Divide National Scenic Trail; forest fires; timber harvests, forest plans; view shed plans; resource plans; watershed plans; roadless plan; creation of wildlife management areas, monuments, non-motorized areas, wilderness areas, and wilderness study areas; area closures, and last but certainly not least, travel plans. This cumulative negative impact has not been quantified and it is significant. In order to evaluate this cumulative negative effect, an accounting of all motorized closures must be done at 5-year increments going back to the creation of the wilderness act. This accounting needs to be done on a local forest or district level in addition to statewide and regional levels. For example, loss of motorized access and motorized recreational opportunities since 1986 in our immediate area (Helena National Forest) include: 18 separate closures in the Big Belts with the loss of over 100 miles; 130 miles in other areas of the forest; closure of 191,000 acres and 75 miles in the Elkhorn Mountains; and closure of 625,447 acres in the remainder of the forest. Both adjoining public lands and public lands further away have experienced similar trends.

Therefore, the cumulative negative impact of all motorized access and recreational closures is significant. Simply, there are very few places left where motorized recreationists can recreate and yet the trend continues. This stealthy attack on motorized recreational opportunities must be acknowledged. Please quantify and consider these cumulative negative impacts and develop a preferred alternative that will mitigate the significant impact on motorized recreationists that has occurred.

**Response:** The BLM believes it has adequately considered cumulative effects of past travel planning actions within the Butte RMP Planning Area. In Chapter 4 (Volume II), in the Cumulative Effects of Travel Plans at the Planning Area Scale section, under Travel Management and Access, the BLM has quantified and described recent travel planning decisions reached by other agencies (including recent BLM site-specific travel plan decisions within the past 10 years) within and adjacent to the Planning Area of the Butte RMP. There is no requirement to examine motorized route closures in 5-year increments dating back to the creation of the Wilderness Act.

### CC33

**Comment:** The current trend agency decision makers have pursued; closing large blocks of land and many miles of trails and low level roads, has compounded the cumulative effects on motorized recreationists. Social Conditions (page 480) recognizes "some cumulative effects". None of the land management agency proposals have accurately evaluated the cumulative effects that have taken place over the last 10 years. While the numbers of OHV recreationists is increasing, by the agency's own estimated figures, the opportunities have continually been decreasing. As stated, other federal agencies may be following a 'trend' but we would expect BLM to

evaluate the need and the cumulative effects of the past in the process of proposing plans that will have such a long lasting impact on the OHV community.

**Response:** The BLM believes it has adequately considered cumulative effects of past travel planning actions within the Butte RMP Planning Area. In Chapter 4 (Volume II), in the Cumulative Effects of Travel Plans at the Planning Area Scale section, under Travel Management and Access, the BLM has quantified and described recent travel planning decisions reached by other agencies (including recent BLM site-specific travel plan decisions within the past 10 years) within and adjacent to the Planning Area of the Butte RMP. With travel plan alternatives contained in the Butte RMP, the BLM is not considering closing large blocks of land. The BLM believes it has provided viable travel plan alternatives within the Butte RMP to address the need to balance motorized uses with the need to provide for non-motorized uses and to provide for resource protection.

## Travel Management - User Conflicts

### DD1

**Comment:** Creating more separate use areas will not solve the conflict between motorized and non-motorized users. People have to realize that multiple-use areas are just that-MULTIPLE USE. All visitors to multiple-use must be expected to share. If people want to go to an area that is completely non-motorized, they can. There are areas specifically set aside for this purpose. Taking more and more multiple-use land away will only create more problems.

**Response:** The BLM is not mandated to provide for every possible use on every possible acre or trail, but instead for a variety of recreation opportunities as appropriate across the landscape. Establishing separate use areas for motorized and non-motorized users does help reduce conflict. In general, the experiences sought by non-motorized users are different from those being sought by motorized users. As such, some places must be identified for non-motorized use to allow this rather significant segment of the recreating public to enjoy their recreational pursuits. In addition to their preferred means of travel (horse, foot, mountain bike, x-country skis, etc.), many non-motorized users are also seeking a quiet recreational experience. By its very nature, motorized use is not quiet. Noise is widely recognized by the motorized community as major social conflict. While most motorized users do not mind sharing the same space (trail, area) with non-motorized users, the reverse is not usually true for this reason.

### DD2

**Comment:** It is not reasonable to define user conflict as merely seeing someone else on a trail. There is a significant need for an adequate number of miles of single-track for existing and future motorcyclists. There is no

legitimate reason why the single-track trails in the multiple-use areas of the project should not be shared between motorized and non-motorized recreationists to a much greater extent.

**Response:** The BLM agrees that merely seeing someone else on a trail or in an adjacent area does not constitute a user conflict, whether occurring among users engaged in the same recreational activity (i.e., ATV riders) or divergent activities (ATV riders/hikers). However, in addition to their preferred means of travel (horse, foot, mountain bike, x-country skis, etc.), many non-motorized users are also seeking a quiet recreational experience. By its very nature, motorized use is not quiet. Noise is widely recognized by the motorized community as a major social conflict. As such, while most motorized users do not mind sharing the same space (trail, area) with non-motorized users, the reverse is not usually true for this reason.

The BLM believes that the Preferred Alternative provides adequate motorized single track opportunities, such as those provided for at the Pipestone designated OHV recreation area.

#### DD3

**Comment:** Wheeled recreationists have with their noisy machines (ATVs) reduced hunting opportunities over here [Helena Travel Planning Area]. Maintain and monitor access. If you can't control it - close it.

**Response:** Current travel management in the Helena area (Alternative A) falls under the direction of the 2003 Statewide Off Highway Vehicle Record of Decision, which restricts all motorized use to existing roads and trails. Under the action alternatives, a range of site-specific route management has been proposed for these existing roads and trails (Open yearlong, Open/Restricted, Closed). The BLM believes that the Preferred Alternative will help reduce resource impacts and user conflicts in this area, and resolve some of the concerns expressed in the comment. In addition, the BLM has initiated a Trail Ranger program with a primary focus on providing public education and monitoring for travel plan compliance.

#### DD4

**Comment:** Roadless Rule: I understand that this plan would abide by all federal laws in carrying out its management objectives. However, it is not clear how the Clinton Administration's "Roadless Rule" that is currently in appeals would impact the proposed alternatives. Of particular interest is the Preferred Alternative B, which considers new roads for the commercial harvest of forest and woodland products (page 29). Was the science that was used to craft the Roadless Rule considered when creating these alternatives? If so, this is not clear in the analysis as it is currently presented in the plan. The Roadless Rule, should it become law, will

impact management direction for the Butte Field Office; and its effects on public lands can, and should, be declared at this time in this document.

**Response:** The Roadless Rule applies to Forest Service Roadless Areas on National Forest lands, but does not apply to BLM lands.

#### DD5

**Comment:** In Chapter 4, page 448 the following statement is made "Likewise, there is a direct correlation between travel management decisions and the level of conflict between motorized and non-motorized users. Travel management decisions that create separate use areas reduce conflict between motorized and non-motorized recreation users. Conversely, travel management designations that mix motorized and non-motorized recreation use lead to increased conflict." There is no significant documentation of user conflict in the project area and this issue is being blown out of proportion to serve the interest of non-motorized recreationists. We request copies of any documentation of user conflicts in the area and request that it be categorized and weighed against the overall number of visitor-days to the area. A more reasonable expectation is that all visitors to multiple-use must be expected to share.

**Response:** The BLM does not agree that there is no significant documentation regarding conflict between motorized and non-motorized recreation users. Conflict between motorized and non-motorized users has been the most frequent and major issue of concern addressed during public scoping meetings and written comments for this RMP. Likewise, it has been a frequent and contentious issue for previous travel planning efforts conducted in the Butte Field Office (Sleeping Giant, White-tail-Pipestone, Clancy-Unionville, etc.). Furthermore, a review of public scoping comments and written comments received during the development of recent inter-agency travel management plans, such as the Dillon Field Office (BLM) or Gallatin National Forest (USFS), will yield the same results.

With regards to multiple use, BLM is not mandated to provide for every possible use on every possible acre, but instead for a variety of recreation opportunities as appropriate across the landscape. As such, some places are identified for non-motorized use to allow this segment of the recreating public to enjoy its recreational pursuits.

#### DD6

**Comment:** Out of the 10,469 recreationists that were observed, 168 were hikers and all of the meetings were pleasant. We have not experienced any user conflict in eight years of observations.

**Response:** The BLM notes that observations cited in the comment were on motorized routes. The BLM acknowledges that hikers and other non-motorized users

electing to recreation on motorized routes have no expectations for a non-motorized experience, nor standing for complaint.

**DD7**

**Comment:** Conflict on multiple use trails: Synthesis of the Literature and State of Practice; Report No.: FWVA-PD-94-031 “Conflict in outdoor recreation settings (such as trails) can best be defined as “goal interference attributed to another’s behavior” (Jacob & Schreyer 1980, 369). As such, trail conflicts can and do occur among different user groups, among different users within the same user group, and as a result of factors not related to users’ trail activities at all. In fact, no actual contact among users need occur for conflict to be felt. Conflict has been found to be related to activity style (mode of travel, level of technology, environmental dominance, etc.), focus of trip, expectations, attitudes toward and perceptions of the environment, level of tolerance for others, and different norms held by different users. Conflict is often asymmetrical (i.e., one group resents another, but the reverse is not true). The use of Executive Orders 11644 and 11989 to “minimize conflict with other uses” should be evaluated from the perspective of “fair-mindedness of expectations”. To provide non-motorized experiences we have designated and set-aside wilderness/non-motorized use areas. Just as motorized recreationists do not expect to be able to use motorized vehicles in wilderness/ non-motorized use areas, non-motorized enthusiasts should not expect to go to multiple-use areas and experience wilderness conditions.

**Response:** The BLM agrees with the comment. Non-motorized users who knowingly choose to recreate in an area or on trails open to motorized use have no standing for complaints. While many non-motorized users would not choose to do so, some, such as mountain bike riders, or joggers, have no problem sharing trails with motorized users.

**DD8**

**Comment:** User conflict as identified in the listed alternatives is such an ambiguous issue and should not even be a consideration in this or any other travel plan. The concept of user conflict appears to be promoted mainly by the staunch environmental groups that do not think anyone in or on a motorized vehicle should be allowed in the mountains.

**Response:** For the purposes of travel planning for this RMP, user conflict refers to conflicts between motorized and non-motorized recreation users, over competition for space and the pursuit of a quality recreational experience. In addition to their preferred means of travel (horse, foot, mountain bike, x-country skis, etc.), many non-motorized users are also seeking a quiet recreational experience. By its very nature, motorized use is not quiet. In fact, the motorized community recognizes that noise is the single biggest social conflict. OHV sound

can carry for long distances, and mask the sounds of birds, animals, and wind in the forest. Loud OHVs can startle stock or endanger equestrians. While most motorized users may not mind sharing the same space (trail, area) with non-motorized users, the reverse is not usually true for these reasons. As such, some places must be identified for non-motorized users to enjoy their recreational pursuits.

**DD9**

**Comment:** The cumulative negative effects of more restrictive travel plan decisions include the concentration of use on fewer miles of road and trail, such that traffic density is increased and recreation enjoyment is reduced. To experience the cumulative effects of motorized closures first hand one can visit the Whitetail-Pipestone area on Memorial Day and Copper Creek near west of Phillipsburg on July 4th and see hundreds to thousands of multiple-use recreationists forced into small areas with limited opportunities by the cumulative effects of many motorized closures produced by forest plans and travel plans. Travel decisions affecting public lands that restrict motorized recreation in one area may consequently increase motorized use in another where site-specific travel plans are not yet in place. Cumulatively then, this "leapfrog" effect may increase resource damage, create more law enforcement problems, generate discord between motorized and non-motorized recreationists, and make future site-specific travel planning more difficult. This cumulative negative effect must be adequately considered as part of this project.

**Response:** The BLM believes the Preferred Alternative provides adequate opportunities for motorized recreation. Given the overall availability of BLM and other interagency routes (USFS), crowding is not generally an issue. However, as with any form of recreation, popular riding areas such as Pipestone and Clancy can become more crowded during holiday weekends, especially during permitted organized events. Riders are encouraged to make alternate plans, and avoid these areas during peak use for a more enjoyable recreation experience. However, if crowding or other related issues become a problem, the BLM may need to consider more intensive management, or use allocation at these popular sites.

**DD10**

**Comment:** There needs to be better coordination between adjoining National Forest and BLM lands when making maps, laying out trails, and establishing travel plans. In some cases a trail is open in one jurisdiction but becomes closed when it crosses over the boundary to another jurisdiction resulting in an overall loss of motorized recreation opportunity.

**Response:** The RMP provides for interagency route connectivity and flexibility for both current and future USFS travel management plans. The BLM has consulted

with the USFS on this specific issue at public and inter-agency meetings throughout the Butte RMP process to coordinate route-specific travel planning.

#### DD11

**Comment:** A study of sound levels from OHV use was found to be less than the background noise of the wind in treetops (Nora Hamilton, Mendocino National Forest, memorandum to the file, November 17, 1992). Also, the USDA FS Technology and Development Program in a report prepared in 1993 and titled "Sound Levels of Five Motorcycles Traveling Over Forest Trails" found that at distances over 400 feet, motorcycles do not raise the ambient sound level (they are no louder than background levels of noise). Absolute quiet is not a reasonable expectation. Sound from motorized sources such as airplanes exists even in the most remote areas. It is not reasonable to expect absolute quiet in areas intended for multiple-use. The sound level of motorized recreation use is not greater than natural sounds, and therefore, sound level should not be used as a reason to justify motorized recreation and access closures.

It is not reasonable to enact motorized closures based on the issue of sound when viable alternatives could be pursued. The Sierra Club in their ORV Handbook makes the following statement "The fact is that most ORV noise is unnecessary; even motorcycles can be muffled to relatively unobjectionable noise level". We request that agencies initiate an education campaign (loud is not cool) to promote the development and use of quiet machines. OHV brochures such as those published by the Wallowa-Whitman National Forest include public awareness information on the importance of sound control.

**Response:** The BLM agrees that absolute quiet is not a reasonable expectation, particularly for non-wilderness lands. Many states, including Montana, have enacted OHV sound limit laws. Organized OHV groups are doing a good job of educating the public, as well as monitoring their own members for excessive noise issues. OHV noise, however, continues to remain one of the primary complaints and conflicts between motorized and non-motorized users. In general, the experiences sought by non-motorized users are different from those being sought by motorized users. Many non-motorized users seek as natural and primitive an experience as possible when recreating on non-wilderness lands. Having clean air and water, seeing wildlife, listening to the sounds of nature, and escaping from the noise of everyday life are essential parts of their experience.

#### DD12

**Comment:** During the 1970's, when Executive Orders 11644 and 11989 were created, snowmobile and motorcycles were much louder than today's machines. Concern with sound levels led to the creation of Executive Orders 11644 and 11989. Today's technology provides

machines that are significantly quieter than in the 1970's. Furthermore, the technology now exists to make vehicles even quieter. Therefore, concern with sound levels can be mitigated by establishing a reasonable decibel limit for exhaust systems. States such as California and Oregon have enacted sound emission limits. We encourage all jurisdictions to adopt the stationary sound test procedures as set forth in the Society of Automotive Engineers J-1287 June 1980 standard. Public land-use agencies could establish reasonable sound limits and use this approach to address the sound level issue. This alternative would be more equitable than closures. We request that this reasonable alternative to motorized closures be pursued and incorporated into the preferred alternative and decision-making.

**Response:** Executive Orders 11644 and 11989 were initiated to address a wide range of concerns regarding motorized recreation (resource impact, public safety, social conflicts), not just sound levels. The BLM agrees that advances in technology, as well as new laws (Montana's 96 decibel sound limit) have improved OHV sound levels. OHV noise, however, continues to remain one of the primary complaints and conflicts between motorized and non-motorized users. In general, the experiences sought by non-motorized users are different from those being sought by motorized users. Wilderness status withstanding, many non-motorized users seek as natural and primitive an experience as possible when recreating on public lands. Having clean air and water, seeing wildlife, listening to the sounds of nature, and escaping from the noise of everyday life are essential parts of their experience.

#### DD13

**Comment:** I have a major problem understanding what the safety issues is between non-motorized and motorized users. It is common sense that if you hear a vehicle (truck, car, 4 wheeler or snowmobile) coming down the road or trail you should get out of the way.

**Response:** Safety is the responsibility of all users, but especially for motorized users who may unknowingly be sharing road or motorized trail with hikers, horseback riders, or mountain bikers. Maintaining "situational alertness" and watching for other users is a basic element of "Tread Lightly" and "Right Rider" OHV ethics.

### Travel Management – User Data

#### EE1

**Comment:** The agency does not observe visitors on weekends and holidays and consequently is unaware of actual visitor usage. The agency simply needs to go out and count the different recreationists and mode of access on multiple-use lands on any weekend. This is what we have done and our data is an accurate representation of actual visitor usage on multiple-use lands. We feel very strongly that the current approach and data used by the

agency to represent the historic public use of multiple-use lands does not provide an accurate representation and that the table of observations above is a reasonable representation.

**Response:** Given BLM budget constraints, it is true that the BLM's field presence is typically greater on weekdays in dispersed use areas. One exception to this has been the travel management program over the last three years. Under this program the Butte Field Office has focused its Trail Ranger seasonal employees to make visitor contacts, monitor use, and conduct maintenance work in areas where motorized uses and management concerns are greatest during the weekends. This effort has been very successful and the Butte Field Office plans to continue it, provided that funds are available.

**EE2**

**Comment:** Surveys conducted by Citizens for Balanced Use (CBU) in Bozeman show that motorized users travel on average 50 miles per day per visit to our public lands while non-motorized travel on average 2 miles per day per visit. The quality experience of motorized recreation requires on average 25 times the amount of trail that non-motorized users require. The result of this survey shows a definite need of more trails being provided for the motorized community yet the Forest Service is continuing to close trail after trail to motorized use. This action is unreasonable and should be considered unacceptable. The ratio of motorized versus non-motorized trails should be 50 miles per day of use versus 2 miles per day of use or 25:1. Non-motorized side may say that the agency does not have an obligation to provide 25 times the miles of motorized trails. However, 95 percent of the visitors are motorized recreationists and the ratio of motorized versus non-motorized visitors is 95:5 or 19:1, so 25:1 is not an unreasonable goal.

A reasonable goal for the split of trails should be 50/50 motorized/non-motorized. Remember that 25:1 is justified based on actual usage. The proposed plan does not achieve this balance with only 25% of the existing routes meeting the definition of a motorcycle or ATV trail. We request that a more reasonable proposal be developed.

**Response:** The Butte Field Office provides about three times more OHV trails than non-motorized trails and dedicates about 90 percent of its travel management funding for the management of motorized uses. In addition to designated trails there would be over 415 miles of roads available for riding yearlong or seasonally under the Preferred Alternative in the RMP.

**EE3**

**Comment:** Telephone or other off-trail surveys to establish the percent of visitors who are hiking are inaccurate because everyone will respond that they "hike" but it may only be from the tent to the outhouse or a ¼ mile out in a meadow. Surveys have not established whether the respondent actually hikes any appreciable distance or

uses a specific route. Surveys based on actual observations of activity in the field are a far more accurate determination. Surveys must ask how far did you hike, how long did you hike, and did you use a trail? Once accurate survey information is compiled then it will establish that the majority of hiking experiences are less than 1 mile and that many hikes do not involve trails. This accurate information must be developed immediately and hiking trails should be reduced to meet the factual level of need and use.

**Response:** The Butte Field Office manages approximately 15 miles of established hiking trails and about 40 miles of designated OHV trails. In addition hundreds of secondary roads are available for both motorized and non-motorized travel. Approximately 90 percent of the travel management budget over the last ten years has been used for motorized travel purposes. Based on this situation, BLM does not believe that hiking trails must be reduced or that proposed management is based on inaccurate information.

**EE4**

**Comment:** We are very concerned that a built-in bias exists with visitor use monitoring data based on the fact that all wilderness visitors must sign-in in order to visit a wilderness area and at the same time there are no self-reporting opportunities for multiple-use visitors. Therefore, multiple-use visitor data does not exist because it is not collected or it is under-stated.

**Response:** The Butte Field Office does not manage any established wilderness areas. Proposed management contained in the Butte RMP was not based on the information of concern identified in the comment.

**EE5**

**Comment:** In order to conserve energy, adequate motorized recreational opportunities are needed within a short distance of the cities and towns in our area. In order to conserve energy, we request that all reasonable OHV routes within short distance of urban areas be developed and that urban OHV trail heads be developed where ever public right-of-way allows access to public land. The motorized trails and trailheads developed by the City of Boise (<http://www.ridgetorivers.org/>) are a good example of how motorized trails and connections can be incorporated into an urban situation.

**Response:** Throughout the development of the RMP, there has been considerable public interest and debate regarding OHV use on BLM lands adjacent to urban development (rural/urban interface). Given the high level of interest, BLM initiated two balanced "community based collaborative working groups" (see **Appendix A**) to assist with the development of travel plans for three such areas. With some minor adjustments, the working group recommendations have been incorporated into the Preferred Alternative.

Energy conservation is a concern for all recreational users, motorized and non-motorized alike. However, it was not used as a criterion during travel planning.

#### EE6

**Comment:** Agencies are encouraged to establish OHV census collection points at road and trail collection points. Include an OHV category on all trail and road census sheets.

**Response:** Although outside the scope of the RMP, the BLM agrees with this comment. Road and trail traffic counter data provides useful management information.

#### EE7

**Comment:** Agencies are encouraged to provide good statistics on the level of use by the various public land visitors and use these statistics in the decision processes. Management for exclusive-use runs counter to Congressional directives for multiple-use.

**Response:** The Butte Field Office does gather and report visitor use annually using the Recreation Management Information System (RMIS) (USDI-BLM 2008b) by Recreation Management Areas and sites. This information is compiled using traffic counters, permits issued, field observations, limited surveys and professional judgment. See Chapter 3, Social and Economic Environment, Recreation and Tourism for more information.

#### EE8

**Comment:** The population in the immediate four-county project area is at least 108,000 (<http://ceic.commerce.state.mt.us/Demog/estimate/pop/County/COEST2006-01-30.htm>) that visit the Butte RMP project area is estimated to be at least 100,000 and the number of OHV recreationists in the area is estimated at 29,100. The travel plan must address the needs associated with the numbers and popularity of at least 29,100 motorized and OHV recreationists by providing for adequate motorized recreational resources. The current proposal does not meet the needs of 29,000 OHV recreationists in the immediate area and 272,000 OHV recreationists state-wide, which is unreasonable for a multiple-use area that is ideal for motorized use.

**Response:** The BLM recognizes and has addressed the growing popularity of OHV recreation. To date, the majority of travel management funding for the Butte Field Office has been spent on OHV trail development, trailhead facilities, trail maintenance, and management (Trail Ranger program). Examples include the Pipestone and Clancy Designated OHV riding areas. Very few BLM funds have been spent on non-motorized trail systems or facilities. The BLM believes Alternative B, the Preferred Alternative, represents a balanced travel plan that takes into account resource protection, and the divergent interests of motorized and non-motorized recreational users.

## Travel Management – Winter Use/Snowmobiles

#### FF1

**Comment:** Forest Service Chief Dale Bosworth recognized the true popularity and magnitude of motorized recreation in his January 16, 2004 speech which stated “Off-highway vehicles, or OHVs, are a great way to experience the outdoors. But the number of OHV users has just gotten huge. It grew from about 5 million in 1972 to almost 36 million in 2000.” We agree with the Forest Chief that 36 million is a significant number of recreationists. Additionally, the USDA Southern Research Station has recently validated the growing popularity of OHV recreation in their Recreation Statistics Update Report No. 3 dated October 2004 (<http://www.srs.fs.usda.gov/trends/RecStatUpdate3.pdf>). This document reports that the total number of OHV users has grown to 49.6 million by the fall 2003/spring 2004. Based on the 2000 estimates OHV and motorized recreationists are about 64 percent of the population that actually visits the forest (36 million/56 million). This popularity is also representative of BLM managed lands. OHV registrations in Montana grew 24 percent from 2004 to 2005 (MDFWP).

The typical use of public lands including the Butte RMP project area and the typical needs of the public in our region are described on Table 2-7 in the Social Assessment of the Beaverhead-Deerlodge National Forest dated October 2002 ([http://www.fs.fed.us/r1/bd/forest\\_plan/revision/reports\\_documents/social/Forest%20Social%20Assessment%20Masterfinal%20.pdf](http://www.fs.fed.us/r1/bd/forest_plan/revision/reports_documents/social/Forest%20Social%20Assessment%20Masterfinal%20.pdf)). This document reported that the total number of forest visitors in Forest Service Region 1 for year 2000 was 13,200,000. The total number of wilderness visits was estimated at 337,000 or 2.55 percent. Therefore, millions of visitors to public lands (nearly all at 97.45 percent) benefit from management for multiple-use and benefit from motorized access and mechanized recreational opportunities which are consistent with our observations of visitors enjoying motorized access and mechanized recreation on public lands. Therefore, millions of visitors to public lands (nearly all at 97.45 percent) benefit from multiple-use and motorized access. We need more areas to ride, not less.

**Response:** It is agreed that OHVs provide a great means for enjoying the outdoors and that use is increasing. The Butte Field Office realizes that demands are high and these needs were considered in combination with all other resource values and uses prior to identifying the Preferred Alternative.

#### FF2

**Comment:** It is difficult for the snowmobile user to distinguish wilderness or closed area boundaries where no obvious geographic feature marks the boundary. In wilderness or other areas with motorized closures, snowmobile users should be protected against inadver-

tently entering wilderness or closed areas. Ecological and wilderness values could be protected by designating non-motorized buffer zones around all wilderness. We also recommend that Wilderness Study Areas be considered for designation for non-motorized uses in order to protect wilderness characteristics and values in these areas.

**Response:** Although this comment is outside the scope of the RMP, the BLM considers it the snowmobile user's responsibility to know where they are located in the Field Office and to avoid Wilderness Study Areas. The BLM, however, endeavors to sign travel plan areas. Under the Interim Management Policy and Guidelines for Lands under Wilderness Review, no snowmobiling is allowed in the six Wilderness Study Areas in the Field Office and all Wilderness Study Areas are closed to motorized travel with the exception of several travelways in Black Sage WSA (that lack public access), and one route in the southern portion of Humbug Spires.

### FF3

**Comment:** Some Federal land managers have policies that prohibit off-trail snowmobile use until at least 6 inches of snow has accumulated. Snow in alpine areas is highly susceptible to wind movement which can leave bare or thinly covered areas that would be difficult or impossible to avoid given the speed of snowmobiles. Fragile alpine vegetation may need protection against such use.

**Response:** The BLM agrees that sensitive areas should be protected from impacts from snowmobile use and has added the following management prescription to all action alternatives:

“Snowmobile use would be subject to restrictions outlined in specific travel plans. It is the rider's responsibility to avoid locations where wind or topographic conditions may have reduced snow depth and created situations where damage to vegetation or soils could occur, or where vegetation is taller than the protective snow cover. Ecologically sensitive areas could be closed to snowmobiling if resource damage caused or exacerbated by snowmobile activity is found to be occurring in these areas.”

### FF4

**Comment:** Snowmobile Use: As stated in the report compiled by the University of Wyoming for the State of Wyoming's Department of State Parks and Cultural Resources (State of Wyoming DSPCR 2000), “The previous policy of encouraging dispersed human use over the landscape has unintended consequences for a broad range of wildlife. Although this policy dilutes human impacts over a broader area, it also exposes more of the landscape to these impacts. There is a consensus among the literature reviews that activities such as snowmobiling should be restricted to defined trails dur-

ing daylight hours. This would reduce the amount of area impacted by human activities and allow some animals to habituate to the predictable disturbance. It would also minimize vegetation destruction, erosion, and the total area of snow compaction, thereby preserving subnivean fauna.” (p11) Much literature speaks to the negative effects of snowmobiles on wildlife and habitat (Dorance et al 1973; Mahoney et al 2001; Schmid 1974; Wanek and Schumacher 1974) and the BLM recognizes the negative influences of snowmobiles throughout the DEIS. It is therefore puzzling to American Wildlands that the BLM permits cross country snowmobile use in its preferred plan. American Wildlands does not believe the elimination of snowmobiling is necessary. However, snowmobiling should be managed to minimize wildlife and habitat disturbance.

The most effective means of minimizing wildlife and habitat disturbance would be to restrict snowmobile use to designated routes as described in Alternative C.

**Response:** The BLM recognizes the need to minimize impacts to wildlife from cross-country snowmobile use. The Preferred Alternative would increase the Butte Field Office acreage of lands in the “closed” area designation for snowmobile use by approximately 27,640 acres. Most of the additional proposed snowmobile area closures are located in the Upper Big Hole River Travel Planning Area and are designed to minimize disturbance to big game in winter range areas and bighorn sheep. While the BLM acknowledges that restricting snowmobile use to designated routes may be the most effective alternative to minimize wildlife disturbance, the BLM also notes its multiple use mission which allows for snowmobile uses. The Preferred Alternative provides for some snowmobile use while reducing impacts to wildlife associated with snowmobile use.

### FF5

**Comment:** Helena TPA: Pg. 514: (Cross-country snowmobile use would be allowed, as well as snowmobile travel on all existing routes during the season of use (12/2-5/15), conditions permitting.) If the existing routes you are proposing, in Table 4-55, then this is a net loss of 38.6 miles of routes now in use for snowmobile use leaving only 13.6 miles open.

East Helena TPA: Pg 542: (Under Alternative B, cross-country snowmobile travel would be allowed, as well as travel on all existing routes during the season of use (12/2-5/15), except for the North Hills, Dana's Bar, and the area located to the west of Prickly Pear Creek. The remaining areas (McMasters Hills, Ward Ranch, and Spokane Hills) would be closed to all cross-country snowmobile use, including travel on existing roads and trails.) Does this mean that North Hills, Dana's Bar, and the area west of the Prickly Pear Creek, along with the other areas that are listed as closed, are closed to snowmobile use also? If the existing routes you are proposing, in Table 4-65, then this is a net loss of 22.9 miles of

routes now in use for snowmobile use leaving only around 16 miles open. They are also losing seven large areas of cross-country use.

Lewis and Clark TPA; Pg. 574 (Compared to Alternative A, opportunities for cross country snowmobile travel would be reduced with the area identified in the northwest portion of the TPA (Marysville area) restricted to designated routes only, during the season of use (12/2-5/15), conditions permitting.) This does not reflect the loss of the closures, decommissioned, and conversion of motorized routes to non-motorized routes. This is a dramatic loss in this TPA.

Boulder Jefferson City TPA; Pg 603: (Area-wide cross-country snowmobile use, as well as travel on all existing routes during the season of use (12/2-5/15), conditions permitting would continue to be allowed in all the action alternatives.) This appears to be a no loss situation but there is a net loss of around 50 miles of now motorized route loss, leaving 4 miles of routes open year-round.

Upper Big Hole TPA Pg. 632: (Snowmobile management would continue to remain substantially in effect as represented by the 1996 Southwest Interagency Visitor/Travel Map. However, several additional areas would be closed to cross country travel, and travel in other areas would be restricted to existing designated routes and trails. Proposed cross-country closures include the area located between the Soap Gulch and Camp Creek roads, the Goat Mountain/Maiden Rock area, and the Sawmill Gulch/Nez Pierce Ridge area. The proposed closures would have little impact on snowmobile use due to the poor snow conditions in these areas.) Not only are you proposing to close large blocks of land, you also propose to close many miles of routes now in use by snowmobile users. All of the above TPAs need to be looked at again and a more equitable alternative developed. Closing over 50 percent of the Butte RMP routes and area is unacceptable.

**Response:** For the Helena Travel Planning Area, cross country snowmobile use as well as use on existing routes would be allowed under the Preferred Alternative, so there would be no loss of existing snowmobile opportunities. Much of this area lacks adequate snow conditions for snowmobile use throughout the majority of most winters, however. The area is not currently used substantially by snowmobilers.

For the East Helena Travel Planning Area, incorrect wording on page 542 of the Draft RMP/EIS has been corrected in the Proposed RMP/Final EIS to indicate that the North Hills, Dana's Bar, and the area west of Prickly Pear Creek would be open to cross-country snowmobile use under the Preferred Alternative.

For the Lewis and Clark County NW Travel Planning Area under the Preferred Alternative, 12,649 acres of the BLM total of 17,000 acres in the area would remain open to cross-country snowmobile use, as well as use of existing routes. Approximately 888 acres in the area of

the Great Divide Ski Area would be closed to snowmobile use. Snowmobile use would be restricted to designated routes (not all existing routes) in the northwest corner of this area, totaling about 3,463 acres.

For the Boulder/Jefferson City TPA, there would be no loss of snowmobile opportunities under the Preferred Alternative. Much of this area lacks adequate snow conditions for snowmobile use throughout the majority of most winters, however. Because this entire travel planning area is within a big game winter range area, the BLM has proposed winter seasonal closures to wheeled motorized use on most routes in this area under the Preferred Alternative.

For the Upper Big Hole River Travel Planning Area, the BLM stands by its original proposal in the Preferred Alternative to close an additional approximately 15,325 acres to snowmobile use in lower elevation areas to provide for improved big game winter range and to reduce disturbance to bighorn sheep populations. These lower elevation areas often lack adequate snow conditions for snowmobile use during most winters.

The Preferred Alternative for the travel plans addressed in the Butte RMP constitute an approximately 34 percent reduction in routes open to wheeled motorized use, rather than the 50 percent reduction suggested by the comment. The BLM believes its Preferred Alternative best balances the needs to provide adequate access while protecting resources.

## Travel Management Boulder/ Jefferson TPA

### GG1

**Comment:** The proposed Boulder/Jefferson City Travel Management Plan substantially reduces the motorized roads available from 60 miles to 27 miles with only 3.7 being open year round and the remaining being seasonally restricted. The proposed area is adjacent to the larger Forest Service property and this plan should be coordinated with travel management and land use plans involving a proposed new wilderness area and road closures that should help accommodate the needs of non-motorized users.

The other important aspect of road density reductions under this proposal is the ability to access wildland fires will be reduced at a time when large timber stands are dying due to the bug infestations.

**Response:** The BLM evaluated each road and trail segment for its effects to wildlife and wildlife habitats, fish and aquatic habitats, riparian areas and soils in the Boulder/Jefferson City Travel Planning Area. Each route was also assessed for human uses which included; access for fire suppression, vegetation management, public lands access, and recreation. From this analysis, a range of travel management alternatives in this planning area was developed. Coordination on routes that access Forest Service lands was also conducted. Routes that are

closed to public use can be used during emergency situations as described in the Travel Management and Access section, Field Office Level – Management Common to All Alternatives subsection of Chapter 2 in the RMP. Cross-country travel in emergency situations is also allowed.

**GG2**

**Comment:** Boulder Jefferson TPA: American Wildlands supports Alternative C and recommends further closing and decommissioning of roads where possible. American Wildlands also recommends the decommissioning of any “dead end” routes to avoid user-created loops especially those near Basin Mountain.

**Response:** For the Boulder/Jefferson City TPA, the BLM believes that Alternative B would provide the best mix of road closures and continued road use to meet the needs of the BLM’s multiple use missions. Road closures proposed under Alternative B would improve wildlife habitat compared to the current condition in this area. Road closures would be implemented through a variety of means that would include a combination of signing of open routes and physical installation of gates, berms, or down trees to close off closed routes.

**GG3**

**Comment:** Boulder-Jefferson City TPA: Open roads in the planning area would likely increase due to development and management of private lands. Alternatives B and C would have greater beneficial cumulative affects to wildlife and wildlife habitat from closing roads than Alternatives A and D.”

Soils: Alternative C contains by far, the least soil erosion impact than any other alternative, and “would provide the greatest benefit on water resources...thus allowing these areas to vegetatively recover, stabilize soils, and reduce erosional outputs to streams.” (p. 584)

Weeds: “Overall, Alternative C would reduce weed spread more than any other alternative.” (p.586)

Riparian: Alt. C would contribute most to riparian vegetation benefits (p. 589).

Wildlife: “Alternative C would decrease harassment to wildlife during all seasons of use, especially during the winter and spring, over all alternatives. This alternative would also improve habitat and reduce fragmentation more than all other alternatives.” “Actual road density in elk winter range would be 0.8 mi/mi2.” “There would be substantially more acres of functional winter range.” Snowmobile use would be “limited to open roads only...This would substantially reduce the negative effects to wildlife from snowmobile use and be the most protective of all alternatives.” (p. 591).

Alternative B and C would have particularly beneficial cumulative effects to core and subcore habitats and to wildlife movement corridors (p. 594).

Please consider modifying your preferred alternative to provide for conditions more favorable towards wildlife, similar to what is found in Alternative C.

**Response:** Under the Preferred Alternative, the BLM is already proposing to reduce road densities in this area in part to improve the quality of big game winter range. The Preferred Alternative attempts to balance the needs of providing motorized access while providing for resource protection.

**GG4**

**Comment:** Trail #510124: This trail is to end on BLM land, but people have added to it by crossing private property and coming out on Depot Hill Rd. I would request that you post the end of trail with a sign indicating end of trail.

**Response:** This is an implementation issue that has been addressed on the ground outside the scope of the Butte RMP.

**GG5**

**Comment:** Trail #510123b - this trail also ends at private property but people have continued on and made a trail that comes out on Depot Hill Rd. This crosses private property and they have cut cables and fences to continue to use this road. I would like this trail posted at the end or closed where it intersects with BJ041. There is a gate at this intersection and it has been left open many times allowing the cattle of two ranches to cross onto other BLM lands, etc.

**Response:** This is an implementation issue that has been addressed on the ground outside the scope of the Butte RMP.

**GG6**

**Comment:** The next area of concern is just north of Trail #5103. Last year people started to drive off the road and make a trail that leads up through the burned trees and dead ends in a park on the Boulder Hill. This trail was not there before last year. There was a fire road that was cut in there in 2000 but it was reclaimed after that.

**Response:** The Off-Highway Vehicle EIS Record of Decision (ROD) was signed in 2003, and established the benchmark for designated vehicle routes. Trails created after 2003 must be designated for specific purposes and subject to environmental analysis. Since the BLM is not designating this as a route in the Boulder/Jefferson City travel plan, this route will be closed to the public.

**GG7**

**Comment:** There is also another trail that connects with Trail #5129. This trail starts just NE of where Trail 58102B connects with the county road. It is used a lot during hunting season and crosses private property. I

have spoken with the property owners and they are having trouble with people littering and partying on their property. They stated they don't mind people crossing but they don't like having to clean up the mess all the time. This is a nice trail but it is not on your map. I would like you to consider adding it, but perhaps finding a better place to enter from.

**Response:** In developing the travel plan alternatives, the BLM did not consider this route to be crucial to motorized use in this area. The BLM does not have an easement for this route as it originates on private land and passes onto BLM lands. Given that the property owner is having some difficulties associated with public access through their lands, the BLM does not propose adding this route to the BLM road network.

### GG8

**Comment:** MAP 19: Boulder/Jefferson City. This area provides riding opportunities until early winter and then again beginning in late winter. The attached maps where I have added road numbers are the routes used most for winter travel and are preferred summer use routes.

Road 510120 - This road is the only place where there is a wide view of the Cataract Creek drainage, the mountains west of Basin Creek, and the mountains southerly towards Butte. It is a picture taking opportunity. The road grade is level, grassed in and has no erosion. I think this road should be left open.

**Response:** Road #510120 was proposed for closure in the Preferred Alternative because it is redundant to a county road as well as another BLM route that has a right-of-way on it. Since the route with which this road is redundant will remain open, the BLM continues to propose closing Road #510120 in the Preferred Alternative.

### GG9

**Comment:** MAP 19: Boulder/Jefferson City. This area provides riding opportunities until early winter and then again beginning in late winter. The attached maps where I have added road numbers are the routes used most for winter travel and are preferred summer use routes.

Roads BJ047, 5101 and 5107 - These routes are used through December and are used again beginning the first of May. I would like the closed restriction changed to 1/1 to 5/1. During heavy snow years the ATV use would end earlier and begin later than these dates. During lean snow years the lost opportunity would be acceptable.

**Response:** The closure dates proposed in the Preferred Alternative are set to improve winter range for wildlife. BLM coordinates with other land management agencies to arrive at the most effective dates, utilizing data provided by Fish, Wildlife and Parks on the timing and patterns of animal movement. The BLM continues to

propose the December 2 – May 15 closure dates for these routes to improve winter range and to provide for consistency of seasonal closure dates on BLM routes in the Boulder/Jefferson City Travel Planning Area.

### GG10

**Comment:** MAP 19: Boulder/Jefferson City. This area provides riding opportunities until early winter and then again beginning in late winter. The attached maps where I have added road numbers are the routes used most for winter travel and are preferred summer use routes.

Road 5108 and the east end of 5107 - Road 5108 is the main power line access route. It is a well constructed route and does not have any erosion. About mid point along the route there is a nice view point. The panorama is 180 degrees plus, including the Elk Horn Mountains, Boulder, the Boulder Valley, mountains to the south and southwest, to Jack Mountain. I think this route should be kept open with the same restriction dates as described above. The east end of 5107, from the junction with 5108 to Comet, is not gravel surfaced and has continuous erosion occurring. Maintenance on this route is greater than route 5108. I would like to have this route left open but if some road has to be closed then I prefer 5108 be open and the east end of 5107 be closed.

**Response:** The BLM has changed the Preferred Alternative to open Road #5108 with seasonal restrictions (closed December 2 – May 15) to address this comment and to acknowledge that this route has a utility right-of-way on it.

### GG11

**Comment:** MAP 19: Boulder/Jefferson City. This area provides riding opportunities until early winter and then again beginning in late winter. The attached maps where I have added road numbers are the routes used most for winter travel and are preferred summer use routes.

Road 5129 and 5128 - The same comment about 5107 above applies here. I suggest the closed restriction date be changed to 1/1 to 5/1 even though early winter and late winter access occurs later and earlier than it does on route 5107.

**Response:** The closure dates proposed in the Preferred Alternative are set to improve winter range for wildlife. BLM coordinates with other land management agencies to arrive at the most effective dates, utilizing data provided by Fish, Wildlife and Parks on the timing and patterns of animal movement. The BLM continues to propose the December 2 – May 15 closure dates for these routes to improve winter range and to provide for consistency of seasonal closure dates on BLM routes in the Boulder/Jefferson City Travel Planning Area.

**GG12**

**Comment:** MAP 19: Boulder/Jefferson City. This area provides riding opportunities until early winter and then again beginning in late winter. The attached maps where I have added road numbers are the routes used most for winter travel and are preferred summer use routes.

Road 099, 5130, 101, BJ033 and BJ134 - These routes are dead end spur access to power line towers. I see hardly any sign of vehicle use, the road beds are grassed, and erosion is not occurring. Because BPA has maintenance responsibility, the BLM is not saving maintenance dollars by closing these routes. Instead the BLM is spending funds for gate installation and yearly gate maintenance that appears to have a very low benefit/cost ratio. What is the B/C ratio? Also the numerous closures to almost nowhere may not seem reasonable to the public. Instead the closures may be creating a negative "stay out of your public land" image.

**Response:** The BLM notes that BPA does not have maintenance responsibilities on the short routes identified in the comment so if these routes are to remain open then BLM would have maintenance responsibilities. In addition, the BLM uses a variety of methods to close routes so not all routes are closed with gates that require maintenance. Routes mentioned in the comment remain proposed for closure in the Preferred Alternative.

**Travel Management - East Helena TPA**

**HH1**

**Comment:** The proposed plan converts the North Hills from a multiple-use area to a non-motorized area which is contrary to the overall needs and input from the public. This is the second closest and next to last motorized area in close proximity to Helena and the impact of this proposed closure has not been adequately addressed or mitigated. Because of the significant cumulative effects any motorized closure must be mitigated. Additionally and more importantly, this direction is completely contrary to the input received at the public meeting and demonstrates the strength of the motorized closure agenda within the agency.

**Response:** There has been considerable public interest and debate regarding motorized and non-motorized use levels and needs in the North Hills. Given the high level of interest, BLM initiated a community based collaborative working group to assist with the development of a travel plan for this rural/urban interface area (see **Appendix A**). With some minor adjustments, the working group recommendations for North Hills were incorporated into what ultimately became the Preferred Alternative.

**HH2**

**Comment:** East Helena: Map 10 & 12 – Bad because it cuts off access to a lot BLM ground and existing roads.

Map 11 – pretty good, but some of the game retrieval roads should have seasonal restrictions on them to allow American citizens to camp and recreate in those areas during the summer months (May-Sept.) too. Map 13 – best, but need to provide "restricted" summer access, especially around the Spokane Hills areas.

**Response:** Alternatives A-D provide a varying range of opportunities for motorized and non-motorized recreation. The BLM believes that the Preferred Alternative (represented by Map 11) provides the best balance of resource protection and recreation use. The Preferred Alternative reflects the long history of non-motorized use for the Ward Ranch, McMaster Hills, and Spokane Hills areas.

**HH3**

**Comment:** East Helena TPA: Page 54, Alt B "Spokane Hills". I suggest opening to handicapped persons Tuesday, Wednesday, and Thursday during hunting season with no permit required.

**Response:** Under the Preferred Alternative, this area would be available to handicapped persons for hunting during a two week period. In accordance with state law, a valid Montana State Disabled Conservation License or Permit to Hunt from a Vehicle would be required, as well as a BLM permit. The permit requirements or restrictions would be coordinated with the Montana Department of Fish, Wildlife and Parks to ensure hunter safety and a quality hunting experience. This management is consistent with USFS management and other BLM offices.

**HH4**

**Comment:** One long-standing area of user conflict has been recreational shooting in the North Hills. Neither the RMP nor the Travel Management Plan addresses this significant issue of public safety. Certainly "safety" would be considered part of a quality experience as stated in the vision statement for the RMP. With fewer hunters, less and less of the recreating public are familiar with firearms, resulting in lower tolerance levels and higher expectations for quiet recreational experiences. Recreational shooting in the North Hills has been historically concentrated along route EH0516; resulting in many user conflicts and impacts to resources. Because of the excessive fuels load in portions of the North Hills and the area's vulnerability to fire, the declining numbers of hunters and interest in hunting in the Rocky Mountain states, the travel management plan for the East Helena TPA should be revised to designate EH0516 as the only motorized route in the North Hills. This revision to the plan would result in reduced risk of trespass OHV use, increasing the BLM and local enforcement agencies' ability to control risky behaviors such as the use of the area for "keggers". Designation of this route as a "no shooting" zone with an appropriate safety area where no shooting would be allowed would provide for

increased public safety as well as comply with the underlying vision of the RMP for quality experiences on public lands.

**Response:** Alternative C addresses your concerns, as it restricts all motorized use to route EH0516. However, Alternative B is the BLM's preferred alternative in part because it represents a combined effort between the BLM and a community based collaborative working group specifically established to help develop travel planning for the North Hills (refer to Appendix A). Although travel planning for the North Hills may have an indirect impact on illegal OHV use, shooting safety, wildland fire, keggers, etc, these are issues best addressed through other management action, law enforcement patrols, and site specific recreational activity planning. Outside the scope of the RMP, the BLM is currently working with the Western Montana Resource Advisory Council and a community based collaborative working group, to help resolve the shooting safety issue.

#### HH5

**Comment:** East Helena TPA - Maps provided for the North Hills erroneously indicate that a major change from the status quo (Alternative A) would occur with any other alternative. But for years, the roads that have been open would remain open, and roads that have been closed would remain closed, which is what is proposed in Alternative C. The same two access routes that have existed for years for the North Hills portion of the East Helena TPA would remain in effect. In fact, all alternatives except Alternative C would open roads in the North Hills in opposition to cooperative efforts that MFWP has been involved in with BLM for several years (2007 Block Management map enclosed). There was no discussion in the RMP that Alternative C has essentially been the status quo for the North Hills for years. You should address this.

**Response:** Alternative A represents the status quo. Under Alternative A, all of the routes shown on the map are open to motorized use. As indicated in the legend, many of these routes are closed, however, during the big game hunt (closed 10/15-12/1) to provide a non-motorized hunting experience. This is consistent with the September 30, 1991 Block Hunting Management agreement. Each of the Action Alternatives, however, represents a distinct departure from this existing management. Under the Preferred Alternative (Alternative B), year round motorized access is reduced. All of the routes managed as seasonally restricted under Alternative A are permanently closed under Alternative B. Under Alternative C, with the exception of routes 516/516a (open yearlong), all other routes are Closed. Alternatives B and C enhance non-motorized hunting recreation opportunities. Alternative D does represent a departure from the 1991 Block Hunting Management agreement. Under Alternative D, several additional routes would

remain open yearlong to motorized use in order to provide higher elevation access during the hunting season.

#### HH6

**Comment:** We would like to meet with you or representatives from your office in the near future to go over our travel plan maps along adjacent boundaries to discuss management consistency across federal lands. We have completed the North Belts Travel Plan and the Elkhorns Travel Plans, and will complete the South Belts Travel Plan by December 31, 2007. We are just beginning to work on the Blackfoot and Continental Divide Travel Plans. Our goal is to provide for management consistency forest-wide. Towards this end, we feel it is necessary to coordinate on some specific items, similar to our coordination efforts with the BLM on the Elkhorns Travel Plan and the Statewide OHV Plan. Some topics include:

- a. Continued coordinated management of route designations, route closures, and route closure dates.
- b. Continued coordinated management in the Missouri River corridor from Holter Lake upstream to Canyon Ferry Lake.
- c. Reroute of a road onto BLM to bypass private land where no public right of way exists in the vicinity of Hellgate Canyon.
- d. Maintaining an open ATV route across BLM lands to coincide with the Helena National Forest's North Belts Travel Plan between Avalanche Creek and Magpie Creek.
- e. Clarification of BLM guidelines and signing of the Jimmy's Gulch Road north of Confederate Gulch in the Big Belts as it relates to public access.
- f. Coordination of travel management signing on adjoining lands.
- g. Coordination of road maintenance.

**Response:** Upon review by the BLM, this comment is outside the scope of the RMP and site-specific travel plans being concurrently addressed.

#### HH7

**Comment:** York Bridge West: BLM lands in this area should be developed as a hiking area. It would be the perfect complement to the Devil's Elbow site; the views from the top of the ridge (above the York Bridge) encompass most of Hauser reservoir and the entire Helena Valley. The terrain is open and the soils permit easy construction of tread, the parking is already there (along the dead-end spur to the old bridge location). The ground is very weedy - especially on the lower slopes off York Road, but increasingly on the ridge top. And there is vehicle trespass (mostly pickups, some ATVs) coming off the private subdivision roads to the south and pioneering routes along the open ridges (which is why weeds are spreading on to the ridge). The entire area should be closed to all motor vehicle use (as per your

Alt. C.) But it should also be designated, and developed as, a hiking area. As such, it should have NSO stipulations for Oil & Gas leasing and its ROS should be semi-primitive modified.

**Response:** The BLM notes that much of this area in question is proposed for No Surface Occupancy stipulations for oil and gas leasing and a semi-primitive modified Recreation Opportunity Spectrum designation in the Preferred Alternative. The BLM believes that proposed management in the Preferred Alternative to leave Road #EH037 open for a portion of its length as the only open motorized route in the area is appropriate and consistent with managing this area primarily as non-motorized.

## Travel Management - Helena TPA

### II1

**Comment:** We also support nighttime closures for travel in the Scratchgravel Hills trail system, with the exception of allowing hunters access approximately 1 hour before sunrise and one hour after sunset.

**Response:** The Preferred Alternative for the Helena Travel Planning Area has been modified in the Proposed RMP/Final EIS so that all interior roads in the Scratchgravel Hills would be closed to public motorized travel yearlong at the five proposed trailheads, with the exception of a few perimeter right-of-way routes and routes to private residents. This modification is due to the high degree of user conflicts and illegal activity taking place in this area. This change will negate the need for the dusk to dawn closure since the use of motorized vehicles will not be allowed during any time of the day.

### II2

**Comment:** I prefer Alternative C which keeps access to the existing trail heads. I did want to address the issue of dumping on the BLM property. You might be aware of the mound of tires being dumped at the end of Echo Drive. There are also frequent beer cans dumped along the road. Just last year there was a contractor rack for a truck and stolen tools thrown in the trees. We called the sheriff on both cases. I would like the BLM to consider shutting down access after dark to motorized vehicles in the Scratch Gravel area. I feel the amount of garbage and tires dumped would decrease somewhat if the access at night was not allowed. Also the weeds and fire control are a concern of all in the area.

**Response:** The Preferred Alternative for the Helena Travel Planning Area has been modified in the Proposed RMP/Final EIS so that all interior roads in the Scratchgravel Hills would be closed to public wheeled motorized travel yearlong at the five proposed trailheads, with the exception of a few perimeter right-of-way routes and routes to private residences. This modification is due to the high degree of user conflicts and illegal activity

taking place in this area. The BLM believes that the revised Preferred Alternative would reduce problems with dumping and illegal activities after dark. Other problems could be largely eliminated through proactive community involvement, such as a "Citizens Watch" program.

### II3

**Comment:** The proposed plan converts the Scratch Gravel Hills from a multiple-use area to a non-motorized area which is contrary to the overall needs and input from the public. This is the last motorized area in close proximity to Helena and the impact of this proposed closure has not been adequately addressed or mitigated. Because of the significant cumulative effects any motorized closure must be mitigated. Additionally and more importantly, this direction is completely contrary to the input received at the public meeting and demonstrates the strength of the motorized closure agenda within the agency.

**Response:** There has been considerable public interest and debate regarding motorized use in the Scratchgravel Hills. Given the high level of interest, BLM initiated a "community based collaborative working group" (see **Appendix A**) to assist with the development of a travel plan for this rural/urban interface area. With some minor adjustments, the working group recommendations were brought forward as the Preferred Alternative; which allows for some limited motorized use. It should be noted, however, that 8 of the 9 working group members favored Alternative C, the non-motorized alternative for the Scratchgravel Hills. BLM supports motorized recreation. However, after consideration of public comments and other factors including the close proximity to residential development, sharp social conflict, and occurrence of unlawful activities, the BLM does not believe that this area lends itself to motorized use. The Proposed RMP/Final EIS has been adjusted to close the Scratchgravel Hills to wheeled motorized use beyond the five trailhead locations in the area.

### II4

**Comment:** It seems that under all alternatives of the travel plan, BLM plans to designate an "open yearlong" route in a very short section of BLM land where no road currently exists, nor has one ever existed (labeled "new road" on the attached copies of the map). This is of concern to us, because in order for anyone to use this very short section, they would have to enter our first property via a private road, leave that property, enter or second property via the same private road, and then leave our second property and enter BLM land onto this proposed new section of road. This would be difficult, because we have fenced our property's perimeter, including the stretch where the proposed road would intersect our property. We have no intention to allow any access to BLM via our private road through our property, and do

not think there is any legal basis to ask us to do so. We would respectfully suggest landowners in the area be allowed access via the current well-traveled existing road on BLM (labeled "existing road") on the diagrams.

**Response:** All roads with current right-of-way grants issued by the Bureau of Land Management are shown as open on the travel planning maps under each of the action alternatives. Further investigation of the issue raised by the comment shows that a right-of-way grant was issued to cross BLM land via Route 75 on August 26, 1997.

## II5

**Comment:** I would like to comment on the Helena portion of the Resource Management Plan, in particular concerning road #68. On all alternatives, this road remains open. I would like to address reasons for closing this road.

1. RECREATIONAL OPPORTUNITIES. These are limited to an extremely small segment of BLM land surrounded by private lands. Houses are close enough to the road and the land it accesses that hunting opportunities other than bow are nonexistent or minimal at best. Also, a letter from the BLM, dated 7/22/05 states that access through this area, lot 25, section 35, T.11 N, R.5 W, is non motorized and is limited to walk-in only. In addition, this road dead-ends after its short distance, which I would assume is under a half a mile total in length.

2. WILDLIFE: Due to extensive cattle grazing during the summer, very little forage remains in winter. Despite this, whitetail and mule deer frequently utilize this area. Elk do travel through but do not seem to spend as much time here. I have also witnessed wolves and bear cross this land. Granted these are not critically endangered species but nonetheless are enjoyed by most Montanans. If vehicular traffic would increase, these4 creatures may well leave the area.

3. CULTURAL: I have discussed with Dr. Richard Buswell, a known expert in the old Mullen Road, about this area. He believes that a portion of the Mullen Road may cross this region. Under your guidelines, I feel this should also be considered in your ultimate decision.

4. The present leaseholder of the grazing permit sublets this area out to another rancher. The lessee, as well as the rancher, has access to this property through road #7. In fact, this is how he normally accesses his own house. He has been given right-of-way by the BLM through your property on the opposite end. It is my understanding that his road, #68, did not exist in the true sense of a road but as a cattle trail until he repeatedly drove across it over the years. This would thus qualify as a user-created trail, which is why you are examining all of these roads.

So in summary, there are minimal recreational opportunities, wildlife habitat would be affected, possible cultural significance, and finally it is a user-created road. This was not a road and had never been one until certain individuals decided to make one. Given these facts, I feel the road should be closed rather than be left open as presently is suggested in all alternatives.

According to a letter received by the Pujols from the BLM (enclosed), it is quite clear that the BLM has no administrative or public access over this road on private property. It is apparent that BLM understands that it does not have an easement over our property. Without an eminent domain action and compensation, how can BLM open a little piece of "road" that can only be accessed from across our property?

**Response:** As noted, the BLM does not have administrative or public access through your private properties; therefore, the status of Road 68 in the Helena travel planning area has been changed from open to closed under each of the action alternatives.

## II6

**Comment:** Scratchgravel: The key characteristics are their small size and the fact they're surrounded by ever increasing residential development. The key concerns are public health & safety, limiting public nuisances and maximizing recreational opportunities. Regarding public health & safety, fire is the over-riding concern, followed by shooting (still a problem, but minor compared to what it used to be.) The major 'nuisances' now are ORV use and late night 'parties.' So I strongly urge you to 'close' the entire area to use after dark. Mineral development and utility corridors would be inappropriate 'nuisances' here; so I support making the Scratchgravel a 'no-lease' area and an 'exclusion' area respectively. (The oil & gas potential in the batholith probably insignificant; and with all the surrounding roads, and existing towers in the north hills, Spokane Hills, Boulder Hill, MacDonald Pass, etc., there's no need to trash the Scratchgravel.)

**Response:** The Preferred Alternative for the Helena Travel Planning Area has been modified in the Proposed RMP/Final EIS so that all interior roads in the Scratchgravel Hills would be closed to public motorized travel yearlong at five trailheads, with the exception of a few perimeter right-of-way routes and routes to private residents. This change will negate the need for the nighttime closure since the use of motorized vehicles will not be allowed during any time of the day.

The Scratchgravel Hills are proposed as an "avoidance" area for utility rights-of-way in the Butte RMP. This means rights-of-way would be strongly discouraged. Authorizations made in avoidance areas would have to be compatible with the purpose for which the area was designated and not be otherwise feasible on lands outside the avoidance area. To meet a portion of the BLM's

mission of providing opportunities for oil and gas exploration and development, in the Preferred Alternative the western portion of the Scratchgravel Hills area provides for oil and gas leasing with No Surface Occupancy stipulations, while the east side allows for leasing with Controlled Surface Use and Timing Limitations.

## II7

**Comment:** Please consider modifying your preferred alternative to provide for conditions more favorable towards wildlife, similar to what is found in your Alternative C.

Helena TPA

- The Scratchgravel Hills are heavily impacted by motorized users, yet this block of BLM land is crucial for wildlife movement. Under Alternative C, one motorized route would be allowed to the heart of the area with two other routes accessing from different boundaries, and several trail head accesses would be allowed.

- Soils: Alternative C would “provide for closure or decommissioning of about 86 percent of BLM roads in the TPA, thus allowing these areas to vegetatively recover and stabilize soils.

- Water: “Alternative C would reduce the contribution to adverse cumulative effects from BLM roads and would provide for the most closed roads.” (p. 496) Alternative B would decommission more roads but close fewer roads.

- Weeds: “Alt. C would restrict wheeled motorized travel to five non-motorized trailheads in the Scratchgravel Hills... and would provide the least number of wheeled motorized routes in the Helena TPA.” This approach would diminish the spread of noxious weeds.

- Riparian: “Alt C would make the greatest contribution to riparian vegetation by closing the greatest mileage of riparian roads on BLM lands of all alternatives.” (p. 501)

- Wildlife: “Alternative C would allow for more breeding, foraging, and hiding habitat as well as improve more movement corridors for a wide variety of species more than all other alternatives.” (p.503)

**Response:** The Preferred Alternative for the Helena Travel Planning Area has been modified in the Proposed RMP/Final EIS so that all interior roads in the Scratchgravel Hills would be closed to public motorized travel yearlong at five trailheads, with the exception of a few perimeter right-of-way routes and routes to private residents. Although the Preferred Alternative in the Draft RMP/EIS would have improved conditions for wildlife here compared to the existing condition, this modification of the Preferred Alternative in the Proposed RMP/Final EIS should benefit wildlife even greater than in the Draft RMP/EIS.

## II8

**Comment:** I generally hike or ride my horse in the area between Head Lane and Echo Lane (trails 0501, 0509, 0510 and 050128 on the BLM maps in the document). Alternative B, the “preferred alternative” raises several concerns:

1. This area currently receives little motorized traffic. Listing it as an authorized route would carry the risk of attracting users to trailer in ATVs and motorcycles, thereby increasing motorized use.
2. The Scratchgravel Hills is an extremely dry area, with fragile vegetation, erodable soils, and primitive roads. Motorized use jeopardizes the vegetation which is easily damaged and slow to regrow. This is of particular concern since there is no on-site law enforcement presence to prevent off road travel and user created trails.
3. Motorized travel increases the spread of noxious weeds.
4. Motorized travel increases fire risk.
5. In the past, motorized use has been associated with garbage dumping, littering, and keggers.
6. The area recommended as a motorized route is now used mostly by hikers, mountain bikers and horseback riders, who would be displaced if motorized use increases.

**Response:** Alternative B has been modified so that this road segment would be closed to public motorized vehicles yearlong under the Preferred Alternative in the Proposed RMP/Final EIS.

## II9

**Comment:** Close the Scratchgravel to all ORV use. There would be vehicle access to the existing 'trailheads' at Tumbleweed Dr and Norris Rd, and a similar trailhead could be constructed just inside the fence on John G Mine Rd. The one through route for passenger vehicles from Echo Lane to Head Lane (via 509 & 510a) is OK. (This is essentially your Alt. B, but slightly scaled back.) With ORV use eliminated, the Scratchgravel would be a premier area for horseback riding, mountain biking and walking. And whereas a neighborhood kid on his ATV can tear around the whole area in less than an hour, a walker or rider can easily spend half a day or more on the many tracks and trails. With the development and other changes occurring in the valley, now is the time to create a few, easily accessible non-motorized areas near Helena.

**Response:** The Preferred Alternative for the Helena Travel Planning Area has been modified in the Proposed RMP/Final EIS so that all interior roads in the Scratchgravel Hills would be closed to public motorized travel yearlong at the five proposed trailheads, with the exception of a few perimeter right-of-way routes and routes to

private residents. This modification is due to the high degree of user conflicts and illegal activity taking place in this area. This change will enhance non-motorized experiences for walking, jogging, horseback riding and mountain biking.

### III10

**Comment:** I would prefer to see as little motorized vehicle use, particularly by off road vehicles (OHVs), as possible in the Scratchgravel Hills (SGH) and other BLM areas. However, in the SGH, OHVs have carved many off road trails into the hills, and many of the trails are redundant and badly eroded. It seems that as one trail becomes too eroded and rocky to ride, another is created nearby. In some areas the swath of eroded hillside is more than 50 feet wide. Weed densities are higher along these trails and roads, and it looks like as though many of the weeds in the SGH area have been spread along these roads and trails by OHV activity. The SGH is one of the driest areas of Montana, and vegetation is very slow to recover. I would prefer that the Alternative C travel plan be implemented in the SGH and other areas covered by the Draft, because Alternative C allows the least amount of OHV activity. Currently, OHVs in the SGH ride off established routes and trails, through private property (sometimes cutting fences to do so), and I do not believe that this activity would be prevented by “signing off” some routes. In addition to erosion and weed spread caused by OHVs, these vehicles are aggressively noisy which disturbs wildlife as well as nearby homeowners. More and more homes are being built near the SGH, and I believe more people would use the SGH for non-motorized activities (hiking, walking, jogging, horseback riding, etc.) if the official routes were better marked. The SGH area is small enough that much of it can be easily enjoyed on foot within a few hours.

**Response:** The Preferred Alternative for the Helena Travel Planning Area has been modified in the Proposed RMP/Final EIS so that all interior roads in the Scratchgravel Hills would be closed to public motorized travel yearlong at the five proposed trailheads, with the exception of a few perimeter right-of-way routes and routes to private residents. This change will enhance non-motorized experiences, provide resource protection, and minimize use violations. Once the travel plan is complete it is anticipated that reclamation work and some non-motorized trail enhancements will be initiated.

### III11

**Comment:** I reside at 680 Blue Grouse Road within the Sunny Vista Subdivision which is located ¼ mile south of the Scratch Gravel Hills. In the past and before “off road vehicles”, you would see heavy usage by 4X4 trucks and jeeps but primarily on existing roads and it was manageable. But since ORVs have taken over, there are many, many more new trails, new roads and acres and acres of land where the vegetation has been torn up

and now gone. One good example of the latter is the west slope of the southern peak.

Realistically, I think the BLM has only two choices. Either open up the entire area to ORVs or restrict it entirely. The only other option is to open up a couple roads like your Preferred Option B, but with enforcement. Since you do not have the budget nor does the county for enforcement, this option does not appear to be a viable.

So, I recommend no ORVs allowed in the area. Your preferred option B is fine for trucks and jeeps.

**Response:** The Preferred Alternative for the Helena Travel Planning Area has been modified in the Proposed RMP/Final EIS so that all interior roads in the Scratchgravel Hills would be closed to public motorized travel yearlong at the five proposed trailheads, with the exception of a few perimeter right-of-way routes and routes to private residents. This change will enhance non-motorized experiences, provide resource protection, and minimize use violations.

### III12

**Comment:** This letter is in response to your colored map showing road closures of BLM land use in the Norris Road Addition. On studying the map, we cannot see where you acknowledge our 4 acres which contains our two residences. We think we have determined approximately the location of our 4 acres. Our land is on the east side of private property, which on your map shows directly north of Norris Road Trailhead. As your map shows the road closure, we would have no reasonable access to our property.

**Response:** The status of Road #0520 has been changed from closed to open to just beyond your residences under the Preferred Alternative in the Proposed RMP/Final EIS. Route #H112 would also remain open under the Preferred Alternative. However, it should be noted that current casual use does not guarantee future use of that existing road. Travel management plans can and do change and the status of roads can also change. To ensure long term legal access to your property, or if you want to make repairs or do maintenance to the existing road, the BLM recommends that the Butte Field Office be contacted about obtaining a right-of-way.

## Travel Management – Lewis and Clark County NW TPA

### JJ1

**Comment:** The concerns raised during the meetings with the Marysville group appear to have fallen on deaf ears. I do not see most of those concerns resolved except with Alt. A, which BLM told us isn’t even a consideration.

**Response:** Marysville was one of three high interest areas addressed by a community based collaborative working group initiated to assist BLM with the development of a travel plan (see **Appendix A**). There was vigorous discussion among this group regarding motorized use, both wheeled and snowmobile. In the end, the working group was able to arrive at a consensus travel plan proposal. This working group proposal was incorporated into what ultimately became the Preferred Alternative. The BLM believes that the Preferred Alternative represents a balance of opportunities for both motorized and non-motorized users. Public comments received at the working group meetings for this area were incorporated into Alternative D, but were not ultimately included in the Preferred Alternative.

### JJ2

**Comment:** We applaud BLM for developing community based collaborative working groups to assist in development of site-specific travel management alternatives for the travel plans in Lewis & Clark County (page 52). While we do not object to site-specific travel plans developed by collaborative community groups, we do recommend that the information about adverse effects of roads and motorized uses that are identified and discussed in our comments above is provided to groups so such effects may be adequately considered in their deliberations.

**Response:** The BLM evaluated each road and trail segment for its effects to wildlife and wildlife habitats, fish and aquatic habitats, riparian areas and soils. Each route was also assessed for human uses which included access for fire suppression, vegetation management, public lands access, and recreation. All of this information was provided to the working groups upon their request. BLM personnel also attended working group meetings to present data, site-specific information and any concerns related to specific roads and trails when requested by working groups. Concerns and/or issues with the overall transportation network in the travel plan areas were also presented to the working groups.

### JJ3

**Comment:** Lewis & Clark NW TPA: I sat in on most of the Marysville workgroup meetings and I strongly feel that all motorized users were not adequately represented. The one person representing motorized use was mainly interested in snowmobile access which was not a major issue as that use is affected by the travel plan a lot less than other motorized use in this area.

**Response:** The BLM disagrees that all motorized users were not adequately represented in the working group for the Lewis and Clark County NW TPA. At least four additional working group members expressed support for motorized use (both wheeled and snowmobile) during the meetings. Snowmobile use was in fact a frequent

and important topic of discussion, given that Marysville is a winter recreation destination for many people.

### JJ4

**Comment:** Travel plan statistics were not included for each of the project areas including the Jimmie, Marysville, Sieben area. This lack of adequate disclosure must be corrected.

**Response:** Tables 2-6 through 2-13 provide statistical data for routes at the Butte Field Office scale and for each of the five Activity Level Planning areas. The Jimmie [New] area is located in the Upper Big Hole River Travel Planning Area; the Marysville and Sieben areas are located in the Lewis and Clark County NW Travel Planning Area.

### JJ5

**Comment:** Lewis & Clark County NW TPA: All of the alternative maps give the impression that routes through the private land of the Sieben Ranch and O'Connell Ranch (in Lyons Creek) are open yearlong. That is not the case. Routes that are open on the Sieben Ranch and the O'Connell Ranch are only open during the hunting season.

**Response:** Because BLM does not manage routes on private lands, these routes are identified as "non-BLM routes" and not given an access designation on the maps. Only BLM routes are identified as "open", "closed" or "seasonally restricted" as described in the Travel Management and Access section, Field Office Level – Management Common to All Alternatives subsection of Chapter 2 in the RMP.

### JJ6

**Comment:** Lewis & Clark NW TPA: The BLM has not applied a range of limitations (or availability) for snowmobile use. Alternative C is the only alternative with meaningful reductions in the areas within which snow machines can operate. Alternatives B and D provide the same area limits, and these are only different from Alt A because of the artificial designation of "limited" which has, indeed, limited meaning. The only difference between the miles of motorized routes available between Alts B and D is 0.2 miles, whereas Alternative C would provide less than 20 percent of that value. Barring any meaningful attempt to consider the effects of snow machine use on area resources, BLM should implement limitations on all areas and acres currently open.

**Response:** The BLM believes it has provided an appropriate range of snowmobile limitations under travel plan alternatives for the Lewis and Clark County NW Travel Planning Area (TPA). The BLM notes that this particular TPA has more established snowmobile use than other TPAs considered in the Butte RMP. However, the Preferred Alternative would eliminate snowmobile use on 5.7 miles of routes currently available. Most of these

eliminated routes are in the northwest corner of the TPA and the BLM believes this is most important wildlife habitat in the TPA.

### JJ7

**Comment:** Lewis & Clark County NW TPA: Wildlife: More than other alternatives, Alternative C would decrease harassment to wildlife during all seasons but especially during winter and spring, it would reduce road density to 0.7 mi/mi<sup>2</sup> on elk winter range, it would have substantially more acres of functional elk winter range, it would close the same number of acres to cross country snowmobile use as other alternatives, it would provide for more acres of big game security increase the acreage of core and subcore habitat with low road density, it would have the least miles of roads in wildlife movement corridors, it would protect and restore more riparian habitat, it would have the lowest road density within occupied grizzly bear habitat at 0.6 mi/mi<sup>2</sup>. “Through travel management, Alternative C would provide the greatest benefit to grizzly bears and other special status species by reducing fragmentation of habitats, protecting larger blocks of habitat, and reducing disturbance in occupied grizzly bear habitat” (p. 561-562).

Recreation: Alternative C “would result in enhancement of non-motorized opportunities. Snowmobiles would be restricted to designated routes only during the season of use (12/2-5/15)” (p. 573). Both circumstances would benefit wildlife and habitat.

Please consider modifying your preferred alternative to provide for conditions more favorable towards wildlife, similar to what is found in your Alternative C.

**Response:** The BLM is already proposing to reduce road densities in this area under the Preferred Alternative which should improve wildlife habitats. The Preferred Alternative attempts to balance the needs of providing motorized access while providing for resource protection.

## Travel Management - Upper Big Hole River TPA

### KK1

**Comment:** Upper Big Hole River TPA: American Wildlands does question the seasonal closure of the road southeast of Divide that separates two open roads. American Wildlands suggests yearlong closure of this road.

**Response:** Routes BH127 and 010113 provide a motorized connector route between the Soap Gulch and Camp Creek roads. Route BH127 (2.39 miles) provides the majority of access across this area, and would be seasonally restricted (closed to motorized traffic) from 10/15 to 5/15 in the Preferred Alternative. Route 010113 (1.07 miles) provides the remainder of the access, and would be seasonally restricted (closed to motorized travel) from

12/2 to 5/15 in the Preferred Alternative. Accordingly, motorized travel between Camp Creek and Soap Gulch via these two routes would really only available from 5/16 to 10/14, a period of five months. However, there is very little motorized travel on these roads during this open period; the majority of use actually occurs during the big game hunting season (approximately mid October to mid November) when these roads are closed. As such, the BLM believes that the Preferred Alternative provides adequate protection for wildlife residency and movement.

### KK2

**Comment:** If you close this "road" (referring to Teddy Creek closure, T1N, R12W, SW SW Sec 11) it should be closed at the narrows leaving the lower 300 yds off Hwy 43 open to allow for off highway parking for hikers and hunters.

**Response:** The BLM agrees that road closures should be done in a manner that addresses such site-specific issues mentioned in the comment. Implementation of the closure in this instance (Route #189015) would likely consider the described use of this area.

### KK3

**Comment:** Change proposed closure of roads for the Upper Big Hole Travel Plan DEWEY AREA T.1S; R.10W parts of sections 5, 6, and 8. Allow parts of roads BH226, BH227, an unmapped portion of 189012 and the mapped portion of 189012, to remain open for travel by ATVs, snowmobiles, and motorcycles, except during the big game hunting season, 10/15 to 12/1 of each year.

Rationale: Safety is an issue to be considered when traveling between parking areas at Triangle Gulch, road 189007 and Quartz Hill road BH204, on ATV's, snowmobiles and motorcycles. These are popular parking areas used when traveling loop trails through the Vipond Park area. Your proposed closure of these roads would force users to travel on Hwy 43 to return to vehicles left in the parking areas.

History: this proposed route is presently being used, and future travel should be considered on this route as a safe alternative to avoid travel on Hwy 43. Portions of these roads proposed for closure are part of a former power line service road that has existed for many years. I would be available to guide BLM personnel through this area and show them the existing route, and other unmapped roads. We currently have volunteers who would be able to work with the BLM to improve and mark this travel route as proposed.

**Response:** The BLM has changed the Preferred Alternative on these routes for them to remain open for travel by ATVs, snowmobiles, and motorcycles, except during the big game hunting season, October 15 – December 1 of each year, as suggested by the comment.

**KK4**

**Comment:** With regards to the proposed closure on road number 189014, we would like access to remain open for weed control and firewood cutting, perhaps restricted to the dry season. As an alternate we would like to propose leaving road 189014 open to four wheeler and dirt bikes for wild game retrieval. This road being centrally located along Tie creek road would make it a good candidate for this purpose. It would also allow for weed control.

**Response:** After considering this comment, the BLM continues to propose closure of this route in the Preferred Alternative. The BLM considers the vicinity where this road is located to be important for big game winter range, wildlife connectivity to areas across the Big Hole River, and as habitat for at least one sensitive species where motorized disturbance could preclude habitat use. The BLM notes that although proposed for closure, this route would remain intact and could be used in the future for administrative purposes associated with weed treatments and potential fuels reduction efforts if needed in the future. In the context of game retrieval, the BLM also notes that it is a relatively short distance (approximately 1 mile) from the Tie Creek road which runs across the slope of this area and is proposed to remain open during hunting season, to the bottom of the hill. The BLM notes that this road could be opened in the future on a temporary basis as a firewood cutting area to help address fuels concerns.

**KK5**

**Comment:** We mentioned public access across the Big Hole River at Sawlog and Toomy respectively. The BLM spent a lot of tax dollars fixing the road through their land and the forest service did the same above the Sawlog crossing. If these two accesses are closed this will not only be a waste of tax payer dollars, but stop the very young hunters and the older hunters from wanting to wade the river to hunt, let alone pulling something like an elk all the way back to their rigs. Road closure agreements with the Forest Service and BLM were put in place, but a large segment of the recreating public will be left out if these crossings are off limits. Leave these accesses as they are - believe me there is enough country for wildlife to escape into.

**Response:** The BLM has changed the Preferred Alternative for the Sawlog Crossing to match Alternative D. This would be for the road to be open with a seasonal restriction (closed December 2 – July 15). This proposed management could change in the future pending coordination with the Forest Service and Department of Natural Resources to provide an alternative means of access to this area.

**KK6**

**Comment:** MAP 23: Upper Big Hole River. This is another area that provides winter wheeled recreation opportunities. The opportunities are all winter but the distance of upstream use in the Soap Gulch and Camp Creek drainages depends on snow depth.

Road BH123 - Unloading of ATVs occurs at Melrose. Any access, winter or summer, use this route to go from Camp Creek to Soap Gulch and/or back. This connection is the alternative to riding on the paved road north from Melrose to access Soap Gulch. This route is much safer for the rider to use. Also the south end of this route is used to access road BH122a. I would like for this route to be left open. A hunting season closure, as now in place, is acceptable.

Road BH122a – I use this route for access for wildlife viewing. I would like to see it left open.

**Response:** The BLM follows a comprehensive travel planning process to determine how roads and trails are used as well as how natural resources are impacted by those routes. The BLM evaluated each road and trail segment for its effects to wildlife and wildlife habitats, fish and aquatic habitats, riparian areas and soils. Each route was also assessed for human uses which included; access for fire suppression, vegetation management, public lands access, and recreation. Because Road BH123 recently washed out, the route will remain proposed as closed under the Preferred Alternative due to soil erosion concerns. Road BH122a will also remain proposed as closed under the Preferred Alternative due to wildlife habitat concerns, including big game winter range, and because use of BH123 (washed out as described above) is necessary to access BH122a. .

**KK7**

**Comment:** MAP 23: Upper Big Hole River. This is another area that provides winter wheeled recreation opportunities. The opportunities are all winter but the distance of upstream use in the Soap Gulch and Camp Creek drainages depends on snow depth.

Road BH125, BH126, BH127, 010113, 010115, BH139 and BH140 – Depending upon snow depth various parts of all of these routes are used until mid January and then again beginning early March. The proposed closure dates almost eliminates our winter riding opportunities. The existing hunting season closures have been acceptable.

**Response:** Under the Preferred Alternative the BLM will continue to propose Road #s BH125, BH126, BH127, 010113, 010115, BH139 and BH140 as open with a seasonal restriction (closed October 15 – May 15) because of their location in big game winter range and subsequent importance to wildlife habitat, including bighorn sheep.

**KK8**

**Comment:** MAP 23: Upper Big Hole River. This is another area that provides winter wheeled recreation opportunities. The opportunities are all winter but the distance of upstream use in the Soap Gulch and Camp Creek drainages depends on snow depth. Road BH141 (south end) – Closure of this route eliminates a nice winter loop. I would like for this route to be left open except for hunting season closure. Road BH141 (north end) – This route is a very important summer and early winter connector for looping rides. It is rocky, rough, and is mostly grassed in. This portion is much more important to retain open than the south end.

**Response:** Both the north end and south ends of Road BH141 are located in big game winter range and occupied bighorn sheep habitat. After further consideration the BLM has changed the proposal for the north end of Road #BH141 to designate it as open with a seasonal restrict of December 2 – May 15 in the Preferred Alternative. The BLM continues to propose yearlong closure for the south end of this route in the Preferred Alternative.

**KK9**

**Comment:** MAP 23: Upper Big Hole River. This is another area that provides winter wheeled recreation opportunities. The opportunities are all winter but the distance of upstream use in the Soap Gulch and Camp Creek drainages depends on snow depth.

Road BH148 - This is another important route that is a loop through Forest Service lands. The road also is access to two fence lines.

It is an old road and is grassed in and has very little erosion. I would like to have this road left open with hunting season closure acceptable.

**Response:** The BLM continues to propose closing Road #BH148 in the Preferred Alternative as it is redundant with a nearby open Forest Service route (0106). While Road #BH148 passes through BLM lands and accesses Forest Service lands, coordination with the Forest Service indicates that this route is not needed or desired to remain open by the Forest Service.

**KK10**

**Comment:** MAP 23: Upper Big Hole River

This is another area that provides winter wheeled recreation opportunities. The opportunities are all winter but the distance of upstream use in the Soap Gulch and Camp Creek drainages depends on snow depth.

Road 010114 - This route and the others in the canyon provide great explorer riding. Do you really need to close these routes? Isn't access for fence maintenance needed?

**Response:** Analysis of Road 010114 showed the route is located along a creek bottom, resulting in degraded riparian conditions. The route will remain proposed as closed under the Preferred Alternative due to these riparian concerns. Closure of this or any other route will not affect maintenance duties as temporary travel variances may be granted on closed routes for administrative duties.

**KK11**

**Comment:** In the Upper Big Hole River Travel Planning Area we believe the planned game retrieval system for the Sawlog Gulch area needs to be reexamined in close consultation with the U.S. Forest Service, the majority landowner in the area. This past summer, FWP tried to coordinate a review of the affected travel routes with the Wise River Ranger District. Unfortunately the ignition of large fires in the upper Big Hole took precedence over this review. We feel that some vehicular access through the National Forest is critical for the greater Sawlog area and the management of wildlife populations. If having vehicles ford the Big Hole is the major concern, then please consider options such as acquiring an access easement, building a new access road across public lands or suspension bridges that may also accommodate ATVs. A used bridge from the Montana Department of Transportation may be another option worth pursuing. Your access proposal creates a horseman's hunting paradise and I question whether or not that is good for elk population management or the sport of hunting.

**Response:** The BLM has changed the Preferred Alternative for the Sawlog Crossing to match Alternative D. This would be for the road to be open with a seasonal restriction (closed December 2 – July 15). This proposed management could change in the future pending coordination with the Forest Service and Department of Natural Resources to provide an alternative means of access to this area.

**KK12**

**Comment:** Leave Route BH103 in the Dewey area open in order to access the cemetery for burial.

**Response:** Access to the Dewey cemetery was taken under consideration, and the Preferred Alternative has been changed to propose that Road #BH103 remain open yearlong.

**KK13**

**Comment:** Change seasonal restriction dates for Route 010104 from 12/2-5/15 to 10/15-12/1 to match current Forest Service management.

**Response:** After coordination with the Forest Service, the BLM continues to propose managing Road #010104 as open with the seasonal restriction of December 2 – May 15. The Forest Service has indicated willingness to

change its management direction on connecting routes to match BLM's management so as to provide consistency for the public.

**KK14**

**Comment:** Leave an unmapped route open during summer fore firewood retrieval. Member of public is concerned about fire danger adjacent to his land/residence.

**Response:** Under the Preferred Alternative, the unmapped route has been mapped and proposed to be managed as closed yearlong. Should a firewood cutting project be analyzed and implemented in the future, use of a travel variance would provide flexibility to temporarily open the road. A firewood cutting project, however, is a separate project-level issue and is beyond the scope of the RMP.

**KK15**

**Comment:** Change management status for Route BH037 from "decommission" to "open to OHV use". Local resident would like access to an OHV trail on Forest Service lands (the "Cat Walk" trail).

**Response:** After coordination with the Forest Service, the BLM has changed its proposed management of this route in the Preferred Alternative to "closed". Further changes to management of this route may occur pending the outcome of travel planning by the Forest Service on the adjoining route.

**KK16**

**Comment:** Local rancher would like to see routes BH54 and BH55 managed as open to the public at least during hunting season. He allows the public to cross his property, and then onto routes 54 and 55 so they can access Forest Service lands for hunting.

**Response:** The Preferred Alternative has been changed to propose managing roads #BH54 and #BH55 as open yearlong.

**Water**

**LL1**

**Comment:** Chapter 4, Effects on Resources, Water Resources, Effects Common to All Alternatives, page 323, last 2 paragraphs: Managing riparian areas and wetlands to be at or moving towards proper functioning condition (PFC) can contribute to improvements in water quality. However, the discussion as written could be misleading because it implies a simple, cause-and-effect relation. While improving PFC is desirable, doing so would not guarantee an improvement in water-quality conditions as other processes within the watershed upstream from or within the ground-water system could

contribute to water-quality problems masking any improvements due to PFC.

**Response:** The second to last paragraph dealing with PFC states that there "should be" improvements in water quality. It did not intend to guarantee improvements. It also did not attempt to deal with the magnitude of the improvements. The last paragraph clearly identifies the role of upstream areas and ground water on water quality. The BLM believes this wording is appropriate.

**LL2**

**Comment:** List the Montana Nonpoint Source Management Plan and associated BMPs among the primary sources of information for BMPs and nonpoint source pollution management in Appendix D of the RMP. The latest Montana Nonpoint Source Management Plan is available at, <http://deq.mt.gov/wqinfo/nonpoint/2007NONPOINTPLAN/Final/NPSPlan.pdf>. The RMP should be consistent with the Montana Nonpoint Source Management Plan.

**Response:** The Montana Nonpoint Source Management Plan will be referenced as a source of potential BMPs in the BMP appendix (**Appendix E** in the Proposed RMP/Final EIS).

**LL3**

**Comment:** The list of impaired waters included in the draft RMP appears to need review and will likely need revision (Table 3-3 pages 212-213), since it is based on Montana's Clean Water Act Section 303(d) list for 2004 (page 212). The most current Montana 303(d) list is the 2006 list, which list can be accessed on the web at <http://www.deq.state.mt.us/CWAIC/default.aspx>. We did a brief comparison of the 2006 303(d) list with RMP Table 3-3 for the Jefferson River drainage, and noticed many streams on the 2006 303(d) list in the Jefferson River drainage that were not included in Table 3-3 (e.g., Charcoal Creek, Cherry Creek, Fish Creek, Fitz Creek, Halfway Creek, Hells Canyon Creek, Little Pipestone Creek, North Willow Creek, Norwegian Creek, South Boulder River, South Willow Creek, Willow Creek, Whitetail Creek).

We did not see a clear or comprehensive watershed map in the RMP that identified locations of BLM land in relation to surface waters, with stream names identified, so we were not able to determine the amount of BLM land within these additional 303(d) listed drainages. Table 3-3 should be reviewed and revised appropriately to show all impaired water bodies that have BLM land within their drainages based on the most current 2006 Montana 303(d) list.

Also, a comprehensive watershed map (or maps) clearly identifying surface waterbodies and their approximate drainage boundaries and locations of BLM land should be included in the RMP/EIS. Lack of such a watershed map(s) limits the ability to fully review and evaluate

consistency of the draft RMP/EIS with the Clean Water Act and applicable Federal and State water quality policies and regulations.

**Response:** The 2006 list was not finalized when the Draft RMP/EIS was being prepared. This table has been updated in the Proposed RMP/Final EIS to show the 2006 information.

The Montana Department of Environmental Quality (DEQ) web site provides an excellent assessment database that allows for queries of specific basins. This includes maps that show water bodies, ownership, TMDL planning areas, and other landmarks. This database can be found at:

<http://deq.mt.gov/cwaic/default.aspx?yr=2006>.

The total miles of impaired streams located on BLM managed lands is 77.37 miles. The BLM cannot estimate miles of potential improvement, since too many factors that could influence water quality are outside of BLM's control. These factors include land ownership, drought, fires, and State and EPA priorities. In many cases, the source of the impairment is located well above the BLM managed lands and therefore is out of BLM's control. In these cases the impaired water simply flows through the BLM parcel.

To address water quality restoration, the BLM will work with the State of Montana and the EPA on the development and implementation of water quality restoration plans for all TMDLs that involve BLM managed lands. This commitment has been made under the 2002 Memorandum of Understanding (MOU) between the DEQ and BLM.

The development of TMDLs is prioritized to address State and EPA priorities for water quality improvement. This information is needed to even begin estimating miles of potential improvement. The BLM does not maintain our own schedule, as we wish to be consistent with DEQ and EPA approved priorities. We look forward to working with your agency in improving water quality in streams influenced by BLM management.

While the BLM does not maintain its own schedule for restoring water quality, during its budgeting process the BLM does give a high priority to those projects that would improve the water quality of listed streams. This allows us to take action to improve water quality, on BLM managed lands, prior to the approval of TMDLs.

#### LL4

**Comment:** The draft RMP/EIS states that the Land Health Standards would be implemented to ensure water quality meets State standards and beneficial uses are protected or restored, and that Best Management Practices (BMPs) would be used to prevent non-point source water pollution and mitigation measures would be applied on a case-by-case basis (page 81). It is relevant to note that the Montana DEQ has issued guidance ("Re-

quirements for Nonpoint Sources of Pollution Impacting High Quality and Impaired Waters") that differentiates BMPs from the "reasonable land, soil, and water conservation practices" that are required by Montana WQS (Administrative Rules of Montana 17.30 Subchapters 6 and 7). "Reasonable soil, land, and water conservation practices" are defined by the Administrative Rules of Montana (ARM 17.30.602) as "methods, measures, or practices that protect present and reasonably anticipated beneficial uses." Such practices include but are not limited to structural and nonstructural controls and operation and maintenance procedures. Appropriate practices may be applied before, during, or after pollution producing activities.

This MDEQ guidance says differentiation between BMPs and "reasonable land, soil, and water conservation practices" is necessary because BMPs are largely practices that provide a degree of protection for water quality, but may or may not be sufficient to protect beneficial uses (achieve WQS). Therefore, Montana's "reasonable land, soil, and water conservation practices" generally include BMPs, but may require additional conservation practices, beyond BMPs, to achieve WQS and protect or restore beneficial uses.

The key point is that the protective or restorative practices that are used by BLM should be adequate to achieve WQS (i.e., protect or restore beneficial uses) in order to meet the Montana Water Quality Act and Federal Clean Water Act requirements. Standard BMPs alone may not always be sufficient.

**Response:** The Water Quality Land Health Standard was established to ensure an end result – meeting State Water Quality standards and ensuring the support of beneficial uses. BMP's were identified as a means to the end, and not the end itself. If BMPs are not sufficient to meet or move towards meeting state water quality standards, additional measures would be necessary to achieve the end result. One of the primary sources of water quality impairment, originating on BLM managed lands is livestock grazing. The Montana Nonpoint Source Management Plan (2007) states that "a strategy for reducing impacts of grazing on water quality and riparian and channel condition should include implementation of multiple BMPs prescribed on a site-specific basis, focusing on those areas especially susceptible to impacts from grazing, or contributing the largest pollutant loads." This led to objectives 6.2 and 6.3 that emphasize the use of BMPs for dealing with Montana's Non-point strategy for pasture and rangelands. The BLM agrees with the State on the value of grazing BMPs.

#### LL5

**Comment:** Appendix D of the draft RMP identifies sources of BMPs for land management; however, Appendix D fails to mention Montana's Nonpoint Source Management Plan and its associated BMPs. The Montana Nonpoint Source Management Plan describes the

Montana Department of Environmental Quality's (MDEQ's) strategy for controlling nonpoint source water pollution, including identification of BMPs. Nonpoint source pollution (which is contaminated runoff from the land surface that can be generated by land use activities, including agriculture, forestry, mining, and others), is Montana's single largest source of water quality impairment. We recommend that the Montana Nonpoint Source Management Plan be listed among the primary sources of information for BMPs and nonpoint source pollution management in Appendix D of the RMP. The latest updated Montana Nonpoint Source Management Plan is available at, <http://deq.mt.gov/wqinfo/nonpoint/2007NONPOINTPLAN/Final/NPSPlan.pdf>

**Response:** The Montana Non-Point Source plan was not complete when the Draft RMP/EIS was released. The BLM agrees that this is a useful plan and will include it as a primary source of information.

#### LL6

**Comment:** We are pleased that the draft RMP/EIS states that all action alternatives would emphasize maintaining diverse, healthy, productive, well-distributed aquatic habitats and communities to increase populations of native fish and other aquatic species (page 43), the preferred alternative would also increase and maintain habitat for native and locally important fish (page 44). The Clean Water Act requires that Total Maximum Daily Loads (TMDLs) be prepared to promote water quality restoration in 303(d) listed waters. The MDEQ and EPA are under a Federal District Court Order to develop TMDLs for 303(d) listed waters. A TMDL:

Identifies the maximum load of a pollutant (e.g. sediment, nutrient, metal) a waterbody is able to assimilate and fully support its designated uses; allocates portions of the maximum load to all sources; identifies the necessary controls that may be implemented voluntarily or through regulatory means; and describes a monitoring plan and associated corrective feedback loop to insure that uses are fully supported;

Or can also be viewed as, the total amount of pollutant that a water body may receive from all sources without exceeding WQS; or may be viewed as, a reduction in pollutant loading that results in meeting WQS.

In accordance with the terms of a Consent Decree for a lawsuit in Federal District Court, the EPA and MDEQ are required to address impaired waters listed on Montana's 1996 303(d) list, unless those waters are adequately assessed and water quality is determined to be fully supporting beneficial uses, and the waters are not listed on the Montana 2006 303(d) list.

The MDEQ has divided the State of Montana into TMDL Planning Areas, grouping streams with similar water quality problems and land ownership on a watershed basis. Each TMDL planning area may include 4 to 10 impaired watersheds that have specific TMDL preparation needs. A schedule for development of

TMDLs is shown at <http://deq.mt.gov/wqinfo/TMDL/TMDLSchedule2006.pdf>.

Montana's approach is to include TMDLs as one component of comprehensive Water Quality Restoration Plans (WQRPs). The MDEQ and EPA are sharing development of TMDLs; although EPA retains authority to approve all TMDLs. TMDLs/WQRPs contain eight principal components:

1. Watershed characterization (hydrology, climate, vegetation, land use, ownership, etc.)
2. Description of impairments and applicable water quality standards.
3. Pollutant source assessment and estimate of existing pollutant loads, including pollutant loads in tributaries to 303(d) listed waters.
4. Water quality goals/restoration targets.
5. Load allocations (i.e., TMDLs).
6. Restoration strategy
7. Monitoring Strategy
8. Public involvement (30 day public comment period, informational meetings, etc.)

**Response:** In the Water Resources section of Chapter 2 of the Butte RMP, under Management Common to All Alternatives, the Butte RMP indicates that the "BLM would continue to coordinate and cooperate with Montana Department of environmental Quality (MDEQ) and communities in the development of Water Quality Restoration Plans and Source Water Protection plans." This includes TMDLs.

#### LL7

**Comment:** We are pleased that management direction under the Water Resources (page 81) indicates that all necessary permits pertaining to projects affecting water quality, wetlands and streams will be obtained. Discharges of fill material into wetlands and other waters of the United States are regulated by Section 404 of the Clean Water Act, 33 USC. 1344, which is administered jointly by the U.S. Army Corps of Engineers and EPA. It is important for the RMP to ensure consultation with the Corps of Engineers to determine applicability of 404 permit requirements to specific project level construction activities in or near streams or wetlands, (e.g., contact Mr. Allan Steinle of Corps of Engineers Montana Office in Helena at 406-441-1375). The 404(b) (1) Guidelines (found at 40 CFR Part 230) and Corps of Engineers, EPA, and USFWS Wetland Specialists should be consulted to provide specific environmental criteria and guidance when BLM projects need a 404 permit. See Corps of Engineers Montana Regulatory Office website for further information, <https://www.nwo.usace.army.mil/html/od-rmt/mthome.htm>.

**Response:** This is a legal requirement that will be met. Chapter 2 of the RMP, under Vegetation Communities,

Management Common to All Alternatives, Riparian subheading (Page 21 paragraph 1 right column in Draft RMP/EIS) indicates that the BLM's position with regard to existing regulations is that "Riparian and wetland management would be consistent with all state and federal laws and regulations". This includes all permitting requirements.

### LL8

**Comment:** We are pleased that BLM would continue to coordinate and cooperate with MDEQ in the development of Source Water Protection Plans (page 82). The 1996 Amendments to the Safe Drinking Water Act require all States with primary enforcement authority for public water supply supervision programs (such as Montana) to carry out a source water assessment program for all public water systems (PWSs) within the State. Information on source water assessments can be found on the Montana DEQ website at: [www.deq.state.mt.us/wqinfo/swp/index.asp](http://www.deq.state.mt.us/wqinfo/swp/index.asp).

It would be helpful if Source Waters for Federally-regulated public water supply systems within the BFO Planning and Decision Areas were identified in the RMP/EIS. Source Water is untreated water from streams, rivers, lakes, springs, and aquifers that is used as a supply of drinking water. Source Water Protection Areas are areas delineated around sources of drinking water and mapped by the States for each Federally-regulated public water system. A Federally-regulated public water system provides water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average or at least 25 people for at least 60 days a year.

RMP management direction should assure that public water supplies including ground water aquifers are adequately protected from risks (e.g., use of mitigation measures and barriers). We note that there is a USFS document entitled, "Drinking Water from Forests and Grasslands", General Technical Report SRS-39, that is meant for the Forest Manager, that may be of interest to the public and BLM.

We encourage BLM to contact Mr. Joe Meek of MDEQ at 406-444-4806 to obtain guidance for incorporating source water protection into the Federal Land Management Planning Process. We are also enclosing guidance for "Incorporating Source Water Protection into Federal Land Management Planning Process" following our detailed comments.

**Response:** Public water systems are identified in the Water Resources section of Chapter 3 of the RMP (page 213 in the Draft RMP/EIS). There are four municipal watersheds in the Butte Field Office. They are the Missouri River Siphon, Tenmile Creek drainage, Big Hole River Intake, and Moulton Reservoir. The Tenmile Creek drainage is Helena's primary source of drinking water. Additional water is obtained, as needed, during

the summer months from the Missouri River Siphon which is located on the downstream side of Canyon Ferry Dam. The Big Hole River Intake encompasses a major portion of the Big Hole watershed upstream of the intake and is an important source of drinking water for the city of Butte. Moulton Reservoir is about five miles north of Butte and provides additional drinking water for Butte.

### LL9

**Comment:** We also believe the RMP/EIS monitoring program should include watershed/water quality assessment/monitoring for evaluation of watershed and riparian restoration success and achievement of proper functioning condition and beneficial use support (i.e. Water Quality Standards compliance). We suggest addition of a Water Resource Monitoring and Assessment direction to address such monitoring. For example, "BLM will establish aquatic monitoring and assessment programs incorporating adaptive management to monitor and assess water quality, proper functioning condition, and aquatic habitat conditions to measure effectiveness of watershed protection and restoration efforts and progress towards attainment of desired conditions and goals (e.g. sub-basin and watershed assessments, landscape and project scale analysis, inventories, BLM wide monitoring, etc.)."

Monitoring programs are important elements in maintaining and restoring the health of watersheds, riparian, and aquatic resources, and are key to achieving riparian, wetlands and other aquatic goals. The achievement of Water Quality Standards (WQS) for activities that generate nonpoint source pollution occurs through the implementation of BMPs, and although BMPs should be designed to protect water quality, they need to be monitored to verify their effectiveness. If found ineffective, the BMPs need to be revised, and impacts mitigated. It is through the iterative process of developing and implementing BMPs and mitigation measures, and monitoring effectiveness of BMPs and mitigation measures, with adjustment of measures where necessary, that Water Quality Standards are achieved. Also, the success of watershed and riparian restoration is dependent on monitoring programs that measure and evaluate progress toward achievement of restoration goals.

Monitoring programs should address the types of surveys, parameters to be monitored, indicator species, budget, procedures for using data or results in plan implementation, and availability of results to interested and affected groups. The monitoring program should include discussion of how the three types of monitoring (implementation, effectiveness, and validation monitoring) are incorporated into BLM's adaptive management program. Information, including a contact person, should be provided on how the public can receive information on mitigation effectiveness and monitoring results. The relationship between national BLM and BFO monitoring

on a broad scale vs. project monitoring activities should be described. The design of monitoring programs should:

- 1) ensure State Water Quality Standards (WQS) for support of beneficial uses are met;
- 2) provide a mechanism to initiate additional measures if needed to meet State WQS;
- 3) evaluate the effectiveness of the BMPs, and/or the need for additional or revised BMPs, Standards and Guidelines, other direction or need to change existing direction;
- 4) evaluate the accuracy of estimates made in the analysis, including cumulative effects of the RMP and other activities on the health of the ecosystems being managed, and risk of potential damage to ecosystems (requires a companion process to take rapid protective steps when high risks are identified); and
- 5) provide a data management system and resources to allow feedback mechanism for future projects.

We also note that it would be helpful if BLM aquatic monitoring and assessment methods and indicators for evaluation of water quality conditions were consistent with those used by the State (i.e., Montana Dept. of Environmental Quality-MDEQ) and EPA for evaluation of water quality and support of beneficial uses of surface waters. Perhaps RMP Guidelines would be appropriate place for such direction.

It would also be appropriate to revise the discussion of water quality parameters on pages 722 and 723 of Appendix E (Rangeland Health Standards) to include the multiple indicator approach that the MDEQ and EPA uses for evaluating beneficial use support to account for complexity of chemical, physical and biologic processes, and potential lack of certainty regarding the effectiveness of a single indicator. For example, using multiple indicators like:

Water Column	Streambed Sediment	Channel Condition	Biological	Other
Suspended	% fines	Pool/Riffle	macro-invertebrate community metrics	Large woody debris
turbidity	particle size distribution	W/D	periphyton	canopy cover
Temperature	pool filling	entrenchment		
specific pollutants		bank stability		

Information on State and EPA water quality monitoring beneficial use support indicators are available on the MDEQ website, <http://www.deq.state.mt.us/wqinfo/monitoring/index.asp>

Indicators and parameters such as these are being incorporated into TMDLs by the Montana DEQ and EPA. We recommend that the BLM coordinate and discuss aquatic monitoring methods and indicators with Rosie Sada, Aquatic Monitoring Program Manager of MDEQ in Helena at 406-444-5964, and Tina Laidlaw, Aquatic Monitoring Specialist with EPA, in Helena at 406-457-5016. The following documents are references for developing an aquatic monitoring program:

The Forest Service publication, "Guide to Effective Monitoring of Aquatic and Riparian Resources," RMRS-GTR-121, available at, [http://www.fs.fed.us/rm/pubs/rmrs\\_gtr121.html](http://www.fs.fed.us/rm/pubs/rmrs_gtr121.html).

The Forest Service publication, "Testing common stream sampling methods for broadscale, long-term monitoring," RMRS-GTR-122, available at, [http://www.fs.fed.us/rm/pubs/rmrs\\_gtr122.html](http://www.fs.fed.us/rm/pubs/rmrs_gtr122.html).

"Aquatic and Riparian Effectiveness Monitoring Plan for the Northwest Forest Plan," Gordon H. Reeves, David B. Hohler, David P. Larsen, David E. Busch, Kim Kratz, Keith Reynolds, Karl F. Stein, Thomas Atzet, Polly Hays, and Michael Tehan, February 2001, available on-line at, [www.reo.gov/monitoring/watershed/aremp-compile.htm](http://www.reo.gov/monitoring/watershed/aremp-compile.htm).

Monitoring Guidelines to Evaluate Effects of Forestry Activities in the Pacific Northwest and Alaska; Lee H. McDonald, Alan W. Smart, and Robert C. Wissmar; May 1991; EPA/910/9-91-001;

"Aquatic Habitat Indicators and Their Application to Water Quality Objectives within the Clean Water Act," Stephen B. Bauer and Stephen C. Ralph, 1999, EPA-910-R99-014. (This publication is available on-line at, <http://www.pocketwater.com/reports/ahi.pdf>)

Western Pilot Study: Field Operations Manual for Wadeable Streams; Environmental Monitoring and Assessment Program Protocols, Edited by David V. Peck, James M. Lazorchak, and Donald J. Klemm, April 2001, available on-line at: <http://www.epa.gov/emap/html/pubs/docs/groupdocs/surfwatr/field/ewwsm01.pdf>.

Montana DEQ's Water Quality Monitoring and Assessment information can be found on the website, <http://www.deq.state.mt.us/wqinfo/monitoring/Functions.asp><http://www.deq.state.mt.us/>

Rapid Bioassessment Protocols for use in Streams and Rivers; James A. Plafkin, May 1989, EPA/444/4-89-001.

"Montana Stream Management Guide; for Landowners, Managers, and Stream Users", Montana Dept. Of Environmental Quality; December 1995.

The Forest Service Region 5 document entitled. "Water Quality Management for Forest System Lands in California: Best Management Practices." September 2000, is a useful reference for BMP development and BMP effectiveness monitoring. It can be found at the website

<http://fsweb.r5.fs.fed.us/unit/ec/water/water-best-mgmt.pdf>.

“Protocol for Developing Sediment TMDLs” EPA 841-B-99-004. October 1999. <http://www.epa.gov/owow/tmdl/sediment/pdf/sediment.pdf>.

**Response:** The BLM notes that RMP level monitoring concentrates on whether or not we are meeting the objectives, goals, and standards established in the plan. Project level monitoring deals with specific projects and areas. Both levels of monitoring are important to protecting water quality and riparian and aquatic health.

With regard to using consistent monitoring methods as DEQ, the BLM notes that we have an existing agreement in place with the State DEQ where they actually perform the BLM’s water quality monitoring. The approved objectives of this agreement are to expand the State’s water quality monitoring network to lands influenced by BLM management. The resulting data will be used to: (1) determine reference conditions, (2) complete beneficial use assessments, and (3) develop TMDLs. The BLM will use this data to ensure its management meets all state and federal standards. The acknowledged benefits of this partnership are:

1. BLM resources would benefit from the availability of water quality data that can be used to implement sound resource management decisions.
2. The BLM would meet its water quality monitoring obligations identified in the BLM/DEQ MOU of 2002 (including any update or replacement)
3. DEQ would have the ability to expand its water quality monitoring network to the prairie region of Montana.
4. DEQ could utilize BLM resource specialist to obtain information regarding the management of various watersheds.
5. The public would benefit from the improved management of public lands due to better integration of land management and water quality monitoring.

This core monitoring program includes the collection of physical, chemical, and biological parameters.

With regard to the riparian standard, the BLM’s primary assessment tool is the PFC methodology. This method is used during Land Health Assessments which take a holistic look at the landscape (including uplands and riparian). This method was identified in objective 6.1 of DEQ’s recently released “Montana Nonpoint Source Management Plan” as an appropriate riparian assessment tool in rangeland areas. This plan states that this objective is to “Support land management agency (DNRC, BLM, USFS, and NRCS) utilization of PFC interdisciplinary functional assessments as a first tier approach of

riparian grazing leases on federal and state public lands to assess and implement riparian grazing management strategies. Support site specific grazing BMPs (i.e. water developments, fencing, etc) and planned grazing systems which incorporates record keeping and monitoring.” In addition to DEQ’s support, the PFC methodology was used in developing the Lake Helena TMDL (the primary TMDL for this planning area). The Lake Helena TMDL was completed by EPA and it emphasized the use of PFC for assessing riparian conditions (section 3.3.3.6). Given this support from EPA, DEQ, and the BLM; we believe this method is appropriate for monitoring riparian conditions and potential non-point source pollution.

Many of the parameters identified in the comment are more appropriate for project level monitoring, where specific objectives are established and specific parameters designated. Although not specifically a part of the land health assessment process, many of these parameters are considered during the PFC assessment where the collection of site specific supporting information is encouraged.

The BLM agrees that as TMDLs are established for this area, some of the indicators and parameters listed in the comment could become a part of the TMDL. As we’ve previously committed to implement relevant portions of approved TMDLs, we would evaluate any relevant parameter identified in a TMDL. However, these would be site specifically established by the State and EPA and not programmatically assigned by the BLM. In addition, the BLM is currently funding DEQ to collect water quality monitoring data on BLM managed lands. This partnership is led by DEQ’s Rosie Sada and Mike Suplee and includes any data DEQ deems appropriate.

The BLM will provide more specifics on its RMP monitoring plan in the Record of Decision for the plan that identifies and describes the Approved RMP. Thank you for your list of references, they will be extremely useful in implementing site specific site evaluations.

#### LL10

**Comment:** We did not see much discussion of ground water impacts associated with oil and gas leases. Will the BLM or oil and gas operators conduct any ground water monitoring in association with oil and gas leases and/or transport of oil and gas products within the BFO Planning Area? Are any impacts to ground water quality anticipated as a result of oil and gas exploration, development and transport within the BFO area?

**Response:** The BLM does not forecast any appreciable ground water impacts associated with federally approved oil and gas activity in the Butte Field Office based on the low level of oil and gas activity forecast in our Reasonably Foreseeable Development (RFD) Scenario for the Butte RMP. Additionally, the BLM has no intention of conducting ground water monitoring or requiring operators to conduct ground water monitoring in the Butte

Field Office at this time due to the low level of activity forecast.

The BLM forecasts a total of 19 conventional wells in the Field Office; of which six are forecast to be discoveries. We have forecast a total of 12 successful step-out (development) wells. The RFD scenario forecasts that seven of the 18 producing wells, original discoveries and step-out wells, will be on federal minerals and under BLM jurisdiction. Due to uncertainties we have not forecast how many of the unsuccessful wildcat wells will be federal and how many non-federal. The BLM forecasts 10 wildcat coal bed natural gas (CBNG) wildcat wells. We expect six of the wildcat CBNG wells will be producing wells. These are expected to be followed by 24 producing step-out wells. As noted in the RMP none of the coal bed natural gas wells are expected to be federal.

The BLM does not regulate oil and gas drilling and other operations on non-federal minerals in Montana. That is the job of the Montana Board of Oil and Gas Conservation. In the case of federally approved activities, the BLM will administer oil and gas activities under applicable laws, regulations, Onshore Oil and Gas Orders, and Notices to Lessees. Our procedures for regulating oil and gas activities on federal leases are described in **Appendix M** of the Proposed RMP/Final EIS.

**LL11**

**Comment:** Table 4-50 is misleading when considering the roads in question in the Scratchgravel Hills. The table references the effects on water and fishery resources in the Scratchgravel Hills is misleading and very minimal as there are no perennial streams in this immediate area. Table 4-50 gives the impression that closing the roads in the immediate Scratchgravel Hills will have an effect on non-fish bearing streams even though it does not specify which roads are within 300 feet of a perennial stream.

**Response:** The information provided in Table 4-50 applies to the entire Helena Travel Planning Area (TPA), not just Scratchgravel Hills. There are perennial streams in other areas of the Helena TPA outside the Scratchgravel Hills.

**LL12**

**Comment:** The full cost of motorized usage (both wheeled vehicles and snowmobiles) should be factored into the analysis. The Clancy-Unionville BLM travel plan may be contributing to water quality problems that exist in that area of Lump Gulch (on the impaired water body list, p. 212).

**Response:** During travel management planning the BLM evaluates its actions versus all standards. While Lump Creek is currently listed on the 303(d) list, the probable sources are agriculture, range, grazing – riparian, and resource extraction. Motorized use was not

identified as a probable source of impairment. In addition, this area is not within one of the travel planning areas being addressed in concert with the Butte RMP revision.

**DISTRIBUTION OF THE PROPOSED RMP /FINAL EIS**

The Proposed RMP/EIS has been sent to all parties expressing continuing interest in the RMP.

Copies of the Proposed RMP/Final EIS are also available for public review at the following locations:

- BLM Butte Field Office
- BLM Dillon Field Office
- BLM Missoula Field Office
- Helena National Forest Supervisor’s Office
- Gallatin National Forest Supervisor’s Office
- Beaverhead-Deerlodge National Forest Supervisor’s Office
- Beaverhead-Deerlodge National Forest Butte Ranger District/S.O. Annex
- Beaverhead-Deerlodge National Forest Wise River Ranger District
- Butte Public Library
- Helena Public Library
- Bozeman Public Library
- Dillon Public Library
- Whitehall Public Library
- Anaconda Public Library
- Livingston Public Library
- Boulder Public Library

The Draft RMP/EIS is also available electronically at the Butte Field Office website at, [www.blm.gov/mt/st/en/fo/butte\\_field\\_office.html](http://www.blm.gov/mt/st/en/fo/butte_field_office.html).

Concurrent with the distribution of the Draft RMP/EIS, a Notice of Availability was published by EPA in the Federal Register which marks the beginning of the 90-day public comment period. BLM also published a Notice of Availability in the Federal Register announcing the availability of the Draft RMP/EIS for public comment.

Hard copies of the Proposed RMP/Final EIS have been distributed to the following organizations, agencies, and individuals who requested them, or as required by regulation or policy.

## **Federal Government Agencies**

Bureau of Reclamation  
Environmental Protection Agency – Region 8  
US Army – Montana National Guard  
US Fish & Wildlife Service – Helena  
US Fish & Wildlife Service – Billings  
Beaverhead-Deerlodge National Forest Butte Ranger District/S.O. Annex  
USDA Forest Service – Beaverhead-Deerlodge NF - Dillon  
USDA Forest Service – Beaverhead-Deerlodge NF - Whitehall  
USDA Forest Service – Beaverhead-Deerlodge NF – Wise River  
USDA Forest Service – Gallatin NF  
USDA Forest Service – Helena NF – Helena  
USDA Forest Service – Helena NF – Townsend  
USDA – National Resources Conservation Service – Dillon  
USDA – National Resources Conservation Service – Townsend

## **State Government Agencies**

Honorable Brian Schweitzer, Governor of Montana  
Montana Bureau of Mines and Geology  
Montana Department of Environmental Quality  
Montana Department of Natural Resources and Conservation  
Montana Fish, Wildlife & Parks - Bozeman  
Montana Fish, Wildlife & Parks – Butte  
Montana Fish, Wildlife & Parks – Helena  
Montana Fish, Wildlife & Parks – Townsend  
Montana Fish, Wildlife & Parks – Dillon  
Montana State Historic Preservation Office

## **Local Governments**

Beaverhead County Commission  
Beaverhead County Weed Coordinator  
Broadwater County Commission  
Broadwater County Weed Coordinator  
City of Helena Parks and Recreation  
Deer Lodge County Commission  
Deer Lodge County Weed Coordinator

Gallatin County Commission  
Gallatin County Weed Coordinator  
Jefferson County Commission  
Jefferson County Weed Coordinator  
Jefferson County Weed District  
Lewis and Clark County Commission  
Lewis and Clark County Planning Department  
Lewis and Clark County Weed Coordinator  
Park County Commission  
Park County Environmental Council  
Park County Planner  
Park County Weed Coordinator  
Silver Bow County Commission  
Silver Bow County Weed Coordinator

## **Tribal Governments and Committees**

Arapaho Business Council  
Blackfeet Planning and Development  
Blackfeet Tribal Council  
Chippewa Cree Business Committee  
Confederated Salish and Kootenai Tribes  
Crow Tribal Council  
Fort Belknap Community Council  
Fort Peck Tribal Executive Board  
Nez Perce Tribal Executive Committee  
Nez Perce Tribes Cultural Resources Committee  
Northern Cheyenne Tribal Council  
Shoshone Business Council – Fort Washakie  
Shoshone-Bannock Tribes Business Council – Fort Hall  
Turtle Mountain Band of Chippewa Indians

## **Congressionals**

U.S. Representative, Dennis Rehberg  
U.S. Senator, John Tester  
U.S. Senator, Max Baucus

## **Nongovernmental Organizations and Businesses**

American Wildlands  
Boone and Crockett Club – Townsend  
Butte Skyline Sportsmen  
Capital Trail Vehicle Association (CTVA)

Driftwood Ranch  
 East Pioneer Experimental Stewardship Program  
 Elkhorn Working Group  
 Gold Prospectors Association  
 Graymont Western US, Inc.  
 Helena Mineral Society  
 International Association of Fish and Wildlife Agencies  
 Jefferson River Watershed Council  
 Johns Ranch, Inc.  
 Lamarche Creek Ranch  
 Lewis and Clark Search and Rescue  
 Lorengo Logging  
 Mining City Trailriders  
 Montana Foundation for North American Wild Sheep  
 Montana Logging Association  
 Montana Mining Association – Helena Chapter  
 Montana Natural Heritage Program  
 Montana Snowmobile Association  
 Montana Stockgrowers Association  
 Montana Trail Vehicle Riders Association – Bozeman  
 Montana Trail Vehicle Riders Association – Great Falls  
 Montana Trout Unlimited  
 Montana Tunnels Mining, Inc.  
 Montana Wilderness Association – Bozeman  
 Montana Wilderness Association – Dillon  
 Montana Wilderness Association – Helena  
 Montana Wildlife Federation  
 Montana Wood Products Association  
 Northwestern Energy  
 Pacific Legal Foundation  
 PPL Montana, LLC (PPLM)

Public Lands Access Association, Inc.  
 Reinhardt Ranch  
 Renewable Technologies  
 Rocky Mountain Elk Foundation  
 Safari Club International – Southwest Montana Chapter  
 Safari Club International – Washington, DC Office  
 Silver City Lumber, Inc.  
 Sims Ranch  
 Skyline Sportsmen Association  
 Smurfit Stone Container Company  
 Snowmobile Alliance for Western States  
 Stanchfield Cattle Company  
 State Land Coalition  
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An interdisciplinary team of resource specialists from the BLM Butte Field Office, and the State of Montana BLM office prepared this RMP/EIS. Maxim Technologies, a subsidiary of Tetra Tech Inc. assisted the BLM in the planning process and preparation of these documents (**Table 5-2**). Rick Hotaling, Field Manager of the Butte Field Office, provided guidance, oversight, and support in developing the Draft RMP/EIS and moving the planning process forward.

**Table 5-1  
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## GLOSSARY

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### -A-

**ABANDONED MINE LANDS:** Inactive or abandoned mines located on or near public land where the owner or operator cannot be established, have no financial assets, are cannot assist with the reclamation of these mine sites.

**ADVERSE OR NEGATIVE:** An effect that is detrimental or causes harm to a specific resource or resource use. Could be used in short-term, long-term, or both short and long-term contexts.

**ACCELERATED EROSION:** Soil loss above natural levels resulting directly from human activities. Because of the slow rate of soil formation, accelerated erosion can lead to a permanent reduction in plant productivity.

**ACTIVE PREFERENCE:** That portion of the total grazing preference for which grazing use may be authorized.

**ACTIVITY PLAN:** Site-specific plan which precedes actual development. This is the most detailed level of BLM planning, and is also referred to as project level or implementation level planning.

**ACTUAL USE:** The amount of animal unit months consumed by livestock based on the numbers of livestock and grazing dates submitted by the livestock operator and confirmed by periodic field checks by the BLM.

**ADMINISTRATIVE UNIT:** Field Office, Resource Area, District, or State.

**AFFECTED ENVIRONMENT:** Natural, physical and human-related environment that is sensitive to changes due to proposed actions.

**AIR QUALITY:** Refers to standards for various classes of land as designated by the Clean Air Act of 1978.

**ALLOTMENT:** An area of land where one or more livestock operators graze their livestock. Allotments generally consist of BLM lands but may also include other federally managed, state owned, and private lands. An allotment may include one or more separate pastures. Livestock numbers and periods of use are specified for each allotment.

**ALLOTMENT CATEGORIZATION:** Grazing allotments and rangeland areas used for livestock grazing are assigned to an allotment category during resource management planning. Allotment categorization is used to establish priorities for distributing available funds and personnel during plan implementation to achieve cost-effective improvement of rangeland resources. Categorization is also used to organize allotments into similar groups for purposes of developing multiple use prescriptions, analyzing site-specific and cumulative impacts, and determining trade-offs.

**ALLOTMENT MANAGEMENT PLAN:** A written program of livestock grazing management, including supportive measures if required, designed to attain specific management goals in a grazing allotment.

**ALLOWABLE SALE QUANTITY:** The maximum quantity of timber that may be sold from the area of suitable land covered by the resource management plan for a specified time period specified by the plan.

**ALTERNATIVE:** In an Environmental Impact Statement, one of a number of possible options for responding to the purpose and need for action.

**ALLUVIUM:** Any sediment deposited by flowing water, as in a river bed, floodplain, or delta.

**AMENDMENT:** The process for considering or making changes in the terms, conditions, and decisions of approved Resource Management Plans or Management Framework Plans using the prescribed provisions for resource management planning appropriate to the proposed action or circumstances. Usually only one or two issues are considered that involve only a portion of the planning area.

**ANALYSIS AREA:** The geographic area defining the scope of analysis for a particular resource. This area may be larger than the project area when effects have the potential to extend beyond the boundaries of the proposed action.

**ANALYSIS OF THE MANAGEMENT SITUATION:** A comprehensive documentation of the present conditions of the resources, current management guidance, and opportunities for change.

**ANIMAL UNIT MONTH (AUM):** A standardized measurement of the amount of forage necessary for the sustenance of one cow unit or its equivalent for 1 month; approximately 800 pounds of forage.

**APPEAL:** Application for review by a higher court.

**APPLICATION FOR PERMIT TO DRILL (APD):** Before beginning construction or the drilling of a well, the lessee or operator must file an Application for Permit to Drill (APD) with the BLM Great Falls Oil and Gas Field Station. A copy of the application is posted in the Field Station and Butte Field Office, and if applicable, in the office of the Surface Management Agency (SMA) for a minimum of 30 days for review by the public. After 30 days, the application can be approved in accordance with (a) lease stipulations, (b) Onshore Oil and Gas Orders, and (c) Onshore Oil and Gas regulations (43 CFR Part 3160) if it is administratively and technically complete.

**APPROPRIATION:** Public lands covered by an entry, settlement, claim, location, withdrawal, or reservation

that sets the land apart for some particular use or disposal.

**AQUATIC:** Living or growing in or on the water.

**AQUIFER:** A water-bearing bed or layer of permeable rock, sand, or gravel capable of yielding large amounts of water.

**ARCHAEOLOGICAL RESOURCE/REMAINS:** A term with legal definition and application, meaning any material remains of human life or activities that are at least 100 years of age, and that are of archaeological interest.

**AREA OF CRITICAL ENVIRONMENTAL CONCERN:** Areas within the public lands where special management attention is required to: (1) protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or (2) protect life and safety from natural hazards.

**ARID:** A condition of a region where precipitation is insufficient to support any but drought-adapted vegetation.

**ARMORING:** Placement of protective material for the primary purpose of reducing sediment into streams or other water bodies.

**ASPECT:** (1) the visual first impression of vegetation at a particular time or seen from a specific point. (2) The predominant direction of the slope of the land.

**ASSESSMENT:** The act of evaluating and interpreting data and information for a defined purpose.

**AUTHORIZED OFFICER:** The Federal employee who has the delegated authority to make a specific decision.

**AUTHORIZED USE:** Uses of public land that may be authorized include agriculture development, residential use (under certain conditions), business, industrial, and commercial uses, advertising; research projects, State National Guard maneuvers, and motion picture filming. Recreational concessions are considered business uses and may be authorized by lease. Timber harvest, livestock grazing, mineral extraction, and special recreation events, among other uses, are authorized under other regulations and not under Section 302 of the Federal Land Policy Management Act (FLPMA).

**AVOIDANCE AREAS:** Areas with sensitive resource values where rights-of-way would be strongly discouraged. Authorizations made in avoidance areas would have to be compatible with the purpose for which the area was designated and not be otherwise feasible on lands outside the avoidance area.

**-B-**

**BACK COUNTRY BYWAYS:** Vehicle routes that traverse scenic corridors utilizing secondary or back country road systems. National back country byways are desig-

nated by the type of road and vehicle needed to travel the byway.

**BANKFULL CHANNEL:** The elevation on the stream-bank where flooding begins. Bankfull discharge normally re-occurs every 1½ years. The bankfull stage corresponds to the discharge at which channel maintenance is effective.

**BASIN:** A depressed area having no surface outlet (topographic basin); a physiographic feature or subsurface structure that is capable of collecting, storing, or discharging water by reason of its shape and the characteristics of its confining material (water); a depression in the earth's surface, the lowest part often filled by a lake or pond (lake basin); a part of a river or canal widened (drainage, river, stream basin).

**BENEFICIAL OR POSITIVE:** An effect promoting a favorable result for a specific resource of resource use. Could be used in short-term, long-term, or both short and long-term contexts.

**BEST MANAGEMENT PRACTICES (BMPs):** A suite of techniques that guide, or may be applied to, management actions to aid in achieving desired outcomes. Best management practices are often developed in conjunction with land use plans, but they are not considered a land use plan decision unless the land use plan specifies that they are mandatory. They may be updated or modified without a plan amendment if they are not mandatory.

**BIG GAME:** Large species of wildlife that are hunted, such as elk, deer, bighorn sheep, and pronghorn antelope.

**BIG GAME ANALYSIS UNIT:** Logical locations across the landscape to conduct analysis of big game winter range. These areas were broken out based on a combination of Elk Management Units from Montana's Elk Management Plan (MFWP 2004) and watershed boundaries.

**BIODIVERSITY:** The diversity of living organisms considered at all levels of organization including genetics, species, and higher taxonomic levels, and the variety of habitats and ecosystems, as well as the processes occurring therein.

**BIOLOGICAL ASSESSMENT:** The gathering and evaluation of information on proposed endangered and threatened species and critical habitat and proposed critical habitat. Required when a management action potentially conflicts with endangered or threatened species, the biological assessment is the way federal agencies enter into formal consultation with the Fish and Wildlife Service and describe a proposed action and the consequences to the species the action would affect.

**BIOLOGICAL WEED TREATMENT:** These are treatments which involve living creatures, such as insects, sheep and goat grazing, plant pathogens, and biopesticides.

**BIOMASS:** Vegetative byproducts or materials leftover from stand treatments usually made up of all or portions of trees and woody shrubs, including limbs, tops, stumps, and stems. This term can refer to such material that can be gathered and transported to cogeneration plants, and there utilized for production of electricity.

**BOARD FEET:** A unit of solid wood one foot square and one inch thick. (BF- board foot, MBF-thousand board feet, MMBF million board feet)

**BROWSE:** To browse (verb) is to graze a plant; also, browse (noun) is the tender shoots, twigs and leaves of trees and shrubs often used as food by livestock and wildlife.

**BUFFER ZONE (STRIP):** A protective area adjacent to an area of concern requiring special attention or protection. In contrast to riparian zones which are ecological units, buffer strips can be designed to meet varying management concerns.

**BUNCHGRASS:** Individual grasses that have the characteristic growth habit of forming a “bunch” as opposed to having stolens or rhizomes or single annual habit.

-C-

**CANDIDATE SPECIES:** Any species included in the Federal Register notice of review that are being considered for listing as threatened or endangered by the U.S. Fish and Wildlife Service.

**CANOPY:** Foliar layer(s) consisting of the crowns of trees or shrubs in a forest or woodland.

**CARRYING CAPACITY:** The maximum stocking rate possible without damaging vegetation or related resources.

**CENOZOIC:** The most recent era of geologic history (65 million years ago until the present) during which the world’s modern landforms, animals, and plants came into being.

**CHANNEL:** An open conduit either naturally or artificially created which periodically or continuously contains moving water or forms a connecting link between two bodies of water.

**CHEMICAL WEED TREATMENT:** These are treatments using additives, such as applying herbicides or changing soil nutrient ratios.

**CLASSIFICATION:** The authority of the Secretary of the Interior to examine land to see whether it is proper for entry, selection, or location.

**CLASSIFICATION OF LANDS:** The process of determining whether lands are more valuable or suitable for transfer or use under particular or various public land laws than for retention in federal ownership for management purposes.

**CLEAN AIR ACT:** Federal legislation governing air pollution.

**CLIMATE CHANGE (ALSO REFERRED TO AS 'GLOBAL CLIMATE CHANGE'):** Climate change refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from:

- Natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun
- Natural processes within the climate system (e.g., changes in ocean circulation)
- Human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, desertification)

**CLIMAX:** The culminating stage in plant succession for a given site where vegetation has reached a highly stable condition.

**CLIMAX VEGETATION:** The ecological vegetation community that represents the culminating stage or highest development of natural vegetative succession. The climax community often can perpetuate itself indefinitely unless disturbed by outside forces.

**CLOSE (SEGREGATE):** To remove land from operation of some or all of the public land laws for a given period of time.

**CLOSED:** Generally denotes that an area is not available for a particular use or uses; refer to specific definitions found in law, regulations, or policy guidance for application to individual programs.

**CLOSED ROAD:** Closed to motorized public access and subject to administrative or permitted uses based on case-specific exceptions (such as for mining claimants with existing claims accessed by existing routes). Routes identified as closed would have a route bed left intact in case they are needed for valid existing rights only, or in the extended future for administrative purposes. Closed routes would be open to non-motorized use.

**CODE OF FEDERAL REGULATIONS (CFR):** The official, legal tabulation or regulations directing federal government activities.

**COLLABORATION:** A cooperative process in which interested parties, often with widely varied interests, work together to seek solutions with broad support for managing public and other lands.

**COMMERCIAL FOREST LAND:** Forest land which is producing, or has a site capable of producing, at least 20 cubic feet/acre/year of a commercial tree species.

**COMMON VARIETY MINERALS:** Stone, gravel, pumice, pumicite, and cinders that, though possibly having value for trade, manufacture, the sciences, or the mechanical or ornamental arts, do not have a distinct,

special value for such use beyond normal uses. On the public lands such minerals are considered salable and are disposed of by sales or by special permits to local governments.

**COMMUNITY:** An assemblage of plant and animal populations in a common spatial arrangement.

**COMPOSITION (OF FOREST VEGETATION):** The proportion of each tree species in a stand, expressed as a percentage of the total number, basal area, or volume of all tree species in the stand.

**CONDITION CLASS:** Departure from the historic fire regime, as determined by the number of missed fire return intervals - with respect to the historic fire return interval and the current structure and composition of the system resulting from alternations to the disturbance regime. Three classes categorize the current condition with respect to each of five historic Fire Regime Groups. The relative risk of fire-caused loss of key components defines the system increases for each higher number condition. Class 1 level means little or no risk.

**CONFORMANCE:** That a proposed action shall be specifically provided for in the land use plan or, if not specifically mentioned, shall be clearly consistent with the goals, objectives, or standards of the approved land use plan.

**CONIFER:** A tree or shrub of the order Coniferae with cones and needle-shaped or scale like leaves.

**CONIFEROUS:** Pertaining to conifers, which bear woody cones containing naked seeds.

**CONNECTIVITY:** The degree to which similar but separated vegetation components of a landscape are connected.

**CONSERVATION AGREEMENT:** A formal signed agreement between the U.S. Fish and Wildlife Service or National Marine Fisheries Service and other parties that implements specific actions, activities, or programs designed to eliminate or reduce threats or otherwise improve the status of a species. Conservation agreements can be developed at a State, regional, or national level and generally include multiple agencies at both the State and Federal level, as well as tribes. Depending on the types of commitments the BLM makes in a conservation agreement and the level of signatory authority, plan revisions or amendments may be required prior to signing the conservation agreement, or subsequently in order to implement the conservation agreement.

**CONSERVATION STRATEGY:** A strategy outlining current activities or threats that are contributing to the decline of a species, along with the actions or strategies needed to reverse or eliminate such a decline or threats. Conservation strategies are generally developed for species of plants and animals that are designated as BLM Sensitive species or that have been determined by

the Fish and Wildlife Service or National Marine Fisheries Service to be Federal candidates under the Endangered Species Act.

**CONSISTENCY:** The proposed land use plan does not conflict with officially approved plans, programs, and policies of tribes, other Federal agencies, and State, and local governments to the extent practical within Federal law, regulation, and policy.

**CONTIGUOUS:** lands or legal subdivisions having a common boundary; lands having only a common corner are not contiguous.

**COOPERATING AGENCY:** Assists the lead Federal agency in developing an Environmental Analysis or Environmental Impact Statement. The Council on Environmental Quality regulations implementing NEPA defines a cooperating agency as any agency that has jurisdiction by law or special expertise for proposals covered by NEPA. Any tribe or Federal, State, or local government jurisdiction with such qualifications may become a cooperating agency by agreement with the lead agency.

**CORRIDOR:** A wide strip of land within which a proposed linear facility could be located.

**COUNCIL ON ENVIRONMENTAL QUALITY (CEQ):** An Executive Office advisory council established by the National Environmental Policy Act of 1969 for review of federal program effects on the environment. They conduct environmental studies and advise the President on environmental matters.

**COVER:** Any form of environmental protection that helps an animal stay alive (mainly shelter from weather and concealment from predators).

**COVER TYPE:** The present vegetation composition of an area, described by the dominant plant species.

**CRITICAL HABITAT:** An area occupied by a threatened or endangered species "on which are found those physical and biological features (1) essential to the conservation of the species, and (2) which may require special management considerations or protection".

**CULTURAL RESOURCE/ CULTURAL PROPERTY:** a definite location of human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence. The term includes archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) or traditional cultural or religious importance to specified social and/or cultural groups. Cultural resources are concrete, material places and things that are located, classified, ranked, and managed through the system of identifying, protecting, and utilizing for public benefit.

**CULTURAL RESOURCE INVENTORY CLASSES:**

- Class I – Existing data inventory: a study of published and unpublished documents, records, files, registers, and other sources, resulting in analysis and synthesis of all reasonably available data. Class I inventories encompass prehistoric, historic, and ethnological/sociological elements, and are in large part chronicles of past land uses. They may have major relevance to current land use decisions.
- Class II – Sampling field inventory: a statistically based sample survey designed to help characterize the probable density, diversity, and distribution of archaeological properties in a large area by interpreting the results of surveying limited and discontinuous portions of the target area.
- Class III – Intensive field inventory: a continuous, intensive survey of an entire target area, aimed at locating and recording all archaeological properties that have surface indications, by walking close-interval parallel transects (generally at 30 m intervals) until the area has been thoroughly examined.

**CULTURAL WEED TREATMENT:** These are treatments which involve human behavior, such as using quarantine, closure, or relocation of a particular activity to reduce weed spread, selective timing and choice of stock for grazing, containing livestock after they have grazed in a weed infested area, revegetation seed mix choices for rehabilitating new soil disturbances, land use choices, and public outreach methods.

**CUMULATIVE IMPACT:** The impact on the environment that results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

**-D-**

**“DE FACTO” WITHDRAWAL:** An action that closes lands through a means other than formal withdrawal, e.g. application, classification, land use planning decision.

**DECIDUOUS:** Pertaining to plants that shed all their leaves every year in a certain season.

**DECISION AREA:** Within the Butte Field Office Planning Area, BLM administers about 307,309 acres of public land surface and 652,194 acres of federal mineral estate. All public land managed by the BLM within the Planning Area is referred to as the Decision Area.

**DECOMMISSIONED ROAD:** Route is closed and rehabilitated to eliminate resource impacts (for example, to eliminate erosion or to restore a riparian area if route is located within a riparian area) and is no longer useable for public or administrative uses.

**DEEP SOILS:** Soils that are 40 to 60 inches deep to bedrock.

**DENNING HABITAT:** Habitat used during parturition and rearing of young until they are mobile. The common component appears to be large amounts of coarse woody debris, either down logs or root wads. Coarse woody debris provides escape and thermal cover for kittens. Denning habitat may be found either in older mature forest of conifer or mixed conifer/deciduous types, or in regenerating stands (>20 years since disturbance). Denning habitat must be located within daily travel distance of foraging habitat (typical maximum daily distance for females is 3-6 miles).

**DESIGNATED ROADS AND TRAILS:** Specific roads and trails where some type of motorized vehicle use is allowed either seasonally or year-long.

**DESIRED FUTURE CONDITION:** Outcomes representing the long-term vision of BLM with regard to the resources managed in the Butte Field Office on BLM land.

**DEVELOPED RECREATION:** Recreation that requires facilities and might result in concentrated use of an area; for example, a campground.

**DISPERSED RECREATION:** Recreation activities of an unstructured type which are not confined to specific locations such as recreation sites. Example of these activities may be hunting, fishing, off-road vehicle use, hiking, and sightseeing.

**DISTURBANCE:** Events that alter the structure, composition, or function of terrestrial or aquatic habitats. Natural disturbances include drought, floods, wind, fires, wildlife grazing, and insects and pathogens. Human-caused disturbances include actions such as timber harvest, fire, livestock grazing, road construction, and the introduction of exotic species.

**DISTRIBUTION LINE:** An electric power line operating at a voltage of less than 69 kilovolts.

**DIVERSITY:** The relative abundance of wildlife species, plant species, communities, habitats, or habitat features per unit of area.

**DRAINAGE:** The removal of excess water from land by surface or subsurface flow.

**DRILLING:** The operation of boring a hole in the earth, usually for the purpose of finding and removing subsurface formation fluids such as oil and gas.

**-E-**

**EASEMENT:** A right afforded a person or agency to make limited use of another’s real property for access or other purposes.

**ECOLOGICAL FUNCTION:** The process through which the constituent living and nonliving elements of ecosystems change and interact, including biogeochemical processes and succession.

**ECONOMICS:** The study of allocation of limited resources, goods, and services among competing uses.

**ECOSYSTEM:** A complete, interacting system of living organisms and the land and water that make up their environment; the home places of all living things, including humans.

**ELIGIBILITY (FOR WILD AND SCENIC RIVERS):** A river is eligible for inclusion in the National Wild and Scenic River System if it is free flowing and has at least one river-related value that is considered outstandingly remarkable.

**ELK MANAGEMENT UNIT:** Designated by Montana Fish Wildlife and Parks, establishes statewide elk management population objectives and divides Montana's elk habitat into 35 management units, each with its own elk management objectives and elk population targets.

**EMERGENT VEGETATION:** Aquatic plant species that are rooted in wetlands but extend above the water's surface.

**ENCROACH:** Plant succession in the absence of disturbance, in areas the plant type is not desired. Often associated with vegetative type conversion such as conifer colonization of grass or shrub meadows.

**ENDANGERED SPECIES:** Any plant or animal species which is in danger of extinction throughout all or a significant portion of its range.

**ENTRY:** An application to acquire title to public lands.

**ENVIRONMENTAL ASSESSMENT:** A concise public document that analyzes the environmental impacts of a proposed federal action and provides sufficient evidence to determine the level of significance of the impacts.

**ENVIRONMENTAL IMPACT STATEMENT:** A detailed written statement required by the National Environmental Policy Act when an agency proposes a major federal action significantly affecting the quality of the human environment.

**ENVIRONMENTAL JUSTICE:** Refers to the fair treatment and meaningful involvement of people of all races, cultures and incomes with respect to the development, implementation and enforcement of environmental laws, regulations, programs and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal state, local and tribal programs and policies.

**Ephemeral area:** Watershed land area that delivers surface water flow during spring runoff, rain, and snow storms to intermittent and perennial streams.

**EROSION:** The wearing away of the land surface by running water, wind, ice, or other geological agents.

**EXCEPTION (OIL AND GAS):** A one-time exemption to a lease stipulation. Exceptions are determined on a case-by-case basis.

**EXCHANGE:** A trading of public lands (surface and/or subsurface estates) that usually do not have high public value, for lands in other ownerships that do have value for public use, management, and enjoyment. The exchange may be for the benefit of other federal agencies as well as for BLM.

**EXCLUSION AREAS:** Areas with sensitive resource values where rights-of-way would be prohibited.

**EXPLORATION:** The work of investigating a mineral deposit to determine by geological surveys, geophysical surveys, geochemical surveys, boreholes, pits, and underground workings if it is feasible to mine.

**EXTENSIVE RECREATION MANAGEMENT AREA:** Areas where significant recreation opportunities and problems are limited and explicit recreation management is not required. Minimal management actions related to the Bureau's stewardship responsibilities are adequate in these areas.

**-F-**

**FACULTATIVE (FAC):** Plant species equally likely to occur in wetlands, riparian areas, or non-wetlands (estimated probability 34%-66%).

**FACULTATIVE WETLAND (FACW):** Plant species that usually occur in wetlands or riparian areas (estimated probability 67%-99%), but occasionally found in non-wetlands or uplands.

**FEDERAL LAND POLICY AND MANAGEMENT ACT OF 1976:** Public Law 94-579. October 21, 1976, often referred to as the BLM's "Organic Act," which provides the majority of the BLM's legislated authority, direction, policy, and basic management guidance.

**FEDERAL POWER PROJECT RESERVATION:** A reservation of public lands for use in a project developed under the jurisdiction of the Federal Power Commission.

**FEDERAL REGISTER:** A daily publication that reports Presidential and Federal Agency documents.

**FIRE CONDITION CLASS:** Categorizes and describes vegetation composition and structure conditions that currently exist inside the Fire Regime Groups. Three classes serve as generalized wildfire risk rankings based on coarse-scale data. The risk components from unwanted wildland fire increases from lowest risk-Condition Class I, to highest-Condition Class 3.

**FIRE FREQUENCY:** How often fire burns a given area; often expressed in terms of fire return intervals. For example, a site might burn over every 5 to 15 years.

**FIRE INTENSITY:** Expression used to describe the power of wildland fires. More commonly described as the rate of energy released per unit length of the fire front.

**FIRE MANAGEMENT PLAN:** A strategic plan that defines a program to manage wildland and prescribed fires and documents the fire management program in the approved land use plan; the plan is supplemented by operational procedures such as preparedness plans, preplanned dispatch plans, prescribed fire plans, and prevention plans.

**FIRE MANAGEMENT ZONE:** Administrative unit for wildland fire suppression, for the execution of all logistical, aviation, and support activities within this geographical area.

**FIRE PREPAREDNESS:** Activities that lead to a safe, efficient, and cost-effective fire management program in support of land and resource management objectives through appropriate planning and coordination.

**FIRE REGIMES:** periodicity and pattern of naturally occurring fires in a particular area or vegetative type, described in terms of frequency, biological severity, and aerial extent.

**FIRE SEVERITY:** A qualitative measure of the fire's immediate effects on the ecosystem. Relates to the extent of mortality and survival of plant and animal life—both above and below ground and to loss of organic matter.

**FISHERY:** Habitat that supports the propagation and maintenance of fish.

**FLOOD PLAIN:** The relatively flat area or lowlands adjoining a body of standing or flowing water which has been or might be covered by floodwater.

**FLUVIAL:** Pertaining to streams or produced by stream action.

**FORAGE:** All browse and herbaceous foods available to grazing animals, which may be grazed or harvested for feeding.

**FORAGE RESERVE ALLOTMENT (GRAZING):** A unit of public land that will not have term grazing permits issued. Such an allotment would only be grazed on a temporary nonrenewable basis. The use of these allotments would be to provide temporary grazing to rest other areas following wildfire, habitat treatments, or to allow for more rapid attainment of rangeland health. The allotment must be of sufficient size to be managed as a discrete unit. Resource Reserve Allotments should be distributed throughout the planning area.

**FORB:** An herbaceous plant that is not a grass, sedge, or rush.

**FOREST HEALTH:** The perceived condition of a forest derived from concerns about such factors as its age, structure, composition, function, vigor, presence, or

unusual levels of insects and disease, and resilience to disturbance.

**FOREST HEALTH TREATMENTS:** Treatments that restore forest ecosystems or stands to a condition that sustains their complexity, function, and/or productivity while providing for human needs.

**FOREST LAND:** Land that is now, or has the potential of being, at least 10 percent stocked by forest trees (based on crown closure) or 16.7 percent stocked (based on tree stocking).

**FORMATION:** A body of rock identified by lithic characteristics and stratigraphic position; it is prevailing, but not necessarily tabular, and is mappable at the earth's surface or traceable in the subsurface.

**Fossil:** Mineralized or petrified form from a past geologic age, especially from previously living things.

**FRAGMENTATION:** The splitting or isolating of patches of similar habitat. Habitat can be fragmented by natural events or development activities.

**FREE-FLOWING RIVER:** Existing or flowing in a natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway.

**FUEL LOADING:** The weight of fuels in a given area, usually expressed in tons per acre, pounds per acre, or kilograms per square meter.

**FUEL MANAGEMENT:** Manipulation or reduction of fuels to meet forest protection and management objectives while preserving and enhancing environmental quality.

**FUEL TREATMENT:** The rearrangement or disposal of fuels to reduce the fire hazard.

**FUEL TYPE:** An identifiable association of fuel elements of a distinctive plant species, form, size, arrangement, or other characteristics that will cause a predictable rate of fire spread or difficulty of control under specified weather conditions.

#### -G-

**GAME SPECIES:** Any species of wildlife or fish for which seasons and bag limits have been prescribed, and which are normally harvested by hunters, trappers, and fisherman under State or federal laws, codes, and regulations.

**GENERAL ORDERS OF WITHDRAWALS:** Executive Orders No. 6910 of November 26, 1934, and No. 6964 of February 5, 1935, which withdrew for classification all vacant public lands in the 11 western states and certain other public land states.

**GEOGRAPHIC INFORMATION SYSTEM (GIS):** A system of computer hardware, software, data, people and applications that capture, store, edit, analyze, and

graphically display a potentially wide array of geospatial information.

**GEOPHYSICAL EXPLORATION:** The use of geophysical instruments and methods to determine subsurface conditions by analyzing such properties as specific gravity, electrical conductivity, or magnetic susceptibility.

**GLOBAL CLIMATE CHANGE (ALSO REFERRED TO AS 'CLIMATE CHANGE'):** Climate change refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from:

- Natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun
- Natural processes within the climate system (e.g., changes in ocean circulation)
- Human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, desertification)

**GOAL:** A broad statement of a desired outcome. Goals are usually not quantifiable and may not have established time frames for achievement.

**GRAZING SYSTEM:** The manipulation of livestock grazing to accomplish a desired result.

**GREENHOUSE GAS (GHG):** Gases in the earth's atmosphere that produce the greenhouse effect. Greenhouse gases include water vapor, carbon dioxide, methane, nitrous oxide, halogenated fluorocarbons, ozone, perfluorinated carbons, and hydro fluorocarbons. Changes in the concentration of certain greenhouse gases, due to human activity such as fossil fuel burning, increase the risk of global climate change.

**GROUNDWATER:** Water contained in pore spaces of consolidated and unconsolidated surface material.

**GUIDELINES:** Actions or management practices that may be used to achieve desired outcomes, sometimes expressed as best management practices. Guidelines may be identified during the land use planning process, but they are not considered a land use plan decision unless the plan specifies that they are mandatory.

**-H-**

**HABITAT:** A specific set of physical conditions that surround a species, group of species, or a large community. In wildlife management, the major constituents of habitat are considered to be food, water, cover, and living space. The complete suite of biotic and abiotic components of the environment where an animal lives.

**HABITAT CONNECTIVITY:** Vegetative cover in sufficient quantity and arrangement to allow for the movement of wildlife.

**HABITAT DIVERSITY:** The variation in types, sizes, and shapes of landscape elements or vegetation types.

**HABITAT TYPE:** A site classification of all land areas potentially capable of producing similar plant communities at the climax phase of succession.

**HAZARDOUS FUEL:** Excessive live or dead wildland fuel accumulations that increase the potential for uncharacteristically intense wildland fire and decrease the capability to protect life, property, and natural resources.

**HEALTHY FOREST INITIATIVE OF 2002:** Presidential direction to the Departments of Agriculture and the Interior to improve regulatory processes and management efficiency in reducing the threat of destructive wildfires while upholding environmental standards and encouraging early public input during review and planning processes. The initiative is based on sound science and helps care for forests and rangelands, reduce the risk of catastrophic fire to communities, help save the lives of firefighters and citizens, and protect threatened and endangered species.

**HEAVY METAL:** Any of the metals that react readily with dithizone, including zinc, copper, cobalt, lead, bismuth, gold, cadmium, iron, manganese, nickel, tantalum, tellurium, platinum, and silver.

**HERBACEOUS:** Pertaining to or characteristic of an herb (fleshy-stem plant) as distinguished from the woody tissue of shrubs and trees.

**HIGH OR MAJOR:** An effect is severe; there would be a highly noticeable, long-term, or permanent measurable change.

**HISTORIC:** Period wherein nonnative cultural activities took place, based primarily upon European roots, having no origin in the traditional Native American culture(s).

**HISTORIC PROPERTY OR HISTORIC RESOURCE:** "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register. The term includes, for purposes of these regulations, artifacts, records, and remains that are related to and located within such properties. The term 'eligible for inclusion in the National Register' includes both properties formally determined as such by the Secretary of the Interior and all other properties that meet National Register listing criteria" {quoted from 36 CFR 900.2(e)}.

**HOME RANGE:** The area in which an animal travels in the scope of natural activities.

**HORIZON (SOIL):** A layer of soil or soil material roughly parallel to the land surface and differing from adjoining genetically related layers in physical, chemical, and biological properties or characteristics, such as color, structure, and texture.

**HUMMOCK:** A low, rounded hill, knoll, hillock; a tract of wooded land higher than a nearby swamp or marsh.

**HYDROLOGIC CONDITION:** The current state of the processes controlling the yield, timing, and quality of water in a watershed. Each physical and biologic process that regulates or influences stream flow and ground-water character has a range of variability associated with the rate or magnitude of energy and mass exchange. At any point in time, each of these processes can be defined by their current rate or magnitude relative to the range of variability associated with each process. Integration of all processes at one time represents hydrologic condition.

**HYDROLOGIC UNIT CODE (HUC):** A coding system developed by the U.S. Geological Survey to map geographic boundaries of watersheds by size.

**HYDROPHYTIC:** Water-loving; ability to grow in water or saturated soils.

**-I-**

**IGNEOUS ROCK:** Rock, such as granite and basalt, which has solidified from a molten or partially molten state.

**IMPACT:** A modification of the existing environment caused by an action (such as construction or operation of facilities).

**IMPACTS (OR EFFECTS):** Environmental consequences (the scientific and analytical basis for comparison of alternatives) as a result of a proposed action. Effects may be either direct, which are caused by the action and occur at the same time and place, or indirect, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable, or cumulative.

**IMPLEMENTATION DECISIONS:** Decisions that take action to implement land use plan decisions. They are generally appealable to Interior Board of Land Appeals.

**IMPLEMENTATION PLAN:** A site-specific plan written to implement decisions made in a land use plan. An implementation plan usually selects and applies best management practices to meet land use plan objectives. Implementation plans include both activity plans and project plans.

**INDIAN TRIBE:** Any Indian group in the conterminous United States that the Secretary of the Interior recognizes as possessing tribal status.

**INDICATOR (SPECIES):** A species of animal or plant whose presence is a fairly certain indication of a particular set of environmental conditions. Indicator species serve to show the effects of development actions on the environment.

**INDIRECT EFFECTS:** Secondary effects that occur in locations other than the initial action or later in time.

**INFILTRATION:** The downward entry of water into the soil or other material.

**INITIAL (FIRE) ATTACK:** An aggressive fire suppression action consistent with firefighter and public safety and values to be protected.

**INTEGRATED WEED MANAGEMENT (IWM):** This is a decision support system involving deliberate selection, integration, and implementation of effective weed management tactics. It utilizes cost/benefit analysis and takes into consideration public interests and social, economical, and ecological impacts in the decision making process.

**INTERDISCIPLINARY TEAM:** A group of individuals with different training, representing the physical sciences, social sciences, and environmental design arts, assembled to solve a problem or perform a task. The members of the team proceed to a solution with frequent interaction so that each discipline may provide insights to any stage of the problem and disciplines may combine to provide new solutions. The number and disciplines of the members preparing the plan vary with circumstances. A member may represent one or more discipline or Bureau program interest.

**INTERIM MANAGEMENT POLICY:** Policy that guides management of the BLM's Wilderness Study Areas. The policy balances the various uses of Wilderness Study Areas with the requirement to protect the lands wilderness values.

**INTERIOR BOARD OF LAND APPEALS:** The Department of the Interior, Office of Hearings and Appeals board that acts for the Secretary of the Interior in responding to appeals of decisions on the use and disposition of public lands and resources. Because the Interior Board of Land Appeals acts for and on behalf of the Secretary of the Interior, its decisions usually represent the Department's final decision but are subject to the courts.

**INTERMITTENT STREAM:** A stream which occasionally is dry or reduced to pool stage. Often the water drainage connection from ephemeral areas to perennial streams.

**INVASIVE PLANTS:** Plants which are invasive species.

**INVASIVE SPECIES:** Organisms that have been introduced into an environment where they did not evolve. Executive Order 13112 focuses on organism whose presence is likely to cause economic harm, environmental harm, or harms to human health.

**INVERSION:** The state of the atmosphere in which a layer of cool air is trapped near the earth's surface by an overlying layer of warm air so that the lower layer cannot rise. Serious air pollution problems may result from air pollutants being emitted into the limited mixing depth below the inversion.

**IRREVERSIBLE COMMITMENT OF RESOURCES:** Result from the use or destruction of a specific resource that cannot be replaced within a reasonable time frame.

**IRRETRIEVABLE COMMITMENT OF RESOURCES:** Result from actions in which resources are considered permanently lost.

**-J-**

**JURISDICTION:** The legal right to control or regulate use of a transportation facility. Jurisdiction requires authority, but not necessarily ownership.

**-K-**

**-L-**

**LAND CLASSIFICATION:** A process for determining the suitability of public lands for certain types of disposal or lease under the public land laws or for retention under multiple use management.

**LAND USE ALLOCATION:** The identification in a land use plan of the activities and foreseeable development that are allowed, restricted, or excluded for all or part of the planning area, based on desired future conditions.

**LAND USE PLAN:** A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of FLPMA; an assimilation of land-use-plan-level decisions developed through the planning process, regardless of the scale at which the decisions were developed.

**LEASABLE MINERALS:** Those minerals or materials designated as leasable under the Mineral Leasing Act of 1920. They include coal, phosphate, asphalt, sulphur, potassium, and sodium minerals, and oil, gas, and geothermal.

**LEASE:** (1) A legal document that conveys to an operator the right to drill for oil and gas; (2) the tract of land, on which a lease has been obtained, where producing wells and production equipment are located.

**LEASE (OCCUPANCY):** A usually long-term authorization to possess and use public lands for a fixed period of time (43 CFR 2910)

**LEASE STIPULATION (OIL AND GAS):** Conditions of lease issuance that provide protection for other resource values or land uses by establishing authority for substantial delay or site changes or the denial of operations within the terms of the lease contract. The authorized officer has the authority to relocate, control timing, and impose other mitigation measures under Section 6 of the Standard Lease Form. Lease stipulations clarify the Bureau's intent to protect known resources or resource values.

**LESSEE:** A person or entity holding record title in a lease issued by the United States (see 43 CFR 3160.0-5).

**LESSEE (GRAZING):** Holder of a valid lease that authorizes grazing use of the public lands outside the grazing district.

**LEK:** An assembly area where birds, especially sage grouse, carry on display and courtship behavior.

**LIMITED AREAS OR TRAILS:** Designated areas or trails where the use of off-road vehicles is subject to restrictions, such as limiting the number or types of vehicles allowed, dates and times of use (seasonal restrictions), limiting use to existing roads and trails, or limiting use to designated roads and trails. Under the designated roads and trails designation, use would be allowed only on roads and trails that are signed for use. Combinations of restrictions are possible, such as limiting use to certain types of vehicles during certain times of the year.

**LINKAGE:** Route that permits movement of individual plants (by dispersal) and animals from a habitat type to another similar habitat type.

**LITTER:** The uppermost layer of organic debris on the soil surface, essentially the freshly fallen or slightly decomposed vegetal material.

**LOAMY:** Intermediate in texture and properties between fine- and coarse-textured soils.

**LOCATABLE MINERALS:** Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

**LODE MINING:** Mining of a mineral deposit in solid rock.

**LONG TERM:** Effects lasting more than 10 years.

**LOW OR MINOR:** An effect is slight but detectable; there would be a small change.

**LYNX HABITAT:** Lynx occur in mesic coniferous forest that have cold, snowy winters and provide a prey base of snowshoe hare. In the Rocky Mountains primary vegetation that contributes to lynx habitat is lodgepole pine, subalpine fir, and Englemann spruce. Secondary vegetation that, when interspersed within subalpine forests, may also contribute to lynx habitat, includes cool, moist Douglas-fir, grand fir, western larch, and aspen forest. Dry forest types (ponderosa pine, climax lodgepole pine) do not provide lynx habitat. Primary elevations for lynx habitat are between 1500-2000 m. (4,920 – 6,560 ft.) elevation zones in the northern Rockies.

**-M-**

**MANAGEMENT DECISION:** A decision made by the BLM to manage public lands. Management decisions include both land use plan decisions and implementation decisions.

**MANAGEMENT FRAMEWORK PLAN:** Planning decision document prepared before the effective date of the regulations implementing the land use planning provisions of the FLPMA, which establishes, for a given area of land, land-use allocations, coordination guidelines for multiple-use, and objectives to be achieved for each class of land use or protection.

**MANAGEMENT OPPORTUNITIES:** A component of the analysis of the management situation; actions or management directions that could be taken to resolve issues or management concerns.

**MEDIUM OR MODERATE:** An effect is readily apparent; there would be a measurable change than could result in a small but permanent change.

**MID-TERM:** Effects lasting 5 to 10 years.

**MILL:** A plant in which ore is treated for the recovery of valuable minerals or valuable minerals are concentrated into a smaller bulk for shipping to a smelter or other reduction works.

**MINE:** An opening or excavation in the earth for extracting minerals.

**MINERAL:** Any solid or fluid inorganic substance that can be extracted from the earth for profit.

**MINERAL ENTRY:** The filing of a claim on public land to obtain the right to any minerals it may contain.

**MINERAL ESTATE:** The ownership of minerals, including rights necessary for access, exploration, development, mining, ore dressing, and transportation operations.

**MINERAL MATERIALS:** Materials such as common varieties of sand, stone, gravel, pumice, pumicite, and clay, that are not obtainable under the mining or leasing laws but that can be acquired under the Mineral Materials Act of 1947, as amended.

**MINERAL WITHDRAWAL:** A formal order that withholds federal lands and minerals from entry under the Mining Law of 1872 and closes the area to mineral location (staking mining claims) and development.

**MINIMIZE:** To reduce the adverse impact of an operation to the lowest practical level.

**MINING CLAIM:** A parcel of land that a miner takes and holds for mining purposes, having acquired the right of possession by complying with the Mining Law and local laws and rules. A single mining claim may contain as many adjoining locations as the locator may make or buy. There are four categories of mining claims: lode, placer, mill site, and tunnel site.

**MINING DISTRICT:** An area, usually designated by name, with described or understood boundaries, where minerals are found and mined under rules prescribed by the miners, consistent with the Mining Law of 1872.

**MITIGATION MEASURES:** Methods or procedures that reduce or lessen the impacts of an action.

**MONITORING PLAN:** The process of tracking the implementation of land use plan decisions and collecting and assessing data/information necessary to evaluate the effectiveness of land use planning decisions.

**MODIFICATION:** A change in a Plan of Operations that requires some level of review by BLM because it exceeds what was described in the approved Plan of Operations.

**MODIFICATION (OIL AND GAS):** A change to the provision of a lease stipulation either temporarily or for the term of the lease.

**MONITORING PLAN:** the process of tracking the implementation of land use plan decisions.

**MULTIPLE USE:** The management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the lands for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some lands for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long term needs of future generations for renewable and nonrenewable resources, including but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the lands and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or greatest unit output.

-N-

**NATIONAL AMBIENT AIR QUALITY STANDARDS:** The allowable concentrations of air pollutants in the ambient (public outdoor) air. National ambient air quality standards are based on the air quality criteria and divided into primary standards (allowing an adequate margin of safety to protect the public health) and secondary standards (allowing an adequate margin of safety to protect the public welfare). Welfare is defined as including (but not limited to) effects on soils, water, crops, vegetation, human-made materials, animals, wildlife, weather, visibility, climate, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being.

**NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) OF 1969:** An Act that encourages productive and enjoyable harmony between man and his environment and promotes efforts to prevent or eliminate damage to the

environment and biosphere and stimulate the health and welfare of man; enriches the understanding of the ecological systems and natural resources important to the Nation, and establishes the Council on Environmental Quality.

**NATIONAL REGISTER OF HISTORIC PLACES:** A register of districts, sites, buildings, structures, and objects, significant in American history, architecture, archaeology, and culture, established by the "Historic Preservation Act" of 1966 and maintained by the Secretary of the Interior.

**NATIONAL WILD AND SCENIC RIVERS SYSTEM:** A system of nationally designated rivers and their immediate environments that have outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, and other similar values and are preserved in a free-flowing condition. The system consists of three types of streams: (1) recreation—rivers or sections of rivers that are readily accessible by road or railroad and that may have some development along their shorelines and may have undergone some impoundments or diversion in the past, (2) scenic—rivers or sections of rivers free of impoundments with shorelines or watersheds still largely undeveloped but accessible in places by roads, and (3) wild—rivers or sections of rivers free of impoundments and generally inaccessible except by trails, with watersheds or shorelines essentially primitive and waters unpolluted.

**NEGLECTIBLE:** An effect at the lower level of detection; there would be no measurable change. Effects may not be readily noticeable.

**NEUTRAL:** An effect that is neither beneficial nor adverse to a specific resource or resource use.

**NO SURFACE OCCUPANCY:** A fluid minerals leasing constraint that prohibits occupancy or disturbance on all or part of the lease surface to protect special values or uses. Lessees may exploit the fluid mineral resources under the leases restricted by this constraint through use of directional drilling from sites outside the area.

**NOXIOUS WEEDS:** A plant species designated by Federal or State law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or nonnative, new, or not common to the United States.

**NUTRIENT CYCLING:** The circulation of chemical elements such as nitrogen, oxygen, carbon, and phosphorus in specific pathways from the abiotic (not involving or produced by organisms) portions of the environment into organic substances in plants and animals and then back into abiotic forms.

**-O-**

**OBJECTIVE:** A description of a desired condition for a resource. Objectives can be quantified and measured

and, where possible, have established time frames for achievement.

**OBLIGATE:** Essential, necessary, unable to exist in any other state, mode, or relationship.

**OBLIGATE WETLAND (OBL):** Plant species that occur almost always (estimated probability >99%) under natural conditions in wetlands or riparian zones.

**OFF-HIGHWAY VEHICLE (OHV):** Any motorized vehicle capable of, or designed for, travel on or immediately over land, water, or other natural terrain, excluding: (1) Any nonamphibious registered motorboat; (2) Any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (3) Any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; (4) Vehicles in official use; and (5) Any combat or combat support vehicle when used in times of national defense emergencies.

**OLD FOREST STRUCTURE:** Physical forest or woodland characteristics that contribute to the structure, composition, or function of forested stands for a particular forest type. These characteristics include large and old tree components, accumulations of dead wood components such as standing snags and/or downed logs, occurrence of climax plant species or seral trees with a common decadent attributes such as broken or deformed tops and rotten boles, wide variation in tree age classes and stocking levels, and multiple canopy layers.

**OLD-GROWTH:** Forested stands in late successional stages of development meeting the main characteristics or old forest structures that are described by the forest type for the East-side Montana Zone in Old-Growth Forest Types of the Northern Region (Green, 1992<sup>1</sup>)

**Open:** Generally denotes that an area is available for a particular use or uses. Refer to specific program definitions found in law, regulations, or policy guidance for application to individual programs.

**OPEN ROAD:** Open year-round to public and administrative uses.

**OPEN ROAD WITH RESTRICTIONS:** Open to public and administrative uses with seasonal and/or vehicle type limitations.

**OPENING ORDER:** Returning land to the operation of some or all of the public land laws. It is normally done at the same time as revocation...opens lands to the operation or partial operation of the public land laws. An opening order may be a part of the revocation order and need not be a separate document.

**OPERATOR:** Any person who has taken formal responsibility for the operations conducted on the leased lands.

**ORE:** A mineral deposit of high enough quality to be mined at a profit.

**OUTSTANDINGLY REMARKABLE (RIVER) VALUES:** Values among those listed in Section 1(b) of the Wild and Scenic Rivers Act are “scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values. . . .” Other similar values which may be considered include botanical, hydrological, paleontological, or scientific. Professional judgment is used to determine whether values exist to an outstandingly remarkable degree.

**OVERSTORY:** The layer of foliage in a forest canopy, often the uppermost layer(s) consisting of the crowns of trees or shrubs.

**-P-**

**PALEONTOLOGICAL RESOURCES (FOSSILS):** The physical remains of plants and animals preserved in soils and sedimentary rock formations. Paleontological resources are important for understanding past environments, environmental change, and the evolution of life.

**PALEONTOLOGY:** A science dealing with the life forms of past geological periods as known from fossil remains.

**PARENT MATERIAL (SOIL):** The unconsolidated more or less chemically weathered mineral or organic matter from which the upper level of the soil profile has developed.

**PATENT:** The instrument by which the Federal Government conveys title to the public lands.

**PERENNIAL STREAM:** A natural course that confines and conducts water that flows continuously during all seasons of the year.

**PERMIT:** A short-term (generally under 3 years), revocable authorization to use public lands for specific purposes. BLM issues permits under 43 CFR 2910.

**PERMITTED USE:** The forage allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease. Expressed in AUMs.

**PERMITTEE:** Holder of a valid permit that authorizes certain uses of the public lands (e.g., for grazing).

**PERMITTEE (GRAZING):** Holder of a valid permit that authorizes grazing use of the public lands within the grazing district.

**PETROGLYPH:** A figure, design, or indentation carved, abraded, or pecked into a rock.

**PHYSICAL WEED TREATMENT:** These are treatments which use manual labor, mechanical equipment, or fire, such as hand-pulling, mowing or tilling, and prescribed burning.

**PICTOGRAPH:** A figure or design painted onto a rock.

**PLACER:** An alluvial deposit of sand and gravel containing valuable minerals such as gold.

**PLACER MINING:** A method of mining in which the overburden is removed to expose gold-bearing gravel deposits beneath. The gravel is then sluiced to separate the gold.

**PLAN:** A document that contains a set of comprehensive, long range decisions concerning the use and management of Bureau administered resources in a specific geographic area.

**PLANNED SALE QUANTITY (PSQ):** The allowable forest harvest level that can be maintained without decline over the long term, if the schedule of harvests and regeneration are followed. PSQ is an estimate of potential production rather than a specific level of forest product volume that would be offered every decade.

**PLANNING AREA:** A geographical area for which land use and resource management plans are developed and maintained. The Butte Field Office Planning Area (approximately 7.2 million acres) is the boundary of the Butte Field Office and includes all of Lewis and Clark, Jefferson, Broadwater, Deer Lodge, Silver Bow, Gallatin, and Park Counties; and the northern portion of Beaverhead County.

**PLANNING CRITERIA:** The standards, rules, and other factors developed by managers and interdisciplinary teams for their use in forming judgments about decision making, analysis, and data collection during planning. Planning criteria streamline and simplify the resource management planning actions.

**PLANNING DECISION (LAND USE PLAN DECISION):** establishes desired outcomes and actions needed to achieve them. Decisions are reached using the BLM planning process. When they are presented to the public as proposed decisions, they can be protested to the BLM Director. They are not appealable to Interior Board of Land Appeals.

**POPULATION:** Within a species, a distinct group of individuals that tend to mate only with members of the group. Because of generations of inbreeding, members of a population tend to have similar genetic characteristics.

**POTENTIAL NATURAL VEGETATION:** The vegetation that would become established if all successional sequences were completed without interferences by man under the present environmental conditions.

**POWER SITE CLASSIFICATION:** A classification made by the Federal Power Commission that is a segregation against the operation of the public land laws for lands that are needed or have potential for power projects and associated transmission lines. Lands classified to benefit transmission lines are open to the operation of the public land laws subject to their use for transmission lines.

**POWER SITE RESERVE:** A reservation of public lands that have potential value for power development.

**PRECAMBRIAN:** Pertaining to the earliest era of geological history, extending from 4.5 billion to 540 million years ago and encompassing 7/8 of the earth's history. Just before the end of the Precambrian, complex multicellular organisms, including animals, evolved.

**PRECIOUS METAL:** A general term for gold, silver, or any of the minerals of the platinum group.

**PRE-COMMERCIAL THINNING:** A thinning that does not yield trees of commercial value, usually designed to reduce stocking in order to concentrate growth on the more desirable trees or to meet desired vegetation and/or fuel loading conditions.

**PREHISTORIC:** Refers to the period wherein Native American cultural activities took place which were not yet influenced by contact with historic nonnative culture(s).

**PRESCRIBED FIRE:** The introduction of fire to an area under regulated conditions for specific management purposes.

**PRESCRIPTION LIVESTOCK GRAZING (GRAZING):** Grazing use authorized on land designated or not designated for livestock grazing designed to accomplish a specific purpose. For example, authorizing sheep and goats to graze a piece of land as a biological control agent to treat noxious weeds. Prescription grazing would normally be authorized on a temporary nonrenewable basis.

**PREVENTION OF SIGNIFICANT DETERIORATION:** A regulatory program based not on the absolute levels of pollution allowable in the atmosphere but on the amount by which a legally defined baseline condition will be allowed to deteriorate in a given area. Under this program, geographic areas are divided into three classes, each allowing different increases in nitrogen dioxide, particulate matter, and sulfur dioxide concentrations.

**PREY BASE:** Populations and types of prey species available to predators.

**PRIMITIVE AND UNCONFINED RECREATION:** Non-motorized, non-mechanized and undeveloped types of recreational activities.

**PRIORITY HABITATS:** Priority habitats would include habitat for all special status species as well as riparian areas, dry savannah forest, special habitats including caves, cliffs, snags, and down woody material, sagebrush, bitterbrush communities, and mountain mahogany communities.

**PRIORITY SPECIES:** Priority species are those wildlife, fish, or plant species that the BLM has determined to be unique or significant based on at least one of the following factors: density, diversity, population size, public interest, remnant character, or age.

**PRIVATE EXCHANGE:** A land exchange between the federal Government and any landowner other than a state.

**PROJECT PLAN:** A type of implementation plan. A project plan typically addresses individual projects or several related projects. Examples of project plans include prescribed burn plans, trail plans, and recreation site plans.

**PROJECT AREA (MINERALS):** The area of land upon which an operator conducts mining operations, including the area needed for building or maintaining of roads, transmission lines, pipelines, or other means of access.

**PROJECT AREA (VEGETATION):** An area of land within some type of management activity would occur and encompasses a region defined by logical boundaries such as: watersheds, ridges, highways, or ownership blocks of BLM lands. The project area can be both the analysis area and a starting point to determine where treatments or activities should occur, and includes the area needed for supporting structures and activities such as roads, transmission lines, or pipelines.

**PROPER FUNCTIONING CONDITION (PFC):** Ecosystems are in PFC when they function within their historic range of variability.

**PROPOSED ACTION:** A project or set of activities that a federal agency intends to implement, as defined in NEPA regulations.

**PROPOSED PLANNING SCENARIO:** Using comments received during the initial scoping period, the BLM interdisciplinary team developed the "Proposed Planning Scenario", to describe possible management prescriptions and goals for individual programs.

**PROTEST:** Application for review by a higher administrative level.

**PUBLIC INVOLVEMENT:** Any process designed to broaden the information base upon which agency decisions are made by informing the public about BLM activities, plans, and decisions to encourage public understanding about the participation in the planning processes which lead to final decision-making.

**PUBLIC LAND:** Land or interest in land owned by the United States and administered by the Secretary of the Interior through the BLM, except lands located on the Outer Continental Shelf, and land held for the benefit of Indians, Aleuts, and Eskimos.

**PUBLIC LAND LAWS:** A body of laws that regulates the administration of the public lands and the resources thereon.

**PUBLIC LAND ORDER (PLO):** Creating, continuing, modifying, or revoking a withdrawal or reservation that has been issued by the Secretary of the Interior pursuant to his delegations of authority.

**PUBLIC PURPOSE:** A use in which the public has an interest, affecting its safety, health, morale, and welfare, but not including use for habitation, cultivation, trade, or manufacturing.

**PUBLIC VALUE:** An asset held by, service performed for, or benefit accruing to the people at large.

-Q-

**QUARRY:** An open or surface working, usually for the extraction of stone, slate, limestone, etc.

**QUARRY SITE:** Place where minerals occur which were a source of raw material for prehistoric/historic industries.

-R-

**RANGELAND:** Land used for grazing by livestock and big game animals on which vegetation is dominated by grasses, grass-like plants, forbs, or shrubs.

**RAPTOR:** Bird of prey with sharp talons and strongly curved beaks such as hawks, owls, vultures, and eagles.

**REACH:** A segment of stream.

**REASONABLY FORESEEABLE DEVELOPMENT SCENARIO:** The prediction of the type and amount of oil and gas activity that would occur in a given area. The prediction is based on geologic factors, past history of drilling, projected demand for oil and gas, and industry interest.

**RECLAMATION:** The process of converting disturbed land to its former use or other productive uses.

**RECLAMATION PROJECT:** A water development and irrigation project of the Bureau of Reclamation.

**RECLAMATION WITHDRAWALS:**

- First Form: A reclamation withdrawal of public lands that are or may be needed for the building and maintaining a reclamation project.
- Second Form: A reclamation withdrawal of public lands susceptible to irrigation form a reclamation project.
- The distinction between the first and second forms of withdrawals has been eliminated, and all such withdrawals are called reclamation withdrawals.

**RECORD OF DECISION:** A document signed by a responsible official recording a decision that was preceded by the preparing of an environmental impact statement.

**RECREATION AND PUBLIC PURPOSES (R&PP) ACT, THE ACT OF JUNE 14, 1926, AS AMENDED (43 U.S.C. 869, 869-4):** A federal statute that allows the disposal of public lands to any state, local, federal, or political instrumentality or nonprofit organization for any recreation or public purpose, at the discretion of the authorized officer.

**RECREATION OPPORTUNITY SPECTRUM (ROS):** A framework for stratifying and defining classes of outdoor recreation environments, activities, and experience opportunities. The settings, activities, and opportunities for obtaining experiences are arranged along a continuum or spectrum divided into six classes-primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, rural and urban.

**RELICT:** A remnant or fragment of the vegetation of an area that remains from a former period when the vegetation was more widely distributed.

**RELINQUISHED ALLOTMENT (GRAZING):** An allotment where an existing permittee or lessee gives up his or her permit or lease causing the allotment to become unleased.

**RESEARCH NATURAL AREA:** An area that illustrates or typifies for research or educational purposes, the important forest and range types in each field office, as well as other plant communities that have special or unique characteristics of scientific interest and importance.

**RESERVATION:** A "setting aside", or dedication of lands for the federal government for a specific public purpose. "Reserved" land is not necessarily withdrawn. A permanent withdrawal dedicated to a specific public purpose

**RESERVES (MINERAL):** Known mineral deposits that are recoverable under present conditions but are as yet undeveloped.

**RESERVOIR (OIL AND GAS):** A naturally occurring, underground container of oil and gas, usually formed by deformation of strata and changes in porosity.

**RESOURCE ADVISORY COUNCIL:** A council established by the Secretary of the Interior to provide advice or recommendations to BLM management.

**RESOURCE MANAGEMENT PLAN:** A land use plan as prescribed by the Federal Land Policy and Management Act which establishes, for a given area of land, land-use allocations, coordination guidelines for multiple-use, objectives and actions to be achieved.

**RESOURCE RESERVE ALLOTMENT:** A unit of public land that will not have term grazing permits issued. Such an allotment would only be grazed on a temporary nonrenewable basis. The use of these allotments would be to provide temporary grazing to rest other areas following wildfire, habitat treatments, or to allow for more rapid attainment of rangeland health. The allotment must be of sufficient size to be managed as a discrete unit. Resource Reserve Allotments should be distributed throughout the planning area.

**REVISION:** The process of completely rewriting the land use plan due to changes in the planning area affecting major portions of the plan or the entire plan.

**REVOCATION:** The action that cancels a withdrawal but does not necessarily "open" the lands to application or entry.

**RIGHT-OF-WAY:** A permit or an easement which authorizes the use of public lands for certain specified purposes, commonly for pipelines, roads, telephone lines, electric lines, reservoirs, etc.; also, the lands covered by such an easement or permit.

**RIGHT-OF-WAY CORRIDOR:** A parcel of land that has been identified by law, Secretarial order, through a land use plan or by other management decision as being the preferred location for existing and future right-of-way grants and suitable to accommodate one type of right-of-way or one or more rights-of-way which are similar, identical or compatible.

**RIPARIAN AREA:** A form of wetland transition between permanently saturated wetlands and upland areas. Riparian areas exhibit vegetation or physical characteristics that reflect the influence of permanent surface or subsurface water. Typical riparian areas include lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels. Excluded are ephemeral areas or washes that lack vegetation and dependent on free water in the soil.

**RIVER DESIGNATION:** The process whereby rivers are added to the National Wild and Scenic Rivers System by an act of Congress or by administrative action of the Secretary of the Interior with regard to state-designated rivers under Section 2(a)(ii) of the Wild and Scenic Rivers Act.

**ROAD DENSITY:** Number of miles of open road per square mile.

**ROADLESS:** Refers to the absence of roads which have been improved and maintained by mechanical means to insure relatively regular and continuous use. A way maintained solely by the passage of vehicles does not constitute a road.

**ROCK ART:** Petroglyphs or pictographs.

**RUNOFF:** The water that flows on the land surface from an area in response to rainfall or snowmelt.

**-S-**

**SALABLE MINERALS:** Common variety minerals on the public lands, such as sand and gravel, which are used mainly for construction and are disposed of by sales or special permits to local governments.

**SALMONID:** Any fish of the Salmonidae family, including salmon and trout.

**SCALE:** Refers to the geographic area and data resolution under examination in an assessment or planning effort.

**SCENIC QUALITY:** The degree of harmony, contrast, and variety within a landscape.

**SCENIC RIVER:** A river or section of a river that is free of impoundments and whose shorelines are largely undeveloped but accessible in places by roads.

**SCOPING:** The process of identifying the range of issues, management concerns, preliminary alternatives, and other components of an environmental impact statement or land-use planning document. It involves both internal and public viewpoints.

**SEASONAL RESTRICTION:** A fluid minerals leasing constraint that prohibits surface use during specified time periods to protect identified resource values. The constraint does not apply to the operation and maintenance of production facilities unless analysis demonstrates that such constraints are needed and that less stringent, project-specific constraints would be insufficient.

**SECTION 7 CONSULTATION:** The requirement of Section 7 of the Endangered Species Act that all federal agencies consult with the U.S. Fish and Wildlife Service or the National Marine Fisheries Service if a proposed action might affect a federally listed species or its critical habitat.

**SECTION 106 COMPLIANCE:** The requirement of Section 106 of the National Historic Preservation Act that any project funded, licensed, permitted, or assisted by the Federal Government be reviewed for impacts to significant historic properties and that the State Historic Preservation Officer and the Advisory Council on Historic Preservation be allowed to comment on a project.

**SECURITY HABITAT:** refers to the protection inherent in any situation that allows elk to remain in a defined area despite an increase in stress or disturbance associated with hunting or other human activities.

**SEDIMENT:** Soil, rock particles and organic or other debris carried from one place to another by wind, water, or gravity.

**SEDIMENTARY ROCK:** Rock resulting from consolidation of loose sediment that has accumulated in layers.

**SEDIMENTATION:** The process or action of depositing sediment.

**SEGREGATION:** Any action such as a withdrawal or allowed application (exchange) that suspends the operation of the general public land laws; removing lands from the operation of part or all the public land mineral laws.

**SENSITIVE SPECIES:** Species designated by the State Director, usually in cooperation with the State agency responsible for managing the species and State Natural heritage programs, as sensitive. They are those species that: (1) could become endangered in or extirpated from a State, or within a significant portion of its distribu-

tion; (2) are under status review by the FWS and/or NMFS; (3) are undergoing significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution; (4) are undergoing significant current or predicted downward trends in population or density such that federal listed, proposed, candidate, or State listed status may become necessary; (5) typically have small and widely dispersed populations; (6) inhabit ecological refugia or other specialized or unique habitats; or (7) are State listed but which may be better conserved through application of BLM sensitive species status.

**SERAL:** A temporal and intermediate condition pertaining to the successional stages of biotic communities.

**SHAFT:** A vertical or inclined opening to an underground mine.

**SHALLOW SOILS:** Soils that are less than 20 inches to bedrock.

**SHORT TERM:** Effects lasting less than 5 years.

**SHRUB:** A low, woody plant, usually with several stems, that may provide food and/or cover for animals.

**SIGNIFICANT:** An effect that is analyzed in the context of the proposed action to determine the degree or magnitude of importance of the effect, either beneficial or adverse. The degree of significance can be related to other actions with individually insignificant but cumulatively significant impacts.

**SLASH:** Forest residues such as branches, bark, tops, cull logs, broken or uprooted trees, and/or stumps that can be left on the ground or in piles after logging, vegetative or fuels treatments, or land use activities such as road construction.

**SLOPE:** The degree of deviation of a surface from the horizontal.

**SOIL COMPACTION:** A layer of dense soil caused by repeated impacts on or disturbances of the soil surface. Compaction becomes a problem when it begins to limit plant growth, water infiltration, or nutrient cycling processes.

**SOIL PRODUCTIVITY:** The capacity of a soil to produce a plant or sequence of plants under a system of management.

**SOIL TEXTURE:** The relative proportions of the three size groups of soil grains (sand, silt, and clay) in a mass of soil.

**SOLITUDE:** (1) the state of being alone or remote from others; isolation; (2) a lonely or secluded place.

**SOURCE WATER PROTECTION PLAN:** A management plan, usually developed by local communities, that addresses public water system concerns based on information contained within Source Water Delineation and Assessment Reports.

**SPECIAL RECREATION MANAGEMENT AREA:** A public lands unit identified in land use plans to direct recreation funding and personnel to fulfill commitments made to provide specific, structured recreation opportunities.

**SPECIAL STATUS SPECIES:** Includes proposed species, listed species, and candidate species under the ESA; State-listed species; and BLM State Director-designated sensitive species.

**SPECIES:** A unit of classification of plants and animals consisting of the largest and most inclusive array of sexually reproducing and cross-fertilizing individuals, which share a common gene pool.

**SPECIES DIVERSITY:** The number, different kinds of, and relative abundances of species present in a given area.

**STAND:** A community of trees or other vegetation uniform in composition, constitution, spatial arrangement, or condition to be distinguishable from adjacent communities.

**STAND COMPOSITION:** The proportion of each tree species in a stand expressed as a percentage of all trees, basal area, or volume.

**STANDARD:** A description of the physical and biological conditions or degree of function required for healthy, sustainable lands (e.g., land health standards). To be expressed as a desired outcome or goal.

**STATE EXCHANGE:** A land exchange between the federal government and a state.

**STIPULATIONS:** Requirements that are part of the terms of a mineral lease. Some stipulations are standard on all Federal leases. Other stipulations may be applied to the lease at the discretion of the surface management agency to protect valuable surface resources and uses.

**STRATEGIC PLAN:** A plan that establishes the overall direction for the BLM. This plan is guided by the requirements of the Government Performance and Results Act of 1993, covers a 5-year period, and is updated every 3 years. It is consistent with FLPMA and other laws affecting the public lands.

**STREAM REACH:** A specified length of a stream or channel.

**STRUCTURE (STREAM CHANNEL):** Any object, usually large, in a stream channel that controls water movement.

**STRUCTURE (OF FOREST VEGETATION):** The horizontal and vertical distribution of plants in a stand, including height, diameter, crown layers, and stems of trees, shrubs, herbaceous understory, snags and coarse woody debris.

**SUBSTRATE:** The mineral or organic material that forms the bed of a stream; the base upon which an

organism lives; the surface on which a plant or animal grows or is attached.

**SUCCESSION:** The replacement in time of one plant community with another. The prior plant community (or successional stage) creates conditions that are favorable for the establishment of the next stage.

**SUITABILITY (FOR WILD AND SCENIC RIVERS):** Evaluation of eligible rivers for inclusion into the national Wild and Scenic River System by determining the best use of the river corridor and the best method to protect the outstandingly remarkable values within the river corridor.

**SUSTAINABILITY:** The ability of an ecosystem to maintain ecological processes and functions, biological diversity, and productivity over time.

**SUSTAINED YIELD:** Maintenance of an annual or regular periodic output of a renewable resource from public land consistent with the principles of multiple use.

**-T-**

**TAILINGS:** The waste matter from ore after the extraction of economically recoverable metals and minerals.

**TAKE:** As defined by the Endangered Species Act, "to harass, harm, pursue, hunt, shoot, wound, kill, capture, or collect, or attempt to engage in any such conduct."

**TEMPORARY ROUTES:** Temporary roads are short-term overland roads, primitive roads, or trails authorized or acquired for the development, construction or staging of a project or event that has a finite lifespan. Temporary routes are not intended to be part of the permanent or designated transportation network system and must be reclaimed when their intended purpose(s) has been fulfilled. Temporary routes should be constructed to minimum standards necessary to accommodate the intended use; the intent is that the project proponent (or their representative) will reclaim the route once the original project purpose or need has been completed. Temporary routes are considered emergency, single use or permitted activity access. Unless they are specifically intended to accommodate public use, they should not be made available for that use. A temporary route will be authorized or acquired for the specific time period and duration specified in the written authorization (permit, right-of-way, lease, contract etc.) and will be scheduled and budgeted for reclamation to prevent further vehicle use and soil erosion from occurring by providing adequate drainage and re-vegetation."

Please keep in mind that complete reclamation of all temporary routes may not be desired or necessary in all situations. When temporary routes are required for periodic use it may be more desirable to close the temporary route to use, assure proper hydrologic functioning of the road bed, and re-vegetate according to the prescription approved in the authorization than it would

be to re-contour soils and slopes to original conditions. In addition, sometimes the BLM allows the temporary route proponent to participate in approved off-site mitigation measures in lieu of reclaiming the temporary route. This type of off-site mitigation is subject to the approval of the BLM's authorized officer.

**TERMS AND CONDITIONS:** Measures contained in livestock grazing permits and leases, which are determined by the authorized officer to be appropriate to achieve management and resource condition objectives for the public lands and other lands administered by the BLM, and to ensure conformance with Fundamentals of rangeland health and Standards and guidelines for grazing administration.

**TERRESTRIAL SPECIES:** Ground-dwelling plants and animals.

**THERMAL COVER:** Vegetation or topography that prevents radiational heat loss, reduces wind chill during cold weather, and intercepts solar radiation during warm weather.

**THREATENED SPECIES:** Any plant or animal species defined under the Endangered Species Act as likely to become endangered within the foreseeable future throughout all or a significant portion of its range; listings are published in the Federal Register.

**TOOLS:** Something that helps to accomplish the stated goal or action for a resource/resource use or program. Tools include: timing, duration of grazing, forage utilization, grazing rotation, deferment of grazing, stubble height, bank alteration, and structural features.

**TOTAL MAXIMUM DAILY LOAD:** An estimate of the total quantity of pollutants (from all sources: point, nonpoint, and natural) that may be allowed into waters without exceeding applicable water quality criteria.

**TRADITIONAL LIFEWAY VALUES:** Values that are important for maintaining a group's traditional system of religious belief, cultural practice, or social interaction. A group's shared traditional lifeway values are abstract, nonmaterial, ascribed ideas that cannot be discovered except through discussions with members of the group. These values may or may not be closely associated with definite locations. Traditional lifeway values sometimes imbue cultural resources with significance. They can be identified through consultation and considered through public participation during planning and environmental review. The BLM does not manage people's values, beliefs, or social systems.

**TRAVEL MANAGEMENT AREAS:** Polygons or delineated areas where a rational approach has been taken to classify areas open, closed, or limited, and have identified and/or designated network of roads, trails, ways, and other routes that provide for public access and travel across the planning area. All designed travel routes within travel management areas should have a clearly identified need and purpose as well as clearly

defined activity types, modes of travel, and seasons or timeframes for allowable access or other limitations.

**TREATMENT AREA:** The specific area of land where the actual management activity, such as timber harvest, prescribed burning, construction, or other activity would occur. One or more treatment areas can be included in a project area which usually includes adjacent and/or surrounding areas that are not treated, and multiple activities could occur within a single treatment area, concurrently or over time.

**-U-**

**UNAUTHORIZED USE:** Any occupancy or use of the public lands or the resources of the United States without authorization.

**UNAVOIDABLE ADVERSE EFFECTS:** Those that remain following the implementation of mitigation measures, and include effects for which there are no mitigation measures.

**UNDERSTORY:** Vegetation (e.g., trees or shrubs) growing under the canopy formed by taller trees.

**UNGULATES:** Hoofed animals, including ruminants but also horses, tapirs, elephants, rhinoceroses, and swine.

**UNLEASED ALLOTMENTS (GRAZING):** Areas of land designated and managed for livestock grazing which are currently not leased or permitted by a qualified applicant

**UNRESERVED PUBLIC LANDS:** Public lands not covered by a reservation or a withdrawal except by the federal orders of withdrawal.

**UPLANDS:** Lands at higher elevations than alluvial plains or low stream terraces; all lands outside the riparian-wetland and aquatic zones.

**USE AUTHORIZATION:** Approval of a proposed use for land or resources on the prescribed form or document designated for such use; a document showing permission to use land or the resources thereon; a formalized grant pursuant to a request to use land or resources.

**USER CONFLICT:** In the context of travel management, most often refers to conflicts between motorized and non-motorized recreation users, over competition for space and the pursuit of a quality recreational experience. Many non-motorized users consciously seek a quiet, semi-primitive recreational experience. While most motorized users may not mind sharing the same space (trail, area) with non-motorized users, the reverse is not usually true for these reasons.

**USER DAY:** Any calendar day, or portion thereof, for each individual accompanied or serviced by an operator or permittee on the public lands or related waters; synonymous with passenger day or participant day.

**UTILIZATION (RANGELAND):** The proportion of the current year's forage production that is consumed or

destroyed by grazing animals. Utilization is usually expressed as a percentage.

**-V-**

**VACANT AVAILABLE LANDS (GRAZING):** Areas of land designated for livestock grazing which are not segregated into allotments. These lands may be formed into allotments if a qualified applicant applies for a lease or permit.

**VACANT PUBLIC LANDS:** Public lands that are unappropriated and unreserved and not within a withdrawal; lands that are not reserved except by the general orders of withdrawal.

**VALID EXISTING RIGHTS:** Locatable mineral development rights that existed when the Federal Land Policy and Management Act was enacted on October 21, 1976. Some areas are segregated from entry and location under the Mining Law to protect certain values or allow certain uses. Mining claims that existed as of the effective date of the segregation may still be valid if they can meet the test of discovery of a valuable mineral required under the Mining Law. Determining the validity of mining claims located in segregated lands requires BLM to conduct a validity examination and is called a "valid existing rights" determination.

**VEGETATION COMMUNITY:** An assemblage of plant populations in a common spatial arrangement.

**VEGETATION MANIPULATION:** Alteration of vegetation by using fire, plowing, cutting, powered mechanical or other means.

**VEGETATION TYPE:** A plant community with distinguishable characteristics described by the dominant vegetation present.

**VERY DEEP SOILS:** Soils that are greater than 60 inches deep to bedrock.

**VERY SHALLOW SOILS:** Soils that are less than 10 inches to bedrock.

**VIALE:** Capable of sustaining a healthy, productive, and reproducing population over a long period of time.

**VISUAL RESOURCE MANAGEMENT CLASSES:** Categories assigned to public lands based on scenic quality, sensitivity level, and distance zones. There are four classes. Each class has an objective which prescribes the amount of change allowed in the characteristic landscape.

**-W-**

**WAIVER (OIL AND GAS):** A permanent exemption to a lease stipulation.

**WASTE ROCK:** Barren rock at a mine or material that is too low in grade to be of economic value.

**WATER QUALITY:** The chemical, physical, and biological characteristics of water with respect to its suitability for a particular use.

**WATER QUALITY RESTORATION PLANS:** A comprehensive plan developed in conjunction with Montana Department of Environmental Quality, local watershed groups, and numerous agencies and entities to address and establish water quality goals, Total Maximum Daily Loads, restoration strategies, and monitoring.

**WATER TABLE:** The surface in a groundwater body where the water pressure is atmospheric. It is the level at which water stands in a well that penetrates the water body just far enough to hold standing water.

**WATERSHED:** A geomorphic area of land and water within the confines of a drainage divide. The total area above a given point on a stream that contributes flow at that point.

**WATERSHED APPROACH:** A framework to guide watershed management that: (1) uses watershed assessments to determine existing and reference conditions; (2) incorporates assessment results into resource management planning; and (3) fosters collaboration with all landowners in the watershed. The framework considers both ground and surface water flow within a hydrologically defined geographical area.

**WATERSHED ASSESSMENT:** An analysis and interpretation of the physical and landscape characteristics of a watershed using scientific principles to describe watershed conditions as they affect water quality and aquatic resources.

**WEED MANAGEMENT AREA:** These are distinguishable zones based on similar geography, weed problems, climate, or human-use patterns with agreements between landowners to cooperatively manage noxious weeds.

**WETLAND VEGETATION:** The outer extent of the obligate and facultative wetland species that grows on land that is inundated or saturated by surface water or groundwater.

**WETLANDS:** Areas that are inundated or saturated by surface or ground water often and long enough to support and under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions.

**WILD RIVER:** Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

**WILD, SCENIC, OR RECREATIONAL RIVER:** The three classes of what is traditionally referred to as a "Wild and Scenic River." Designated river segments are classified as wild, scenic and/or recreational, but the segments cannot overlap.

**WILD AND SCENIC STUDY RIVER:** Rivers identified in Section 5 of the Wild and Scenic Rivers Act for study as potential additions to the National Wild and Scenic

Rivers System. The rivers shall be studied under the provisions of Section 4 of the Wild and Scenic Rivers Act.

**WILDCAT, OR EXPLORATION, WELL:** A well drilled in the area where there is no oil or gas production.

**WILDERNESS:** A congressionally designated area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, that is protected and managed to preserve its natural conditions and that (1) generally appears to have been affected mainly by the forces of nature, with human imprints substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres or is large enough to make practical its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historic value.

**WILDERNESS CHARACTERISTICS:** Key characteristics of a wilderness listed in section 2(c) of the "Wilderness Act" of 1964 and used by BLM in its wilderness inventory. These characteristics include size, naturalness, outstanding opportunities for solitude, outstanding opportunities for primitive and unconfined type of recreation, and special features.

**WILDERNESS STUDY AREA:** A designation made through the land use planning process of a roadless area found to have wilderness characteristics as described in Section 2 (c) of the Wilderness Act of 1964

**WILDFIRE:** An unplanned, unwanted wildland fire, including unauthorized human-caused fires, escaped prescribed fire projects, and all other wildland fires where the objective is to put the fire out.

**WILDLAND FIRE:** Any nonstructural fire, other than prescribed fire, that occurs in the wildland.

**WILDLAND FIRE SITUATION ANALYSIS:** A decision-making process that evaluates alternative management strategies against selected safety, environmental, social, economical, political, and resource management objectives as selection criteria.

**WILDLAND URBAN INTERFACE (WUI):** The line, area, or zone, where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuel.

**WILDLIFE CORRIDOR:** Landscape elements that connect similar patches of habitat through an area with different characteristics. Wildlife corridors are also segments of land which create a link between critical habitats. For example, streamside vegetation may create a corridor of willows and hardwoods between meadows or through a forest. These linkage zones are where species migrate and intermingle ensuring genetic interchange and consequently long-term survival.

**WINTER RANGE:** Range that is grazed during winter.

**WITHDRAWAL:** Removal or withholding of public lands by statute or secretarial order, from the operation of some or all of the public land laws.

**WITHDRAWAL MODIFICATION:** To make a change to an existing, indefinite withdrawal.

**WITHDRAWAL REVOCATION:** The cancellation of a withdrawal

**WOODLAND:** A forest community occupied primarily by noncommercial species such as juniper, mountain mahogany, or quaking aspen groves; all western juniper or limber pine are classified as woodlands, since juniper and limber pine are classified as noncommercial species.



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## APPENDIX A – TRAVEL MANAGEMENT

### TRAVEL MANAGEMENT PLANNING AND ROUTE EVALUATION PROCESS USED BY BLM INTERDISCIPLINARY TEAM

In developing site-specific travel plans to meet its multiple-use mission, the BLM is required to follow regulations found at 43 CFR 8342. In part, these regulations (43 CFR 8342.1) require the BLM to locate routes to minimize damage to soil, watershed, vegetation, air, or other resources; minimize harassment of wildlife or significant disruption of wildlife habitats, with special attention being given to protect endangered or threatened species and their habitats; and minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands.

To develop travel plan alternatives that follow these regulations, the Butte Field Office Interdisciplinary Team developed an organized, systematic process to conduct route by route analysis for each travel planning area. Utilizing this process, each route was evaluated to recommend its future management status as either Open, Open/With Restrictions, Closed, or Decommissioned.

Evaluations were conducted by analyzing three identified key Resource categories (Wildlife/Habitat, Aquatics/Fisheries, and Soils), and then comparing the *level of impacts* to those resources to the *level of importance* for Human Use. Six key Human Uses categories were identified. They are: Public Use (recreation, hunting, woodcutting, etc.), Wildland/Prescribed Fire, Forest Management, Mineral/Energy Development, Private Property Access, and Range Management. Due to its importance, Public Use was rated as an individual category, while Wildland/Prescribed Fire, Forest Management, Mineral/Energy Development, Private Property Access, and Range Management were rated together.

Although the process provided separate analysis for Resource impacts, and combined some of the Human Use analysis, each was considered equally important and “weighted” the same during comparative analysis.

In addition to its route by route analysis, the Interdisciplinary Team reviewed and consulted the public scoping comments (issues/concerns, potential solutions) generated during a series of public travel planning meetings. The public comments provided useful information for site-specific route evaluation as well as help set overall context for each travel planning area.

In order to provide a repeatable, systematic approach, Interdisciplinary Team members developed written criteria, with a range of numerical values (e.g., 0, 3, 6, 9), for use with each Resource and Human Use Worksheet. For Resource impact analysis, a numerical value of 0 indicates “No Impact”, while a numerical

value of 9 indicates a “High level of Impact”. For Human Use analysis, a numerical value of 0 indicates “No Importance” to human use, while a numerical value of 9 indicates a “High Level of Importance” to human use.

As each Resource or Human Use specialist completed their route evaluation, the numerical values were entered on Evaluation Worksheets and tabulated, and a final “rating” of Low, Medium, or High was assigned to each route. The Low, Medium, and High ratings were derived by tabulating the maximum numerical value achieved during the analysis, and then dividing the total into thirds to arrive at the Low Medium, and High rating.

For example, seven written Wildlife/Habitat Criteria may have provided for a *possible* maximum numerical value of 52 for any given road segment within a particular travel planning area. However, assume the highest numerical value actually achieved for any road within that specific travel planning area was actually 36. To determine the rating for Low, Medium, or High, divide 36 into thirds (divide by 3). The results are as follows:

- Low = 0-12
- Medium = 13-24
- High = 25-36

Continuing with this example, assume that for a particular route, the following numerical values have been determined and entered on the worksheet:

- Big Game Habitat = 6
- Unique Habitats = 0
- Fragmentation of Habitat = 6
- Connectivity = 0
- Noxious Weeds = 4
- Relict Plant Communities = 0
- Special Status Plant Species and Habitats = 3

In this case, the numerical total for this route is 17, and will receive a rating of “Medium”.

This is the same methodology that was used to complete the Aquatics/Fisheries, Soils, and Human Use route evaluations and ratings throughout the process on a “per travel planning area” basis.

After the Resource and Human Use analysis was completed for a travel planning area, the final ratings (Low, Medium, or High) for each route were entered onto the *Final Evaluation Table*. The Final Evaluation

Table provides a format to compare the Resource Impact and Human Use ratings determined for each route for the particular travel planning area. Interdisciplinary Team recommendations on route-specific management stemmed from a comparison of the Resource Impact and Human Use ratings. Recommendations included a range of options including open yearlong, open with seasonal restrictions (seasons based on site-specific needs), closed yearlong, or decommissioning. Reasons for seasonal restrictions included (but were not limited to) such rationale as minimizing winter disturbance of big game in winter range areas, providing for or preventing motorized access during big game hunting seasons, or minimizing soil erosion during wet or snowmelt periods. The Final Evaluation Table includes a space for written comments to clarify the Interdisciplinary Team's proposed management recommendations.

As an example, assume the following final ratings for a particular route:

- Wildlife/Habitat Impact Rating – Low
- Aquatics/Fisheries Impact Rating – Low
- Soils Impact Rating – Medium
- Human Use Rating – High

For this example, the overall level of Resource impacts is Low, while the overall level of importance to Human Use is High. In this case, the Interdisciplinary Team would likely propose to manage the route as Open, or perhaps Open/Restricted (seasonal restrictions) if Soil erosion were an issue. For a different route, the overall level of Resource Impacts might be High, while the overall importance to Human Use might be low; resulting in an Interdisciplinary Team proposal for Closure. In the above examples, there are no conflicts between the Resource Impact and Human Use ratings.

However, a wide range of variations for Resource/Human Use ratings is possible, and in some cases required discussion and negotiation by the Interdisciplinary Team to arrive at a proposed management decision. For example, there were a number of routes where Resource Impacts and Human Use needs both rated out as High. These situations required group discussion and negotiation in order to arrive at a proposed management solution.

Note: Near the end of BLM's "route by route" review process, a number of additional routes were identified in the Boulder-Jefferson and Lewis and Clark County NW TPAs through the use of aerial photography, orthoquads, and other GIS technology. The vast majority of these routes are very short, less than 1/10<sup>th</sup> mile in length. Due to time constraints, the ID team decided to forgo complete analysis of these routes (using the process described above. Proposed management decisions for these additional routes were based on professional knowledge, and ID team analysis and recommendations made for adjacent routes.

## Rating Criteria Used for Route by Route Evaluation

The following written criteria were used throughout the five travel plan areas for route by route evaluation and proposed management decision (Open, Open/With Restrictions, Closed, or Decommissioned). For some travel planning areas (Upper Big Hole, Lewis and Clark County NW), additional Wildlife criteria were needed to evaluate Unique Habitats, Sensitive Species (Sage Grouse, Northern Goshawk), and Threatened and Endangered Species (lynx, grizzly).

### Resource Impact Evaluation Criteria

#### Wildlife

##### 1. Big Game Habitat

0 = Segment does not lie within or intersect elk/deer winter range.

8 = Segment lies within or intersects elk/deer winter range.

##### 2. Fragmentation of Habitat

This factor addresses the role of each road segment in the context of fragmenting large blocks of habitat (1 square mile). The factor looks at the spatial location and density of roads. Use moving windows roads analysis to determine road densities in analysis area.

2 = Segment is in an area of relatively unfragmented habitat.

12 = Segment is within road density of 0.5-1.5 mi/sq mi.

9 = Segment is within road density of 1.6-2 mi/sq mi.

6 = Segment is within road density of >2 mi/sq/mi.

3 = Segment is within road density of >3 mi/sq/mi

##### 3. Connectivity

This factor primarily addresses the fragmentation and loss of habitat within connectivity corridors or riparian areas. (Based on American Wildlands corridor analysis).

0 = Segment is not within a connectivity corridor or riparian reserve.

3 = Segment intersects a low quality connectivity corridor.

6 = Segment intersects a moderate quality connectivity corridor or riparian reserve.

9 = Segment intersects a high quality connectivity corridor or riparian reserve.

**4. Noxious Weeds**

0 = Segment has no known infestations of noxious or non-native invasive weeds

4 = Density: Trace-5%; And Extent: Patchy = less than 0.1acre

8 = Density: 5-25%; Or Extent: Infestations 0.1-5 acres

12 = Density: 25-100%; Or Extent: 5+ acres and soils susceptible to invasion.

**5. Relict Plant Communities**

0 = Segment does not cross any relict plant communities

4 = Segment crosses a relatively intact relict plant community

**6. Special Status Plant Species and Habitats**

0 = Segment does not cross any known special status plant species communities or potential habitat

3 = Segment crosses potential special status plant species habitat

6 = Segment crosses known special plant status species communities or habitat.

**Aquatics/Fisheries Evaluation Criteria****1. Stream Crossings on non fish-bearing streams**

This factor addresses the extent to which the road segment lies within riparian areas, disconnect streams from their floodplains, and prevent development of riparian vegetation.

0 = Segment is ridge top or mid-slope with no stream crossings

2 = Segment is mid-slope with few (1-2) stream crossings

4 = Segment is mid-slope with numerous (>3) stream crossings

**2. Riparian Vegetation**

0 = Segment is outside of riparian vegetation

2= Segment slightly impacts riparian vegetation

4 = Segment moderately impacts riparian vegetation

6 = Segment highly impacts riparian vegetation. Segment is within a riparian area and/or parallel to a creek

**3. Proximity to Fish Populations**

This factor addresses how direct any road effects would be to fish stocks. Features used to judge the “likelihood” of effects to fish stocks included

stream crossings over fish-bearing streams, stream crossings over non fish-bearing streams that were in close proximity to fish-bearing streams, and effects to riparian vegetation along fish-bearing streams.

0 = Segment is not near fish-bearing waters.

3 = Segment has 1-2 stream crossings over a fish-bearing stream.

6 = Segment has 2-3 stream crossings over a fish-bearing stream.

9 = Segment is directly adjacent to a fish-bearing stream, parallel to the creek or has 4 or greater stream crossings.

**Soil Evaluation Criteria****1. Accelerated Erosion****Soils that are resistant to erosion:**

0 = Low impact. The area the route travels through has slopes ranging from 0-15%.

6 = Medium impact. The area the route travels through has slopes ranging from 15-30%.

9 = High impact. The area the route travels through has slopes greater than 30%.

**Soils with granite parent material**

6 = Medium impact. The area the route travels through has slopes ranging from 0-30%.

9 = High impact. The area the route travels through has slopes greater than 30%.

Soil Impact Rating (minimum = 0, maximum = 9)

Low Impact = 0-3

Moderate Impact = 4-6

High Impact = 6-9

**Resource Use Evaluation Criteria****Private Property access, Public Utility (Right of Way) access, and private property easements granted to BLM****1. Need for Access to private property, public utility right of ways, and private property easements providing access to BLM lands.**

0 = Route does not contribute in any way to access private property, public utility right-of-way, or private property easement providing access to BLM lands.

3 = Route serves as secondary access to private land, public utility right of way, or private property easement providing access to BLM lands.

6 = Route serves as primary access to private property, public utility right of way, or private property easement providing access to BLM lands.

### Forest Management Evaluation Criteria

#### 1. Access for Timber Production and silviculture.

0 = Route does not access or is not needed to access potential forest management or treatment project units, such as areas with no forest or woodland or stands located in regulated management locations like wilderness study areas, nor does the route provide access for personal use of forest materials by the public.

3 = Route is not anticipated to be needed for BLM planned forest management activities or treatment within 20 years, or provides access to isolated stands of forest with no current public access.

6 = Route provides access to public forest or woodland available for public use such as firewood gathering or Christmas tree, or is expected to be needed for vehicle access to forest management or treatment units within 20 years, or currently provides access for inventory or monitoring activities.

9 = Route provides vehicle access to an existing BLM contract area or current or currently planned forest management activities such as forest product sales, pre-commercial thinning, forest residue treatment, site preparation, plantings, insect/disease suppression or fire restoration, or provides access for project follow-up or trespass investigation activities.

### Mineral/Energy Development Evaluation Criteria

#### 1. Need for Access for Mineral/Energy development

0 = Route does not access, or will not be needed to access mineral/energy development.

3 = Route would not be needed to access mineral/energy development within 20 years.

6 = Route is expected to be needed to access mineral/energy development within 20 years.

9 = Route is currently used to access mineral/energy development.

### Range Management Evaluation Criteria

#### 1. Need for Permittee Access (for range management, and/or maintenance repairs to range facilities)

0 = Route does not access range improvements, is not used for range management.

6 = Route provides access to range improvements, and/or is needed for range management.

### Wildland/Prescribed Fire Evaluation Criteria

#### 1. Need for Access for fire suppression, fuels management

0 = Low intensity area

6 = Moderate intensity area.

9 = High intensity area.

### Public Use Access Evaluation Criteria (Recreation, Hunting, Woodcutting, etc.)

#### 1. Need/Level of Public Use

0 = No known public use

3 = Receives little public use, does not access any developed recreation sites (facilities, trailheads) known points of interest, or destination points.

6 = Receives moderate use, used to access hunting areas, developed recreation sites (facilities, trailheads), known points of interest, or destination points.

9 = Receives high use, provides primary access to hunting areas, developed recreation sites (facilities, trailheads), known points of interest, or destination points.

## COMMUNITY BASED COLLABORATIVE WORKING GROUPS

During spring 2004, BLM identified and prioritized nine site specific areas needing travel planning. Five of the nine areas were identified as High Priority, and are being addressed concurrently with the RMP revision. The remaining four areas were identified as Moderate Priority, and will need to be addressed after the RMP, due to time constraints.

1) Helena (focus area- Scratchgravel Hills) - *High Priority*

2) East Helena (focus area- North Hills) - *High Priority*

3) Lewis and Clark Country Northwest (focus area- Marysville) - *High Priority*

4) Boulder/Jefferson City - *High Priority*

5) Upper Big Hole River - *High Priority*

6) Missouri River Foothills - *Moderate Priority*

7) Jefferson County Southeast - *Moderate Priority*

8) Broadwater County South - *Moderate Priority*

9) Park/Gallatin - *Moderate Priority*

Given their relative importance, a series of public scoping meetings were held for the five *High Priority* travel planning area during November and December 2004, and January 2005. The primary purpose of the meetings was to solicit site-specific issues and concerns, as well as potential solutions; to be used to help establish criteria governing decisions for travel planning. (e.g., issue/concern – noise/dust impacts from motorized OHV use near housing area; solution – restrict/prohibit OHV use near housing area, establish minimum distance, criteria – establish/determine minimum distance from housing areas ).

During the meetings, it became apparent that three of the travel planning areas - Lewis and Clark County Northwest (Marysville), Helena (Scratchgravel Hills), and East Helena (North Hills) were particularly important to the public and travel planning. Meetings for these three areas were well attended; interest in the Scratchgravel Hills required a second meeting.

Given the level of public interest, BLM decided to solicit the assistance of three community-based collaborative working groups, one for each travel planning area. Assisted in part by Tetra Tech (RMP contractor), the groups were intended to work under the direct supervision and guidance of the Western Montana Resource Advisory Council (RAC).

Several press releases and letters of interest were issued by Tetra Tech during May 2005, soliciting applicants for each of the three travel planning areas. The mission of the collaborative working groups was to “assist in developing a travel management plan mutually agreeable to both the collaborative working groups and BLM”. Membership criteria included: Montana residency, familiarity with the travel planning area(s), and a willingness to work collaboratively with people of differing viewpoints. In addition, in accordance with the Western Montana Resource Advisory Council criteria, members were selected from three different interest categories in order to provide for balanced representation.

BLM anticipated enough public interest to support three balanced working groups, composed of either six or nine people total. Without BLM intervention, Tetra Tech was tasked with selecting group membership (for subsequent approval by the RAC), and coordinating and facilitating all of the group meetings. No BLM employees participated in the working groups.

In late May, however, it became apparent that the RAC would not be able to sponsor the collaborative subgroups, due to time constraints and other unforeseen events. BLM contacted the Lewis and Clark County commissioners, who graciously agreed to sponsor the collaborative working groups under their direct guidance and supervision.

Due to a shortage of interested candidates, only two (rather than 3) balanced collaborative working groups

were able to be selected, each composed of nine members. Given its group membership, interest, and local knowledge, one of the groups was tasked with assisting the BLM develop travel management for both the Helena (Scratchgravel Hills) travel planning area as well as the East Helena (North Hills) travel planning area, while the second group was selected to assist the BLM with the Lewis and Clark travel planning area (Marysville).

The Lewis and Clark County Commission sponsored and oversaw the working group process. Michael McHugh, the Lewis and Clark County land planner, represented the county and chaired both working groups throughout the process. Each group held a series of six meetings during June and July, 2005. Each meeting was assisted by Tetra Tech, and attended by BLM staff only to answer questions and provide information from the BLM’s Interdisciplinary Team as needed. In addition, BLM provided a full range of maps and other travel planning information used by its own interdisciplinary travel planning team, including its preliminary travel planning recommendations based on the route by route rating process described above (if requested by working groups), for each of the three travel areas. However, since no BLM employees participated on the working groups and the BLM did not facilitate the process, the Federal Advisory Committee Act (FACA) did not apply to the working groups.

Working group recommendations were based on consensus. In the end, the working groups were able to arrive at complete consensus for the Marysville and North Hills areas, but only partial consensus for the Scratchgravel Hills area.

From August 2005-October 2005, the BLM Interdisciplinary team met and finalized a range of alternatives (A-D) for each of the five travel planning areas addressed with the RMP revision. With the exception of some minor changes, community based collaborative working group proposals were incorporated into Alternative B, which eventually became the Preferred Alternative.

## **BUTTE FIELD OFFICE TRAVEL PLAN VARIANCE PROCESS/APPLICATION FORM**

Travel plan variances are requests by the public, commercial interests, interagency personnel, or BLM personnel to temporarily use motorized vehicles on closed roads, seasonally restricted roads, and cross country (off road) use. The following process (see flowchart below) has been developed to address requests for motorized travel not already authorized by a prior decision based on analysis in an existing EIS, EA, or the provisions of a permit, lease, memorandum of understanding, or right of way. It is also intended to provide additional oversight for uses already generally

authorized under the 2003 Statewide OHV ROD and Instruction Memorandum #MT-2001-004 regarding administrative uses.

Variance requests that cannot be approved due to issues raised during review would be subject to the NEPA process, or Documentation of NEPA adequacy (DNA). A DNA is documentation of whether or not there is existing NEPA documentation to cover the proposal. If Example requests for variances include (but are not limited to):

- Access to private property (patented mine claim, mining claim location and assessment work, seasonal cabin)
- Casual use mineral exploration (refer to 43 CFR 3809.5)

the variance request cannot pass this “test”, additional NEPA documentation is required.

The process is initiated by the program lead requesting the variance, or who has received a request from the public. After completing the basic information on the variance form, the flow chart should be circulated among the respective specialists for consultation and overall review.

- Permit lease administration (firewood collection, recreation)
- Agency administrative work
- Contract work or contract administration
- Other permit leases

**Flowchart**

(Please document your responses, as needed, in the space next to the question. Use “N/A” for issues and concerns not applicable to the request).

Does the request provide reasonable use of public lands? — **No-----No Variance**  
*Must be Yes to continue*

|  
**Yes**  
 |

Are there reasonable, alternative routes available? — **Yes-----No Variance**  
*Must be No to continue*

|  
**No**  
 |

Is the activity in a WSA?  
 (Exceptions – Grandfathered rights, valid existing rights, use of an existing way) — **Yes-----No Variance**  
*Must be No to continue*

|  
**No**  
 |

Is the road safe to use during the requested time period? — **No-----No Variance**  
*Must be Yes to continue*

|  
**Yes**  
 |

Can the activity be postponed until the road or area is open to motorized use? — **Yes -----No Variance**  
*Must be No to continue*

|  
**No**  
 |

Can resource impacts be sufficiently mitigated?  
 (Winter range, spring calving habitat, Threatened and Endangered species habitat, sensitive species habitat, sensitive soils, soils susceptible to erosion, water quality, spread of noxious weeds, etc.) — **No-----No Variance**  
*Must be Yes to continue*

|  
**Yes**  
 |

Can social conflicts (as analyzed) be sufficiently mitigated? — **No ----- No Variance**  
*Must be Yes to continue*

|  
**Yes**

**Yes – Variance may be approved by Authorized Officer** (refer to Variance Request Form for signature)

**Respective Program Reviewers:**

Program Lead	Signature	Date
CULTURAL		
FORESTRY		
REALTY		
WILDLIFE/T&E		
GEOLOGY		
SOIL/WATER/AIR		
HAZMAT/AML		
RANGE/WEEDS		
RECREATION/WILDERNESS/VRM		
RIPARIAN		
FIRE/FUELS		
TRAVEL MANAGEMENT		

USDI BUREAU OF LAND MANAGEMENT  
Butte Field Office  
106 North Parkmont  
Butte, Montana, 59701  
Telephone 406-533-7600

Authorization No. \_\_\_\_\_

AUTHORIZATION FOR MOTORIZED USE OF ROAD, TRAIL, OR AREA WITH TRAVEL RESTRICTIONS

When approved by the authorized officer, this permit authorizes:

Name: \_\_\_\_\_

Address: \_\_\_\_\_

(City, State)

(Zip)

Telephone Number (s): \_\_\_\_\_

(List additional authorized users on back of form)

To use the following road (s), trails, or area with travel restrictions (indicate entry locations and travel areas):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

In order to conduct the following operations:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Dates/Time of Use:

\_\_\_\_\_  
\_\_\_\_\_

Number and Type(s) of Vehicles:

\_\_\_\_\_  
\_\_\_\_\_

(See other side)

**Standard Stipulations**

Copy of variance to be kept with authorized vehicle (s) and displayed in window.

Variance restricted to authorized (listed) individuals only

Permittee shall notify BLM of any changes under this authorization

Post sign or notice (on gate or beginning of restricted road) stating reason for use. Close/Lock gates when entering and leaving closure area

Vehicle use limited to ingress and egress only, using the authorized route, and minimum number of vehicles and trips.

No off road travel allowed, unless specifically authorized under this variance.

Avoid wet areas; travel only when ground is dry to prevent ruts and resulting erosion

Wash vehicles prior to use on BLM lands to prevent introduction of weeds

*During fire operations* - May use ATVs and engines on any existing road or trail that accesses treatment area. Off road use restricted for fire holding, mop up, and any related suppression needs. Off road vehicle use should be avoided during the general rifle hunting season. No new trails are to be created

*During hunting season* - Vehicles shall not be used for hunting purposes on BLM lands. Use limited to ingress/egress only after dark or between the hours of 11 AM to 3 PM (with the exception of emergencies).

I (we) acknowledge that I (we) am (are) required to comply with any conditions or stipulations of the authorized officer when the permit is issued:

---

(Applicant signature/date)

**Butte Field Office Manager Action**

**Special Stipulations (if any):**

\_\_\_\_\_ Variance Approved

This application is hereby approved subject to the Standard stipulations and Special stipulations (if any) listed above:

\_\_\_\_\_  
(Signature/date)

\_\_\_\_\_ Variance Denied

This application has been denied for the following reasons:

See attached letter.

This decision may be appealed to the Interior Board of Land Appeals, Office of the Secretary, in accordance with the regulations contained in 43 CFR, Part 4, and the enclosed Form 1842-1. If an appeal is taken, your notice of appeal must be filed in this office (at the above address) within 30 days from receipt of this decision. The appellant has the burden of showing that the decision appealed from is in error.

If you wish to file a petition (request) pursuant to regulation 43 CFR 8342 for a stay (suspension) of the effectiveness of this decision during the time that your appeal is being reviewed by the Board, the petition for a stay must accompany your notice of appeal. A petition for a stay is required to show sufficient justification based on the standards listed below. Copies of the notice of appeal and petition for a stay must also be submitted to each party named in this decision and to the Interior Board of Land Appeals and to the appropriate Office of the Solicitor (see 43 CFR 4.413) at the same time the original documents are filed with this office. If you request a stay, you have the burden of proof to demonstrate that a stay should be granted.

# APPENDIX B – LAWS AND EXECUTIVE ORDERS AFFECTING BLM PLANNING AND MANAGEMENT

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## MANAGEMENT OF LAND & RESOURCES APPROPRIATION LANGUAGE CITATIONS

16 U.S.C. 594,  
43 U.S.C. 17015,  
30 U.S.C. 181 *et seq.*,  
30 U.S.C. 351-359;  
43 U.S.C. 2, 31(a), 52, 315;  
43 U.S.C. 1701 *et seq.*, and 1901 *et seq.*,

78 *Stat.* 986;  
P.L. 103-332;  
P.L. 104-208;  
P.L. 105-83;  
P.L. 105-277;  
P.L. 106-113; and P.L. 106-291

**16 U.S.C. 594, Protection Act of September 20, 1922** provides for the Secretary of the Interior to protect and preserve, from fire, disease, or the ravages of beetles or other insects, timber on the public lands owned by the United States.

**30 U.S.C. 181 *et seq.*, the Mineral Leasing Act of 1920 as amended**, provides for the leasing of deposits of coal, phosphate, sodium, potassium, oil, oil shale, native asphalt, solid and semi-solid bitumen, and bituminous rock or gas, and lands containing such deposits owned by the United States, including those in national forest, but excluding those acquired under other acts subsequent to February 25, 1920, and those within the national petroleum and oil shale reserves. The Act also preserves the right of pre-1920 oil shale mining claims to be patented.

**30 U.S.C. 351-359, the Mineral Leasing Act for Acquired Lands**, provides for the leasing of coal, phosphate, oil, oil shale, gas, sodium, potassium, and sulfur which are owned or acquired by the United States and which are within the lands acquired by the United States, with the consent of the head of the agency having jurisdiction over the lands containing such deposits.

**43 U.S.C. 2**, provides that the Secretary of the Interior, or such officer as he may designate, shall perform all executive duties appertaining to the surveying and sale of the public lands of the United States, or in anyway respecting such public lands, and, also, such as relate to private claims of land and the issuing of patents for all grants to land under the authority of the Government.

**43 U.S.C. 31(a)** provides for the classification of the public lands and examination of the geological structure, mineral resources, and products of the national domain.

**43 U.S.C. 52**, provides that the Secretary of the Interior, or such officer as he may designate, shall cause to be surveyed, measured, and marked, without delay, all base and meridian lines through such points and perpetuated by such monuments, and such other correction parallels and meridians as may be prescribed; that all private land claims shall be surveyed after they have been confirmed

by authority of Congress, so far as may be necessary to complete the survey of the public lands; and that he shall transmit general and particular plans of all lands surveyed by him to such officers as he may designate.

**43 U.S.C. 315, The Taylor Grazing Act of 1934, as amended**, provides that the Secretary of the Interior is authorized to establish grazing districts from any part of the public domain of the United States (exclusive of Alaska) which, in his opinion, are chiefly valuable for grazing and raising forage crops, to regulate and administer grazing use of the public lands, and to improve the public rangelands.

**43 U.S.C. 1701 *et seq.*, the Federal Land Policy and Management Act of 1976, as amended**, provides for the public lands to be generally retained in Federal ownership; for periodic and systematic inventory of the public lands and their resources; for a review of existing withdrawals and classifications; for establishing comprehensive rules and regulations for administering public lands statutes; for multiple-use management on a sustained yield basis; for protection of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values; for receiving fair market value for the use of the public lands and their resource; for establishing uniform procedures for any disposal, acquisition, or exchange; for protecting areas of critical environmental concern; for recognizing the Nation's need for domestic sources of mineral, food, timber, and fiber from the public lands, including implementation of the Mining and Mineral Policy Act of 1970; and for payments to compensate States and local governments for burdens created as a result of the immunity of federal lands from state and local taxation.

**43 U.S.C. 1901 *et seq.*, the Public Rangelands Improvement Act of 1978**, provides for the improvement of range conditions on public rangelands, research on wild horse and burro population dynamics, and other range management practices.

**78 Stat. 986** provides for the classification of certain lands administered exclusively by the Secretary of the

Interior in order to provide for their disposal or interim management under principles of multiple-use and to produce a sustained yield of products and services. Although this authority has expired, the classifications remain in effect.

**43 U.S.C. 1715** provides the Secretary of the Interior authorization to acquire, by purchase, exchange, donation, or eminent domain (for access to public lands only), land and interests in lands.

***P.L. 106-291, the Department of the Interior and Related Agencies Appropriation Act, 2001***, provides expenses necessary for the protection, use, improvement, development, disposal, cadastral surveying, classification, acquisition of easements and other interest in land, and performance of other functions. It also, includes the maintenance of facilities as authorized by law, in the management of lands and their resources under jurisdiction of the Bureau of Land Management, including the general administration of the Bureau, and the assessment of mineral potential of public lands.

## AUTHORIZATIONS

The following laws governing the Bureau of Land Management's activities include General Authorizing Legislation, which authorize the general activities of the Bureau of Land Management or govern the manner in which BLM's activities are conducted; and Specific Authorizing Legislation, which governs specific program activities or activities in specific or designated areas.

<b>Act of July 26, 1866, also known as the Lode Act (14 Stat. 251)</b>	Granted rights of way (ROWs) over "public domain" for highways and to ditch and canal owners. Repealed and superseded by FLPMA.
<b>Act of December 22, 1928 (Color of Title) (45 Stat. 1069) as amended (43 U.S.C. 1068, 1068a)</b>	Allowed patents to be issued for claims of long standing, without reservation of minerals to government
<b>Act of May 24, 1928, as amended (49 U.S.C. App. 211-213)</b>	Authorizes the Secretary to lease contiguous unappropriated public lands (not to exceed 2,560 acres) for a public airport.
<b>Alaska National Interest Lands Conservation Act of 1980 (16 U.S.C. 3101 et seq.)</b>	Provides for the special designation of certain public lands in Alaska and conservation of their fish and wildlife values; management for subsistence uses of fish and wildlife resources on public lands by residents of rural Alaska; and protection of the wildlife resources on North Slope lands impacted by oil and gas exploration and development activities.
<b>Americans with Disabilities Act Accessibility Guidelines (ADAAG)</b>	Sets guidelines for accessibility to places of public accommodation and commercial facilities by individuals with disabilities.
<b>American Indian Religious Freedom Act of 1978 (42 U.S.C. 1996)</b>	Declares the United States policy of protecting and preserving the inherent right of freedom to believe, express, and exercise traditional religions; including access to religious sites, use and possession of sacred objects, and freedom to worship through ceremonials and traditional rites; for the American Indian, Eskimo, Aleut, and Native Hawaiian.
<b>Antiquities Act of 1906 (16 U.S.C. 431 et seq.)</b>	Protects cultural resources on Federal lands, and imposes penalties for excavation or appropriation without a permit.
<b>Archaeological Resources Protection Act of 1979, as amended (16 U.S.C. 470a, 470cc and 470ee)</b>	Requires permits for the excavation or removal of Federally administered archaeological resources, encourages increased cooperation among Federal agencies and private individuals, provides stringent criminal and civil penalties for violations, and requires Federal agencies to identify important resources vulnerable to looting and to develop a tracking system for violations.
<b>Architectural Barriers Act (ABA) of 1968 (42 U.S.C. 4151 et seq.)</b>	Requires access to facilities designed, built, altered, or leased with Federal funds.
<b>Atomic Energy Act of 1952 (42 U.S.C. 2001f)</b>	Provides for both the development and the regulation of the uses of nuclear materials and facilities in the United States by civilians, and for military use.
<b>Bald Eagle Protection Act of 1940, as amended (16 U.S.C. 668-668d)</b>	Provides for the protection of the bald eagle (the national emblem) and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession and commerce of such birds (including their parts, nests, or eggs).

**Bankhead Jones Farm  
Tenant Act of 1937 (7 U.S.C.  
1010 et seq.)**

Authorizes management of acquired farm tenant lands, and construction and maintenance of range improvements. It directs the Secretary of Agriculture to develop a program of land conservation and utilization to adjust land use to help control soil erosion, conduct reforestation, preserve natural resources, develop and protect recreational facilities, protect watersheds, and protect public health and safety.

**Carey Act of 1894, as  
amended (43 U.S.C. 641)**

Authorizes and empowers the Secretary of the Interior, given Presidential approval and proper application, to donate, grant, and patent desert lands to a state for irrigation, reclamation, and occupation. Lands may be restored to the public domain if reclamation requirements are not satisfied within stated time limits

**Carlson-Foley Act of 1968 (42  
U.S.C. 1241-1243)**

Authorizes BLM to reimburse States for expenditures associated with coordinated control of noxious plants.

**Clean Air Act (1970, 1977)  
(42 U.S.C. 1857)**

In its early form (the 1967 Air Quality Act), guided states in controlling sources of air pollution according to a set of principles. As of the 1970, 1977, and 1990 amendments, states apply and administer detailed control requirements prescribed through federal regulations.

**Clean Air Act of 1990 as  
amended (42 U.S.C. 7401,  
7418, 7642)**

Requires BLM to protect air quality, maintain Federal and State designated air quality standards, and abide by the requirements of the State implementation plans.

**Clean Water Act of 1987 as  
amended (33 U.S.C. 1251)**

Establishes objectives to restore and maintain the chemical, physical, and biological integrity of the nation's water.

**Comprehensive  
Environmental Response,  
Compensation, and Liability  
Act of 1980 as amended by  
the Superfund Amendments  
and Reauthorization Act of  
1986 (42 U.S.C. 9601-9673)**

Provides for liability, risk assessment, compensation, emergency response, and cleanup (including the cleanup of inactive sites) for hazardous substances. Requires Federal agencies to report sites where hazardous wastes are or have been stored, treated, or disposed, and requires responsible parties, including Federal agencies, to clean-up releases of hazardous substances.

**Condemnation Act of 1888,  
as amended (40 U.S.C. 257)**

Authorizes officers of the government to procure real estate for the erection of a public building or for other public uses, through condemnation, under judicial process, whenever it is necessary or advantageous to the Government to do so.

**Control of Pollution from  
Federal Facilities (33 U.S.C.  
1323) 1970**

Established that federal agencies shall be subject to all requirements and administrative authorities, processes, and sanctions respecting the control and abatement of water pollution in the same manner, and to the same extent as any nongovernmental entity, including the payment of reasonable service charges.

**Declaration of Taking Act of  
1931 (40 U.S.C. 258(a), (e))**

Authorizes the United States to acquire an interest in land immediately upon the filing of a declaration of taking with a court and the deposit in the court of the estimated compensation stated in the declaration.

**Department of the Interior  
and Related Agencies  
Appropriations Act, 1996  
(P.L. 104-134)**

Directs the Secretary of the Interior, acting through the Bureau of Land Management, to develop and implement a pilot recreation fee demonstration program to determine the feasibility of cost recovery for operation and maintenance of recreation areas and sites.

<b>Desert Land Act of 1877 (43 U.S.C. 321-323)<sup>2</sup></b>	Provides authority to reclaim arid and semi-arid public lands of the western States through individual effort and private capital.
<b>Eagle Protection Act of 1962 (P.L. 87-884 (76 Stat. 1346))</b>	Expanded and amended the Bald Eagle Protection Act of 1940 to include golden eagles.
<b>Emergency Planning and Community Right-To-Know Act of 1986 (42 U.S.C. 11001-11050)</b>	Requires the private sector to inventory chemicals and chemical products, to report those in excess of threshold planning quantities, to inventory emergency response equipment, to provide annual reports and support to local and State emergency response organizations, and to maintain a liaison with the local and state emergency response organizations and the public.
<b>Emergency Wetlands Resources Act of 1986 (P.L. 99-645)</b>	Removed a prior prohibition on the purchase of wetlands with Land and Water Conservation Fund monies. Transferred monies to the Migratory Bird Conservation Fund through import duties and entrance fees at National Wildlife Refuges. Provided for planning, mapping, and inventory of wetlands in the United States; and reports to Congress on wetlands loss and the contribution of federal programs to wetlands loss.
<b>Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)</b>	Directs Federal agencies to ensure that their actions do not jeopardize threatened and endangered species and that through their authority they help bring about the recovery of these species.
<b>Engle Act of February 28, 1958 (43 U.S.C. 156)</b>	Provides that withdrawals for the Department of Defense for more than 5,000 acres shall be made by Congress.
<b>Executive Order, Public Water Reserve No. 107, April 17, 1926</b>	Reserves springs and waterholes on unsurveyed public lands for public use.
<b>Executive Order 11514, Protection and Enhancement of Environmental Quality, March 5, 1970 (35 FR 4247)</b>	Refines implementation of the National Environmental Policy Act of 1969, by directing the federal government to provide leadership in protecting and enhancing the quality of the Nation's environment to sustain and enrich human life, and to initiate measures needed to direct their policies, plans and programs so as to meet national environmental goals.
<b>Executive Order 11593 of May 13, 1971, Protection and Enhancement of the Cultural Environment (36 FR 8921)</b>	Directs Federal agencies to locate, inventory, nominate, and protect Federally owned cultural resources eligible for the National Register of Historic Places, and to ensure that their plans and programs contribute to preservation and enhancement of non- Federally owned resources.
<b>Executive Order 11644, Use of Off-Road Vehicles on Public Lands, February 8, 1972 (37 FR 2877)</b>	Establishes policies and provides for procedures for controlling or directing use of off-road vehicles on public lands, with the goal of protecting resources, promoting the safety of all users, and minimizing conflicts among the various uses.
<b>Executive Order 11987, Exotic Organisms, May 24, 1977 (42 FR 26949)</b>	Directs federal agencies to restrict the introduction of exotic species into natural ecosystems on public lands, to encourage other entities to prevent such introduction, and to restrict federal programs, funds, and authorities from exporting native species for introduction into natural ecosystems outside of the United States.
<b>Executive Order 11988, Floodplain Management, May 24, 1977 (42 FR 26951)</b>	Provides for the restoration and preservation of national and beneficial floodplain values, and enhancement of the natural and beneficial values of wetlands in carrying out programs effecting land use.

<b>Executive Order 11989, Off-road vehicles, May 24, 1977 (42 FR 26959)</b>	Clarifies agency authority to define zones of use for off-road vehicles on public lands.
<b>Executive Order 11990, Protection of Wetlands, May 25, 1977 (42 FR 26961)</b>	Directs that wetland and riparian habitats on the public lands be identified, protected, enhanced, and managed.
<b>Executive Order 12088, Federal Compliance with Pollution Control Standards October 17, 1978 (43 FR 47707)</b>	Sets the requirements for standards applicability, agency coordination, and limits on exemptions from standards.
<b>Executive Order 12548, Grazing fees, February 14, 1986 (51 FR 5985)</b>	Provides for establishment of appropriate fees for the grazing of domestic livestock on public rangelands. Directs that the fee shall not be less than \$1.35 per animal unit month.
<b>Executive Order 12898, Environmental Justice, February 11, 1994 (59 FR 7629)</b>	Requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands.
<b>Executive Order 12962, Recreational Fisheries, June 7, 1995 (60 FR 30769)</b>	Directs all Federal agencies to enhance recreational fish species and provide increased recreational fishing opportunities.
<b>Executive Order 13007, Providing for American Indian and Alaska Native Religious Freedom and Sacred Land Protections, May 24, 1996 (61 FR 26771)</b>	Directs federal agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of such sacred sites.
<b>Executive Order 13084, Consultation and Coordination with Indian Tribal Governments, May 14, 1998 (63 FR 27655)</b>	Provides for consultation with Indian tribal governments in developing regulatory policies that would significantly or uniquely affect Indian tribal communities, increasing flexibility for Indian tribal waivers, and use of consensual mechanisms where appropriate for developing regulations on issues related to tribal self-government, trust resources, or treaty and other rights.
<b>Executive Order 13112, Invasive Species, February 3, 1999 (64 FR 6183)</b>	Directs federal agencies to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species cause.
<b>Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, January 10, 2001 (66 FR 3853)</b>	Directs agencies within the Executive Branch to take certain actions to further implement the Migratory Bird Treaty Act (MBTA), with the goal of promoting the conservation of migratory bird populations.
<b>Executive Order 13195, Trails for America in the 21st Century, January 18, 2001 (66 FR 7391)</b>	Directs federal agencies to protect, connect, promote, and assist trails of all types throughout the United States to the extent permitted by law and where practicable, and in cooperation with Tribes, States, local governments, and interested groups.

<b>Executive Order 13352, Facilitation of Cooperative Conservation, August 26, 2004 (69 FR 52989)</b>	Directs federal agencies to ensure laws relating to the environment and natural resources are implemented in a manner that promotes cooperative conservation with an emphasis on local participation in federal decision-making and established a White House Conference on Cooperative Conservation to facilitate the exchanges of information and advice.
<b>Executive Order 13443, Facilitation of Hunting Heritage and Wildlife Conservation, August 20, 2007 (72 FR 46537)</b>	Directs federal agencies that have programs and activities that have a measurable effect on public land management, outdoor recreation, and wildlife management, including the Department of the Interior and the Department of Agriculture, to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.
<b>Federal-Aid Highway Act of 1958 (23 U.S.C. 207-209)</b>	Authorized increased federal assistance to the states for the construction of roads and highways.
<b>Federal-Aid Highway Act of 1962 (23 U.S.C. 214)</b>	Created the federal mandate for urban transportation planning in the United States, based on the 3-C planning process.
<b>Federal-Aid Highway Act of 1968 (23 U.S.C. 116)</b>	Incorporated provisions designed to protect the environment and reduce the negative effects of highway construction, and launched the Traffic Operations Program to Improve Capacity and Safety (TOPICS) program.
<b>Federal-Aid Highway Act of 1973 (23 U.S.C. 217)</b>	Increased the flexibility in the use of highway funds for urban mass transportation.
<b>Federal Cave Resource Protection Act of 1988 (16 U.S.C. 4301)</b>	Provides for the protection of caves on lands under the jurisdiction of the Secretary, and the Secretary of Agriculture. Establishes terms and conditions for use permits, and penalties for violations.
<b>Federal Insecticide, Fungicide, and Rodenticide Act of 1975 (7 U.S.C. 136 et. Seq.)</b>	Establishes an extensive regulatory system for controlling the sale, distribution, and application of pesticides.
<b>Federal Land Policy and Management Act of 1976, as amended (43 U.S.C. 1701 et seq.)</b>	<p>Outlines functions of the BLM Directorate, provides for administration of public lands through the BLM, provides for management of the public lands on a multiple use basis, and requires land-use planning including public involvement and continuing inventory of resources. The act establishes as public policy that, in general, the public lands will remain in Federal ownership, and also authorizes:</p> <ul style="list-style-type: none"> <li>• acquisition of land or interests in lands consistent with the mission of the Department and land use plans;</li> <li>• permanent appropriation of road use fees collected from commercial road users, to be used for road maintenance;</li> <li>• collection of service charges, damages, and contributions and use of funds for specified purposes;</li> <li>• protection of resource values;</li> <li>• preservation of certain lands in their natural condition;</li> <li>• compliance with pollution control laws;</li> <li>• delineation of boundaries in which the Federal government has right, title, or interest;</li> <li>• review of land classifications in land use planning; and modification or termination of land classifications when consistent with land use plans;</li> <li>• sale of lands if the sale meets certain disposal criteria;</li> <li>• issuance, modification, or revocation of withdrawals;</li> <li>• review of certain withdrawals by October 1991;</li> </ul>

- exchange or conveyance of public lands if in the public interest;
- outdoor recreation and human occupancy and use;
- management of the use, occupancy, and development of the public lands through leases and permits;
- designation of Federal personnel to carry out law enforcement responsibilities;
- determination of the suitability of public lands for rights-of-way purposes (other than oil and gas pipelines) and specification of the boundaries of each right-of-way;
- recordation of mining claims and reception of evidence of annual assessment work.

**Federal Land Transaction Facilitation Act of 2000 (43 U.S.C. 2301)**

Allows the Bureau of Land Management to retain receipts from land sales and to use them to cover administrative costs and acquire properties to improve the nation's land management pattern.

**Federal Noxious Weed Act of 1974, as amended (7 U.S.C. 2814)**

Provides for the designation of a lead office and a person trained in the management of undesirable plants; establishment and funding of an undesirable plant management program; completion and implementation of cooperative agreements with State agencies; and establishment of integrated management systems to control undesirable plant species.

**Federal Onshore Oil and Gas Leasing Reform Act of 1987 (30 U.S.C. 226, et seq.)**

Establishes a new oil and gas leasing system, and changes certain operational procedures for onshore Federal lands.

**Federal Power Act of 1920, as amended (16 U.S.C. 818)**

Allows other uses of Federal waterpower withdrawals with Federal Energy Regulatory Commission approval.

**Fish and Wildlife Conservation Act of 1980 (16 U.S.C. 2901-2911)**

Authorizes financial and technical assistance to the States for the development, revision, and implementation of conservation plans and programs for nongame fish and wildlife.

**Freedom of Information Act (FOIA)**

Established that records in the possession of agencies and departments of the executive branch of the U.S. Government are accessible to the people; establishes statutory guidelines or procedures to help persons seeking information; sets standards for determining which records must be disclosed and which records may be withheld; and sets judicial remedies for those denied access.

Source for FOIA definition; A Citizen's Guide to the FOIA (2003P: A guide to both the Freedom of Information Act and the Privacy Act prepared by the House Committee on Government Reform. <http://www.fas.org/sgp/fois/citizen.html>.

**Fish and Wildlife Coordination Act of 1958 (16 USC 661 et seq)**

Provides for wildlife conservation to be given equal consideration and coordination with other features of water resource development.

**General Allotment Act (or Dawes Act) of 1887, as amended (24 U.S.C. 388-391)**

Called for the allocation of a parcel of land to all members of an Indian tribe, based on the theory that Indians would be become more quickly assimilated if they were owners of a parcel of land and encouraged to pursue civilized agricultural pursuits as opposed to traditional means of existing by hunting, fishing and gathering.

<b>General Mining Law of 1872, as amended (30 U.S.C. 22, et seq.)</b>	Provides for locating and patenting mining claims where a discovery has been made for locatable minerals on public lands in specified States, mostly in the western United States.
<b>Geothermal Steam Act of 1970 (30 U.S.C. 1001)</b>	Authorizes the Secretary to issue leases for the development of geothermal resources.
<b>Geothermal Steam Act Amendments of 1988</b>	Lists significant thermal features within the National Park System requiring protection, provides for lease extensions and continuation of leases beyond their primary terms, and requires periodic review of cooperative or unit plans of development.
<b>Highway Safety Act of 1966, as amended (23 U.S.C. 401-403)</b>	Requires the federal government to encourage and assist each of the States in the establishment of a highway safety system.
<b>Historic Sites Act of 1935 (16 U.S.C. 461)</b>	Declares national policy to identify and preserve historic sites, buildings, objects, and antiquities of national significance, providing a foundation for the National Register of Historic Places.
<b>Land and Water Conservation Fund Act of 1965, as amended (16 U.S.C. 460 et seq.)</b>	Provides for the establishment of the Land and Water Conservation Fund (LWCF), special BLM accounts in the Treasury, the collection and disposition of recreation fees, the authorization for appropriation of recreation fee receipts, and other purposes. Authorizes planning, acquisition, and development of needed land and water areas and facilities.
<b>Materials Act of 1947, as amended (30 U.S.C. 601-604 et seq.)</b>	Provides for the sale of common variety materials for personal, commercial, or industrial uses and for free use for local, State, and Federal governmental entities.
<b>Migratory Bird Conservation Act of 1929, as amended (16 U.S.C. 715) and treaties pertaining thereto</b>	Provides for habitat protection and enhancement of protected migratory birds.
<b>Mineral Leasing Act of 1920, as amended, (30 U.S.C. 181, et seq.)</b>	Provides for leasing of coal, phosphate, sodium, potassium, oil, gas, oil shale, native asphalt, solid and semi-solid bitumen, bituminous rock, and gilsonite on lands containing such deposits owned by the United States, including those in national forests, but excluding those within the national petroleum and oil shale reserves. It preserves the right of pre-1920 oil shale mining claims to be patented, mandates a broad spectrum of requirements for lease management, and authorizes the Secretary to determine suitability of public lands for oil and gas pipeline rights-of-way.
<b>Mineral Leasing Act for Acquired Lands of 1947 (30 U.S.C. 351-359)</b>	Provides for the leasing of coal, phosphate, sodium, potassium, oil, gas, oil shale, and sulfur which are owned or acquired by the United States and which are within the lands acquired by the United States, with the consent of the head of the agency having jurisdiction over the lands containing such deposits. It provides that all mineral leasing receipts derived from leases under this act shall be paid into the same funds or accounts in the Treasury and shall be distributed in the same manner as prescribed for other receipts from the lands affected by the lease. The intention is that this act shall not affect the distribution of receipts pursuant to legislation applicable to such lands.
<b>Mining and Minerals Policy Act of 1970, (30 U.S.C. 21a) (30 U.S.C. 1601, et seq.)</b>	Establishes policy of fostering development of economically stable mining and minerals industries, their orderly and economic development, and studying methods for disposal of waste and reclamation.

<b>Montana Stream Protection Act (SP 124 Permit)</b>	Requires that a permit be obtained for any government (federal, state, county, or city) project that may affect the bed or banks of any stream in Montana.
<b>Montana Natural Streambed and Land Preservation Act (Title 75 Chapter 2, MCA of 1975)</b>	States the State of Montana's policy of protecting and preserving in their natural or existing state its natural rivers, streams, and the lands and property immediately adjacent to them; and the intent to minimize erosion and sedimentation by prohibiting unauthorized projects. Recognizes the needs of irrigation and agricultural use of Montana's rivers and streams and allows for availability for any useful or beneficial purpose as guaranteed by Montana's Constitution.
<b>Montana Streamside Management Zone Law (Title 77-5-301 MCA)</b>	Establishes the Streamside Management Zone (SMZ) to protect public interest in forest water quality, quantity, and dependent resources while still allowing operators to use practices appropriate to site-specific conditions.
<b>Montana Water Use Act (Title 85, Chapter 2, MCA of 1973)</b>	Declares that any use of water is a public use and that the waters within the state are the property of the state for the use of its people and are subject to appropriation for beneficial uses as provided in this chapter. Establishes policy of wise use and includes direction on water rights adjudication.
<b>Montana Water Quality Act (75-5-301 MCA)</b>	Directs the classification of all state waters in accordance with their present and future most beneficial uses and the formulation and adoption of water quality standards that meet specified requirements.
<b>National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 et seq.)</b>	Requires the preparation of environmental impact statements for Federal projects which may have a significant effect on the environment. It requires systematic, interdisciplinary planning to ensure the integrated use of the natural and social sciences and the environmental design arts in making decisions about major Federal actions that may have a significant effect on the environment.
<b>National Historic Preservation Act of 1966, as amended (16 U.S.C. 470)</b>	Expands protection of historic and archaeological properties to include those of national, State and local significance. It also directs Federal agencies to consider the effects of proposed actions on properties eligible for or included in the National Register of Historic Places.
<b>National Parks and Recreation Act of 1978 (16 U.S.C. 1242-1243)</b>	Establishes a number of national historic trails which cross public lands.
<b>National Trails System Act of 1968, as amended (16 U.S.C. 1241-1249)</b>	Establishes a national trails system and requires that Federal rights in abandoned railroads be retained for trail or recreation purposes, or sold with the receipts to be deposited in the LWCF.
<b>Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001)</b>	Requires agencies to inventory archaeological and ethnological collections in their possession or control (which includes non-federal museums) for human remains, associated funerary objects, sacred objects, and objects of cultural patrimony; identify them geographically and culturally; and notify appropriate tribes within 5 years.
<b>Nuclear Waste Policy Act of 1982 (42 U.S.C. 10101 et seq.)</b>	Established a plan for the safe handling, storage, and disposal of the nation's spent nuclear fuel and high-level radioactive waste, and a program of research, development, and demonstration regarding the disposal of spent nuclear fuel and high-level radioactive waste.

**Occupational Health and Safety Act of 1970 (29 U.S.C. 651 et seq.)**

Assures safe and healthful working conditions for working men and women by providing for standards; enforcement; assistance to states in their efforts; and research, information, education, and training in the field of occupational safety and health.

**Pollution Prevention Act of 1990 (42 U.S.C. 13101-13109)**

Requires and encourages prevention and reduction of waste streams and other pollution through minimization, process change, and recycling. Encourages and requires development of new technology and markets to meet the objectives.

**Protection Act of September 20, 1922 (16 U.S.C. 594)**

Authorizes the Secretary of the Interior to protect and preserve, from fire, disease, or the ravages of beetles, or other insects, timber owned by the United States upon the public lands, national parks, national monuments, Indian reservations, or other lands under the jurisdiction of the Department of the Interior owned by the United States.

**Public Rangelands Improvement Act of 1978 (43 U.S.C. 1901-1908)**

Provides for the improvement of range conditions to assure that rangelands become as productive as feasible for watershed protection, livestock grazing, wildlife habitat, and other rangeland values. The act also authorizes:

- research on wild horse and burro population dynamics, and facilitates the humane adoption or disposal of excess wild free roaming horses and burros, and
- appropriation of \$10 million or 50% of all moneys received as grazing fees, whichever is greater, notwithstanding the amount of fees collected.

**Reciprocal Fire Protection Act of May 27, 1955, as amended (42 U.S.C. 1856)**

Authorizes agencies that provide fire protection for any property of the United States to enter into reciprocal agreements with other fire organizations to provide mutual aid for fire protection.

**Recreation and Public Purposes (R&PP) Act of 1926, as amended (43 U.S.C. 869)**

Authorizes the Secretary to classify public lands for lease or sale for recreation or public purposes. The R&PP Amendment Act of 1988 provides that suitable public lands may be made available for use as solid waste disposal sites, in a manner that will protect the United States against unforeseen liability.

**Rehabilitation Act of 1973, Section 504 (29 U.S.C 791)**

Requires federal agencies to ensure that federally assisted or federally conducted programming is accessible to people with disabilities. Access needs of people with visual impairments, hearing impairments and learning impairments must also be considered.

**Reservoir Salvage Act of 1960 (16 U.S.C. 469), as amended by the Archaeological and Historic Preservation Act of 1974**

Provides for the preservation of historical and archeological data (including relics and specimens) that might otherwise be irreparably lost or destroyed as the result of flooding or terrain alteration for any project, including dam construction, undertaken or licensed by an agency of the United States.

**Resource Conservation and Recovery Act as amended by Federal Facility Compliance Act of 1992 (42 U.S.C. 6901-6992)**

Authorizes EPA to manage, by regulation, hazardous wastes on active disposal operations. Waives sovereign immunity for Federal agencies with respect to all Federal, State, and local solid and hazardous waste laws and regulations. Makes Federal agencies subject to civil and administrative penalties for violations, and to cost assessments for the administration of the enforcement.

<b>Rivers and Harbors Act of 1899 (33 U.S.C. 403 10)</b>	Prohibits obstructing, building structures outside of established harbor lines, and altering the course, location, condition, or capacity of waters of the United States, except under certain specified circumstances or permits.
<b>Safe Drinking Water Act Amendments of 1977 (42 U.S.C. 201)</b>	Requires compliance with all Federal, State, or local statutes for safe drinking water.
<b>Sikes Act (or the Act of September 15, 1960), as amended (16 U.S.C. 670 et seq.)</b>	Provides for cooperation by the Departments of the Interior and Defense with State agencies in planning, development, and maintenance of fish and wildlife resources on military reservations throughout the United States. Authorizes conservation and rehabilitation programs on BLM and other lands (as of the 1974 law).
<b>Soil Conservation and Domestic Allotment Act of 1935, as amended (Pub. L. 74-46)</b>	Designed to support farm income by making soil-conservation and soil-building payments to participating farmers.
<b>Soil Info. Assistance for Community Planning and Resource Development Act of 1996 (42 U.S.C. 3271 et seq.)</b>	Directed that the USDA soil survey program of the United States should be conducted so that soil surveys would be available to meet needs of the States and other public agencies in connection with community planning and resource development.
<b>Soil and Water Resources Conservation Act of 1977 (16 U.S.C. 2001)</b>	Provides for conservation, protection, and enhancement of soil, water, and related resources.
<b>Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201 et seq.)</b>	Provides that lands may be declared unsuitable for surface coal mining where significant adverse impacts could result to certain wildlife species.
<b>Surface Transportation Assistance Act of 1982 (P.L. 94-424, Sec. 126(d)).</b>	Reduced the period of availability of apportioned funds from 4 years to 2 years, and stipulated that each State was to receive at least a minimum of 1/2 percent of the total Interstate apportionments for each of FYs 1980-1983.
<b>Sustained Yield Act of 1937 (43 U.S.C. 1181)</b>	Set the policy of managing revested Oregon and California Railroad and reconveyed Coos Bay Wagon Road grant lands for permanent forest production, allowing the timber to be sold, cut, and removed in conformity with the principal of sustained yield.
<b>Taylor Grazing Act of 1934 (43 U.S.C. 315), as amended by the Act of August 28, 1937 (43 U.S.C. 1181d)</b>	Authorizes the establishment of grazing districts, regulation and administration of grazing on the public lands, and improvement of the public rangelands. It also authorizes the Secretary to accept contributions for the administration, protection, and improvement of grazing lands, and establishment of a trust fund to be used for these purposes.
<b>Timber Access Road Act of 1955 (P.L. 84-171)</b>	Provides the Secretary of the Interior with the basic authority to acquire timber access roads and rights-of-way.
<b>Toxic Substances Control Act of 1976 (15 U.S.C. 2601 et seq.)</b>	Provides for EPA to restrict, limit, or otherwise control the use and distribution of chemicals that present an unreasonable risk of injury to health or the environment, with the goal of preventing the discharge of such chemicals into the environment.

**Transportation Safety Act of 1974, with Hazardous materials Transportation Act amendments of 1976 and 1990 (49 U.S.C. 1801 et seq).**

Empowers the U.S. Department of Transportation to regulate the transportation of hazardous materials by rail, aircraft, vessel, and public highway.

**Treasury and General Government Appropriations Act for Fiscal Year 2001 (P.L. 106-554, Sec. 515)**

Also referred to as the Data Quality Act, Sec. 515 provided for requirement of federal agencies to issue guidelines ensuring and maximizing the quality, objectivity, utility, and integrity of information they disseminate. Also established administrative mechanisms allowing affected persons to seek and obtain correction of information maintained and disseminated by agencies that does not comply with agency guidelines.

**Uniform Federal Accessibility Standards(UFAS) (49 FR 31528)**

The standards used to enforce the Architectural Barriers Act of 1968.

**Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1971 (42 U.S.C. 4601)**

Provides policy for federal acquisition of lands and interests in lands, and ensures the fair and equitable treatment of persons whose real property is acquired or who are displaced as a result of a Federal or Federally-assisted project.

**Unlawful Inclosures of Public Lands Act of 1885**

Declares the following to be unlawful if no claim, color of title, or asserted right has been properly entered in good faith under the general laws of the United States:

- All inclosures of any public lands by any person, party, association, or corporation;
- the maintenance, erection, construction, or control of any such inclosures; and
- the assertion of a right to the exclusive use and occupancy of any part of the public lands of the United States.

Source: Synopsized from U.S. Code Title 43, Section 1061 (23 Stat. 321). <http://www.law.cornell.edu/uscode/43/1061.html>.

**Uranium Mill Tailings Radiation Control Act of 1978, as amended (42 U.S.C. 2014 et seq.)**

Provides for a program of assessment and remedial action at inactive mill tailings sites; to regulate mill tailings during uranium or thorium ore processing at active mill operations; and to stabilize and control tailings after operations in a manner that is safe, environmentally sound, and minimizes or eliminates radiation health hazards to the public

**Water Resources Planning Act (42 U.S.C. 1962)**

Encourages the conservation, development, and utilization of water and related resources of the United States on a comprehensive and coordinated basis by the federal government, states, localities, and private enterprise.

**Water Quality Act of 1987, as amended from the Federal Water Pollution Control Act of 1977 (33 U.S.C. 1251)**

Reauthorized the Water Pollution Control Act (or Clean Water Act) of 1972 and strengthened pollution control standards.

**Wild and Scenic Rivers Act of 1968, as amended (16 U.S.C. 1271 et seq.)**

Provides for the development and management of certain rivers. Authorizes the Secretary to exchange or dispose of suitable Federally-owned property for non-Federal property within the authorized boundaries of any Federally-administered component of the National Wild and Scenic Rivers System.

**Wild Free Roaming Horse and Burro Act of 1971, as amended by the Public Rangelands Improvement Act of 1978 (16 U.S.C. 1331-1340)**

Provides for the management, protection, and control of wild horses and burros on public lands and authorizes "adoption" of wild horses and burros by private individuals.

**Wilderness Act of 1964 (16 U.S.C. 1131 et seq.)**

Provides for the designation and preservation of wilderness areas.

## APPENDIX C – VISUAL RESOURCE MANAGEMENT CLASSES

Visual resource classes are categories assigned to public lands. The classes serve two purposes: (1) an inventory tool that portrays the relative value of the visual resources, and (2) a management tool that portrays the visual management objectives. There are four classes, I, II, III, and IV, as described below.

Visual resource management classes are assigned through RMP's. The assignment of visual management classes is ultimately based on the management decisions made in RMP's. However, visual values obtained through the visual resource inventory must be considered throughout the RMP process. All actions proposed during the RMP process that would result in surface disturbances must consider the importance of the visual values and the impacts the project may have on these values.

Management decisions in the RMP must reflect the value of visual resources. In fact, the value of the visual resource may be the driving force for some management decisions. For example, highly scenic areas which need special management attention may be designated as scenic Areas of Critical Environmental Concern and classified as VRM Class I based on the importance of the visual values.

Visual Resources will continue to be managed in accordance with the BLM 8400 Manual. All existing inventory data will be maintained and utilized when assessing visual impacts and needed contrast ratings for future management actions.

VRM	Class Objectives
Class I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
Class II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
Class III	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
Class IV	The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.



# APPENDIX D – USE OF THE SIMPPLLE MODEL

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## USE OF THE SIMPPLLE PROCESS IN DEVELOPING RMP ALTERNATIVES

### General Overview

Simulating Patterns and Processes at Landscape Scales (SIMPPLLE) is a computer modeling program that simulates vegetation patterns and processes emphasizing the dynamics of landscaped level change. It was developed for the U.S. Forest Service, Region 1, as a management tool. SIMPPLLE's purpose is to help provide an understanding of the dynamics of where processes will occur across a landscape. The SIMPPLLE model has been utilized by the Beaverhead-Deerlodge National Forest during their Forest Plan Revision and during the BLM's Dillon Field Office Resource Management Plan revision.

SIMPPLLE was selected for use by the Butte Field Office (BFO) because it is both spatially and temporal explicit, meaning that landscape level vegetation change can be explored in relation to location and neighboring vegetation communities, as well as change within these communities over time. The SIMPPLLE model was used to: (a) simulate future vegetation changes caused by various disturbance processes at multiple landscape scales, (b) show trends in vegetative communities over the next 50 years as a result of fire suppression, (c) simulate historic vegetative conditions by running the model over 500 years with variables such as fire, insect and disease activity, (d) simulate management treatment alternatives for their impact on disturbance processes and the attainment of desired conditions defined at the landscapes scale, and (e) to provide a basis for identifying the probability of disturbance processes and vegetation conditions.

### Vegetation Coverage

At the time the Resource Management Plan revision began, the BFO lacked a current comprehensive GIS vegetation coverage for the planning area. This vegetation coverage was needed in order to determine the existing condition, calculate potential treatment acres and to conduct effects analysis. It was determined that the existing Forest Service Potential Natural Vegetation (PNV) layer was not adequate for our purposes due to the size of parcels in the BFO and scattered ownership of BLM lands within the planning area.

A Vegetation Subgroup was established and tasked with creating a digital vegetation coverage that would be used to run the SIMPPLLE model. This subgroup consisted of seven members: two foresters, a wildlife biologist, a fire/fuels specialist, a soil scientist, a riparian/range/special status plants specialist, and a GIS specialist.

Ssurgo soil survey data obtained from the Natural Resources Conservation Service (NRCS) in Jefferson, Broadwater, Lewis and Clark, Gallatin and Deerlodge Counties was used to map vegetation on BLM and private lands. As a majority of these lands were determined to be grasslands, it was assumed that potential vegetation was the same as the existing vegetation.

Since no soil survey was available for Silver Bow County, BFO's soil scientist created a vegetation map for this county based on his extensive knowledge of the area. Park County also did not have a published soils survey, so the Potential Natural Vegetation coverage obtained from the U.S. Forest Service (USDA-FS, 2001a) was used to fill in any data gaps. This data layer was also used to fill any data omissions on the Gallatin National Forest.

The county soil surveys lumped grassland and sagebrush habitats into a "grassland" category. To determine sagebrush habitat, BFO's special status plant specialist created a map depicting sagebrush based on attributes in the soil surveys. Ssurgo soil survey data from NRCS for BLM and private lands in the BFO for Jefferson, Broadwater, Lewis and Clark, Gallatin, and Deerlodge Counties was queried for polygons with big sagebrush as part of the characteristic vegetation. This map was then merged with the vegetation coverage the BFO Soil Scientist created for Silver Bow County. Professional knowledge and additional data collected by previous vegetation survey were used to check the map and fill in gaps. Sagebrush mapping in Park and Beaverhead Counties was not completed due to incomplete soil survey data.

The BLM has detailed forest stand data that was used to map forested habitats on BLM managed lands. A crosswalk was developed to move the forest stand data from the existing database, Forest Vegetation Information System (FORVIS), to the vegetation coverage. The crosswalk included data for the following attributes: cover class, density, habitat type, size class, species type, dominant vegetation, and potential vegetation. This crosswalk extracted the information necessary to run the SIMPPLLE model.

Soil and vegetation data was obtained from the Beaverhead-Deerlodge and Helena National Forests and was used to map vegetation (forest, grassland, and shrubland) on Forest Service lands. Forest Service soil data was used in conjunction with Forest Service stand data to determine potential natural vegetation.

Encroachment of conifers within grasslands was mapped using orthophotos. This information was also used in the SIMPPLLE model. Encroachment of conifers in sagebrush was not mapped by the time the model was run (July 2005) but some mapping of encroachment within sagebrush was completed in August, 2005.

Agriculture, urban and mining lands were mapped using orthophotos for Deerlodge, Silver Bow, Jefferson, Lewis and Clark and Broadwater Counties and merged into the vegetation coverage. In Park and Gallatin Counties, agriculture lands were mapped using the FS Potential Natural Vegetation Grid.

All polygons less than eight acres in size were merged with adjacent polygons.

To run the SIMPPLLE Model, large polygons were broken down to polygons less than 250 acres in size. Insect and disease from the 2003 survey flights was provided by the Forest Service was added to the SIMPPLLE model database in an attempt to accurately represent the existing ground condition. The model was able to break out and summarize data for the 7 major watersheds in the field office.

## **SIMPPLLE Process**

### **1. Gathering Data**

The BFO began working with the Forest Service Rocky Mountain Research Station Fire Lab (RMRS) in 2003 to develop the data required for the SIMPPLLE Model as well as to determine how the model should be run. Discussion at this first stage centered on the data requirements for running a landscape analysis using the SIMPPLLE model. Data needs for running SIMPPLLE included a GIS coverage (ArcInfo format with polygon topology), with attributes of species, size class, and density for each vegetation polygon, as well as some way to stratify the vegetation (i.e. habitat group). Other optional attributes that enhance SIMPPLLE simulations and representation of the landscape include land ownership, a code indicating the presence or absence of roads, fire management zones, prior landscape processes (i.e. insect disease and activity), and a “special area” field that can be filled with anything the user decides would help to logically represent the landscape. An ArcInfo Digital Elevation Model (DEM) for the same spatial extent as the vegetation coverage was necessary to create a neighbor file, which, when paired with a vegetation file derived from the ArcInfo coverage, loads into SIMPPLLE to create a landscape ready for simulation (a file with the .area extension).

Since SIMPPLLE is a landscape level, process driven, spatially explicit simulation model, vegetation as it is represented on the entire landscape will influence and be influenced by the processes that cause change over time and space. In order for all vegetation polygons to be included in SIMPPLLE simulations, a contiguous landscape must be used with all polygons populated with

vegetation information including water and nonforest conditions including rock and agriculture.

### **2. Cross-walk and Data Loading**

The SIMPPLLE User’s Guide describes the attributes used in with the model and can be downloaded from <http://www.fs.fed.us/rm/ecology/publications/simpplle/>.

Several errors were found by BFO personnel but these error were resolved with help from personnel at the Rocky Mountain Research Station Fire Lab. Errors are expected to be found a majority of the time following a cross-walk to SIMPPLLE attributes; the cross-walk is iterative and subject to expert knowledge of the most likely vegetation expected at specific locations on the landscape. Once the initial vegetation attributes were examined by the BFO, discussion followed with members of the Fire Lab about whether specific vegetation pathways should be developed for the BFO landscape in order to improve model behavior; several nonforest pathways were then adjusted.

Analysis of initial model behavior was accomplished by considering the landscape as current and looking at vegetation change over several decades, or time-steps, as they are represented in the SIMPPLLE environment. Further analysis was accomplished on the historical landscape conditions by running simulations out for several hundred years without fire suppression and then saving the “new” landscape as one example of the historical BFO landscape. From this new starting point, SIMPPLLE simulations were run and the output was compared to that obtained from the current condition. Users have the option to make multiple landscape representations so that various approaches to stratification can be tested such as breaking the landscape by ownership, or by differences in the special area field.

### **3. Adjusting the Vegetation**

An initial iteration of a SIMPPLLE landscape representation provides managers with the opportunity to consider how well the vegetation is being modeled. Further adjustment of vegetation states as well as other aspects of vegetation change was accomplished by the BFO with some interaction by telephone and in meetings in Butte. Resultant files that augmented model behavior were developed for vegetation pathways, vegetation regeneration, and conifer encroachment. Further comparisons of current and historical conditions were made similar to the earlier iteration.

### **4. Processes**

Fire is the most extensive process on the BFO landscape and BFO and Fire Lab personnel spent time describing fire behavior for the model. Files were developed to augment this behavior including better representations for fire occurrence, fire management zones (fire history based on data that can be provided from PCHA) and fire spread. Analysis of model behavior was conducted in a

meeting at the BFO with personnel from the Fire Lab by running simulations of current and historical landscapes. Model behavior was analyzed using output comparisons as described above.

### 5. Alternative Development

Personnel from the BFO worked with the Fire Lab to develop management plan alternatives for the BFO. They discussed model treatment logic in SIMPPLLE and how to alter that logic for simulation. The Fire Lab added a “cutting” treatment for the WUI, dropped the follow-up treatment to “group selection,” changed the “density change” logic for “commercial-thinning” (added density of 2 along with 3), and made changes to the follow-up treatment for “encroachment-thin-and-burn” and “ecosystem-thin-and-burn.” Changes were also made to allow selection of JUSC for cutting. This aided in determining treatment schedules for the RMP alternatives.

### 6. Simulation Output and Reports

Once SIMPPLLE was behaving in an acceptable manner, simulations for the current condition with no management, historical, and current condition with management treatments applied were run. Macros for Excel were used with model output to display data trends and some time was spent working with the Rocky Mountain Research Station Fire Lab to put together displays. These include current trends and historical range of variation.

### Considerations in Vegetation Treatments

Variables that were considered in development of the treatment schedule for alternative development included:

1. No acres were identified for treatment in the Sleeping Giant and Sheep Creek WSA/ACEC, Elkhorn WSA, Black Sage WSA and Humbug Spires WSA.
2. The effects of treatment in designated semi-primitive areas (including ROS and VRM categories) were considered.
3. Recreation sites and lands adjacent to recreation sites were taken into account.
4. Adjacent land ownership and management was taken into account.
5. Access to lands for treatment was considered including the existing road system.
6. Budget was not used during identification of acres for treatment.
7. Urban interface was taken into consideration and a “heavy-handed” approach was used in these areas. Urban interface areas were not identified for “ecosystem restoration.” The Wildland Urban Interface Communities at Risk

Hazard Assessment, 2004 – (The Helena Valley) was used as a tool for assessment.

8. Past treatments (logging and fire) as well as past wildfires were considered.
9. Topographical features (including rocky and steep sites) were taken into account.
10. Wildlife habitat including elk winter range, corridors, security habitat, and habitat for sensitive species was considered.
11. Errors in the vegetation coverage were addressed and corrections were made based on professional knowledge of the area.
12. The SIMPPLLE Model was used to determine the historical reference for each major watershed to guide in determining the number of acres treated.

### Riparian

Polygons which had FORVIS data were selected from the BFO vegetation layer. It was assumed that if the polygon had FORVIS data it was/is forested. The BFO riparian layer was then queried for FAR reaches. The FAR selection was then clipped based on the FORVIS selection to get a forested FAR riparian shapefile. The clipped selection had repeated lengths which rendered acreage calculations impossible. The forested FAR riparian shapefile was then buffered by 200 feet. The buffer shapefile was converted to a coverage to produce an estimate of forested FAR riparian acres. This procedure was repeated for NFU and PFC reaches to get forested riparian acres for those as well.

### Forested Riparian

FAR	3,037 acres	or	63 Miles
NFU	937 acres	or	19 Miles
PFC	3,725 acres	or	77 Miles

To get grass/shrub riparian acres, the FAR, PFC and NFU selections were summarized to get total lengths for each. These figures were used to derive acres by multiplying the total length by 400 feet (200ft buffer on each side) and dividing by 43,560. Forested riparian acres were subtracted to get “wide grass” acres. This figure was converted to square feet and divided by 400 to get back to lineal feet. The resulting figure was multiplied by 200 feet (100ft buffer on each side) and divided by 43,560 to get back to “narrow or actual” grass/shrub riparian acres as follows:

### Grass/Shrub Riparian

FAR	1,228 acres	or	51 miles
NFU	499 acres	or	21 miles
PFC	1,703 acres	or	70 miles

Each FAR reach was reviewed and an estimation was made as to whether the reach could be treated or not through a fuels project, a forestry project or a prescribed burn project. This estimation was based on whether the reach was in a forested polygon, and the riparian coordinator’s personal knowledge of each reach. Notations were made as to whether reaches had such problems as roads, altered flows, small land ownership, historical mining etc. Some of these determinations were based upon the riparian coordinator’s personal knowledge of each reach—the riparian coordinator has visited approximately 75% of the reaches. The riparian coordinator also made an estimation whether reaches could be treated (or are being treated) by grazing practices, exclosures, AML reclamation etc. These reaches were then intersected with the FAR buffer polygon to derive acres.

FAR Treatable Acres

Fuels/forestry/prescribed burns 1,966 acres  
 AML reclamation, grazing, exclosures, weed treatment 689 acres  
 Limited treatment forested due to roads, ownership etc. 1,072 acres  
 Limited treatment grass/shrub due to roads, mining, etc. 542 acres

**I**

<b>Watershed</b>	<b>FAR Treatable – Forest</b>	<b>FAR Limited Treatment – Forest</b>	<b>FAR Treatable – Grass/Shrub</b>	<b>FAR Limited Treatment – Grass/Shrub</b>	<b>PFC Main – Forest</b>
Yellowstone	0	0	0	21	48
Big Hole	774	129	111	267	633
Upper Missouri	575	472	297	154	859
Jefferson	593	471	278	71	249
Gallatin	0	0	0	29	0
Upper Clark Fork	24	0	3	0	0
Blackfoot	0	0	0	0	0
<b>Total</b>	<b>1,966</b>	<b>1,072</b>	<b>689</b>	<b>542</b>	<b>1,789</b>

**II**

<b>Watershed</b>	<b>FAR Forest Total</b>	<b>NFU Forest Total</b>	<b>PFC Forest Total</b>	<b>FAR Grass/Shrub</b>	<b>NFU Grass Shrub</b>	<b>PFC Grass/Shrub</b>
Yellowstone	0	0	62	21	0	267
Big Hole	903	0	1,207	378	37	614
Upper Missouri	1,047	595	1,699	451	310	549
Jefferson	1,064	342	665	349	153	273
Gallatin	0	0	0	29	0	0
Upper Clark Fork	24	0	0	3	0	0
Blackfoot	0	0	92	0	0	0
<b>Totals</b>	<b>3,038</b>	<b>937</b>	<b>3,725</b>	<b>1,231</b>	<b>500</b>	<b>1,703</b>

PFC Maintenance riparian acres

The riparian coordinator then went through each PFC reach and made an estimation as to whether the reach may be treated or not through a fuels project, a forestry project or a prescribed burn project to maintain the functioning condition of the reach. This estimation was based on whether the reach was in a forested polygon, whether the reach was in a WSA, whether the reach was along a major river (all major rivers were excluded from treatment—i.e. Yellowstone, Missouri, Jefferson, etc.) and personal knowledge of the riparian coordinator. The resulting reaches were then intersected with the PFC buffer polygon to derive acres.

PFC Maintenance Acres

Fuels/forestry/prescribed burns 1,789 acres

**6. Simulation Output and Reports**

Once SIMPPLLE was behaving in an acceptable manner, simulations for current with no management, historical, and current with management treatments applied were run. Macros for Excel are used with model output to display data trends and some time was spent working with the RMRS to put together displays. These include current trends and historical range of variation.

## APPENDIX E – BEST MANAGEMENT PRACTICES

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The publications referenced in this appendix are sources of “Best Management Practices” (BMPs). BMPs are measures that have been developed by agency, industry, scientific, and/or working groups as voluntary methods for reducing environmental impacts associated with certain classes of activity. BLM typically uses these measures as guidelines or “project design features” during implementation planning at the activity and/or project-specific levels.

The list included in this appendix is not limiting, but references the most frequently used sources. As new publications are developed, BLM may consider those BMPs. In addition, many BLM handbooks (such as BLM Manual 9113-Roads and 9213-Interagency Standards for Fire and Aviation Operation) also contain BMP-type measures for minimizing impacts. These BLM-specific guidance and direction documents are not referenced in this appendix.

**Planning implications:** Use of Best Management Practices is not mandatory, since individual measures may not be appropriate for use in every situation. They may be added, dropped, or modified through plan maintenance.

**NEPA implications:** Only the wind energy development BMPs have been analyzed in a NEPA process. The use of other BMPs should be analyzed on a case-by-case basis in NEPA documents associated with projects on the public lands. These case-by-case analyses should not “tier to” the BMP publication as a way to dismiss environmental impacts (i.e., must still analyze and disclose the environmental considerations and effects associated with use of the BMP).

### Montana Best Management Practices for Grazing

Developed by: Working group with representation from: MSU College of Agriculture, Society of American Fisheries, Montana Stockgrowers Association, Montana Woolgrowers Association, USDI Bureau of Land Management, USDA Forest Service, USDA Natural Resources Conservation Service, Montana Farm Bureau, and Montana Dept. of Natural Resources and Conservation.

Publication reference: N/A, first printed in 1999

Available From: Conservation Districts Bureau, DNRC, PO Box 201601, Helena MT 59620-1601 (406-444-6667).

Description: Describes BMPs for livestock grazing designed to protect and enhance water quality, soils, plant communities, and other rangeland resources. Explains how and why to use BMPs to manage upland rangeland, forested rangeland, and riparian areas; and describes how grazing BMPs fit into a grazing management plan

### Water Quality BMPs for Montana Forests

Developed by: Montana State University Extension Service

Publication reference: Logan, R. 2001. Water Quality BMPs – Best Management Practices for Montana Forests. EB158, MSU Extension Forestry, Missoula, MT. 58pp.

Available from: MSU Extension Forestry, 32 Campus Dr, Missoula MT 59812, OR MSU Extension Publications, PO Box 172040 Bozeman MT 59717

Description: Discusses methods for managing forest land while protecting water quality and forest soils. Intended for all forest land in Montana, including non-industrial private, forest industry, and state or federally-owned forests. These are preferred (but voluntary) methods that go beyond Montana State Law (Streamside Management Zones). Includes definitions, basic biological information, and BMPs for Streamside Management Zones; road design, use, planning and locating, construction, drainage, and closure; stream crossings, soil, timber harvesting methods, reforestation, winter planning, and clean-up.

### **Montana Placer Mining BMPs**

Developed by: Montana Bureau of Mines and Geology

Publication Reference: Special Publication 106, October 1993

Available from: Montana Bureau of Mines and Geology, Main Hall, Montana College of Mineral Science and Technology, Butte MT 59701

Description: Provides guidelines for planning, erosion control, and reclamation in arid to semi-arid, alpine, and subalpine environments, to prevent or decrease environmental damage and degradation of water quality.

### **BMPs for Wind Energy**

Developed by: Bureau of Land Management

Publication reference: Wind Energy Development Programmatic EIS

Available From: FEIS Chapter 2 (section 2.2.3.2) at <http://windeis.anl.gov/>

Description: As part of the proposed action, BLM developed BMPs for each major step of the wind energy development process, including site monitoring and testing, plan of development preparation, construction, operation, and decommissioning. General BMPs are available for each step, and certain steps also include specific BMPs to address the following resource issues: wildlife and other ecological resources, Visual resources, Roads, Transportation, Noise, Noxious Weeds and Pesticides, Cultural/Historic Resources, Paleontological Resources, Hazardous Materials and Waste Management, Storm Water, Human Health and Safety, monitoring program, air emissions and excavation and blasting activities.

### **Montana Guide to the Streamside Management Zone Law**

**Note:** The Montana Guide to the Streamside Management Zone Law is a field guide to compliance with State of Montana Law 77-5-301[1] MCA.

Developed by: Montana Department of Natural Resources and Conservation Service Forestry Bureau, in cooperation with Montana Department of Environmental Quality, Montana Logging Association, Montana Wood Products Association, Plum Creek Timber LP, USDA Forest Service, USDI Bureau of Land Management

Publication reference: Revised August 2002

Available From: Montana Department of Natural Resources and Conservation, 2705 Spurgin Road, Missoula MT 59801-3199, (406)542-4300, or local MT DNRC field office.

Description: MT State Law (77-5-301[1] MCA). Complementary BMPs are found in the Water Quality BMPS for Montana Forests (also referenced in this appendix). Provides definitions, stream classifications, and guidelines on the seven forest practices prohibited by Montana law in SMZs (broadcast burning, operation of wheeled or tracked vehicles except on established roads, the forest practice of clearcutting, the construction of roads except when necessary to cross a stream or wetland; the handling, storage, application, or disposal of hazardous or toxic materials in a manner that pollutes streams, lakes, or wetlands, or that may cause damage or injury to humans, land, animals, or plants; the side casting of road material into a stream, lake, wetland, or watercourse; and the deposit of slash in streams, lakes, or other water bodies.

**Erosion and Sediment Control Practices: Field Manual**

Developed by: Prepared for the Montana Department of Transportation

Publication reference: FHWA/MT-030003/8165

Available From: National Technical Information Service, Springfield, VA 21161

Description: The Erosion and Sediment Control Best Management Practices Construction Field Manual was developed to assist in design, construction, and post-construction phases of MDT projects. This manual provides background to concepts of Erosion and Sediment Control. Most of MDT's Best Management Practices are listed within the manual based on application categories. Each BMP is described; its applications and limitations are listed, as well as its design criteria. Construction phase and post-construction phase BMPs are described. This manual is a field guide and condensed version of the Erosion and Sediment Control Design Construction Best Management Practices Manual. For more detailed discussion on topic found within, refer to the Erosion and Sediment Control Construction Best Management Practices Manual.

**Erosion and Sediment Control Practices: Reference Manual**

Developed by: Prepared for the Montana Department of Transportation

Publication reference: FHWA/MT-030003/8165

Available From: National Technical Information Service, Springfield, VA 21161

Description: The Erosion and Sediment Control Construction Best Management Practices Manual was developed to assist in the design, construction, and post-construction phases of MDT projects. This manual provides background to State and Federal regulations associated with erosion and sediment control practices including a general overview of the erosion and sediment processes. Best Management practices are listed within the manual based on application categories. Each BMP is described; its applications and limitations are listed, as well as its design criteria. The design phase includes development of construction plans, NOI, and SWPPP. Construction phase includes the finalization of the SWPPP, NOI, and the implementation of BMPs. Post-Construction phase includes monitoring, maintenance, and removal activities.

**BMPs for Fluid Minerals**

Developed by: Bureau of Land Management

Publication reference: BLM/WO/ST-06/021+3071

Available from: Online at: <http://www.blm.gov/bmp/>

Online at: <http://www.mt.blm.gov/oilgas/operations/goldbook/goldbook1.html>

Online at: [http://www.mt.blm.gov/oilgas/operations/goldbook/Stand\\_Enviro\\_Color.pdf](http://www.mt.blm.gov/oilgas/operations/goldbook/Stand_Enviro_Color.pdf)

Online at: <http://www.mt.blm.gov/oilgas/operations/color.pdf>

Description: BMPs for oil and gas demonstrate practical ideas which may eliminate or minimize adverse impacts from oil and gas development to public health and the environment, landowners, and natural resources; enhance the value of natural and landowner resources; and reduce conflict. The publication reference is to the "Gold Book" which is formally titled "Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development." In addition, the first internet citation is to a location maintained by the Washington Office of the BLM containing general and technical information on the use and application of BMPs. The second location refers the reader directly to an online version of the "Gold Book." The third and fourth locations refer the reader to color charts for use in selecting paint colors for oil and gas facilities.

### **Montana Non-Point Source Management Plan**

Developed by: Montana Department of Environmental Quality, Water Quality Planning Bureau, Watershed Protection Section

Publication reference: 2007

Available From: Montana Department of Environmental Quality, Water Quality Planning Bureau, Watershed Protection Section, P.O. Box 200901, Helena, MT 59620-0901

Online at: <http://www.deq.state.mt.us/wqinfo/nonpoint/2007NONPOINTPLAN/Final/NPSPlan.pdf>

Description: This document describes the Montana Department of Environmental Quality's (DEQ) updated strategy for controlling nonpoint source (NPS) water pollution, which is the state's single largest source of water quality impairment. NPS pollution is contaminated runoff from the land surface that can be generated by most land use activities, including agriculture, forestry, urban and suburban development, mining, and others. Common NPS pollutants include sediment, nutrients, temperature, heavy metals, pesticides, pathogens, and salt. The purpose of the Montana NPS Pollution Management Plan (Plan) is: 1) to inform the state's citizens about NPS pollution problems and 2) to establish goals, objectives, and both long-term and short-term strategies for controlling NPS pollution on a statewide basis. The goal of Montana's NPS Management Program is to protect and restore water quality from the impacts of non-point sources of pollution in order to provide a clean and healthy environment.

# APPENDIX F – LAND HEALTH STANDARDS

## STANDARDS FOR RANGELAND HEALTH AND GUIDELINES FOR LIVESTOCK GRAZING MANAGEMENT BUTTE DISTRICT

### Preamble

The Butte Resource Advisory Council has developed standards for rangeland health and guidelines for livestock grazing management for use on the Butte District of the Bureau of Land Management (BLM). The purpose of the standards and guidelines are to facilitate the achievement and maintenance of healthy, properly functioning ecosystems within the historic and natural range of variability for long-term sustainable use.

The Butte Resource Advisory Council determined that the following considerations were very important in the adoption of these standards and guidelines:

1. For implementation, the BLM should emphasize a watershed approach that incorporates both upland and riparian standards and guidelines.
2. The standards are applicable to rangeland health, regardless of use.
3. The social and cultural heritage of the region and the viability of the local economy, are part of the ecosystem.
4. Wildlife is integral to the proper function of rangeland ecosystems.

### Standards

Standards are statements of physical and biological condition or degree of function required for healthy sustainable rangelands. Achieving or making significant progress towards these functions and conditions is required of all uses of public rangelands as stated in 43 Code of Federal Regulations 4180.1. Baseline, monitoring and trend data, when available, should be utilized to assess compliance with standards.

#### **Butte STANDARD #1: Uplands are in proper functioning condition.**

- As addressed by the preamble to these standards and as indicated by:

#### Physical Environment

- erosional flow patterns;
- surface litter;
- soil movement by water and wind;
- soil crusting and surface sealing;

- compaction layer;
- rills;
- gullies;
- cover amount; and
- cover distribution.

#### Biotic Environment

- community diversity;
- community structure;
- exotic plants;
- photosynthesis activity;
- plant status;
- seed production;
- recruitment; and
- nutrient cycle.

The determination of rangeland health should be based on the evaluation of three criteria: degree of soil stability and watershed function, nutrient cycles and energy flows, and available recovery mechanisms.

Indicators to assess soil stability and watershed function relate to two fundamental processes of watershed degradation: (1) Soil erosion by wind and water; and (2) infiltration or capture and utilization of precipitation. Indicators such as rills, gullies, flow patterns, pedestaling and compaction, may be used to assess watershed condition.

Indicators that can be used to evaluate nutrient cycles and energy flows relate to distribution of plants, litter, roots, and photosynthetic period; i.e., plant community diversity and structure, exotic plants, photosynthetic activity and plant status.

Recovery mechanisms or plant demographic indicators may include increasing vegetative cover, plant vigor, kind, and number of seedlings, and changes in plant age distribution.

- Physical environmental features of a proper functioning watershed are indicated by:
  - little evidence of soil erosion by wind and/or water;

- rills, gullies, pedestaling, flow patterns are not present (significant);
- surface sealing and soil crusting is not evident;
- plant (ground) cover and litter accumulation is adequate to protect site; and
- natural disturbance events are integral to proper ecosystem function.
- Biotic environment features of a proper functioning watershed are indicated by:
  - variety and number of plant life-forms (grass, forb, shrub, tree, succulent) across the site;
  - plants exhibit a good diversity of size, height, distribution, and age/class well distributed;
  - exotic plants, weeds are absent or sparse on site;
  - plants display normal growth and root development;
  - photosynthesis activity occurs throughout the site;
  - plants are alive, productive with well developed root systems;
  - seed stalks/seed adequate for stand maintenance for all life-forms;
  - litter distribution and incorporation is uniform across site; and
  - nutrient/energy cycle mechanisms are adequate for plant maintenance.

**Butte STANDARD #2: Riparian and wetland areas are in proper functioning condition.**

- As addressed by the preamble to these standards and as indicated by:

**Hydrologic**

- flood plain inundated in relatively frequent events (1-3 years);
- amount of altered streambanks;
- sinuosity, width/depth ratio, and gradient are in-balance with the landscape setting (i.e., landform, geology, and bioclimatic region);
- riparian zone widening; and
- upland watershed not contributing to riparian degradation.

**Erosion Deposition**

- flood plain and channel characteristics; i.e., rocks, coarse and/or woody debris adequate to dissipate energy;
- point bars are vegetating;

- lateral stream movement is associated with natural sinuosity;
- system is vertically stable;
- stream is in balance with water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition); and
- bare ground.

**Vegetation**

- reproduction and diverse age structure of vegetation;
- diverse composition of vegetation;
- species present indicate maintenance of riparian soil moisture characteristics;
- streambank vegetation is comprised of those plants or plant communities that have deep binding root masses capable of withstanding high streamflow events;
- utilization of trees and shrubs;
- riparian plants exhibit high vigor;
- adequate vegetative cover present to protect banks and dissipate; energy during high flows; and
- plant communities in the riparian area are an adequate source of large woody debris.

Broadly, "proper functioning condition" may be defined as the ability of a stream to perform its riparian functions. These functions include sediment filtering, bank building, water storage, aquifer recharge, and hydrologic energy dissipation.

No single factor or characteristic of a riparian site can provide a complete picture of either that site's condition or the direction of its successional change. Things considered "negative" in traditional evaluations of ecological sites may not be such for riparian sites. For example, the percent of exposed soil surface, which often reflects overgrazing or erosion on upland sites, may be a result of normal riparian activity; sediment deposition resulting after spring runoff, or a high water event.

Hydrology\Streambanks

The hydrology of a riparian area is perhaps its most important characteristic. Changes in hydrology may result in short and long-term vegetative changes. In some situations, construction (rip rap, roads, railroads, etc.) has influenced the streambanks and stability has been increased over the natural levels. These streambanks may eventually lose their stability, and become altered. This generally occurs if the problems which caused the weak streambanks have not been remedied. Also, constructed streambanks (especially

those with rip rap) will often disrupt the normal energy dissipation of the stream and eventually the meandering of a stream can result in the erosion of streambanks downstream.

#### Lateral Cutting

Lateral cutting is indicated by new stream-caused bank disruption along the outside of stream curves, and much less commonly along the straight portions of a stream. A high degree of active lateral cutting can indicate a degraded watershed.

#### Altered Streambanks

In many instances, land uses have degraded streambanks, accelerating stream movement across the flood plain. We define altered streambanks as those having impaired structural integrity (strength or stability) due to human-caused activities such as exposed soil surfaces from cattle trails and wallows, hiking and ATV trails, roads, logging skid trails, mining activities, etc.

#### Deep Binding Root Mass

Properly functioning streambanks are "armored by both vegetation and bank rock materials (e.g., boulders and cobbles). There have been few studies documenting the depth and extent of root systems of various plant species. Despite this lack of documented evidence, some generalizations can be made. All tree and shrub species are considered to have deep, binding root masses. Among riparian herbaceous species, the first rule is that annual plants do not have deep, binding root masses. Perennial species offer a wide range of root mass qualities. Some rhizomatous species, such as the deep-rooted sedges, are excellent streambank stabilizers. Other rhizomatous species, such as Kentucky bluegrass, have only shallow root systems and are poor streambank stabilizers. Still others such as Baltic rush, appear to be intermediate in their ability to stabilize banks.

#### Downcutting

Active downcutting of a stream is often hard to recognize. Perched wetland vegetation and streambank features, plus the lack of a separate layer of channel bottom materials (i.e., the stream flows directly on the substrate materials), can be clues to downcutting. A stream is incised when downcutting of the stream has resulted in a width to depth ratio so low that average 2-year floods do not come out of the banks.

#### Soils/Geology

The soils and geology (landform and parent material) of a riparian site influence how the site reacts to disturbances and changes over time. Changes in physical characteristics are often (but not always) more difficult to remedy through management actions than are vegetative changes. The depth and texture of soil, of a riparian site, influences the capacity of that site to hold

water (act as a sponge) for prolonged late season flows and support desired vegetation.

#### Bare Ground

Exposed soil surface is important in evaluating the health of riparian areas for several reasons: (1) vulnerability to erosion; (2) it may contribute to, as well as reflect, streambank deterioration; (3) the more exposed soil, the less vegetation is available for soil protection and sediment entrapment; and (4) exposed soil provides opportunity for invasion by noxious weeds and undesirable species.

#### Vegetation

Because they are more visible than soil or hydrological characteristics, plants may provide early indications of riparian health.

#### Reproduction of Trees and Shrubs

One of the clearest indicators of ecological stability, and subsequent health, is the presence of all age classes (seedling, sapling, pole, mature, decadent, and dead) of tree and shrub species where the potential exists.

#### Dead and Decadent Trees and Shrubs

The amount of dead and decadent material in trees and shrubs is another indicator of the overall "health" of riparian areas. Large amounts of decadent and dead woody material can indicate severe stress due to high levels of browsing, and/or dewatering of the site from artificial or natural causes. If severe enough, this may change the potential from a riparian to an upland site. Large amounts of decadent and dead woody material may indicate fluctuations in climate, such as severe winter temperatures, spring freezes, or insect infestations. In all cases, the overall biotic health is affected and may have implications on physical features of a stream such as streambank integrity, channel incisement, and lateral cutting.

#### Utilization of Trees and Shrubs

Heavy utilization by livestock and/or wildlife can prevent the regeneration or establishment of woody species and, thus block succession of the plant community toward a later seral stage. As with herbaceous species, excessive use of these woody species may cause their elimination from the site and their replacement by disturbance-induced species or undesirable invaders.

#### Plant Composition

The presence of disturbance-induced herbaceous plants (either native or introduced) may indicate that the site could be healthier and thus is not performing its optimum riparian functions. Most of these species provide less soil holding and sediment trapping capability, and less desirable forage for livestock and wildlife.

**Butte STANDARD #3: Water quality meets State standards.**

- As addressed by the preamble to these standards and as indicated by:
  - dissolved oxygen concentration;
  - pH;
  - turbidity;
  - temperature;
  - fecal coliform;
  - sediment;
  - color;
  - toxins; and
  - other parameters: ammonia, barium, boron, chlorides, chromium, cyanide, endosulfan, lindane, nitrates, phenols, phosphorus, sodium, sulfates, etc.

When discussing rangeland health, water quality is a relative term which must be associated with water-use to become meaningful. Since the beginning of time, natural processes have influenced the chemical, physical, and biological characteristics of water. The natural quality of water varies from place to place, with the season of the year, with the climate, and with the kind of rock and soil through which water moves. After reaching the earth, water dissolves minerals from the earth's crust, percolates through organic materials such as roots and leaves, and reacts with living things such as microscopic organisms like plankton and algae. Natural water quality is changed by stream sediments; it is modified by temperature, soil bacteria, and evaporation. These and other factors determine the quality of nature's "impure" water.

Water quality criteria specify concentrations of water constituents which, if not exceeded, are expected to support an aquatic ecosystem suitable for higher uses of water. Water quality criteria are intended to protect essential and significant life in water, as well as the direct users of water, and also to protect life that is dependent on life in water for its existence.

- Some of the common indicators of water quality are:
  - Dissolved oxygen concentration (DO)-is a function of temperature of the water, altitude and barometric pressure. The ability of water to hold oxygen decreases with the increases in temperature, altitude and dissolved solids. This is important in fish spawning areas where DO levels must be maintained at specific levels for good growth and general well being of fish and associated biota.

- pH (hydrogen-ion concentration)-is an indicator of acidity and/or alkalinity and an index of hydrogen-ion activity. Lower values indicated acid, higher values indicated alkaline. Fresh water organisms function properly if the pH ranges from 6.0 to 9.0 units. pH concentrations below the recommended level are toxic to fish and other aquatic organisms.
- Turbidity-is the disturbance of water due to the presence of suspended matter such as clays, silt, organic matter, and various effluents. It is the expression of the optical property of water. Excess turbidity reduces light penetration, which reduces photosynthesis by phytoplankton, and submerged vegetation.
- Temperature-is an important function which affects aquatic productivity. Temperature changes may result from natural climatic conditions due to man's manipulation of the riparian environment. Temperature is a function of location, season, time, duration of flow, depth, and many other variables. Aquatic biota are adapted to certain thermal conditions existing in the habitat for their survival and well being. The interrelationship between these conditions is so great that small changes in temperature may have far-reaching effects.
- Coliform groups-include bacteria organisms in their natural habitat and sources; i.e., feces, soil, water, vegetation, etc. Fecal coliform may be an indicator of recent fecal pollution. Other coliform organisms may be the result of plant and soil runoff water.
- Sediment-is a measure of suspended sand, silt, colloid and organic matter which will settle in time to the stream bottom. They originate from sources such as erosion, mine waste, plowed fields, construction projects, natural erosion, or vegetative manipulation. They may affect fisheries by covering the bottom of the stream or lake with a blanket of material that destroys the bottom fauna or spawning grounds for fish.
- Color-is attributed to substances in solution after the suspended have been removed. It may be organic or inorganic substances that affect photosynthesis activity in the water. Organic substances include humic materials, peat, aquatic plants, etc. Inorganic sources include iron and manganese compounds, chemicals, industrial waste, etc.
- Toxins-are those compounds or substances which are found in by-products or waste of the various industries or activities that make their way into water sources which produce a variety

<p>of effects on fish or alter the biological productivity of water sources.</p> <ul style="list-style-type: none"> <li>- Acceptable water quality is indicated by:</li> <li>- Dissolved oxygen concentrations-DO concentrations are being maintained at or near saturation levels.</li> <li>- pH-concentrations are at or near recommended State levels.</li> <li>- Turbidity-readings do not exceed Jackson Turbidity Unit readings for the water source.</li> <li>- Temperature-water temperature readings meet State standard preferred for good growth and productivity.</li> <li>- Coliform-organisms of the coliform group do not exceed State average for the site.</li> <li>- Sediment-water normally contains suspended solids that do not exceed State standard.</li> <li>- Color-water color does not limit or significantly restrict photosynthesis processes.</li> <li>- Toxins-levels are in conformance with State standard.</li> </ul>	<p>Ozone</p> <p>Lead</p> <p>Foliar Fluoride</p> <p>Settled Particulate</p> <p>Hydrogen Sulfide</p> <p>Visibility</p>	<p>0.30 ppm hourly average*</p> <p>0.10 ppm hourly average*</p> <p>1.5 µg/m<sup>3</sup> 90-day average</p> <p>35 µg/g grazing season average 50 µg/g monthly average</p> <p>10 mg/m<sup>2</sup> 30-day average Matter (dustfall)</p> <p>0.05 ppm hourly average*</p> <p>particle scattering coefficient of 3x10<sup>-5</sup> per meter annual average***</p>
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\* Not to be exceeded more than once per year.  
 \*\* Not to be exceeded more than 18 times per year.  
 \*\*\* Applies to PSD mandatory Class I areas.

ppm = parts per million

µg/g = micrograms per gram

µg/m<sup>3</sup> = micrograms per cubic meter

**Butte STANDARD #4: Air quality meets State standards.**

- As addressed by the preamble to these standards and as indicated by:

Section 176(c) of the Clean Air Act, which states that activities of all Federal agencies must conform to the intent of the appropriate State Air Quality Implementation Plan and not:

- cause or contribute to any violations of ambient air quality standards;
- increase the frequency of any existing violations; and
- impede the State's progress in meeting its air quality goals.

**Montana Air Quality Standards**

PM-10	50 µg/m <sup>3</sup> annual average 150 µg/m <sup>3</sup> 24-hour average*
Sulfur Dioxide	0.02 ppm annual average 0.10 ppm 24-hour average * 0.50 ppm 1-hour average **
Carbon Monoxide	23 ppm hourly average* 9.0 ppm 8-hour average *
Nitrogen Dioxide	0.05 ppm annual average

The Clean Air Act established the Prevention of Significant Deterioration (PSD) regulations which set limits for increases in ambient pollution levels and established a system for preconstruction review of new major air pollution sources. Three PSD classes have been established: Class I, Class II, and Class III. Class I areas consist of all international parks, national parks greater than 5,000 acres, national wilderness areas greater than 5,000 acres, and national wildlife refuges which existed on August 7, 1977, when the amendment was signed into law.

Protection of air quality is provided to Class I areas by severely limiting the amount of additional human-caused air pollution which can be added. All other areas, except non-attainment areas, are classified as Class II in which a greater amount of additional human-caused pollution may be added. In no case, however, may pollutant concentrations exceed the National or State ambient air quality standards.

**Butte STANDARD #5: Provide habitat as necessary, to maintain a viable and diverse population of native plant and animal species, including special status species.**

- As addressed by these standards and as indicated by:
  - plants and animals are diverse, vigorous and reproducing satisfactorily, noxious weeds are

absent or insignificant in the overall plant community;

- spatial distribution of species is suitable to ensure reproductive capability and recovery;
- a variety of age classes are present;
- connectivity of habitat or presence of corridors prevents habitat fragmentation;
- diversity of species (including plants, animals, insects and microbes) are represented; and
- plant communities in a variety of successional stages are represented across the landscape.

BLM is charged with managing and developing habitat for a large variety of fish, wildlife, and special status species of plants. Basic habitat considerations can be categorized as including food, water, cover, and space. Specific habitat requirements often vary depending on what geographic area is being considered, species which are present, and the nature and extent of other uses which may be competing. A review of components of the above listed standards (Proper Functioning Riparian-Wetland areas, Uplands and Water Quality) will provide much of the requirements needed to achieve fish, wildlife, and special status plant habitat.

## Guidelines

### Butte GUIDELINE #1:

Manage grazing to maintain or improve watershed vegetation, biodiversity, and flood plain function. Maintain or improve riparian vegetative cover and structure to trap and hold sediments during run-off events to rebuild streambanks, restore/recharge aquifers, and dissipate flood energy. Promote deep-rooted herbaceous vegetation to enhance streambank stability. Where potential for woody shrub species (willows, dogwood, etc.) exists, promote their growth or expansion to aid in controlling access to streambanks, and to provide wildlife cover.

### Butte GUIDELINE #2:

Pastures and allotments will be periodically inventoried to determine their relative suitability for livestock grazing. Topography, slope, distance from water, or vegetation habitat types, wildlife, channel types, soil types, and other resource values must be considered when determining grazing potential. Specific areas could be excluded from grazing, fenced into separate management pastures, or managed more intensively.

### Butte GUIDELINE #3:

Management strategies for livestock grazing should produce sustainable hydrological, vegetative, and soil conditions. Thresholds for acceptable streambank alteration and vegetation utilization can be site-specific, and they should be the basis for establishing terms and

conditions for allotments. These thresholds should be consistent with standards and result from application of scientifically acceptable hydrological and biological principles. Each allotment must have a monitoring plan, and monitoring results should be critical input to grazing system design. Long-term analysis of trend shall be the primary monitoring tool, and will be augmented by short term monitoring information. Monitoring plans should address rangeland standards including hydrologic, vegetative, and soil conditions.

Long-term and short-term monitoring attributes may include:

#### Hydrologic

- stream morphology; and
- streambank alteration.

#### Vegetative

- species composition;
- plant density;
- demographics;
- stubble height; and
- utilization.

#### Soils

- percent bare ground;
- compaction; and
- pedestaling.

Self-monitoring by permittee should be encouraged, but with these sideboards:

- permittee's data and BLM's data should be comparable;
- BLM must perform some level of compliance monitoring for each self monitored allotment to ensure the permittee's monitoring is being done and it is valid;
- there should be regular reporting of self-monitoring data; and
- when appropriate, monitoring should include the use of reference sites (such as exclosures).

Permittees and interested members of the public should be able to participate in the development of monitoring plans.

### Butte GUIDELINE #4:

Compatible seasons and duration of use, rest periods, stocking rates, structural facilities, and management activities, should be designed and implemented to ensure that standards are achieved.

**Butte GUIDELINE #5:**

The development of springs and seeps or other projects affecting water and associated resources shall be designed to protect the ecological functions, processes and native species of those sites.

**Butte GUIDELINE #6:**

Locate facilities (e.g., corrals, water developments) away from riparian areas and wetlands when possible.

**Butte GUIDELINE #7:**

Supplemental salt and minerals should not be placed adjacent to watering locations or in riparian-wetland areas so not to adversely impact streambank stability, riparian vegetation, water quality, or other sensitive areas. Placement of salt in upland sites should consider critical winter wildlife habitat.

**Butte GUIDELINE #8:**

Noxious weed control is essential and should include: cooperative agreements, public education, and integrated

pest management (mechanical, biological, chemical). Butte RAC has addressed weeds in a Resolution dated May 8, 1996 (attached).

**Butte GUIDELINE #9:**

Native species are preferred. Non-native species, where contributing to proper ecosystem function, are acceptable.

**Butte GUIDELINE #10:**

Livestock management should utilize Best Management Practices for livestock grazing that meet or exceed those approved by the State of Montana in order to maintain, restore or enhance water quality.

**Butte GUIDELINE #11:**

Grazing management practices should maintain or improve habitat for federally listed threatened, endangered, and sensitive plants and animals.



## APPENDIX G – WILDLIFE

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## THREATENED OR ENDANGERED SPECIES SCREENS

Grizzly bears and lynx are the listed species that occur throughout the Butte Field Office. This appendix describes analysis screens developed by a Level 1 team of interagency field biologists to facilitate, streamline, and ensure consistency across administrative boundaries during Section 7 consultation under the Endangered Species Act.

The screens are designed to identify simple, straightforward actions that have insignificant or discountable effects on listed species. If proposed actions are fully compliant with the wildlife screens, and the screen leads to a “not likely to adversely affect” conclusion, they will likely be covered for terrestrial species by a programmatic concurrence from the U.S. Fish and Wildlife Service. These proposed actions could proceed once the appropriate documentation (i.e. biological assessment or worksheet with appropriate documentation) is completed. The screens are not all inclusive because some projects warrant additional analyses from the onset. Furthermore, even though an action is identified in the screen, the standard consultation procedure could still be required. A qualified wildlife biologist is responsible for implementing the screening process.

A wildlife screen is attached for the grizzly bear. Measures identified in the Lynx Conservation and Assessment Strategy (LCAS) will serve as the screen for lynx

The Level 1 team is currently determining the appropriate format documentation procedure for the wildlife screening process. At a minimum, the action agency would be required to submit periodic progress reports for NLAA actions that have been consulted on using the programmatic concurrence.

The following sections provide guidance on how to use the wildlife screens and emphasize when the programmatic concurrence would not apply. If programmatic concurrence does not apply, the standard<sup>1</sup> section 7 process would occur. The process described here follows and compliments the National Fire Plan consultation strategy. The screens developed for the National Fire Plan process consider the effects of certain fire-related

<sup>1</sup> Standard consultation refers to the process whereby the action agency biologist commences dialogue with U.S. Fish and Wildlife Service (Service) counterparts to determine the appropriate consultation procedures. Typically this involves phone correspondence to apprise the Service of the effects of an ongoing project and to reach consensus on such an effect and to determine if informal consultation is sufficient or if the project should proceed to formal consultation. Upon agreement of the respective consultation procedure, the action agency biologist will submit the appropriate request and documentation to the Service for concurrence or a biological opinion.

projects and may be used to screen all National Fire Plan projects. The screens presented here consider the effects of most other activities.

### CONDITIONS APPLICABLE TO ALL SCREENS

The programmatic concurrence applies to Forest Service and BLM projects or actions where the biological assessment clearly leads to a “not likely to adversely affect” (NLAA) determination. Use of the consultation screens is intended to be a tool to arriving at an effects determination; the biologist must consider the effects of the action added to the environmental baseline and cumulative effects. The concurrence is expressly limited to those simple, straightforward actions that will have documentation supporting insignificant or discountable effects on wildlife. More complex projects that do not clearly lead to an NLAA determination or those projects for which the project biologist has any threatened and endangered wildlife species concerns do not qualify for this programmatic concurrence. For these projects, biologists should follow standard consultation processes.

Further, projects not meeting or included in the species-specific criteria are not covered by the programmatic consultation and must follow the standard processes for conducting project analysis, biological assessment development, and consultation. Several activities are not included in the species’ screens because the nature of the activity warrants additional consideration provided through standard consultation procedures.

If one species does not meet the screening criteria, then standard consultation procedures need to be followed for all species. However, it is possible to use the screens as a documentation process for those species that fit the screens and include this documentation alongside the analysis for the species that do not fit the screens.

As always, cumulative effects must be considered; cumulative effects findings may cause the project to go to standard consultation.

No Effect determinations are included in the species-specific flowcharts to assist in overall effect determinations even though consultation is not necessary.

Application of the screens and determination of project effects for compliance with Section 7 must be accomplished by a qualified wildlife biologist.

In no case does the programmatic concurrence apply to any project or action that has the potential to cause or increase the likelihood of take as defined by the Service’s regulations.

In the event that a project or action proceeds under the programmatic concurrence and exceeds the conditions of the programmatic concurrence, the action agency must initiate informal or formal consultation or request reaffirmation of concurrence, as appropriate, for that project or action.

## **GRIZZLY BEAR PROJECT SCREENING ELEMENTS & DETERMINATIONS**

Three considerations are prerequisite to more detailed consideration of other project information and are considered in screening process Part 1. (1) The area must be in compliance with the appropriate access management direction. (2) Human foods, livestock feed, garbage, and other attractants must be managed by the application of an adequate<sup>2</sup> “food storage rule” similar to the NCDE or Yellowstone food storage orders. If no specific rule exists for the area, use of either the Yellowstone or NCDE order will be considered adequate. (3) Projects that involve seeding or planting of grasses, forbs, or shrubs, must do so in a manner that will tend not to attract bears into areas where increased mortality risk or interaction between bears and people is likely.

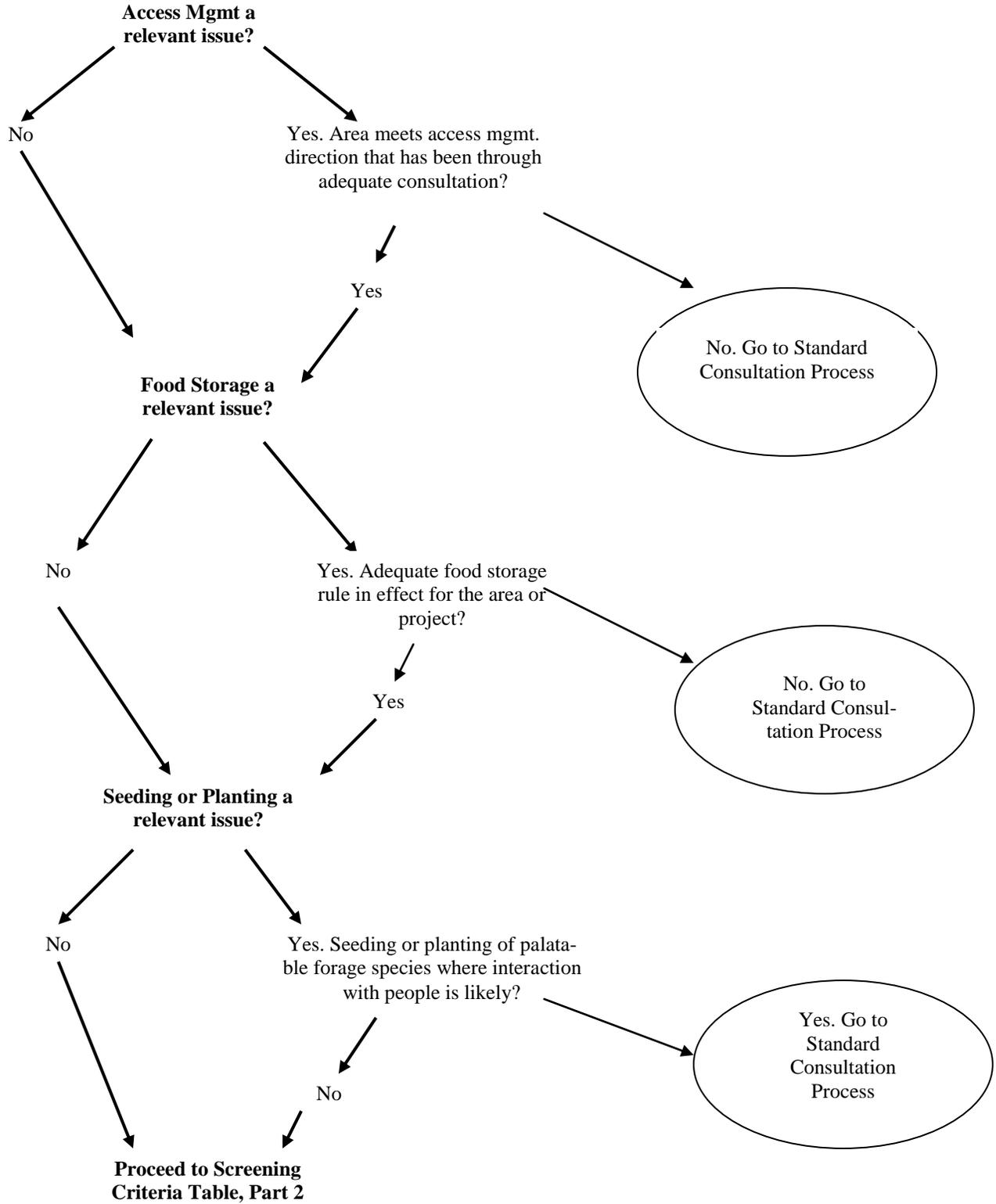
After access management, food/attractant storage, and seeding/planting of grasses, forbs, or shrubs has been considered in Part 1, only then can other project details be considered in the Screening Criteria Table, Part 2. Table 2 represents a comprehensive activity list. There may be activities that are not included in this Table. For those activities not included and for which there is an effect, follow standard consultation procedures. Also, the Not Likely to Adversely Affect (NLAA) determination reflects a conservative determination. There may be activities listed as NLAA in Table 2 that upon site-specific analyses warrant a No Effect determination.

Note: The scope of this programmatic biological assessment applies to areas where grizzly bears are expected to occur – not just within Recovery Zone boundaries.

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<sup>2</sup>Food shall be attended or stored in a bear resistant manner. For examples of applicable methods of bear resistant storage and definitions for ‘attended’ review the NCDE or Yellowstone food storage orders.

**GRIZZLY BEAR SCREENING PROCESS PART 1**



**Part 2:** The following Screening Criteria Table displays forest activities and criteria, that when met, will allow the project to meet “screening elements”. If the project does not meet the identified criteria, the project should proceed through the established consultation process<sup>3</sup>.

#	Activity Type	Activity Component	Crew Level and Duration of Use	Screening Criteria	Determination
1	<b>Timber harvest</b>	Harvest, skidding, and/or hauling of timber products	NA	NA	Potential LAA, go to Standard Consultation process
2	<b>Healthy Forest Initiative Categorical Exclusions</b>	Category 12, Limited Timber Harvest: Live Trees – commercial thinning of overly dense stands of trees to improve the health of remaining trees; removing individual trees for forest products or fuel wood	NA	Limited timber harvest of live trees does not exceed 70 acres and there is less than ½ mile of temporary road construction. This is also not allowed in inventoried roadless areas and other specified areas of significance such as grizzly bear core areas.	NLAA
3	<b>Mechanical</b>	Off road heavy equip operation, such as site prep, fuel piling, log yarding, etc	NA	NA	Potential LAA, go to Standard Consultation process
		Helicopter use for monitoring, prescribed fire ignition, wildlife relocations, etc	Use includes few trips and ≤2 activities/year and ≤2 days/activity/ analysis area	NA	NLAA
4	<b>Existing Gravel Pit Use</b>	Existing gravel pit use for road maintenance, etc.		Use occurs off existing roads only. If on closed roads, use does not exceed administrative use levels	NLAA or NE
5	<b>Roads and Road Maintenance</b>	Opening closed road			Potential LAA, go to Standard Consultation process.

<sup>3</sup> References for crew levels and duration of use as well as time frames identified under Screening Criteria include: CEM – A model for assessing effects on grizzly bears, 1990; Response to peer review of the A19 and proposed approach to managing access in grizzly bear habitat, NCDE Technical Group 1/24/01; and Draft, Rationale and choices made in the review and development of an access direction proposal for the NCDE grizzly bear ecosystem, 11/24/98.

#	Activity Type	Activity Component	Crew Level and Duration of Use	Screening Criteria	Determination
		Reclaiming road outside of riparian/spring habitat	Use is ≤ 14 consecutive days		NLAA
		Reclaiming road in riparian/spring habitat		Project occurs between July 1 through March 31	NLAA
		Reclaiming road		Does not meet administrative use levels, or occurs in riparian/spring habitat and active during 4/1-6/30	Potential LAA, go to Standard Consultation process
		Road maintenance: blading, culvert cleaning, brushing, etc		Road is open, or use meets administrative use criteria	NLAA
		New road construction	Construction is ≤ 14 consecutive days	≤ ½ mile temporary road construction. If in riparian or spring habitat, new road construction occurs between July 1 and March 31	NLAA
		Bridge or stream culvert replacement		Project occurs between July 1 through March 31 or completed in ≤1 day	NLAA
6	<b>Silviculture Activities</b>	Reforestation hand planting	Day use only or camping of ≤20 individuals and ≤5 days/analysis area	Does not include snow plowing for access	NLAA
		Reforestation mechanical treatments	NA	NA	Potential LAA, go to Standard Consultation process.
		Insect suppression Aerial chemical application	NA	Chemicals do not effect cutworm moth and honeybee or their habitats	NLAA
		Insect suppression Aerial chemical application	NA	Chemicals affect cutworm moth or habitat, and in moth habitat	Potential LAA, go to Standard Consultation process
		Insect suppression ground chemical application	NA	NA	NLAA
		Insect suppression survey, fertilization, manual treatment, individual tree fire treatment, or pheromone treatment	NA	NA	NLAA
		Precommercial thinning and long term (>1 year) commercial Christmas tree			Potential LAA, go to Standard Consulta-

#	Activity Type	Activity Component	Crew Level and Duration of Use	Screening Criteria	Determination
		harvest			tion process
		Disease control – manual treatment of larch through girdling to control larch mistletoe	NA	NA	NLAA
7	<b>Range</b>	Infrastructure development	NA	NA	NLAA
		Grazing		Maintains or reduces existing livestock grazing or changes livestock class to a less vulnerable spp, and no history of depredation or control actions	NLAA
		Grazing		Increases livestock grazing, introduces new grazing into areas where depredation more likely, or history of livestock depredation	Potential LAA, go to Standard Consultation process
8	<b>Recreation</b>	Trail maintenance or reconstruction	NA	Results in increased use or change of user type	Potential LAA, go to Standard Consultation process
		Trail maintenance or reconstruction		Does not result in increase in use or change in user type	NLAA
		New Trail construction			Potential LAA, go to Standard Consultation process
		Facility operations, including developed and dispersed camping		Educate public campers and enforce sanitation standards. Does not increase use or change user type.	NLAA
				Sanitation standards are not enforced or use is increased or user type is changed.	Potential LAA, go to Standard Consultation process

#	Activity Type	Activity Component	Crew Level and Duration of Use	Screening Criteria	Determination
9	<b>Forest Products</b>	Personal use firewood collection, annual Christmas tree cutting, berry picking, low/incidental mushroom picking, and collection of “other forest products” (such as bear grass greens, medicinal herbs, pachistima, etc)		Does not include off road mechanical skidding or hauling. Include “bear aware” education message	NLAA
		Commercial firewood collection, berry picking, and “other forest products” (such as bear grass greens, medicinal herbs, pachistima, etc), but does not include mushrooms.	Day use only or camping of ≤20 individuals and ≤5 days total/analysis area	Does not include off road mechanical skidding or hauling. Enforce sanitation standards, and Include “bear aware” education message.	NLAA
10	<b>Habitat Restoration</b>	See timber harvest, mechanical treatments, roads, weed control, and prescribed fire. Also includes monitoring, fencing, fish barrier development, fish spp removal/trapping, rotenone treatment, interpretation/Con Ed, meadow restoration, riparian planting and restoration, snag creation, and water source development.	Day use only or camping of ≤20 individuals and ≤5 days/analysis area	Project occurs between July 1 through March 31 or completed in ≤1 day in riparian areas. Project does not result in an increase in public use or user type.	NLAA
11	<b>Prescribed Fire</b>	General support, ignition, mop-up	Day use only or camping of ≤20 individuals for ≤5 days/analysis area	Does not include riparian areas	NLAA
		Fire line construction	Same as support	Fire line does not/will not function as a road or trail and will be reclaimed after the fire.	NLAA
		Defensible space treatments (within 100m of structure) (Cohen 2000)	Same as support	Planting and/or seeding does not include palatable forage spp.	NLAA

#	Activity Type	Activity Component	Crew Level and Duration of Use	Screening Criteria	Determination
12	<b>Watershed Restoration</b>	Includes erosion control structures, sediment control, monitoring. Also, see reforestation, timber harvest, mechanical treatments, etc.	Day use only or camping of $\leq 20$ individuals and $\leq 5$ days/analysis area	Project occurs between July 1 through March 31 or completed in $\leq 1$ day	NLAA
13	<b>Weed Management</b>	Chemical, aerial or ground application	NA	NA	NLAA
		Sheep or goat grazing	NA	NA	Potential LAA, go to Standard Consultation process
14	<b>Non-recreational Special Uses</b>	This includes maintenance of existing sites, corridors, or other facilities and is often carried out by the entity that owns the structures or facilities	NA	Meets administrative use levels	NLAA
		New construction of facilities – this includes microwaves, cell towers, substation communications, powerlines, etc.	NA	Construction of powerlines is $\leq \frac{1}{2}$ mile and includes vegetation clearing. Includes $\leq \frac{1}{2}$ mile of temporary road construction. Roads are not constructed in spring habitat between April 1 and June 30.	NLAA
15	<b>Miscellaneous</b>	Similar activity component, but must meet all screening criteria in parts 1 and 2 of the screens table and not violate any of these criteria.			NE or LNAA

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## LYNX PROJECT SCREENING ELEMENTS & DETERMINATIONS<sup>4</sup>

The lynx screen is a two-part process. Projects are initially screened through the Part 1 Flow Chart to determine whether they are carried forward into Part 2 or if standard consultation procedures need to be followed. Part 2 consists of two different tables, D1 and D2. Table D1 is composed of those activities described in the LCAS. Table D2 consists of projects that are not identified in the LCAS but that may be implemented as part of program of work and as such need to be analyzed for effects to listed species.

Table D2 is based on the consultation that was completed when the lynx was listed in 2000 and through ongoing project analysis. As such, we retained the “*no effect*” determination in these screens as a general guideline for use by project biologists.

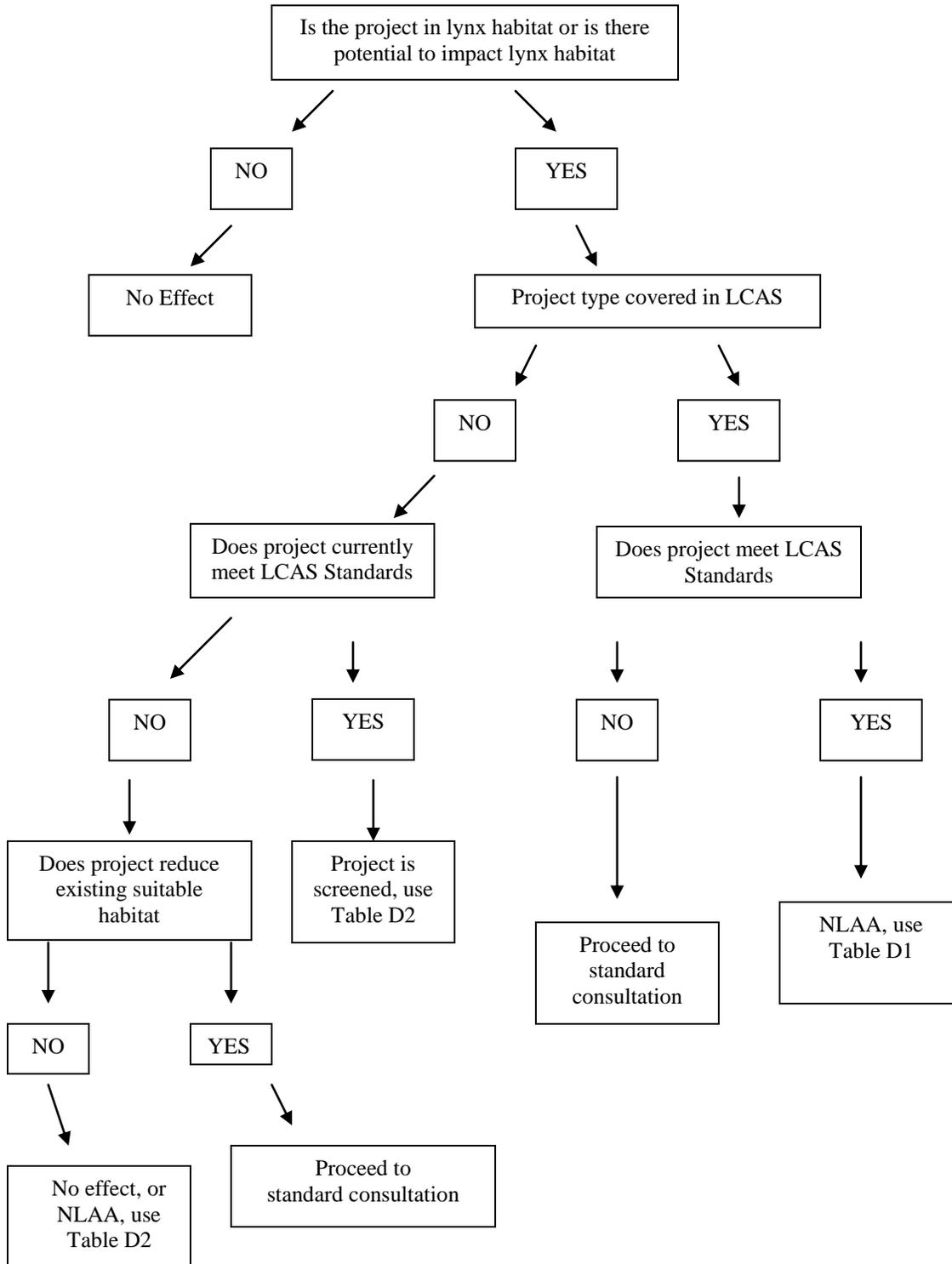
Applicable to both Tables, the *Not Likely to Adversely Affect* (NLAA) determinations reflect a conservative determination. There may be activities listed as NLAA that upon site specific analyses warrant a No Effect determination.

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<sup>4</sup> Screening elements apply to projects that are in lynx habitat that are within a lynx analysis unit.

Refer to the Lynx Conservation Assessment and Strategy for a definition of lynx habitat

**LYNX SCREENS  
PART 1**



**LYNX SCREENS, PART 2 (Tables D1 and D2)**

**Table D1. Screening criteria for projects included in the Lynx Conservation and Assessment Strategy**

<b>#</b>	<b>Activity Type</b>	<b>Activity Component</b>	<b>Screening Criteria</b>	<b>Determination</b>
1	<b>Timber Harvest (from LCAS)</b>	Felling, skidding, and/or hauling of timber products (not including salvage harvest). Includes post sale prescribed fire (slash, broadcast burning, etc.)	Management actions shall not change more than 15% of lynx habitat within a LAU to an unsuitable condition within a 10-year period; no more than 30% of lynx habitat within an LAU will be in unsuitable condition; greater than 10% denning habitat remains after the project; habitat connectivity is maintained	Proceed to standard consultation
	<b>(From LCAS)</b>	Salvage harvest (in this case, salvage harvest of blowdown)	Affected area is greater than or equal to 5 acres OR denning habitat has been field verified and comprises more than 10% of lynx habitat within an LAU and will be well-distributed after salvage harvest	Proceed to standard consultation
2	<b>Healthy Forest Initiative Categorical Exclusions or similar project meeting these and screening criteria in #1</b>	Category 12, Limited Timber Harvest: Live Trees – commercial thinning of overly dense stands of trees to improve the health of remaining trees; removing individual trees for forest products or fuelwood	Area does not exceed 70 acres and there is no more than ½ mile of temporary road construction (and meets screening criteria in #1 above)	NLAA
		Category 13, Salvage of Dead and Dying Trees – Salvage harvest in areas where trees have been severely damaged by forces such as fire, wind, ice, insects, or disease and still have some economic value	Area does not exceed 250 acres and there is no more than ½ mile of temporary road construction	NLAA
		Category 14, Tree Removal to Prevent Spread of Insect/Disease – Commercial and non-commercial felling and removal of any trees necessary to control the spread of insects and disease	Area does not exceed 250 acres and there is no more than ½ mile of temporary road construction	NLAA
3	<b>Roads and Road Maintenance</b>	Highways	Highway crossings are identified that reduce highway impacts on lynx. This screening element refers to actual projects that involve the creation of highway crossings to facilitate lynx movement.	Proceed to standard consultation

#	Activity Type	Activity Component	Screening Criteria	Determination
		Non-recreation motorized winter access	Over-snow access is restricted to designated routes	NLAA
4	<b>Silviculture Activities</b>	Precommercial thinning	Precommercial thinning occurs in stands that no longer provide snowshoe hare habitat	NLAA
5	<b>Range</b>	Livestock grazing in post-fire and post-harvest areas	Livestock use is delayed in these created openings until successful regeneration of the shrub and tree component occurs	NLAA
		Livestock grazing in aspen stands	Aspen stands are managed to ensure sprouting and survival sufficient to perpetuate long-term viability of the clones	NLAA
		Livestock grazing in shrub-steppe habitats	Shrub-steppe habitats are managed to maintain or achieve mid-seral or higher condition to provide lynx habitat matrix	NLAA
		Livestock grazing in riparian areas or willow carrs	Livestock grazing is managed to maintain or achieve mid-seral or higher condition to provide cover and forage for prey species	NLAA
6	<b>Recreation</b>	Snowmobiling and other over-the-snow activity such as cross country skiing, snowshoe races, and dogsledding	No net increase in groomed or designated over-the-snow routes for any winter activity and snowmobile play areas by LAU (see definition of 'designated' 5/19/2002 McAlister letter with Clarification and Revised Definitions, p.2)	NLAA
		Developed Recreation including planning and operating new or expanded recreation developments	Landscape connectivity is not compromised; trails, roads, and lift termini are designed to direct winter use away from diurnal security areas; key linkage areas are provided for landscape connectivity	NLAA
7	<b>Prescribed Fire</b>	All activity components	Burn prescriptions are designed to regenerate or create snowshoe hare habitat	NLAA

Table D2. Screening criteria for projects not included in the Lynx Conservation and Assessment Strategy

#	Activity Type	Activity Component	Screening Criteria	Determination	
1	<b>Roads and Road Maintenance</b>	Road Maintenance - This includes general road maintenance that may involve the brushing of vegetation on the road or along roadsides. Road maintenance may include but is not limited to roadbed blading, brushing, cleaning ditches, replacing or cleaning culverts, cleaning dips, or spot graveling.	Brushing included	NLAA	
			No brushing associated with activity	NE	
		Road Decommissioning - This involves the use of heavy equipment and includes obliteration and other methods to hydrologically neutralize the road.		NLAA	
		General Road Use - This includes hauling timber, removing mining waste and materials, and moving livestock over federal roads for which permits are required. It also includes routine road use by administrative units to carry out work associated with recreation, range, timber and minerals management, fire prevention and suppression, inventories, surveys, and other monitoring activities. This includes use of roads consistent with existing travel plans.	Activity includes right-of-ways, multiple dwelling construction, or development of large corporate lands	Proceed to Standard Consultation	
			Activity occurs in winter and does NOT include right-of-ways, multiple dwelling construction, or development of large corporate lands	NLAA	
			Activity occurs in spring, summer, or fall and does NOT include right-of-ways, multiple dwelling construction, or development of large corporate lands	NE	
2	<b>Silvicultural Activities</b>	Tree planting	Tree planting does not result in stand type conversion. Activity does not involve snowplowing	NE	
		Disease control – manual treatment of larch through girdling to control larch mistletoe	Activity does not involve snowplowing	NLAA	
3	<b>Recreation</b>	Recreation Special Uses - This includes activities for which permits are issued and includes outfitting and permits issued to a variety of organizations that engage in activities such as mountaineering, rock climbing, outward bound, ski races, concerts, “Poker Runs”, “Fun Runs”, driving tours, nature watch hikes, hunting, fishing, and a wide variety of other events.	Activity is consistent with existing access management from Forest and Travel Plans and is consistent with the LCAS	Activity occurs in Spring, Summer, Fall	NE
				Activity involves hunting mountain lions with dogs	NLAA
				Activity occurs in winter	NLAA

#	Activity Type	Activity Component	Screening Criteria	Determination
		Trail Use consistent with existing travel management	Activity occurs in winter, meets LCAS	NLAA
			Activity occurs in spring, summer, or fall	NE
		Maintenance and/or Minor Trail Re-routes - This consists of maintenance of trails and minor trail re-routes and may require use of heavy equipment.	Activity does not involve blasting	NE
		New Trail Construction and/or Major Trail Re-routes and Maintenance - This includes the development of new trails used for foot, stock, or motorcycles and may require the use of heavy equipment or hand tools and may create a clearing width up to 10 feet wide (FSH 2309.18). This also includes major re-routing and may require use of heavy equipment and/or blasting.		NLAA
		Camping – Includes dispersed and developed campgrounds	Consistent with existing travel plans and LCAS and occurs during spring, summer, or fall	NE
		Dispersed off-road activities	Consistent with existing travel plans and LCAS	NLAA
		Permitted and Non-permitted use of Developed Sites, Facilities, and Their Maintenance - This includes special use permits issued for facilities, residences, and other structures. Permits are also issued for organizational camps such as the Boy Scouts and church groups at developed campgrounds. Other facilities include but are not limited to campgrounds, rental cabins, watchable wildlife sites, picnic areas, warming huts, and communication sites. Also includes Forest Service administrative sites and their maintenance (e.g. campgrounds, trailheads, ranger stations, etc.)	Activity occurs or is associated with ski areas	Proceed to Standard Consultation
			Activity occurs during the winter	NLAA
			Activity occurs during spring, summer, or fall	NE
4	<b>Forest Products</b>	Post and Pole Sales – This includes both commercial and non-commercial post and pole sales. This typically occurs in forested stands consisting of trees 5-9” diameter at breast height (dbh).	LCAS habitat criteria are met within the respective LAU (i.e. activity occurs in dense stands where low live limbs are generally out of reach for snowshoe hare).	NLAA

#	Activity Type	Activity Component	Screening Criteria	Determination
		Firewood Collection - This includes both commercial and non-commercial collection and involves the collection of standing dead or down wood.	LCAS habitat criteria are met within the respective LAU	NLAA
		Other Forest Products – This includes but is not limited to berry, mushroom, and bear grass collection and includes both commercial and non-commercial activities. Collection of tree products is not included.	LCAS habitat criteria are met within the respective LAU	NE
		Christmas Tree/Bough Cutting - This includes both commercial and non-commercial cutting. The trees cut range from 3” to 5” dbh and are less than 25’ tall.	LCAS habitat criteria are met within the respective LAU. Stand must not be converted to unsuitable snowshoe hare habitat. See Lynx Conservation Assessment and Strategy for a definition of ‘unsuitable’ habitat.	NLAA
5	<b>Habitat Restoration</b>	Forest and Shrub/Grassland Habitat Management - This includes aspen rejuvenation, shrub field maintenance and other types of ecosystem ‘driven’ projects designed to promote natural processes in an area.	LCAS habitat criteria are met within the respective LAU	NLAA
6	<b>Noxious Weed Management</b>	This includes chemical and biological treatments to noxious weeds within or adjacent to lynx habitat	Activity includes aerial application	NLAA
			Activity includes only ground application (no aerial application)	NE
7	<b>Other Special Uses</b>	This includes maintenance of existing sites, corridors, or other facilities and is often carried out by the entity that owns the structures or facilities. Maintenance may include vegetation blading or cutting, or spraying to reduce brush and reduce the invasion of shrubs and trees among other activities.		NLAA
8	<b>Mining and Gravel Pits</b>	Quarries, recreational mining, small mines, and reclamation of small mines	Mines and gravel pits <5 acres, no winter time operation	NLAA or NE

#	Activity Type	Activity Component	Screening Criteria	Determination
9	<b>Ditches and Diversions</b>			NE
10	<b>Surveys</b>	Surveys – This includes snow course surveys, track counts, habitat sampling, hair posts, remote camera stations, and radio telemetry among other methods.	Operations are during winter and include repeated snow compaction activities(cross country ski trips, snowmobile trips) on ungroomed trails generally not being used by public	NLAA
			Operations are during spring, summer, or fall	NE
11	<b>Miscellaneous</b>	Similar activity component, but must meet all screening criteria in parts 1 and 2 of the screens table and not violate any of these criteria		NE or LNAA

## CONSULTATION SUMMARY SHEET FOR PROGRAMMATIC ASSESSMENT

### CONSULTATION SUMMARY SHEET *INSTRUCTIONS* FOR PROGRAMMATIC BIOLOGICAL ASSESSMENT

Summary sheets will be filled out by Project Biologists and reviewed by Forest Biologists. Project Biologists will submit summary sheets to Forest Biologists on a project-by-project basis. Forest Biologists will submit summary sheets, with one project per sheet, to the U.S. Fish and Wildlife Service quarterly and, as needed, these projects will be reviewed and discussed by the Level One Team to ensure the screening criteria are adequately interpreted and applied. There will be a random audit of a few projects each year to insure compliance and effectiveness of the screens and reporting requirements.

Page ___ of ___					
Administrative Unit: _____					
Contact: _____ <i>Project Biologist</i>					
Reviewed by: _____ <i>Forest Biologist</i>					
Date: _____					
Project Name and Description	Species	Effects of Action	Cumulative Effects (ESA)	How does the project meet screening criteria?	Determination of Effects
Project description should provide pertinent information including all aspects of the project that potentially affect T&E species. This includes but is not limited to: project name, project location including management unit if applicable, timing of implementation and details of project activities.	<b>Grizzly Bear</b>	Briefly describe the overall effect for the entire project on the species and base it on the screening criteria.	Briefly describe the effects of future, non-federal actions that are reasonably likely to occur in the action area (this is the area where the effects of the project may be felt).	Specifically identify the screening criteria and describe how the project meets these specific criteria.	<ul style="list-style-type: none"> <li>• No Effect</li> <li>• May affect not likely to adversely affect</li> </ul>
	<b>Canada Lynx</b>				

**CONSULTATION SUMMARY SHEET FOR PROGRAMMATIC BIOLOGICAL ASSESSMENT**

Page \_\_\_ of \_\_\_  
 Administrative Unit: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Reviewed by: \_\_\_\_\_  
 Date: \_\_\_\_\_

Project Name and Description	Species	Effects of Action	Cumulative Effects (ESA)	How does the project meet screening criteria?	Determination of Effects
	Grizzly Bear				
	Lynx				

## **LYNX CONSERVATION ASSESSMENT AND STRATEGY (LCAS) SUMMARY AND LYNX CONSERVATION MEASURES**

The BLM and FWS signed a Conservation Agreement to promote the conservation of the Canada lynx and its habitat on BLM lands, using the Lynx Science Report and the Lynx Conservation and Assessment Strategy. The LCAS was developed in place of the normal recovery plan previously used for most other species listed under ESA.

The agreement and strategy identify objectives, standards, guidelines, and conservation measures to reduce or eliminate risk factors. These measures are intended to conserve the lynx, and to reduce or eliminate adverse effects from the spectrum of management activities on federal lands. These measures are provided to assist federal agencies in seeking opportunities to benefit lynx and to help avoid negative impacts through the thoughtful planning of activities. Plans that incorporate them, and projects that implement them, are generally not expected to have adverse effects on lynx, and implementation of these measures across the range of the lynx is expected to lead to conservation of the species.

Critical habitat for the Canada Lynx was not designated through the listing process. The LCAS instead relies on defining potential habitat based on vegetation characteristics and prey availability wherever that may occur since current lynx populations are small and widely dispersed. Conservation focus is to:

- Manage forested habitat within the historic range of variability for vegetation, and maintain large unfragmented blocks of forest with the appropriate structure;
- Maintain dense understory conditions providing cover and forage for snowshoe hares as the primary lynx prey base;
- Minimize snow compaction that would encourage access for competing predators into lynx habitat; and
- Provide connections within and between lynx habitat areas, emphasizing riparian habitats.

### **CONSERVATION MEASURES APPLICABLE TO ALL PROGRAMS AND ACTIVITIES**

Because it is impossible to provide standards and guidelines to address all possible actions in all locations across the broad range of the lynx, it is imperative that project specific analysis and design be completed for all actions that have the potential to affect lynx. Circumstances unique to individual projects or actions and their locations may still result in adverse effects on lynx. In

these cases, additional or modified mitigating measures may be necessary to avoid or minimize adverse effects.

### **Programmatic Planning - Objectives**

Design vegetation management strategies that are consistent with historical succession and disturbance regimes. The broad-scale strategy should be based on a comparison of historical and current ecological processes and landscape patterns, such as age-class distributions and patch size characteristics. It may be necessary to moderate the timing, intensity, and extent of treatments to maintain all required habitat components in lynx habitat, to reduce human influences on mortality risk and interspecific competition, and to be responsive to current social and ecological constraints relevant to lynx habitat.

### **Programmatic Planning - Standards**

1. Conservation measures will generally apply only to lynx habitat on federal lands within LAUs.
2. To facilitate project planning, delineate LAUs. To allow for assessment of the potential effects of the project on an individual lynx, LAUs should be at least the size of area used by a resident lynx and contain sufficient year-round habitat.
3. To be effective for the intended purposes of planning and monitoring, LAU boundaries will not be adjusted for individual projects, but must remain constant.
4. Lynx habitat will be mapped using criteria appropriate to each geographic area.
5. Prepare a broad-scale assessment of landscape patterns that compares historical and current ecological processes and vegetation patterns, such as age-class distributions and patch size characteristics. In the absence of guidance developed from such an assessment, limit disturbance within each LAU as follows: if more than 30 percent of lynx habitat within a LAU is currently in unsuitable condition, no further reduction of suitable conditions shall occur as a result of vegetation management activities by federal agencies.

### **Programmatic Planning - Guidelines**

1. The size of LAUs should generally be 6,500- 10,000 ha (16,000 – 25,000 acres or 25-50 square miles) in contiguous habitat, and likely should be larger in less contiguous, poorer quality, or naturally fragmented habitat. Larger units should be identified in the southern portions of the Northern Rocky Mountains Geographic Area (in Idaho from the Salmon River south, Oregon, Wyoming, and Utah) and in the Southern Rocky Mountains Geographic Area.

In the west, we recommend using watersheds (e.g., 6th code hydrologic unit codes (HUCs) in more northerly portions of geographic areas, and 5th code HUCs in more southerly portions). In the east, terrestrial ecological units that have been delineated at the land type association or subsection level (e.g., LTAs or whatever scale most closely approximates the size of a lynx home range) may be an appropriate context for analysis. Coordinate delineation of LAUs with adjacent administrative units and state wildlife management agencies, where appropriate.

2. After LAUs are identified, their spatial arrangement should be evaluated. Determine the number and arrangement of contiguous LAUs needed to maintain lynx habitat well distributed across the planning area. LAUs with only insignificant amounts of lynx habitat may be discarded, or portions of the unit combined with or divided among neighboring LAUs to provide a meaningful unit for analysis.

### **Project Planning - Standards**

1. Within each LAU, map lynx habitat. Identify potential denning habitat and foraging habitat (primarily snowshoe hare habitat, but also habitat for important alternate prey such as red squirrels), and topographic features that may be important for lynx movement (primary ridge systems, prominent saddles, and riparian corridors). Also identify non-forest vegetation (meadows, shrub-grassland communities, etc.) adjacent to and intermixed with forested lynx habitat that may provide habitat for alternate lynx prey species.
2. Within a LAU, maintain denning habitat in patches generally larger than 5 acres, on at least 10 percent of the area that is capable of producing stands with these characteristics. Where less than 10 percent of the forested lynx habitat within a LAU provides denning habitat, defer those management actions that would delay achievement of denning habitat structure.
3. Maintain habitat connectivity within and between LAUs.

## **CONSERVATION MEASURES TO ADDRESS RISK FACTORS AFFECTING LYNX PRODUCTIVITY**

### **TIMBER MANAGEMENT IN LYNX HABITAT**

Timber management modifies the vegetation structure and mosaic of forested landscapes. Timber management can be used in conjunction with, or in place of, fire as a disturbance process to create and maintain snowshoe

hare habitat. In the southern portion of its range, lynx populations appear to be limited by the availability of snowshoe hare prey, as suggested by large home range sizes, high kitten mortality due to starvation, and greater reliance on alternate prey, especially red squirrels, as compared with populations in northern Canada. Timber management practices should be designed to maintain or enhance habitat for snowshoe hare and alternate prey such as red squirrel. Dense horizontal cover of conifers, just above the snow level in winter, is critical for snowshoe hare habitat. This structure may occur either in regenerating seedling/sapling stands, or as an understory layer in older stands.

Most aspen stands in the Rocky Mountains are in late successional condition as a result of past fire prevention and grazing. In aspen stands intermixed with spruce-fir forests, particularly in southern Idaho, southern Montana, Wyoming, Utah, and Colorado, treatments that result in dense regeneration of aspen are likely to enhance habitat for potential prey of lynx.

### **Programmatic Planning - Objectives**

1. Evaluate historical conditions and landscape patterns to determine historical vegetation mosaics across landscapes through time. For example, large infrequent disturbance events may have been more characteristic of lynx habitat than small frequent disturbances.
2. Maintain suitable acres and juxtaposition of lynx habitat through time. Design vegetation treatments to approximate historical landscape patterns and disturbance processes.
3. If the landscape has been fragmented by past management activities that reduced the quality of lynx habitat, adjust management practices to produce forest composition, structure, and patterns more similar to those that would have occurred under historical disturbance regimes.

### **Project Planning - Objectives**

1. Design regeneration harvest, planting, and thinning to develop characteristics suitable for snowshoe hare habitat.
2. Design project to retain/enhance existing habitat conditions for important alternate prey (particularly red squirrel).

### **Project Planning - Standards**

1. Management actions (e.g., timber sales, salvage sales) shall not change more than 15 percent of lynx habitat within a LAU to an unsuitable condition within a 10-year period.

2. Following a disturbance such as blowdown, fire, insects, and disease that could contribute to lynx denning habitat, do not salvage harvest when the affected area is smaller than 5 acres; exceptions would include areas such as developed campgrounds. Where larger areas are affected, retain a minimum of 10% of the affected area per LAU in patches of at least 5 acres to provide future denning habitat. In such areas, defer or modify management activities that would prevent development or maintenance of lynx foraging habitat.
3. In lynx habitat, pre-commercial thinning will be allowed only when stands no longer provide snowshoe hare habitat (e.g., self-pruning processes have eliminated snowshoe hare cover and forage availability during winter conditions with average snow-pack).
4. In aspen stands within lynx habitat in the Cascade Mountains, Northern Rocky Mountains and Southern Rocky Mountains Geographic Areas, apply harvest prescriptions that favor regeneration of aspen.
  - b) Retain and recruit coarse woody debris, consistent with the likely availability of such material under natural disturbance regimes; and
  - c) Maintain or improve the juxtaposition of denning and foraging habitat.

#### **WILDLAND FIRE MANAGEMENT**

Wildland fire and insects have historically played the dominant role in maintaining a mosaic of forest successional stages in lynx habitat. Stand-replacing fires were infrequent and affected large areas. In areas with a mixed fire regime, moderate to low intensity fires also occurred in the intervals between stand-replacing events. Refer to the geographic area descriptions for more detailed information regarding historical fire regimes.

Periodic vegetation disturbances maintain the snowshoe hare prey base for lynx. In the period immediately following large stand-replacing fires, snowshoe hare and lynx densities are low. Populations increase as the vegetation grows back and provides dense horizontal cover, until the vegetation grows out of the reach of hares. Low to moderate intensity fires may also stimulate understory development in older stands.

Fire exclusion may have altered the pattern and composition of vegetation in subalpine forests. In the western United States, particularly in the southern portion of the Northern Rocky Mountains Geographic Area and in the Southern Rocky Mountains Geographic Area, fire exclusion is one of the primary factors contributing to the decline or loss of aspen. Aspen communities occupy a small percentage of the total forested area, but they provide important habitat diversity. Aspen/tall forb community types, especially those that include snowberry, serviceberry and chokecherry shrubs in the understory, are very productive and may contribute to the quality of lynx foraging habitat.

Wildland fire management activities include suppression and pre-suppression activities, as well as prescribed fire (natural and management ignitions).

#### **Programmatic Planning - Objectives**

#### **Project Planning - Guidelines**

1. Plan regeneration harvests in lynx habitat where little or no habitat for snowshoe hares is currently available, to recruit a high density of conifers, hardwoods, and shrubs preferred by hares. Consider the following:
  - a) Design regeneration prescriptions to mimic historical fire (or other natural disturbance) events, including retention of fire-killed dead trees and coarse woody debris;
  - b) Design harvest units to mimic the pattern and scale of natural disturbances and retain natural connectivity across the landscape. Evaluate the potential of riparian zones, ridges, and saddles to provide connectivity; and
  - c) Provide for continuing availability of foraging habitat in proximity to denning habitat.
2. In areas where recruitment of additional denning habitat is desired, or to extend the production of snowshoe hare foraging habitat where forage quality and quantity is declining due to plant succession, consider improvement harvests (commercial thinning, selection, etc). Improvement harvests should be designed to:
  - a) Retain and recruit the understory of small diameter conifers and shrubs preferred by hares;
  - b) Retain and recruit coarse woody debris, consistent with the likely availability of such material under natural disturbance regimes; and
  - c) Maintain or improve the juxtaposition of denning and foraging habitat.
3. Restore fire as an ecological process. Evaluate whether fire suppression, forest type conversions, and other forest management practices have altered fire regimes and the functioning of ecosystems.
4. Revise or develop fire management plans to integrate lynx habitat management objectives. Prepare plans for areas large enough to encompass large historical fire events.
5. Use fire to move toward landscape patterns consistent with historical succession and disturbance regimes. Consider use of mechanical pre-treatment and management ignitions if needed to restore fire as an ecological process.

4. Adjust management practices where needed to produce forest composition, structure, and patterns more similar to those that would have occurred under historical succession and disturbance regimes.
5. Design vegetation and fire management activities to retain or restore denning habitat on landscape settings with highest probability of escaping stand-replacing fire events. Evaluate current distribution, amount, and arrangement of lynx habitat in relation to fire disturbance patterns.

#### **Project Planning - Objectives**

1. Use fire as a tool to maintain or restore lynx habitat.
2. When managing wildland fire, minimize creation of permanent travel ways that could facilitate increased access by competitors.

#### **Project Planning - Standards**

1. In the event of a large wildfire, conduct a post-disturbance assessment prior to salvage harvest, particularly in stands that were formerly in late successional stages, to evaluate potential for lynx denning and foraging habitat.
2. Design burn prescriptions to regenerate or create snowshoe hare habitat (e.g., regeneration of aspen and lodgepole pine).

#### **Project Planning - Guidelines**

1. Design burn prescriptions to promote response by shrub and tree species that are favored by snowshoe hare.
2. Design burn prescriptions to retain or encourage tree species composition and structure that will provide habitat for red squirrels or other alternate prey species.
3. Consider the need for pre-treatment of fuels before conducting management ignitions.
4. Avoid constructing permanent firebreaks on ridges or saddles in lynx habitat.
5. Minimize construction of temporary roads and machine fire lines to the extent possible during fire suppression activities.
6. Design burn prescriptions and, where feasible, conduct fire suppression actions in a manner that maintains adequate lynx denning habitat (10% of lynx habitat per LAU).

## **RECREATION MANAGEMENT**

Lynx have evolved a competitive advantage in environments with deep soft snow that tends to exclude other predators during the middle of winter, a time when prey is most limiting (Murray and Boutin 1991, Livaitis 1992, Buskirk et al. 1999). Widespread human activity (snowshoeing, cross-country skiing, snowmobiling, snow cats) may lead to patterns of snow compaction that make it possible for competing predators such as coyotes and bobcats to occupy lynx habitat through the winter, reducing its value to and even possibly excluding lynx (Bider 1962, Ozoga and Harger 1966, Murray et al. 1995, O'Donoghue et al. 1998). In order to maintain a competitive advantage for lynx, it may be necessary to minimize or even preclude snow compacting activities in and around quality snowshoe hare habitat. To not do so may lead to the elimination of lynx, or preclude the ability to re-establish them, in these landscapes.

A consideration for lynx in winter landscapes is exploitation or interference competition from other predator/competitors (Buskirk et al. 1999) and human disturbance (e.g., large developed recreational sites or areas of concentrated winter recreational use). Lynx may be able to adapt to the presence of regular and concentrated recreational use, so long as critical habitat needs are being met. Therefore it is essential that an interconnected network of foraging habitat be maintained that is not subjected to widespread human intervention or competition from other predator species.

In areas of concentrated recreational use (e.g., large ski areas), it may be necessary to maintain or provide "diurnal security habitat". In landscapes where there is widespread or intense recreational use, the natural diurnal patterns of human and lynx activity may provide the opportunity to maintain both uses in the landscape. Most human activity occurs during daylight hours, while lynx appear to be most active dusk to dawn, although weather may affect the time period when lynx are most active (Apps 1999). A key to providing temporal segregation of use may be in ensuring there are places in that landscape where lynx can bed during the day relatively undisturbed. Sites that are similar to denning habitat (i.e., areas that are tangled with large woody debris) will tend to exclude most human activity because of the inherent difficulty they pose for human movement. Diurnal security habitat should be sufficiently large to provide effective and visual insulation from human activity, and must be well distributed and in proximity to foraging habitat.

Where such diurnal security sites exist, they should be protected from actions or activities that would destroy or compromise their functional value. In landscapes where these areas are lacking or inadequate, it may be desirable to create them, focusing on location, adequate size, and an abundance of jackstrawed large woody debris.

Landscape connectivity may be provided by narrow forested mountain ridges, plateaus, or forest stringers that

link more extensive areas of lynx habitat. Woodland riparian communities that provide travel cover across otherwise open areas may also provide connectivity.

Minimizing disturbance around denning habitat is important from May to August.

### **Programmatic Planning - Objectives**

1. Plan for and manage recreational activities to protect the integrity of lynx habitat, considering as a minimum the following:
  - a) Minimize snow compaction in lynx habitat.
  - b) Concentrate recreational activities within existing developed areas, rather than developing new recreational areas in lynx habitat.
  - c) On federal lands, ensure that development or expansion of developed recreation sites or ski areas and adjacent lands address landscape connectivity and lynx habitat needs.

### **Programmatic Planning - Standards**

1. On federal lands in lynx habitat, allow no net increase in groomed or designated over-the-snow routes and snowmobile play areas by LAU. This is intended to apply to dispersed recreation, rather than existing ski areas.
2. Map and monitor the location and intensity of snow compacting activities (for example, snowmobiling, snowshoeing, cross-country skiing, dog sledding, etc.) that coincide with lynx habitat, to facilitate future evaluation of effects on lynx as information becomes available.

### **Programmatic Planning - Guidelines**

1. Provide a landscape with interconnected blocks of foraging habitat where snowmobile, cross-country skiing, snowshoeing, or other snow compacting activities are minimized or discouraged.
2. As information becomes available on the impact of snow-compacting activities and disturbance on lynx, limit or discourage this use in areas where it is shown to compromise lynx habitat. Such actions should be undertaken on a priority basis considering habitat function and importance.

### **Project Planning - Standards**

#### ***Developed Recreation:***

1. In lynx habitat, ensure that federal actions do not degrade or compromise landscape connectivity when planning and operating new or expanded recreation developments.

2. Design trails, roads, and lift termini to direct winter use away from diurnal security habitat.

#### ***Dispersed Recreation:***

To protect the integrity of lynx habitat, evaluate (as new information becomes available) and amend as needed, winter recreational special use permits (outside of permitted ski areas) that promote snow compacting activities in lynx habitat.

### **Project Planning - Guidelines**

#### ***Developed Recreation:***

1. Identify and protect potential security habitats in and around proposed developments or expansions.
2. When designing ski area expansions, provide adequately sized coniferous inter-trail islands, including the retention of coarse woody material, to maintain snowshoe hare habitat.
3. Evaluate, and adjust as necessary, ski operations in expanded or newly developed areas to provide nocturnal foraging opportunities for lynx in a manner consistent with operational needs, especially in landscapes where lynx habitat occurs as narrow bands of coniferous forest across the mountain slopes.

### **FOREST/BACKCOUNTRY ROADS AND TRAILS**

Forest and backcountry roads and trails are those that occur on public lands; highways are addressed separately. Refer also to the conservation measures in the Forest Management, Recreation, and Trapping sections.

Plowed roads and groomed over-the-snow routes may allow competing carnivores such as coyotes and mountain lions to access lynx habitat in the winter, increasing competition for prey (Buskirk et al. 1999). However, plowed or created snow roads may be necessary to accomplish winter logging, which may be desirable to meet a variety of resource management objectives.

Preliminary information suggests that lynx may not avoid roads, except at high traffic volumes. Therefore, at this time, there is no compelling evidence to recommend management of road density to conserve lynx. However, new road construction continues to occur in many watersheds within lynx habitat, many of which are already highly roaded, and the effects on lynx are largely unknown. Further research directed at elucidating the effects of road density on lynx is needed.

### **Programmatic Planning - Objectives**

Maintain the natural competitive advantage of lynx in deep snow conditions.

**Programmatic Planning - Standards**

On federal lands in lynx habitat, allow no net increase in groomed or designated over-the-snow routes and snowmobile play areas by LAU. Winter logging activity is not subject to this restriction.

**Programmatic Planning - Guidelines**

1. Determine where high total road densities (>2 miles per square mile) coincide with lynx habitat, and prioritize roads for seasonal restrictions or reclamation in those areas.
2. Minimize roadside brushing in order to provide snowshoe hare habitat.
3. Locate trails and roads away from forested stringers.
4. Limit public use on temporary roads constructed for timber sales. Design new roads, especially the entrance, for effective closure upon completion of sale activities.
5. Minimize building of roads directly on ridgetops or areas identified as important for lynx habitat connectivity.

**LIVESTOCK GRAZING**

In riparian areas within lynx habitat, ungulate forage use levels may reduce forage resources available to snowshoe hares. Browsing or grazing can have a direct effect on snowshoe hare habitat if it alters the structure or composition of native plant communities.

Throughout the Rocky Mountains, grazing has been a factor in the decline or loss of aspen as a seral species in subalpine forests. Young, densely regenerating aspen stands with a well-developed understory provide good quality habitat for snowshoe hares and other potential lynx prey species, such as grouse. Grazing should be managed to allow for regeneration of aspen clones.

Particularly in the naturally fragmented habitats of the western United States, inclusions of high elevation shrub-steppe habitats often may exist within the home range of a lynx. Resident lynx are also known to occasionally make exploratory movements out of their home ranges (Squires and Laurion 1999, Aubry et al. 1999), encountering these habitats and potential alternate prey such as ground squirrels and jackrabbits. Therefore, shrub-steppe habitats within the elevational ranges of forested lynx habitat should be considered lynx habitat and be managed to maintain or achieve mid-seral or higher conditions, thereby providing maximum natural cover and prey availability. Those areas that are currently in late seral condition should not be degraded.

**Programmatic Planning - Objectives**

In lynx habitat and adjacent shrub-steppe habitats, manage grazing to maintain the composition and structure of native plant communities.

**Project Planning - Objectives**

1. Manage livestock grazing within riparian areas and willow carrs in lynx habitat to provide conditions for lynx and lynx prey.
2. Maintain or move towards native composition and structure of herbaceous and shrub plant communities.
3. Ensure that ungulate grazing does not impede the development of snowshoe hare habitat in natural or created openings within lynx habitat.

**Project Planning - Standards**

1. Do not allow livestock use in openings created by fire or timber harvest that would delay successful regeneration of the shrub and tree components. Delay livestock use in post-fire and post-harvest created openings until successful regeneration of the shrub and tree components occurs.
2. Manage grazing in aspen stands to ensure sprouting and sprout survival sufficient to perpetuate the long-term viability of the clones.
3. Within the elevational ranges that encompass forested lynx habitat, shrub-steppe habitats should be considered as integral to the lynx habitat matrix and should be managed to maintain or achieve mid seral or higher condition.
4. Within lynx habitat, manage livestock grazing in riparian areas and willow carrs to maintain or achieve mid seral or higher condition to provide cover and forage for prey species.

**OTHER HUMAN DEVELOPMENTS: OIL AND GAS LEASING, MINES, RESERVOIRS, AGRICULTURE**

Most of these activities affect lynx habitat by changing or eliminating native vegetation, and may also contribute to fragmentation. The primary effects of leases and mines on lynx are probably related to the potential for plowed roads to provide access for lynx competitors, particularly coyotes. Construction of reservoirs will be handled under normal FERC and consultation procedures, and no conservation measures were developed specific to those projects.

**Programmatic Planning - Objectives**

Design developments to minimize impacts on lynx habitat.

**Programmatic Planning - Guidelines**

Map oil and gas production and transmission facilities, mining activities and facilities, dams, and agricultural lands on public lands and adjacent private lands, in order to assess cumulative effects.

**Project Planning - Standards**

On projects where over-snow access is required, restrict use to designated routes.

**Project Planning - Guidelines**

1. If activities are proposed in lynx habitat, develop stipulations for limitations on the timing of activities and surface use and occupancy at the leasing stage.
2. Minimize snow compaction when authorizing and monitoring developments. Encourage remote monitoring of sites that are located in lynx habitat, so that they do not have to be visited daily.
3. Develop a reclamation plan (e.g., road reclamation and vegetation rehabilitation) for abandoned well sites and closed mines to restore suitable habitat for lynx.
4. Close newly constructed roads (built to access mines or leases) in lynx habitat to public access during project activities. Upon project completion, reclaim or obliterate these roads.

## **CONSERVATION MEASURES TO ADDRESS MORTALITY RISK FACTORS**

### **TRAPPING (LEGAL AND NON-TARGET)**

Lynx are known to be very vulnerable to trapping. Ward and Krebs (1985) stated that trapping was the single most important mortality factor in their Yukon study area. Incidental trapping of lynx can occur in areas where regulated trapping of other species overlaps with lynx habitat (Mech 1973, Carbyn and Patriquin 1983, Squires and Laurion 1999). Lynx may be more vulnerable to trapping near open roads (Koehler and Aubry 1994, Bailey et al. 1986).

The U.S. Fish and Wildlife Service (FWS) is proposing to work with the States to develop a 4-d. rule for all regulated or unregulated trapping (e.g., coyote, wolverine, bobcat, fox) in lynx habitats by establishing adequate trapping protocols to minimize incidental take. Each state would work with FWS to customize the protocol for their specific regions.

**Programmatic Planning - Objectives**

Reduce incidental harm or capture of lynx during regulated and unregulated trapping activity, and ensure retention of an adequate prey base.

**Programmatic Planning - Guidelines**

Federal agencies should work cooperatively with States and Tribes to reduce incidental take of lynx related to trapping.

**PREDATOR CONTROL**

Predator control activities conducted on federal lands by Wildlife Services include trapping, shooting, and poisoning animals on domestic livestock allotments, occasionally within lynx habitat. Similar efforts may be conducted on adjacent private lands. Although such actions are intended to target the offending animal, non-target animals including lynx may be impacted.

**Programmatic Planning - Objectives**

Reduce incidental harm or capture of lynx during predator control activities, and ensure retention of adequate prey base.

**Programmatic Planning - Standards**

Predator control activities, including trapping or poisoning on domestic livestock allotments on federal lands within lynx habitat, will be conducted by Wildlife Services personnel in accordance with FWS recommendations established through a formal Section 7 consultation process.

**SHOOTING**

Lynx may be mistakenly shot by legal predator hunters seeking bobcats, or illegally by poachers. Prey species, such as snowshoe hares and ground squirrels, may also be affected by legal shooting.

**Programmatic planning - Objectives**

Reduce lynx mortalities related to mistaken identification or illegal shooting.

**Programmatic Planning - Guidelines**

1. Initiate interagency information and education efforts throughout the range of lynx in the contiguous states. Utilize trailhead posters, magazine articles, news releases, state hunting and trapping regulation booklets, etc., to inform the public of the possible presence of lynx, field identification, and their status.
2. Federal agencies should work cooperatively with States and Tribes to ensure that important lynx prey are conserved.

## **COMPETITION AND PREDATION AS INFLUENCED BY HUMAN ACTIVITIES**

Habitat changes that benefit competitor/ predator species, including some vegetation management practices and providing packed snow travel ways, may lead to increased starvation or direct mortality of lynx. Refer also to applicable conservation measures in the Forest Management, Recreation, and Forest/ Backcountry Roads and Trails sections.

### **Programmatic Planning - Objectives**

Maintain the natural competitive advantage of lynx in deep snow conditions.

### **Programmatic Planning - Standards**

1. On federal lands in lynx habitat, allow no net increase in groomed or designated over-the-snow routes and snowmobile play areas by LAU. This is intended to apply to dispersed recreation, rather than existing ski areas.

## **HIGHWAYS**

Direct mortality from vehicular collisions may be detrimental to lynx populations in the lower 48 states. Mortality levels can drastically increase with relatively small increases in traffic volumes and speed.

### **Programmatic Planning - Objectives**

Reduce the potential for lynx mortality related to highways.

### **Programmatic Planning - Standards**

Within lynx habitat, identify key linkage areas and potential highway crossing areas.

### **Programmatic Planning - Guidelines**

Where needed, develop measures such as wildlife fencing and associated underpasses or overpasses to reduce mortality risk.

## **CONSERVATION MEASURES TO ADDRESS MOVEMENT AND DISPERSAL**

It is essential to provide landscape connectivity so that all or most habitat has the potential of being occupied, and populations remain connected.

At the southern periphery and eastern portions of lynx range, habitat occurs in narrow fragmented bands (man-made or naturally-occurring), or has been fragmented by human developments. Connected forested habitats allow lynx, and other large and medium size carnivores, to easily move long distances in search of food, cover, and mates. Highways and private lands that are subdivided for commercial or residential developments or have high human use patterns can interrupt existing habitat connec-

tivity and further fragment lynx habitat, reducing the potential for population interchange. In some areas, particularly the eastern United States, habitat connectivity may be difficult to achieve because of mixed ownerships. Land exchanges and cooperative management with private landowners may be the only options available to provide landscape connectivity.

Shrub-steppe habitats provide connectivity between mountain ranges and other blocks of primary forested lynx habitat. Where blocks of lynx habitat are separated by intervening basins, valleys, or high mesas of shrub-steppe, land managers should evaluate those shrub-steppe expanses for potential to provide landscape connectivity. Vegetative or geomorphic features within shrub-steppe habitats that may be particularly important are riparian systems and relatively high ridge systems. Where such features exist, land management practices should be consistent with maintaining landscape connectivity. Livestock grazing within shrub-steppe habitats in such areas should be managed to maintain or achieve mid seral or higher condition, to maximize cover and prey availability. Such areas that are currently in late seral condition should not be degraded.

### **Programmatic Planning - Objectives**

Maintain and, where necessary and feasible, restore habitat connectivity across forested landscapes.

### **Programmatic Planning - Standards**

1. Identify key linkage areas that may be important in providing landscape connectivity within and between geographic areas, across all ownerships.
2. Develop and implement a plan to protect key linkage areas on federal lands from activities that would create barriers to movement. Barriers could result from an accumulation of incremental projects, as opposed to any one project.
3. Evaluate the potential importance of shrub-steppe habitats in providing landscape connectivity between blocks of primary lynx habitat. Livestock grazing within shrub-steppe habitats in such areas should be managed to maintain or achieve mid seral or higher condition, to maximize cover and prey availability. Such areas that are currently in late seral condition should not be degraded.

### **Programmatic Planning - Guidelines**

Where feasible, maintain or enhance native plant communities and patterns, and habitat for potential lynx prey, within identified key linkage areas. Pursue opportunities for cooperative management with other landowners.

## **HIGHWAYS**

Highways impact lynx and other carnivores by fragmenting habitat and impeding movements. As traffic

lanes, volume, speeds, and right-of-way width increase, the effects on lynx and other carnivores are magnified. As human demographics change, highways tend to increase in size and traffic density. Special concern must be given to the development of new highways (gravel roads being paved), and changes in highway design, such as additions in the number of traffic lanes, widening of rights-of-way, or other modifications to increase highway capacity or speed.

Within key linkage areas, highway crossing structures should be employed to reduce effects on wildlife. Information from Canada (Trans-Canada Highway) suggests crossings should generally be at ½-mile intervals and not farther than 1 mile apart, depending on topographic and vegetation features.

#### **Programmatic Planning - Objectives**

Ensure that connectivity is maintained across highway rights-of-way.

#### **Programmatic Planning - Standards**

1. Federal land management agencies will work cooperatively with the Federal Highway Administration and State Departments of Transportation to address the following within lynx geographic areas:
  - a) Identify land corridors necessary to maintain connectivity of lynx habitat.
  - b) Map the location of "key linkage areas" where highway crossings may be needed to provide habitat connectivity and reduce mortality of lynx (and other wildlife).

#### **Programmatic Planning - Guidelines**

Evaluate whether land ownership and management practices are compatible with maintaining lynx highway crossings in key linkage areas. On public lands, management practices will be compatible with providing habitat connectivity. On private lands, agencies will strive to work with landowners to develop conservation easements, exchanges, or other solutions.

#### **Project Planning - Standards**

1. Identify, map, and prioritize site-specific locations, using topographic and vegetation features, to determine where highway crossings are needed to reduce highway impacts on lynx.
2. Within the range of lynx, complete a biological assessment for all proposed highway projects on federal lands. A land management agency biologist will review and coordinate with highway departments on development of the biological assessment.

#### **Project Planning - Guidelines**

Dirt and gravel roads traversing lynx habitat (particularly those that could become highways) should not be paved or otherwise upgraded (e.g., straightening of curves, widening of roadway, etc.) in a manner that is likely to lead to significant increases in traffic volumes, traffic speeds, increased width of the cleared ROW, or would foreseeably contribute to development or increases in human activity in lynx habitat. Such projects may increase habitat fragmentation, create a barrier to movements, increase mortality risks due to vehicle collisions, and generate secondary adverse effects by inducing, facilitating, or exacerbating development and human activity in lynx habitat. Whenever rural dirt and gravel roads traversing lynx habitat are proposed for such upgrades, a thorough analysis should be conducted on the potential direct and indirect effects to lynx and lynx habitat.

#### **LAND OWNERSHIP**

Lynx exemplify the need for landscape-level ecosystem management. Contiguous tracts of land in public ownership (national forests, national parks, wildlife refuges, and BLM lands) provide an opportunity for management that can maintain lynx habitat connectivity. Throughout most of the lynx range in the lower 48 states, connectivity with habitats and populations in Canada is critical for maintaining populations in the U.S.

#### **Programmatic Planning - Objectives**

Retain lands in key linkage areas in public ownership.

#### **Programmatic Planning - Standards**

Identify key linkage areas by management jurisdiction(s) in management plans and prescriptions.

#### **Programmatic Planning - Guidelines**

In land adjustment programs, identify key linkage areas. Work towards unified management direction via habitat conservation plans, conservation easements or agreements, and land acquisition.

#### **Project Planning - Standards**

1. Develop and implement specific management prescriptions to protect/ enhance key linkage areas.
2. Evaluate proposed land exchanges, land sales, and special use permits for effects on key linkage areas.

#### **SKI AREAS/LARGE RESORTS AND ASSOCIATED ACTIVITIES**

Ski areas and large resorts are often developed in and across bands of high elevation boreal forests containing lynx habitat. Landscape location, the high intensity of recreational and operational use, and associated development pose a risk to lynx movement and dispersal. Developments that may impede lynx movement occur in Utah and western Wyoming (Northern Rocky Mountains

Geographic Area), Colorado (Southern Rocky Mountains Geographic Area), and possibly portions of the Northeast Geographic Area.

**Programmatic Planning - Objectives**

When conducting landscape level planning on Federal lands, allocate land uses such that landscape connectivity is maintained.

**Programmatic Planning - Standards**

Within identified key linkage areas, provide for landscape connectivity.

**Project Planning - Standards**

When planning new or expanding recreational developments, ensure that key linkage areas are protected.

**Project Planning - Guidelines**

Plan recreational development, and manage recreational and operational uses to provide for lynx movement and to maintain effectiveness of lynx habitat.

This information has been excerpted from the Canada Lynx Conservation Assessment and Strategy. The entire assessment and strategy, along with the amendment proposed for the Northern Rockies can found on the U.S. Fish and Wildlife Service website at:

<http://www.fs.fed/r1/planning/lynx/reports/lcas.pdf>



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M.02 - BLM

January 22, 2008

MEMORANDUM

To: Field Manager, Bureau of Land Management, Butte, MT

From: Montana Field Supervisor, Helena, MT

Subject: Transmittal of biological opinion for the revised Butte Resource Management Plan

This memo transmits the U.S. Fish and Wildlife Service's (Service) biological opinion for effects to grizzly bears based on our review of the Butte Resource Management Plan (RMP) in western Montana. This also conveys our concurrence with your determinations for the effects of the RMP on gray wolves (*Canis lupus*), Canada lynx (*Lynx Canadensis*), bull trout (*Salvelinus confluentus*), and Ute ladies' tresses (*Spiranthes diluvialis*). The transmitted biological opinion was prepared in response to the Service's June 6, 2007 receipt of your Biological Assessment (BA) requesting concurrence and initiation of formal section 7 consultation under the Endangered Species Act.

The transmitted document represents the Service's biological opinion on the effects of the RMP on grizzly bears in accordance with section 7 of the Endangered Species Act of 1973, as amended, (16 U.S.C. 1531 et seq.). The Service has examined the RMP in accordance with the section 7 Interagency Cooperation Regulations (50 CFR 402, 51 FR 19957-19963). The biological opinion refers only to potential effects on grizzly bears and not the overall environmental acceptability of the proposed project. A complete administrative record of this consultation is on file at our Sub-office in Billings, Montana.

Based on our review of the BA and accompanying material, we concur with your determination that the proposed action is likely to adversely affect the threatened grizzly bear. The Service also concurs with your determination that the action is not likely to adversely affect the gray wolf, Canada lynx, bull trout, and Ute ladies' tresses. This concurrence is based on your BA as well as the RMP environmental impact statement. In addition, you made a "no effect" determination for the black-footed ferret and a no jeopardy call for the experimental/nonessential population of the gray wolf. When BLM makes a no effect determination (or no jeopardy for experimental/non-essential populations), concurrence from the Service is not required, although we do appreciate inclusion of the information for our records. In the BA you also made effects determinations for the bald eagle (*Haliaeetus leucocephalus*) and arctic grayling (*Thymalus arcticus*). Bald eagles

and arctic grayling were subsequently removed from Threatened and Candidate status in 2007 and consultation is no longer required for those species.

If you have further questions about this letter or your responsibilities under the Endangered Species Act, please contact me or Anne Vandehey of my staff at 406-449-5225.

**ENDANGERED SPECIES ACT SECTION 7 CONSULTATION**

**BIOLOGICAL OPINION  
ON THE  
EFFECTS OF THE BUTTE BUREAU OF LAND MANAGEMENT  
RESOURCE MANAGEMENT PLAN ON  
GRIZZLY BEARS**

Agency: U.S. Department of Interior  
Bureau of Land Management  
Butte Field Office  
Butte, Montana

Consultation Conducted by: U.S. Fish and Wildlife Service  
Montana Field Office  
Helena, Montana

Date Issued:

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## I. INTRODUCTION

In this biological opinion, the U.S. Fish and Wildlife Service (Service) analyzed effects of the implementation of the Butte Resource Management Plan (RMP) on grizzly bears (*Ursus arctos horribilis*) that occur on lands and mineral estate administered by the Butte Bureau of Land Management (BLM) Field Office in western Montana. Formal consultation was initiated on June 6, 2007, when the Service received the biological assessment (BLM, 2007) for this project.

Section 7(b)(3)(A) of the Endangered Species Act of 1973, as amended (Act) requires that the Secretary of Interior issue biological opinions on federal agency actions that may affect listed species or critical habitat. Biological opinions determine if the action proposed by the action agency is likely to jeopardize the continued existence of listed species or destroy or adversely modify critical habitat. Section 7(b)(3)(A) of the Act also requires the Secretary to suggest reasonable and prudent alternatives to any action that is found likely to result in jeopardy or adverse modification of critical habitat, if any has been designated. This biological opinion addresses only impacts to federally listed species and does not address the overall environmental acceptability of the proposed action.

### *Consultation History*

In 2005 the Service began discussions with the Butte RMP Interdisciplinary Team about changes in grizzly bear habitat and range since the adoption of previous land use planning documents. In meetings and phone conversations it was relayed to BLM personnel that grizzly bears have expanded their range over the past decades and occur outside the Northern Continental Divide Ecosystem Recovery Zone (NCDE or recovery zone). Grizzly bear occurrence and reports of occurrence outside the recovery zone boundary have been increasing over time, throughout the ecosystem. A team of biologists and grizzly bear experts from the Interagency Grizzly Bear Study Team, Forest Service, Montana Fish, Wildlife and Parks, and Service produced a grizzly bear distribution map displaying where grizzly bears could reasonably be expected to occur (U.S. Forest Service, 2002a). The current distribution of grizzly bears overlaps lands administered by the BLM under the proposed Butte RMP. All of these lands are outside of grizzly bear recovery zones established by the Service and so are deemed not necessary for recovery of the species. Interagency teams including representatives from the Service, Forest Service, and the BLM discussed issues related to the increasing frequency of grizzly bear occurrence outside of designated recovery zones over the past few years (U.S. Forest Service unpublished meeting agendas and notes, 2001-2004).

As a result of these discussions, the BLM concluded that the management actions proposed in the RMP were, in rare circumstances, likely to adversely affect grizzly bears as they occur outside the Northern Continental Divide Ecosystem (NCDE) Recovery Zone. Therefore, the BLM requested programmatic consultation on the effects of implementation of the Butte RMP on grizzly bears.

## II. DESCRIPTION OF THE PROPOSED ACTION

The action is the implementation of the Butte RMP and includes lands with BLM surface and/or mineral ownership in seven counties in southwest Montana. Of these, only BLM lands and minerals in Lewis and Clark County include areas where grizzly bears may occur outside the NCDE Recovery Zone. The action area includes areas of the Field Office within the distribution of grizzly bears (U.S. Forest Service, 2002a). The BLM's biological assessment identified two program areas that are likely to adversely affect grizzly bears: access management and livestock grazing. This biological opinion focuses on the effects of RMP direction related to access management, food storage, and livestock grazing on grizzly bears occurring on the RMP area outside of the NCDE recovery zone.

At the time the Headwaters RMP was written, grizzly bears were unknown on BLM lands in the action area. The Headwaters RMP (BLM, 1984) provides goals, objectives, and standards as part of the proposed action for the management of wildlife, however, there is little reference to grizzly bears in the plan and no goals, standards, and guidelines to minimize adverse effects to grizzly bears.

## III. STATUS OF THE SPECIES /CRITICAL HABITAT DESCRIPTION

### *Species/Critical Habitat Description*

Grizzly bears are among the largest terrestrial mammals in North America. South of the United States - Canada border, adult females range from 250-350 pounds and adult males range from 400 to 600 pounds. Grizzly bears are relatively long-lived, living 25 years or longer in the wild. Grizzly bears are omnivorous, opportunistic feeders that require foods rich in protein or carbohydrates in excess of maintenance requirements in order to survive seasonal pre-and post-denning

requirements. Grizzly bears are homeo-hypothermic hibernators, meaning their body temperature drops no more than five degrees C during winter when deep snow, low food availability, and low ambient air temperatures appear to make winter sleep essential to grizzly bears' survival (Craighead and Craighead, 1972a, 1972b). Grizzly bears excavate dens and require environments well covered with a blanket of snow for up to five months, generally beginning in fall (September-November) and extending until spring (March-April) (Craighead and Craighead, 1972b; Pearson, 1972).

### ***Listing History***

The grizzly bear was listed as a threatened species under the Act in the lower 48 states on July 28, 1975 (40 FR 31736). The Service identified the following as factors establishing the need to list: (1) present or threatened destruction, modification, or curtailment of habitat or range; (2) overutilization for commercial, sporting, scientific, or educational purposes; and (3) other manmade factors affecting its continued existence. The two primary challenges in grizzly bear conservation are the reduction of human-caused mortality and the conservation of remaining habitat (U.S. Fish and Wildlife Service, 1993).

The grizzly bear recovery plan (Recovery Plan) was completed on January 1982 and was revised in 1993 (U.S. Fish and Wildlife Service, 1993). The 1993 revised Recovery Plan delineated grizzly bear recovery zones in 6 mountainous ecosystems in the U.S. The Recovery Plan details recovery objectives and strategies for the grizzly bear recovery zones in the ecosystems where grizzly bear populations still persist. These recovery zones are the Northern Continental Divide (NCDE), Yellowstone Grizzly Bear (YGBE), Cabinet-Yaak (CYE), and Selkirk (SE) Ecosystems. Grizzly bears in the YGBE have recovered and were de-listed by the Service in 2007. The Recovery Plan also includes recovery strategies for the North Cascades ecosystem in Washington, where only a very few grizzly bears are believed to remain, and for the Selway-Bitterroot ecosystem of Idaho and Montana, where suitable grizzly bear habitat still occurs.

### ***Life History***

Grizzly bears are large animals with great metabolic demands requiring extensive home ranges. The search for energy-rich food appears to be a driving force in grizzly bear behavior, habitat selection, and intra/inter-specific interactions. Grizzly bears historically used a wide variety of habitats across North America, from open to forested, temperate through alpine and arctic habitats, once occurring as far south as Mexico. They are highly dependent upon learned food locations within their home ranges. Adequate nutritional quality and quantity are important factors for successful reproduction. Diverse structural stages that support wide varieties of nourishing plants and animals are necessary for meeting the high-energy demands of these large animals. Grizzly bears follow phenological vegetative, tuber or fruit development, seek out concentrated food sources including carrion, live prey (fish, mammals, insects), and are easily attracted to human food sources including gardens, grain, compost, bird seed, livestock, hunter gut piles, bait and garbage. Bears that lose their natural fear and avoidance of humans, usually as a result of food rewards, become habituated and may become food-conditioned. Grizzly bears will defend food and have been known to charge when surprised. As a result of real or perceived threats to human safety or property, both habituation and food conditioning increase chances of human-caused grizzly bear mortality. Nuisance grizzly bear mortalities can be a result of legal management actions, defense of human life or illegal killing.

Adult grizzly bears are normally solitary, except females with cubs or during short breeding relationships. They will tolerate other grizzly bears at closer distances when food sources are concentrated and siblings may associate for several years following weaning (Jonkel and Cowan, 1971; Craighead, 1976; Egbert and Stokes, 1976; Glenn et al., 1976; Herrero, 1978). Across their range, home range sizes vary from about 50 square miles or more for females to a few hundred square miles for males. Overlap of home ranges is common. Grizzly bears may have one of the lowest reproductive rates among terrestrial mammals, resulting primarily from the late age at first reproduction, small average litter size and the long interval between litters. Mating occurs from late May through mid-July. Females in estrus will accept more than one adult male (Hornocker, 1962), and can produce cubs from different fathers the same year (Craighead et al., 1995). Age of first reproduction and litter size may be nutritionally related (Herrero, 1978; Russell et al., 1978). Average age at first reproduction in the lower 48 states for females is 5.5 years and litter size ranges from one to four cubs that stay with the mother up to two years. Males may reach physiological reproductive age at 4.5 years, but may not be behaviorally reproductive due to other dominant males preventing mating.

Habitat fragmentation is significant for large carnivores requiring wide vegetative and topographic habitat diversity (Servheen, 1986). Loss and fragmentation of habitat is particularly relevant to the survival of grizzly bears. Large expanses of unfragmented habitat are important for feeding, breeding, sheltering, traveling, and other essential behavioral patterns. Grizzly bears occur at low densities, have low reproductive rates, exhibit individualistic behavior, and are largely dependent on riparian habitats also used extensively by people; thus, grizzly bear populations are susceptible to human influences. Grizzly bears may avoid key habitats due to human generated disturbances, or become habituated and food conditioned, which may ultimately lead to the animal being destroyed. Historically, as human settlements, developments,

and roads increased in grizzly bear habitat, grizzly bear populations became fragmented. As fragmented population segments become smaller and/or isolated, they are more vulnerable to extinction, especially when human-caused mortality pressures continue. Linkage zones are rather recent concepts in broad management direction for grizzly bears and other wide-ranging species (Servheen and Sandstrom, 1993). Linkage zones, or zones of habitat connectivity within or between populations of animals, foster the genetic and demographic health of the species. Bader (2000) displays potential secure areas that are spatially distributed within known male and female grizzly bear dispersal distances and he believes that the available information shows that effective linkages are possible for grizzly bear use and these linkage areas would increase persistence probabilities.

Natural mortality is known to occur from intra-specific predation, but the degree this occurs in natural populations is not known. Parasites and disease do not appear to be a significant cause of natural mortality (Jonkel and Cowan, 1971; Kistchinskii, 1972; Mundy and Flook, 1973; Rogers and Rogers, 1976). As animals highly dependent upon learned knowledge of their habitat, displacement into unknown territory (such as subadult dispersal) may lead to suboptimal nutrition, reduced reproduction, or greater exposure to adult predatory bears or human food sources (which can lead to human-caused mortality). Starvation and loss in dens during food shortages have been surmised, but have not been documented as a major mortality factor. Natural mortality in rare, relatively secretive animals such as grizzlies can be extremely difficult to document or quantify.

Human-caused mortality has been slightly better quantified, but recent models speculate that reported mortality may only 50 percent of actual mortality (McLellan et al., 1999). Between 1800 and 1975, grizzly populations in the lower 48 states declined drastically. Fur trapping, mining, ranching, and farming pushed westward, altered habitat and resulted in the direct killing of grizzly bears. Historically, grizzly bears were targeted in predator control programs in the 1930's. Predator control was probably responsible for extirpation in many states that no longer support grizzlies. More recent human-caused mortality in Montana includes legal hunting (canceled in 1991), management control actions, defense of life, vehicle and train collisions, defense of property, mistaken identity by black bear or other big game hunters, poaching and malicious killing. Grizzly bears normally avoid people, possibly as a result of many generations of bear sport hunting and human-caused mortality. Displacement away from human activities has been documented to reduce fitness of grizzly bears, affecting survival in some instances. Avoidance of roads can lead grizzly bears to either avoid essential habitat along roads, or could put them at greater risk of exposure to human-caused mortality if they do not avoid roads.

### ***Status and Distribution***

The grizzly bear originally inhabited a variety of habitats from the Great Plains to the mountains of western North America, from central Mexico to the Arctic Ocean. With the advent of Euroamerican colonization in the early nineteenth century, grizzly bear numbers were reduced from over 50,000 to less than 1,000 in North America south of the Canadian border. Today, the grizzly bear occupies less than two percent of its former range south of Canada (U.S. Fish and Wildlife Service, 1993). In the conterminous 48 States, only five remaining areas have either remnant or self-perpetuating populations. These remaining populations are principally located in mountainous regions in Washington, Idaho, Wyoming, and Montana and are often associated with National Parks and wilderness areas.

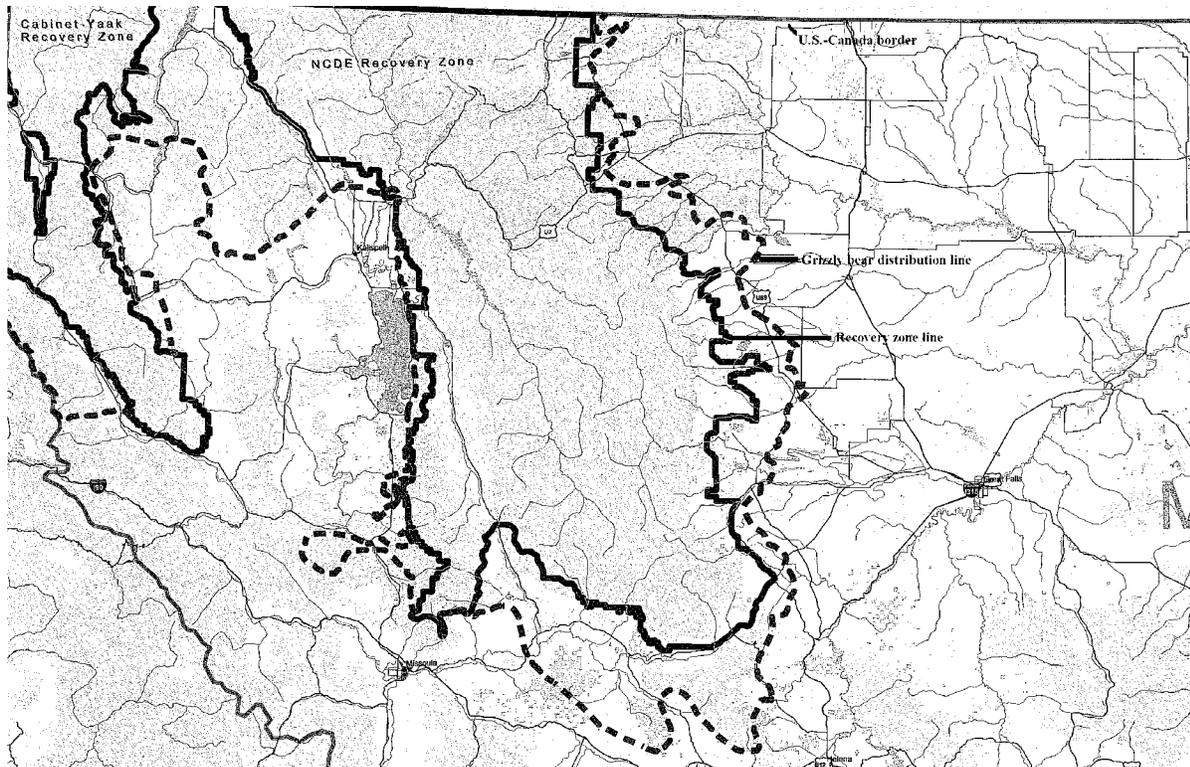
#### Status of grizzly bears in the NCDE

The NCDE extends from the Rocky Mountains of northern Montana into contiguous areas in Alberta and British Columbia, Canada. The U.S. portion of the NCDE which makes up the NCDE recovery zone (U.S. Fish and Wildlife Service 1993) encompasses over 9,600 square miles and includes parts of five National Forests (Flathead, Kootenai, Helena, Lewis and Clark, and Lolo), four wilderness areas (Bob Marshall, Mission Mountains, Great Bear, and Scapegoat), and one wilderness study area (Deep Creek North) (Figure 1). National Forest System lands encompass 63 percent of the NCDE recovery zone. Additionally, the NCDE recovery zone includes Glacier National Park (GNP), the Flathead Indian Reservation (Salish-Kootenai tribal land), the Blackfeet Indian Reservation, adjacent private and State lands, and lands managed by the Bureau of Land Management.

The NCDE grizzly bear recovery zone is subdivided into smaller units to facilitate both the assessment of projects and recovery objectives. Twenty-three bear management units (BMU) were formally delineated throughout the NCDE. BMU were designed to:

- Assess the effects of existing and proposed activities on grizzly bear habitat without having the effects diluted by consideration of too large an area;
- Address unique habitat characteristics and grizzly bear activity and use patterns;
- Identify contiguous complexes of habitat which meet year-long needs of the grizzly bear; and
- Establish priorities for areas where land use management needs would require cumulative effects assessments.

**Figure 1. NCDE (solid line) and grizzly bear distribution area (dashed line) (U.S. Forest Service 2002a).**



The exact size of the grizzly bear population in the NCDE is not known. The nature of the species and the rugged terrain it inhabits makes complete population census difficult, if not impossible. Population parameters more readily monitored are used as an alternative index to population size. The Recovery Plan identified unduplicated females with cubs as one surrogate index for estimating a minimum number of grizzly bears within a recovery zone. The Recovery Plan does not rely entirely on this minimum population estimate to assess the status of grizzly bear populations. The Recovery Plan incorporates a number of measurable parameters to assess population status, including the number of females with cubs, the distribution of family groups, and the relationship between the minimum population estimate and known, human-caused grizzly bear mortality.

The Recovery Plan defines a recovered grizzly bear population as one that can sustain the existing level of known and unknown human-caused mortality that exists in the ecosystem and that is well distributed throughout the recovery zone. Demographic recovery criteria outlined for the NCDE recovery zone include:

- Observation of 22 females with cubs of the year (unduplicated sightings), 10 in Glacier National Park and 12 outside the park, over a 6-year average both inside the recovery area and within a 10 mile area immediately surrounding the recovery zone, excluding Canada;
- Twenty-one of the 23 BMUs occupied by females with young from a running 6-year sum of verified observations, and with no two adjacent BMUs unoccupied;
- Known, human-caused mortality not to exceed 4 percent of the current population estimate (based on most recent 3-year average of females with young);
- No more than 30 percent of the known, human-caused mortality shall be females;
- The mortality limits cannot be exceeded in more than 2 consecutive years for recovery to be achieved; and
- Recovery in the NCDE cannot be achieved without occupancy of the Mission Mountains portion of the NCDE.

Mortality of grizzly bears within a 10-mile area outside the recovery zone boundary is counted towards recovery zone statistics. This is a conservative accounting for grizzly bears making their range primarily in the recovery zone, but it includes bears whose range overlaps the recovery zone line.

In the NCDE, results from monitoring grizzly bears during 1987 through 1996 indicate the Recovery Plan criteria for several population recovery parameters were met, including numbers of females with cubs; numbers of BMUs with family groups; occupancy requirements for BMUs; and total human-caused grizzly bear mortality. Calendar year 2001

was the first year that annual total mortality (6-year average) and annual female mortality (6-year average) were both exceeded (U.S. Fish and Wildlife Service, 2006a). In 2002 and 2003, 15 and 16 grizzly bear mortalities occurred, respectively. During these years three population parameters did not meet demographic recovery criteria: females with cubs inside Glacier National Park (6-year average), annual mortality (6-year average), and annual female mortality (6-year average) (Ibid.). Data for 2004 indicate an increase in overall grizzly bear mortality within the NCDE recovery zone over the past 4 years (U.S. Fish and Wildlife Service 2006a). In 2004, there were 34 grizzly bear mortalities, including 21 females. Four population parameters did not meet demographic recovery criteria (table 1).

**Table 1. 2004 Status of the NCDE in Relation to the Demographic Recovery Criteria (U.S. Fish and Wildlife Service 2006a).**

Population Parameter	Target Number	2004 Number
Females w/cubs (6 yr average)	22	21.8 (131/6)
Inside GNP (6 yr average)	10	9.1 (55/6)
Outside GNP (6 yr average)	12	15 (76/6)
Mortality limit as 4% of min. est.	Less than 12	20.0 (6 yr. avg.) *
Female mortality limit as 30% of total	Less than 3.6	9.0 (6 yr avg.) *
Distribution of females w/young	21 of 23 with Missions occupied	23 of 23; Missions are occupied

\* Exceeds mortality limits

The Recovery Plan requires limits on human-caused grizzly bear mortality as one of the criteria for recovery and delisting. The limits on total and female mortality account for unknown, unreported mortality. Although the Service is concerned with the recent number of grizzly bear mortalities in the NCDE recovery zone, the mortality limits in the Recovery Plan are clearly conservative. Currently, the mathematics used to calculate sustainable mortality limits depend on field counts of females and cubs. An established protocol for this count does not exist, and counting effort varies considerably among years. The NCDE is heavily forested and visual sightings of females with cubs are not easily obtained. Mace and Waller studied grizzly bears in a small portion of the NCDE from 1987 to 1997. Even this intense observation effort yielded variable counts from year to year. The observation variability is also reflected in years not included in the study (U.S. Fish and Wildlife Service, 2006a).

The purpose of counting females with cubs is to estimate a known minimum number of adult females to demonstrate sufficient reproduction to offset existing levels of mortality (U.S. Fish and Wildlife Service 1993). Years during which the effort to count female grizzly bears is poor or conditions are unfavorable may yield very conservative counts of females with cubs. These conservative counts result in a conservative minimum population estimate, which results in conservative human-caused mortality limits. Due to the varying effort and success in counting females with cubs, neither these annual number of females with cubs counted or the human-caused mortality limits/annual tally can be used to estimate trend (U.S. Fish and Wildlife Service, 1993).

The conservative nature of the human-caused mortality estimates were intentional, as the Recovery Plan attempted to incorporate limits that clearly measured recovery of the population. The methodology used in the Recovery Plan (Knight et al., 1988, 1993 in U.S. Fish and Wildlife, 1993) and observations of unduplicated females with cubs from 2002 through 2004 (U.S. Fish and Wildlife Service, 2006a) results in an estimated minimum number of grizzly bears in the NCDE in 2004 of 304 bears.

Current levels of human-caused mortality may be above that sustainable by the population, if the number of grizzly bears in the NCDE is near the minimum estimate. However, current levels may be sustainable by the population if the number of grizzly bears is in fact higher than the minimum. The Service acknowledges that females with cubs are typically poorly counted in the NCDE recovery zone. Reliable estimates of total population versus a minimum population estimate would allow significant insights into assessing the current status of NCDE grizzly bear population.

It is expected that reliable NCDE grizzly bear population estimates will be available within the next year (Kendall, 2004a, b). The U.S. Geological Survey (USGS) DNA-based mark-recapture study in the greater Glacier area collected information from 1998 through 2000 and the data are being analyzed. Final population estimates for this northern one-third of the ecosystem are expected in the fall of 2005 (K. Kendall, USGS, pers. comm., 2005). A preliminary estimate

of grizzly bear numbers from the greater Glacier study was previously reported, but the data are undergoing further analysis and a conclusion is not available at this time (K. Kendall, U.S. Geological Survey, pers. comm., 2005). A more extensive DNA-based study is underway in the entire NCDE recovery zone and grizzly bear population estimates from this study could be available as early as the end of 2007. With 81 percent of the samples analyzed thus far, at least 545 known individual grizzly bears have been identified from samples obtained in the NCDE during 2004 (K. Kendall, USGS, pers. comm., 2007). With 20 percent of the sample yet to be analyzed, the number of known individuals will likely increase. At this time however, even the minimum of 545 grizzly bears for 2004 illustrates the conservative nature of the recovery plan minimum population estimate of 304 grizzly bears in 2004.

We lack precise grizzly bear trend information in the NCDE. During 1987 to 1996, research in the Swan Mountains indicated a tenuous finite rate of increase of 0.977 for grizzly bears in the study area related to high female mortality (Mace and Waller, 1998). However, the authors concluded the study area population was stable, or experiencing an “exceedingly” slow population decline. The authors concluded the population was probably stable based on multiple lines of evidence, including vital rates, density, and occupancy of grizzly bears in the multiple-use zone (Forest Service lands). It is important to note that annual mortality rates for bears utilizing roaded rural (private lands and adjacent roaded areas) and wilderness areas was 21 and 15 times higher, respectively, than for bears using only multiple-use lands (Ibid.). Mortalities in the wilderness areas resulted from “mistaken identity” during the black bear hunting season and human defense of life. In rural areas, mortalities resulted from malicious killing and the management removal of habituated or food-conditioned bears (Ibid.). Recent data (U.S. Fish and Wildlife Service 2006b) indicate that the majority of human-caused mortalities in the NCDE continue to be management removal of nuisance or habituated grizzly bears and illegal killings. The majority of these mortalities occur on roaded, rural areas and not on roaded multiple-use Forest Service lands away from private sites. The Service classified roaded rural as private and public land within 1 mile of a developed private site. This differs slightly from Mace and Waller’s classification of roaded rural as private only. Both classifications demonstrate the higher incidence of grizzly bear mortality associated with areas in proximity to private lands and associated development.

For many reasons, extrapolation of the rate of increase of grizzly bears in the Swan Mountains study area to the entire NCDE recovery zone population is not reasonable. Grizzly bears living in the South Fork area (including the Swan Mountains) are semi-isolated from other portions of the ecosystem, particularly females (Mace and Waller, 1998). The study area was geographically situated between Hungry Horse Reservoir to the east and private lands to the west and south with extensive human development and activity in some areas. Grizzly bears face increased mortality risks due to their proximity to these highly developed lands. According to the authors, these areas of private lands acted as mortality “sinks” for study area bears, and accounted for a great deal of the mortality incurred by study animals. The study area from which the grizzly bear sample was obtained was small (about 360,000 acres) in comparison to the NCDE (over 5,700,000 acres). The NCDE encompasses many diverse habitats such as Glacier National Park with nearly 1,000,000 acres of highest quality habitat, few if any permanent human residences, no public use of firearms, and strict food storage enforcement. Over 1.7 million acres of wilderness (essentially roadless lands) are included in the NCDE along with the Rocky Mountain Front (comprised of drier habitat types east of the Continental Divide, bounded by ranches and relatively low human population), the Swan Valley (high quality habitat but highly populated with people, high road densities, and a public/private checkerboard land ownership pattern), and the North Fork (comprised of very high quality habitat and fewer human residents, bounded by Glacier National Park to the west). It is not known whether similar patterns of grizzly bear population growth, density, or natural and human-caused mortality rates occur across this ecosystem, based on the South Fork Study.

Grizzly bears in the Flathead drainage of British Columbia, including a portion of the Upper North Fork of the Flathead River area in Montana, were shown to be increasing in number over a 10-year period immediately preceding the South Fork study (McLellan 1989b). The density of grizzly bears was high and increased from 5.7 per 100 square kilometers to 8.0 per 100 square kilometer between 1981 and 1986. The estimated average grizzly bear density was 6.4 per 100 square kilometers, high for an interior population.

Montana Fish, Wildlife and Parks (MFWP) initiated a NCDE grizzly bear trend monitoring project in 2005 (R. Mace, MFWP, unpublished 2006). Thus far, a total of 32 females were captured and 22 of these remain radio-collared in 2006. Trend estimates are expected in 2009.

Additionally, a recent mapping effort (U.S. Forest Service 2002a) used 5 years of location data to map the area outside the recovery zone where grizzly bears may occur. The resulting distribution of known grizzly bear presence extends to the west, south, and east of the recovery zone. Although information is limited and not statistically analyzed, grizzly bear occurrences are being increasingly documented outside the recovery zone line suggesting that the grizzly bear population in the NCDE is expanding. Due to the broad distribution of grizzly bear locations and known grizzly bear distribution within the recovery zone, this expansion is likely due to increased grizzly bear numbers in some areas of the recovery zone.

For comparison, the best available information suggests the YGBE grizzly bear population is stable to increasing (Eberhardt et al., 1994; Boyce, 1995; Boyce et al., 2001). Corresponding with this increasing population, female grizzly bears with cubs are well distributed in the Yellowstone recovery zone and sightings of other individuals with cubs occur outside the recovery and 10-mile buffer zone (Haroldson, 2002, 2003; Podruzny et al., 2002). The authors speculated that the 34 percent expansion of grizzly bear range during 1980 to 1990 was likely a product of improved management practices, a series of good food years, and a population increase. Only an estimate of minimum population number is calculated for the NCDE, and population trend information is not available at this time. However, similarities of access management to the Greater Yellowstone Ecosystem (GYE), the distribution of grizzly bears across the recovery zone, and increasing occurrence of bears outside the recovery zone could reasonably be interpreted as indicative of an increasing grizzly bear population in portions of the NCDE as well.

The DNA-based population estimates for the northern one-third of the NCDE will provide important insights into further assessment of the minimum population estimate derived through Recovery Plan methods, and provide a meaningful context within which to view mortality limits and current levels of human-caused grizzly bear mortality. Likewise, the NCDE-wide grizzly bear population estimate, likely available in late 2006, will be invaluable to assessing the status of the population, gauging the use of minimum population estimates, and assessing the impacts of current levels of human-caused mortality. Trend information from the MFWP efforts will be valuable in assessing the population status. In the meantime, the Service finds no compelling evidence to support a prediction that the NCDE grizzly bear population is in decline. Evidence to the contrary, including current distribution of grizzly bears within and outside the recovery zone, reported numbers and locations of recent sightings and conflicts, information and views of MFWP (MFWP in litt. 2005), and observations by NCDE grizzly bear experts (Waller, 2005), suggest a stable or perhaps increasing number of grizzly bears in several areas of the recovery zone. If the DNA-based population estimates reveal we have substantively erred in our assumptions, we will reassess whether the population status would change our conclusions regarding the effects of this proposed action, in accordance with CFR 402.16.

### ***Factors Affecting Grizzly Bears in the NCDE***

A major issue in grizzly bear recovery in the NCDE recovery zone is sanitation related human-caused grizzly bear mortality. Towns and settlements are common in low elevations and major valley bottoms within and adjacent to the recovery zone. Human generated food sources such as bird feeders, garbage, pet and livestock foods, human foods, gardens, and orchards present powerful attractants for grizzly bears. Grizzly bears attracted to these human-generated food sources become habituated and food conditioned. Such bears often become a threat to human safety and property and are killed illegally or removed through agency nuisance grizzly bear control actions.

Sanitation related grizzly bear deaths are among the leading causes of grizzly bear mortality in the NCDE (U.S. Fish and Wildlife in litt. 2004). Data collected since 1980 demonstrate human site conflicts, which involve habituation of bears to human foods and garbage, resulted in 15.5 percent of total grizzly bear mortality within the NCDE recovery zone (Ibid.). This figure increases to 22 percent with the addition of grizzly bear mortality resulting from livestock depredation. Illegal and malicious killing of grizzly bears is the second leading cause of death at 13.5 percent. Legal hunting of grizzly bears is the only activity that exceeded human site conflicts as a source of grizzly bear mortality. Legal hunting of grizzly bears ended in 1991.

An increasing trend is observed in human-caused grizzly bear mortality in the NCDE. The 31 known human-caused grizzly bear mortalities in 2004 was a 29-year high. From 1999 to 2004, the number of grizzly bears removed for conflicts related to human food and livestock depredation increased from 6 to 13 (U.S. Fish and Wildlife Service, 2004), 35 percent and 42 percent of the total mortalities for the respective year. In 2004, 10 of the mortalities were associated with buildings and garbage and 3 of the mortalities involved buildings and grain (U.S. Fish and Wildlife Service 2004). Consistently, mortalities from human-related causes occurred on private lands in the NCDE greater than any other land ownership (Mace and Waller 1998, U.S. Fish and Wildlife Service 2004). Grizzly bears using the interface of rural roaded and multiple-use lands in the Swan Mountains suffered a significantly higher rate of human-caused mortality than individuals using only the multiple-use lands on the Forest (Mace and Waller, 1998).

In the NCDE during 1998 and 2004, significant huckleberry crop failures precipitated an increase in conflicts with grizzly bears (Manley, 2005). During a normal year, a fraction of the grizzly bear population would use natural food sources at low elevations during huckleberry season. In 2004, with the lack of huckleberries at higher elevations, many more grizzly bears used low elevation habitats in search for late summer and fall foods (Manley 2005; R. Mace, Montana Fish, Wildlife and Parks, pers. comm. 2005). The search for food at low elevations puts bears into close proximity to private lands and associated attractants. The number of conflicts and grizzly bear management removals from private and public lands rose dramatically above average. During 2003 and 2004, Montana Fish, Wildlife and Parks Region 1 received over 50 and 225 calls reporting conflicts with grizzly bears, respectively (Manley, 2005). Ninety-five percent were confirmed grizzly bear conflicts and of these, about 95 percent were from private landowners living in or adjacent to grizzly bear

habitat. Conflicts involved grizzly bears seeking unnatural foods in yards or actually causing property damage by trying to access foods in vehicles and buildings. Thirty-one grizzly bears were captured in 2004; 40 percent in the summer and 40 percent in the fall, compared to 20 percent captured in the spring. Eighty-eight percent of the captures were on private property, the rest on public lands. In comparison, only 13 grizzlies were captured in 2003, all on private property.

The Recovery Plan identifies access management as an important tool for conserving grizzly bears and their habitat. To facilitate tracking and controlling cumulative effects of access across the NCDE, the recovery zone was divided into Bear Management Units (BMUs). Each BMU in the NCDE were further divided into smaller units, termed subunits. Subunits are approximately the size of an adult female grizzly bear home range (roughly 50 square miles) and provide the basic scale for the analysis of impacts associated with access management and vegetation management projects. See Appendix C for access conditions of each subunit in the NCDE.

The Butte RMP area does not contain lands within the NCDE recovery zone, consequently, the Butte Field Office does not manage any Bear Management Units or Subunits inside the recovery zone. Access management in grizzly bear habitat in the Butte RMP area outside the NCDE recovery zone is generally managed under guidance from the Montana Co-operative Elk-logging Study (U.S. Forest Service, 1982).

The Lolo National Forest adopted a grizzly bear strategy and amended incidental take statement for its Forest Plan in 1996 that included the NCDE Access Committee recommendations and the Flathead Amendment 19 road density goals (U.S. Forest Service 1996; U.S. Fish and Wildlife Service, 1996) for subunits within the NCDE recovery zone. All but one of seven subunits in two BMUs on the Lolo National Forest has met access objectives; work to reduce road densities is on-going in the Swan subunit (U.S. Forest Service 2004).

The Flathead National Forest encompasses all or portions of 11 BMU and has 70 subunits. Of these 70 subunits, 16 occur entirely within designated wilderness, and are not subject to land management actions such as timber harvest and road construction. Amendment 19 established standards and objectives for the remaining 54 subunits. Of these 54 subunits, 40 are predominantly national forest, in that they are comprised of at least 75 percent national forest lands. As of 2005, eighteen of these subunits met all access standards (U.S. Forest Service, 2005b).

Although the Helena National Forest and Lewis and Clark National Forest have not amended their respective forest plans with the NCDE Access Committee recommendations and 1994 Interagency Grizzly Bear Guidelines (IGBC) guidelines (Interagency Grizzly Bear Committee, 1994), the Flathead A19 is considered accepted road management protocol (U.S. Forest Service 2005a; Wendy Maples, U.S. Forest Service, pers. comm., 2005). The Helena and Lewis and Clark Forests have used the 1994 IGBC guidelines to monitor and implement a no net increase in road densities and no loss of core during project planning.

The Helena National Forest manages one BMU with three subunits of the NCDE (Table 4). Of these three subunits, two meet access guidelines. The Lewis and Clark National Forest has 13 subunits in 6 BMUs, 8 subunits consist of less than 75 percent forest service management and are roaded. However, a preponderance of these roads occurs on private rural or ranch lands and do not receive public use. Two subunits with over 75 percent forest service management are in wilderness. Of the three remaining subunits, two meet access objectives (U.S. Forest Service, 2005 in litt.). Glacier National Park road densities are low. Assuming adequate goals for road and trail access management will be attained through recent and upcoming decisions and actions; the Service considers NCDE recovery zone access management as contributing to and promoting grizzly bear recovery.

The NCDE contains large amounts of secure habitat and low total and open road densities in the majority of the subunits. For the subunits in the NCDE recovery zone that have greater than 75 percent Forest Service ownership, the mean secure habitat is 66.5 percent, the mean Total Motorized Access Density (TMAD) is 15.0 percent and the mean Open Motorized Access Density (OMAD) is 18.1 percent (U.S. Forest Service 2004; 2005a; 2005b; U.S. Forest Service in litt., 2005). See appendix C for all subunit values for OMAD, TMAD and secure habitat across the NCDE.

Habitat fragmentation is significant to large carnivores requiring wide vegetative and topographic habitat diversity (Servheen, 1986). Loss and fragmentation of habitat is particularly relevant to the survival of grizzly bears. Grizzly bears are large animals with great metabolic demands requiring extensive home ranges. Movements of grizzly bears may exceed 60 airline miles and their home ranges can encompass from 50 to over 100 square miles in the NCDE. Large expanses of unfragmented habitat are important for feeding, breeding, sheltering, traveling, and other essential behavioral patterns. Grizzly bears occur at low densities, have low reproductive rates, exhibit individualistic behavior, and are largely dependent on riparian habitats also used extensively by people; thus grizzly bear populations are susceptible to human influences. Grizzly bears may avoid key habitats due to human generated disturbances, or become habituated and food conditioned, which ultimately leads to the animal being destroyed. Historically, as human settlements and developments along roads increased in grizzly bear habitat, grizzly bear populations became fragmented. As fragmented population segments become smaller and/or isolated, they are more vulnerable to extinction, especially when human-caused mortality pressures continue. Linkage zones are rather recent concepts in broad management direction for grizzly bears and oth-

er large-ranging species (Servheen and Sandstrom, 1993). Linkage zones, or zones of habitat connectivity within or between populations of animals, foster the genetic and demographic health of the species.

## Status of grizzly bears in the YGBE

All recovery parameters for the recovery zone were met in 2003 (Schwartz and Haroldson, 2004). Recovery parameters had been met for at least the last 5 years through 2003. The mortality threshold of 5.2 for female bears was slightly exceeded in 2004 with a 6-year running average of 6 human-caused female mortalities (Haroldson and Frey, 2005). There were a total of 26 documented grizzly bear mortalities in 2004, of which 19 were known human-caused deaths, five were natural mortalities, and two were of undetermined causes (Haroldson and Frey, 2005). All other recovery parameters were met in 2004 (Schwartz et al., 2005). The number of females with cubs has surpassed the recovery criterion for a number of years (Haroldson, 2005) and bears now occur where they have not been reported for many years. A total of 49 unduplicated females with 96 cubs were documented in the Greater Yellowstone Ecosystem in 2004 (Haroldson, 2005). With this, the 6-year running average of females with cubs within the Recovery Zone and a 10-mile perimeter has gradually increased from 15 in 1986 to 40 in 2004. The mean litter size of two in 2004 was consistent with past years (Haroldson, 2005).

On November 17, 2005, the Service announced that the Yellowstone Grizzly Bear Ecosystem is a recovered population no longer meeting the Endangered Species Act's definition of *threatened* or *endangered* (70 FR 69854, November 17, 2005). This population has increased from estimates as low as 136 individuals when listed in 1975 to more than 580 animals as of 2004; this population has been increasing since the mid 1990s and is increasing at 4 to 7 percent per year. The range of this population also has increased dramatically as evidenced by the 48 percent increase in occupied habitat since the 1970s. Yellowstone grizzly bears continue to increase their range and distribution annually and grizzly bears in the Yellowstone area now occupy habitats they have been absent from for decades. Currently, roughly 90 percent of females with cubs occupy the Primary Conservation Area (PCA) and about 10 percent of females with cubs have expanded out beyond PCA within the ecosystem.

The Yellowstone Grizzly Bear Ecosystem now represents a viable population which has sufficient numbers and distribution of reproductive individuals so as to provide a high likelihood that the species will continue to exist and be well distributed throughout its range for the foreseeable future. The State and Federal agencies' agreement to implement the extensive Conservation Strategy and State management plans will ensure that adequate regulatory mechanisms remain in place and that the Yellowstone grizzly bear population will not become an endangered species within the foreseeable future throughout all or a significant portion of its range. Therefore, based on the best scientific and commercial information available, the Service delisted GYE grizzly bears on 29 March, 2007 and this population currently does not have protected status under the ESA.

## Status of grizzly bears in the CYE and SE

The Cabinet/Yaak Ecosystem in northwestern Montana and northeastern Idaho has over 1,900 square miles of forested and mountainous habitat occupied by grizzly bears. The population in the Cabinet Mountains portion of this area is thought to be less than 15 bears. The Yaak section of the CYE currently supports a minimum of approximately 20 bears. The Yaak population estimate does not include credible reports from the public of grizzly bear observations, which suggest a population estimate of 20 to 30 bears in the Yaak section of the CYE would be conservative (Kasworm et al. 2000). Grizzly bears occur to the north of the U.S.-Canada border, and interchanges of radio-collared bears across the border have been documented (U.S. Fish and Wildlife Service, 1993).

The Selkirk Ecosystem of northwestern Idaho, northeastern Washington, and southeastern British Columbia includes about 1,080 square miles in the U.S. portion and about 875 square miles in the Canadian portion of the recovery zone. The Selkirk recovery zone is the only defined grizzly bear recovery zone that includes part of Canada because the habitat in the U.S. portion is not of sufficient size to support a minimum population. The habitat is contiguous across the border and radio-collared bears are known to move back and forth across the border. Therefore, the grizzly bears north and south of the border are considered one population (U.S. Fish and Wildlife Service, 1993).

Neither the CYE nor the SE grizzly bear populations have attained the Recovery Plan criteria for females with cubs. Population trend information is statistically inconclusive, though the point estimate of the rate of increase declined during 1999 to 2004 (Kasworm et al. 2000, Kasworm 2001, Kasworm et al., 2004) in the CYE. The Service determined that the combined SE-CYE grizzly bear recovery zones were warranted endangered but precluded in 1999 and suggested that the two populations might be inter-connected (FR 26725-26733).

The most recent data indicate that population status is below recovery goals in the CYE for the distribution of females with young in bear management subunits and exceeds the 6-year average of female mortality in the recovery zone (Kas-

worm et al., 2005). Montana Fish, Wildlife and Parks began augmenting the grizzly bear population in the Cabinet Mountains in 2005.

#### Status of the Selway-Bitterroot and North Cascades Ecosystems

Grizzly bear recovery efforts in the Selway-Bitterroot Ecosystem and North Cascades Ecosystem are in the planning stages. In the North Cascades Ecosystem, most of the grizzly bear population occurs north of the Canada - U.S. border, but a few grizzly bears persist south of the border. Though suitable habitat remains, grizzly bears were extirpated from the Selway-Bitterroot Ecosystem decades ago. The Service released a final environmental impact statement and decision notice addressing the impacts of reintroducing grizzly bears into the Bitterroot Ecosystem in east central Idaho (U.S. Fish and Wildlife Service, 2000).

#### ***Analysis of the species/critical habitat likely to be affected***

The biological assessment determined that continued implementation of the Butte Resource Management Plan would likely adversely affect individual grizzly bears that occur in the RMP area. Grizzly bears are listed as threatened under the Act. Critical habitat has not been designated for this species; therefore none would be affected by the proposed action.

### **IV. ENVIRONMENTAL BASELINE**

Under the provisions of section 7(a)(2), when considering the “effects of the action” on listed species, the Service is required to consider the environmental baseline. Regulations implementing the Act (50 CFR 402.02) define the environmental baseline as the past and present impacts of all federal, state, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed federal projects in the action area that have undergone section 7 consultation, and the impacts of state and private actions which are contemporaneous with the consultation in progress.

Action area, as defined by the Act, is the entire area to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action. For the purposes of this biological opinion, we have defined the action area to be that portion of the RMP area where grizzly bears occur outside of the NCDE recovery zone.

#### ***Status of the Species within the Action Area***

Grizzly bears are now found on BLM lands managed by the Butte Field Office along the Continental Divide in Lewis and Clark County, Montana, outside of the NCDE recovery zone.

#### ***Factors Affecting Species Environment within the Action Area***

The environmental baseline is described here in terms of those program areas that affect grizzly bears either through human contact and conflict or through reductions in secure habitat. These program areas include access management, sanitation/food storage, and livestock grazing. The recreation program may also impact grizzly bears, but access and sanitation/food storage are those elements of the recreation program that may adversely affect grizzly bears.

#### Access Management

Grizzly bears occur on BLM lands outside the recovery zone along the Continental Divide in Lewis and Clark County, Montana. Habitat for grizzly bears is generally of lower quality than areas inside the recovery zone due to high road densities found on state and private lands. Complete road inventories for these areas have not been completed, however a recent BLM analysis of the Hoodoo watershed in Powell County showed that across all ownerships, total road density was 2.45 mi/mi<sup>2</sup>, and open road density was 1.54 mi/mi<sup>2</sup>. On BLM managed lands, total road density was 1.12 mi/mi<sup>2</sup>, while open road density was 0.68 mi/mi<sup>2</sup> (James Sparks Personal Communication), well below the standard for open road density for lands within the recovery zone. The proposed action would allow no net increase in permanent roads built in areas where open road densities are 1 mi/mi<sup>2</sup> or less in big game winter and calving ranges, and within the current distribution of grizzly bear. The proposed action would also manage to reduce open road densities in big game winter and calving ranges, and within the current distribution of grizzly bear where they currently exceed 1 mi/mi<sup>2</sup>.

#### Sanitation/Food Storage

Food Storage Special Order LC00-18 (U.S. Forest Service, 2000) is in effect for all National Forests within the NCDE recovery zone. Similar food storage orders have been in place since 1995. The proposed Butte RMP would require the development and implementation of human food storage regulations and guidelines in grizzly bear distribution zones in coordination with Montana Department of Fish, Wildlife, and Parks and other agencies.

The purpose of the food storage order would be to minimize grizzly bear/human conflicts and thereby provide for visitor safety and recovery of the grizzly bear.

No grizzly bear mortalities have been reported and no management actions towards grizzly bears associated with improper food storage have occurred in the action area (Sarah LaMarr, pers. comm.). Although the adoption of food storage guidelines is likely to effectively prevent food conditioning of grizzly bears on BLM lands, food conditioning of grizzly bears may occur on adjacent lands and thus could potentially lead to grizzly bear management actions on BLM lands as food-conditioned bears move from adjacent lands on to BLM lands.

#### Livestock Grazing

The Butte RMP area has no sheep allotments either inside or outside of a recovery zone. Therefore, no grizzly bear deaths have occurred on BLM lands as a result of sheep grazing. There are no cattle allotments within the recovery zone however there are active cattle allotments in the action area outside of the recovery zone. There have been no grizzly bear deaths or management removals of grizzly bears on BLM lands or due to BLM grazing program activities.

The Montana legislature has created policy to direct MFWP to protect, conserve, and manage grizzly bears as a rare species of Montana wildlife. With this in mind, the Fish, Wildlife & Parks Commission developed a grizzly bear policy (Section 12.9.103, ARM) to address the need to protect grizzly bear habitat, the need to pursue grizzly research, the role of sport hunting in grizzly bear management, depredations, and the appropriate department response to depredations, and requires compliance with federal regulations relating to grizzly bears (Montana Fish, Wildlife and Parks 2001). Under this direction, MFWP has implemented a conservation program to manage and enhance grizzly bear populations. In 2002, MFWP prepared the Grizzly Bear Management Plan for Southwestern Montana 2002-2012 and Final Programmatic Environmental Impact Statement with input from the Montana Grizzly Bear Working Group and other interested parties (Montana Fish, Wildlife and Parks 2002).

## **V. EFFECTS OF THE ACTION**

Under section 7(a)(2) of the Act, "effects of the action" refers to the direct and indirect effects of an action on the species or critical habitat, with the effects of other activities interrelated or interdependent with that action. Indirect effects are those caused by the proposed action and are later in time, but still are reasonably certain to occur (50 CFR 402.02). The effects of the action are added to the environmental baseline to determine the future baseline and to form the basis for the determination in this opinion. Should the federal action result in a jeopardy situation and/or adverse modification conclusion, the Service may propose reasonable and prudent alternatives that the federal agency can take to avoid violation of section 7(a)(2). The effects discussed below are the result of direct and indirect impacts of implementing the proposed project.

The effects of the action section will address the programmatic issues of access management, sanitation/food storage, and livestock grazing. Based on the history of project level consultation with the U.S. Forest Service and BLM, we conclude that implementation of actions under the RMP within these three program areas have the highest likelihood of adversely affecting grizzly bears either through human contact and conflict or through reductions in secure habitat.

#### Access Management

The IGBC Taskforce provided standardized definitions for roads and standardized methods to measure road densities and define analysis areas as a result of grizzly bear research information on open and total road densities and grizzly bear core areas (Interagency Grizzly Bear Committee 1994, 1998). The Service considers the management of roads one of the most important factors in grizzly bear habitat conservation and the IGBC Taskforce guidelines as the best direction with which to manage roads on Federal lands. This section focuses on analysis and discussion of the direct and indirect effects of the BLM's motorized access management on the grizzly bear and on the environmental baseline as affected by existing road densities.

#### ***General Effects of Roads on Grizzly Bears***

Research has confirmed the adverse impacts of roads on grizzly bears (Mace et al. 1996, Mace et al. 1999). Negative impacts associated with roads and excessive road densities influences grizzly bear population and habitat use patterns in numerous, widespread areas. The Grizzly Bear Compendium (Interagency Grizzly Bear Committee 1987) summarized impacts reported in the literature including:

- Avoidance/displacement of grizzly bears away from roads and road activity;
- Changes in grizzly bear behavior, especially habituation to humans, due to ongoing contact with roads and human activities conducted along roads;

- Habitat loss, modification, and fragmentation due to roads and road construction, including vegetative and topographic disturbances; and
- Direct mortality from road kills, legal and illegal harvest, and other factors resulting from increased human-bear encounters.

### ***Habituation and mortality***

Mortality is the most serious consequence of roads in grizzly bear habitat. Mortalities result directly from collisions with vehicles and illegal shooting or indirectly through habituation to human presence. Continued exposure to human presence, activity, noise, and other elements can result in habituation, which is essentially the loss of a grizzly bear's natural wariness of humans. High road densities and associated increases in human access into grizzly bear habitat can lead to the habituation of grizzly bears to humans. Habituation in turn increases the potential for conflicts between people and grizzly bears. Habituated grizzly bears often obtain human food or garbage and become involved in nuisance bear incidences, and/or threaten human life or property. Such grizzly bears generally experience high mortality rates as they are eventually destroyed or removed from the population through management actions. Habituated grizzly bears are also more vulnerable to illegal killing because of their increased exposure to people. In the Yellowstone region, humans killed habituated grizzly bears over three times as often as non-habituated grizzly bears (Mattson et al., 1992).

The specific relationship between roads and the mortality risk to grizzly bears is difficult to quantify. The level of human use of roads is one of several factors influencing the mortality risk associated with any road. Research supports the premise that roads facilitate human access into grizzly bear habitat, which directly or indirectly increases the risk of mortality to grizzly bears. Grizzly bears were increasingly vulnerable to illegal and legal harvest as a consequence of increased road access by humans in Montana (Mace et al., 1987) and in the Yellowstone region (Mattson et al., 1992). In southeastern British Columbia, McLellan and Shackleton (1988) reported roads increased access for legal hunters and poachers, the major source of adult grizzly mortality. McLellan (1989b) reported that 7 of 13 successful legal hunters interviewed had been on a road when they harvested their grizzly bear. McLellan and Mace (1985) found that a disproportionate number of mortalities occurred near roads. In the Yellowstone ecosystem, Mattson and Knight (1991) reported that areas influenced by secondary roads and major developments were most lethal to grizzly bears. Aune and Kasworm (1989) reported 63 percent of known, human-caused grizzly bear deaths on the east front of the Rocky Mountains occurred within 1 kilometer (0.6 miles) of roads, including 10 of 11 known female grizzly bear deaths. In Montana, Dood et al. (1986) reported that 48 percent of all known, non-hunting mortalities during the period of 1967 through 1986 occurred within 1 mile of roads. Grizzly bears were also killed by vehicle collision, the most direct form of road-related mortality (Greer 1985, Knight et al., 1981, Palmisciano, 1986).

Several analyses on grizzly bear mortalities for the NCDE have been completed. During 1992-2001, Montana Fish, Wildlife and Parks reported a total of 157 known grizzly bear deaths (including cubs) were attributed to the following sources (percents have been rounded to the nearest whole number): 20 percent (32) management removal due to food conditioning; 13 percent (21) due to illegal, malicious killing; 11 percent (18) due to train collisions; 10 percent (16) under investigation; 8 percent (12) illegal mistaken identification; 8 percent (12) livestock conflicts; 6 percent (9) legal self defense; 6 percent (9) related to human fatalities; 5 percent (8) natural; 4 percent (6) human fatality; 3 percent (5) vehicle collision; 3 percent (5) unknown; 3 percent (4) capture related. A total of 143 of these grizzly bear deaths were known human-caused: 22 percent (32) management removal due to food conditioning; 15 percent (21) due to illegal, malicious killing; 13 percent (18) due to train collisions; 11 percent (16) under investigation; 8 percent (12) illegal mistaken identification; 8 percent (12) livestock conflicts; 6 percent (9) legal self defense; 6 percent (9) related to human fatalities; 3 percent (5) vehicle collision; 3 percent (5) unknown; 3 percent (4) capture related (U.S. Fish and Wildlife Service 2002). During this period 12 females and six cubs were removed from the population due to management removal.

During 1999-2005, 146 known human-caused grizzly bear mortalities were reported in the NCDE (U.S. Fish and Wildlife Service *in litt.* 2006b). They were attributed to the following causes: 54 management removals related to human food/livestock; 30 train and vehicle collision; 41 malicious illegal; 14 legal self-defense/hunter; 3 management removals related to a human fatality; and 4 handling. Of the human-caused mortalities during this period, 63 were female, 69 were male and 14 were unknown (U.S. Fish and Wildlife Service *in litt.*, 2006b).

Subadult grizzly bears are more often vulnerable to habituation and illegal killing or they conflict with people and are removed through management action. Subadult grizzly bears frequently traverse long distances or unknown territory, increasing the likelihood of encountering roads, human residences or other developments where human food or other attractants are available, increasing the potential for habituation and/or conflicts with people. Between 1988 and 1993, six of seven grizzly bear management removals from the Flathead National Forest and surrounding area involved subadults (U.S. Forest Service, 1994a, 1994b). In the Yellowstone ecosystem, roads impacted individual age and sex classes

of grizzly bears differently. Subadults and females with young were most often located near roads, perhaps displaced into roaded, marginal habitat by dominant grizzly bears (Mattson et al., 1987, Mattson et al., 1992).

Known, human-caused grizzly bear mortality in the South Fork Study area during the 6-year period of 1988 through 1994 appears relatively high when compared to other studies. During a 9-year period of research in southeastern British Columbia, McLellan (1989b) reported fewer human-caused grizzly bear mortalities (11) than occurred during 6 years of research in the South Fork Study area (13) (excluding legal hunter and research-caused mortalities). Although the British Columbia study area was roaded for gas exploration, timber harvest and other uses, the area had few permanent human residents and generally received lower use by humans than did the South Fork Study area in Montana. In 1994, grizzly bear population trajectories for the two study areas were computed (Servheen et al., 1994). In the British Columbia study area, high survivorship rates of adult and subadult females resulted in an upward trend in the grizzly bear population. In the South Fork Study area, relatively low adult and subadult female survivorship rates resulted in an annual decline in the grizzly bear population. Adult female grizzly bear mortality was the most important factor in determining trend, and most known grizzly bear mortalities were determined to be human-caused.

The presence of roads alone does not necessarily result in direct mortality of grizzly bears, but the proximity of the land to human population centers, resulting high numbers of people using roads, and dispersed recreation in habitat around roads can pose considerable risks to grizzly bears. Social values and attitudes also contribute to the level of mortality risk to grizzly bears. Incidental or accidental human-caused grizzly bear mortality, combined with a few individuals intent on illegally shooting grizzly bears, can collectively result in serious, detrimental effects to grizzly bear populations. Access management can be instrumental to reducing mortality risk to grizzly bears by managing the present and anticipated future road use-levels resulting from continued timber harvesting and the increasing human population in western Montana.

### *Displacement and Security*

Some grizzly bears, particularly subadults, readily habituate to humans and consequently suffer increased mortality risk. However, many grizzly bears under-use or avoid otherwise preferred habitats that are frequented by people. Such under-use of preferred habitat represents modification of normal grizzly bear behavior. Negative association with roads arises from the grizzly bears' fear of vehicles, vehicle noise, and other human-related noise around roads, human scent along roads and hunting and shooting along or from roads. Grizzly bears that experience such negative consequences learn to avoid the disturbance and annoyance generated by roads. Such animals may not change this resultant avoidance behavior for long periods after road closures. Even occasional human-related vehicle noise can result in annoying grizzly bears to the extent that they continue to avoid roads.

All factors contributing to direct links between roads and displacement from habitat have not been quantified. As with mortality risk, the level of road-use by people is likely an important factor in assessing the potential displacement caused by any road. Contemporary research, however, indicates that grizzly bears consistently were displaced from roads and habitat surrounding roads, often despite relatively low levels of human use (Mattson et al. 1987, McLellan and Shackleton 1988, Aune and Kasworm 1989, Kasworm and Manley, 1990; Mace and Manley, 1993; Mace et al., 1996).

In Montana, Aune and Stivers (1982) reported that grizzly bears avoided roads and adjacent corridors even when the area contained preferred habitat for breeding, feeding, shelter, and reproduction. McLellan and Shackleton (1988) found that grizzly bears used areas near roads less than expected in southeastern British Columbia and estimated that 8.7 percent of the total area was rendered incompatible for grizzly bear use because of roads. In Montana, Mace and Manley (1993) reported use of habitat by all sex and age classes of grizzly bears was less than expected in habitats where total road densities exceeded 2 miles per square mile. Twenty-two percent of the South Fork Study area exceeded 2 miles per square mile. Adult grizzly bears used habitats less than expected when open motorized access density exceeded 1 mile per square mile. Further, female grizzly bears in the South Fork Study area tended to use habitat more than 0.5 mile from roads or trails greater than expected. As traffic levels on roads increased, grizzly bear use of adjacent habitat decreases (Mace et al., 1996). In Yellowstone, Mattson et al. (1992) reported wary grizzly bears avoided areas within 2 kilometers (1.2 miles) of major roads and 4 kilometers (2.4 miles) of major developments or town sites.

Research suggests that grizzly bears benefit from road closures aimed at minimizing traffic on roads within important seasonal habitat, especially in low elevation habitats during the spring (Mace et al., 1999). When roads are located in important habitats such as riparian zones, snowchutes and shrub fields, habitat loss through avoidance behavior can be significant. Mace et al. (1996) found that most of the roads within grizzly bear seasonal ranges were either closed to vehicles or used infrequently by humans. Some grizzly bears avoided areas with a high total road density even when the roads were closed to public travel. If human-related disturbances such as road use or timber harvest continue in preferred habitats for extended periods of time, grizzly bear use of the area may be lost, particularly use by female grizzly bears. In the Swan Mountain study (Mace et al., 1996), female grizzly bear home range selection of unroaded cover types was greatest and as road densities increased, selection declined. Zager (1980) reported the avoidance of roads by females

with cubs. Aune and Kasworm (1989) and McLellan (1989a) found that female cubs generally established their home range within or overlapping with their mother's home range, where as males generally dispersed from their mother's home range. Long-term displacement of a female from a portion of her home range may result in long-term under-use of that area by female grizzly bears because cubs have limited potential to learn to use the area. In this way, learned avoidance behavior could persist for several generations of grizzly bears before grizzly bears again utilize habitat associated with closed roads. Thus, displacement from preferred habitats may significantly modify normal grizzly bear behavioral patterns.

Grizzly bears can also become conditioned to human activity and show a high level of tolerance especially if the location and nature of human use are predictable and do not result in overtly negative impacts for grizzly bears (Mattson, 1993). In Glacier National Park, Jope (1985) suggested grizzly bears in parks habituate to high human use and showed less displacement, even in open habitats. Yonge (2001) found that grizzly bears near Cooke City, Montana, were willing to consistently forage in very close proximity to high levels of human use if cover was sufficient and energetically efficient feeding opportunities were present. Both Mattson (1993) and Yonge (2001) postulated that areas with higher levels of human activity might have a positive effect for bears by serving as a kind of refugia for weaker population cohorts (sub-adults and females with cubs) seeking to avoid intra-specific competition (adult males). However, Mattson qualified this observation by adding that the beneficial effects vary as to whether hunting is allowed, and how closely the human population is regulated. Further, food conditioned grizzly bears were much more likely to be killed by humans.

Both Yonge (2001) and Mattson (1993) indicated that increases in human use levels can be deleterious if some human activities are unregulated, such as use of firearms, presence of attractants, nature and duration of human uses. Conversely, a level of coexistence between humans and grizzly bears can be achieved if such activities are controlled. Near Cooke City, Montana, the New World Mine reclamation project had minimal effects on grizzly bears, in part because reclamation activities were temporally and spatially predictable and people associated with the work were carefully regulated against carrying firearms or having attractants available to grizzly bears (Tyers, unpublished 2006). In the Swan Valley of Montana, raw location data from a small number of collared grizzly bears show nocturnal use of highly roaded habitat (C. Servheen, pers. comm. 2005). The Swan Valley data have not been statistically analyzed and the study was not designed to determine the impact of roads on bears, sample size is very small, and perhaps most importantly, mortality rates for these grizzly bears are not yet known. However, these data indicate that some grizzly bears can apparently habituate to relatively high levels of human activity.

Low-elevation riparian habitats are of significant seasonal importance to grizzly bears in the YGBE. Grizzly bears typically use the lowest elevations possible for foraging during spring. Craighead et al. (1982) described the value of low-elevation habitats to grizzly bears. The MFWP concluded that maximum numbers of grizzly bears can be maintained only if the species continues to have the opportunity to use both the temperate and subalpine climatic zones (Dood et al. 1986).

Research identified the following individual home-range selection patterns in local grizzly bear population segments: (1) some individual animals live almost exclusively (except for denning) in low elevation habitats; (2) other individuals maintain home ranges in more mountainous or remote locations; and (3) some individuals migrate elevationally on a seasonal basis (Servheen 1981, Aune and Stivers 1982).

Specific causes or factors involved in the selection or preferences for certain home ranges by grizzly bears are not well understood. Mace and Manley (1993) found that grizzly bear home ranges in the South Fork Study area included remote areas in high elevations. South Fork Study grizzly bear habitat-use data, road density analyses of the South Fork Study area, previous studies, and CEM analysis (U.S. Forest Service, 1994a, Mace et al., 1999) suggested that low-elevation habitats were not freely available to grizzly bears because of high road densities and associated human use in these areas. High road densities in low-elevation habitats may result in avoidance of or displacement from important spring seasonal habitat for some grizzly bears or high mortality risk for those individuals that venture into and attempt to exploit resources contained in these low-elevation areas.

### ***Core areas***

The Service considers significant declines in expected use of habitat by grizzly bears a serious consequence of high road densities. Significant declines in grizzly bear use of MS-1 habitat (habitat areas within a recovery zone that are key to the survival of the grizzly where seasonal or year-long activity, under natural, free-ranging conditions is common), especially those habitat components with high seasonal values, indicate that habitat needed for survival and recovery is less available. Ideal grizzly bear habitat provides some areas isolated from excessive levels of human impact. Because grizzly bears can conflict with humans and their land uses, grizzly bear populations require a level of safety from direct human-caused mortality and competitive use of habitat such as settlement, roading, recreation, excessive logging, mining and livestock grazing.

Analysis in the South Fork Study area (Mace and Manley, 1993, Mace et al., 1996) indicated the importance of unroaded habitat, especially for females with cubs. Mace and Manley (1993) reported adult females used habitat further than 0.5 mile from roads or trails more than expected; 21 percent of the composite home range had no trails or roads and 46 percent was unroaded (greater than 0.5 mile from a road). Substantive blocks of unroaded habitat were components of all adult female home ranges. Of the adult female locations within unroaded polygons, 83 percent occurred within 7 polygons that exceeded 2,260 acres in size. Based on grizzly bear habitat use data from the Yellowstone ecosystem, Mattson (1993) recommended that micro scale security areas in that region be an absolute minimum of 6 kilometers (3.6 miles) in diameter or 28 square kilometers (10 square miles) and should be secure for a minimum period of 5, or preferably 10, years.

The IGBC Taskforce (Interagency Grizzly Bear Committee, 1994) recognized the importance of secure areas to grizzly bears. The Taskforce defined "core areas" as those areas with no motorized access (during the non-denning period) or heavily used foot/livestock trails, providing some level of secure habitat for grizzly bears. Motorized use, such as snowmobiling or that associated with timber harvest, could occur within core areas during the denning (winter) period. The Taskforce recommended the establishment of core areas in all recovery zone subunits, the size of core area should depend on ecosystem-specific habitat conditions, and that a core area remain intact on the landscape for at least 10 years. In the South Fork Study area of the NCDE, approximately 68 percent of the adult female composite home range was core area (U.S. Forest Service in litt. 1994, K. Ake, U.S. Forest Service, pers. comm., 2005).

### *Effects of Roads in the Action Area*

Continued implementation of the Butte RMP impacts grizzly bears outside of the recovery zone. Grizzly bears have been and will continue to be impacted to varying degrees by existing road densities, road use, decreasing road densities in some areas, salvage harvest, recreation activity in all seasons, legal big game hunting, routine land management tasks, and natural changes in habitats in the ecosystem. Routine management includes road and facilities maintenance and wildlife improvement projects.

Portions of the action area have high levels of activity along roads while other portions have low activity along roads or no roads at all. Adverse effects from access management on the resource area may be resulting in the displacement of individual grizzly bears, the avoidance of suitable habitat and/or the reduction of habitat to an unsuitable condition. High road densities and lack of core or secure areas exist across many areas outside the NCDE recovery zone. However, the overall habitat condition within the NCDE recovery zone is of high quality and grizzly bear populations are increasing.

The Butte RMP would preclude additional permanent road construction in grizzly bear distribution where such construction would result in road densities exceeding 1 mi/mi<sup>2</sup>, total road miles would decrease in those areas of grizzly bear distribution that currently exceed the 1 mi/mi<sup>2</sup> road density standard. Periodic new road construction may occur, but overall there would be a downward trend in the miles of roads in grizzly bear habitat. The Service concludes that it is reasonable to assume that under the RMP, the level of permanent roads in areas outside the recovery zone will not substantively increase during the life of the RMP, with some local exceptions. This assumption is based on the objectives and standards contained in the proposed action as well as recent history and trends in road building and decommissioning in an adjacent BLM field office that show fewer permanent roads on the landscape. For example, in the Hoodoo Mountain watershed, a primary grizzly bear habitat in the Garnet RMP area, open road densities are 0.50 mi/mi<sup>2</sup>, and total road densities are 1.12 mi/mi<sup>2</sup> on BLM lands (Tables 2 and 3). These road density measures are well below those determined to result in adverse effects to grizzly bears. However, current high open and total road densities in some areas outside of the recovery zone, may result in adverse effects to grizzly bears attempting to live in these areas. These roads and any new roads constructed in the future may adversely impact grizzly bears' ability to find food resources, breed and raise young, and find shelter.

**Table 2.** Total road density; open road density during fall; and open road density during spring, summer, and winter on BLM lands located in the Hoodoos Watershed Analysis Boundary, Missoula BLM Field Office.

<b>Road Density</b>	<b>Pre-Treatment</b>	<b>Post-Treatment</b>	<b>Compliance</b>
Total Road Density	1.12 mi/mi <sup>2</sup>	1.18 mi/mi <sup>2</sup>	N/A
Open Road Density (fall)	0.50 mi/mi <sup>2</sup>	0.52 mi/mi <sup>2</sup>	yes
Open Road Density (spring, summer, and winter)	0.68 mi/mi <sup>2</sup>	0.70 mi/mi <sup>2</sup>	yes

**Table 3.** Total road density; open road density during fall; and open road density during spring, summer, and winter in the Hoodoos Watershed Analysis Boundary (all ownerships) Missoula BLM Field Office.

Total Road Density	2.45 mi/mi <sup>2</sup>	2.45 mi/mi <sup>2</sup>	N/A
Open Road Density (fall)	0.96 mi/mi <sup>2</sup>	0.98 mi/mi <sup>2</sup>	yes
Open Road Density (spring, summer, and winter)	1.54 mi/mi <sup>2</sup>	1.56 mi/mi <sup>2</sup>	no

Under the RMP, temporary roads built for resource extraction such as timber harvest or mining may remain on the landscape for several years and receive a substantial amount of use. Such roads may also cause temporary adverse effects to grizzly bears, such as displacement from key habitats. The Service expects that temporary roading will occur on lands within the distribution of grizzly bears on the Butte RMP area, outside the recovery zone. The Service also anticipates some level of adverse effects to grizzly bears with home ranges impacted by these temporary roads. However, effects would be moderated if the BLM continues its record of decommissioning temporary roads. In addition, on adjacent Helena National Forest lands inside the recovery zone, road densities have been decreasing in recent years leading to improved conditions for grizzly bears in the area managed primarily for their recovery (Forest Service, 2006).

#### Sanitation/Food Storage

This section focuses on analysis and discussion of the direct and indirect effects to grizzly bears related to sanitation and food storage issues. Mortality of grizzly bears may occur indirectly through habituation to human presence. Also refer to the ‘habituation and mortality’ subsection in the ‘General Effects of Roads on Grizzly Bears’ section for further discussion on habituation.

#### ***General Effects of Sanitation/Food Storage and Habituation***

Human-caused mortality of grizzly bears results from management action, train and auto collision, trapping during research or management action, defence of human life and property, and illegal killing. Grizzly bear-human conflicts resulting in management removal of grizzly bears habituated to human foods or livestock is a leading cause of grizzly bear mortality in the NCDE (U.S. Fish and Wildlife Service, 2004). The number of management removals is exceeded only by legal hunting that was discontinued in 1991.

The Service is concerned with the significant number of grizzly bear mortalities resulting from habituation and conditioning to human-related foods. An increasing trend is observed in human-caused grizzly bear mortality in the NCDE. The 31 known human-caused grizzly bear mortalities in 2004 was a 29-year high. From 1999 to 2004, the number of grizzly bears removed for conflicts related to human food and livestock depredation increased from 6 to 13 (U.S. Fish and Wildlife Service, 2004), 35 percent and 42 percent of the total mortalities for the respective year. Grizzly bears face management action on public lands and other land ownerships. Consistently, mortalities from human-related causes occurred on private lands in the NCDE greater than any other land ownership (Mace and Waller 1998, U.S. Fish and Wildlife Service, 2004). Grizzly bears using the interface of rural roaded and multiple-use lands in the Swan Mountains suffered a significantly higher rate of human-caused mortality than individuals using only the multiple-use lands on the Forest (Mace and Waller, 1998).

Permanent or seasonal human residences and livestock facilities with improperly stored garbage, livestock or pet foods can lure grizzly bears to private property and are particular sources of grizzly bear food conditioning. Food conditioned grizzly bears enter unsecured garbage receptacles, sheds and other buildings in search of a reward. In the NCDE in 2004, 10 mortalities were associated with buildings and garbage; three mortalities involved buildings and grain (U.S. Fish and Wildlife Service, 2004). Accessibility to human related attractants and conditioning to those rewards can lead to management removal and to mortality of grizzly bears by people defending their life and property.

Mace and Waller (1998) studied grizzly bear movements in three types of access situations in the Swan Mountains in Montana: multi-use Forest Service lands, unroaded wilderness with no permanent human dwellings, and roaded rural areas adjacent to multiple-use zones and composed of private lands with roads and developed for permanent homes, farms, or service facilities. Grizzly bears spent varying amounts of time in the three zones. Grizzly bears in rural roaded and wilderness areas faced 21 and 15 times increased risk of human-caused mortality than those bears using multiple-use lands only. The researchers recommended that where concentrated human uses occur on public lands and human foods and attractants are present on private lands, efforts to minimize grizzly bear exposure to these elements is important to

increasing grizzly bear numbers and improve long-term population trend. Also, the authors suggested more public road closures would be of limited mitigative value for decreasing grizzly bear mortality.

Grizzly bears face direct mortality risks on public land relatively infrequently in the NCDE. Management action due to human food habituation does occur. However, on Forest Service administered lands, grizzly bear mortalities more often resulted from mistaken identity during legal hunting season, illegal or malicious killing, or automobile collision (U.S. Fish and Wildlife Service 2004). Glacier National Park receives an average of 1.7 million visitors a year with concentrated use in developed areas and dispersed in the backcountry (National Park Service 2005). Between 1980 and 2002, only 10 grizzly bear mortalities were attributed to management action due to human-related foods in Glacier Park (U.S. Fish and Wildlife Service, in litt., 2003). In comparison, in 2004 alone, 13 grizzly bears were removed from private lands within the NCDE because of habituation.

Ake et al. (1998) summarized human-caused grizzly bear mortality locations for the period 1984 to 1996. An estimate of the amount of time grizzly bears spent in rural, roaded, and backcountry area (Mace and Waller 1998) was then compared with mortality locations. Although grizzly bears spent less than 5 percent of time in rural settings, 56 percent of human-caused grizzly bear mortality occurred in rural roaded areas. Grizzly bear mortality data collected since 1998 support the premise of increased risk to grizzly bears in rural roaded areas. In the NCDE, mortalities associated with roaded rural (private) areas exceeded the sum of mortalities from Forest Service roaded areas and areas away from roads. Distribution data from 2003 and 2004 show a pattern of management removals at the interface of public and private lands in the NCDE (U.S. Fish and Wildlife Service 2004). BLM lands in the action area tend to be more scattered, and intermingled with private and state-owned lands than the Forest Service Lands referenced above. For this reason, despite the low probability of bears becoming food conditioned on BLM lands, BLM lands may be more likely to host bears conditioned on other ownerships.

Grizzly bears habituated and conditioned to human foods in the GYE also ranged closer to human developments and suffered higher mortalities than their more wary counterparts (Mattson et al., 1992). Gunther et al. (2004a) reviewed grizzly bear-human conflicts in the GYE between 1992 and 2000. The second highest source of human-caused grizzly bear mortality included livestock depredation and anthropogenic foods. Defense of human life and property resulted in the highest level of mortalities. Although no distinct geographic concentrations of mortalities were evident, most management removals occurred outside of the Yellowstone recovery zone and on private land. In 2003, 85 percent of human-grizzly bear conflicts involved human foods or livestock; 71 percent of conflicts were concentrated in three areas of mixed ownership to the east of Yellowstone National Park (Gunther et al., 2004b). Two of 12 known human-caused grizzly bear mortalities reported in the GYE in 2003 resulted from site conflicts involving anthropogenic food; both removals occurred on private property (Haroldson and Frey, 2004).

Yellowstone National Park received close to 3 million visitors, approximately 670,000 automobile campground use nights, and 43,000 backcountry campers from 2000 through 2003 (Gunther, 2004). One-hundred and four known grizzly bear mortalities occurred in the GYE, 15 in Yellowstone National Park, during that 4-year period (Haroldson and Frey 2000, 2001, 2002, 2003). Habituation and food conditioning was not identified as a source of human-caused grizzly bear mortality. Vehicle collisions, wolf predation, natural processes and unknown (2 individuals) were causes of grizzly bear deaths in the Park. Grizzly bear mortalities occurred more frequently on National Forest lands and private lands surrounding Yellowstone National Park than within the park boundary. Conflicts with hunters were a major source of grizzly bear death on National Forest lands. Nuisance removals for property damage, livestock depredation, and food conditioning were primary reasons for mortality on private property.

Incidence of property damage or conflicts associated with human related foods is inversely proportional to the availability of high quality grizzly bear resources; during periods of poor natural food production incidences of human-grizzly bear conflicts increase. When poor seasonal bear foods exist in part or through the entire nondenning season in the GYE, the incidences of bears causing property damage and obtaining anthropogenic foods increased four fold over average or good years (Gunther et al., 2004a). The conflict relationship is magnified when the availability of late season natural foods such as whitebark pine seeds is insufficient to meet the high energy requirements during hyperphagia (Mattson et al., 1992).

Numerous studies in the NCDE elucidate the importance of late-season frugivory, especially globe huckleberries (*Vaccinium globulare*), by grizzly bears (Martinka and Kendall, 1986, Weaver et al., 1990). Berry failure due to drought or destruction of plants by fire would force grizzly bears to range more widely than in normal periods of seasonal availability (Blanchard and Knight, 1991). Therefore, grizzly bears face an increased risk of encounters with humans and ultimately human-caused mortality during the autumn season. Grizzly bears in some areas that avoided trails with human activity during part of the year changed this avoidance behavior when a favored berry resource came into season (Donelon, 2004). Although grizzly bears still had a low tolerance for trails with high human activity, the tendency to approach areas of human activity when nutritional and energy needs are high could put individuals at an increased risk of conflict.

In the NCDE during 1998 and 2004, significant huckleberry crop failures precipitated increased conflicts with grizzly bears (Manley, 2005). During a normal year, a fraction of the grizzly bear population would use natural food sources at low elevations during huckleberry season. In 2004, with the lack of huckleberries at higher elevations, many more grizzly bears used low elevation habitats in search of late summer and fall foods (Manley 2005; R. Mace, Montana Fish, Wildlife and Parks, pers. comm. 2005). The search for food at low elevations puts bears into close proximity to private lands and associated attractants. The number of conflicts and grizzly bear management removals from private and public lands rose dramatically above average. During 2003 and 2004, Montana Fish, Wildlife and Parks Region 1 (encompassing the action area) received over 50 and 225 calls reporting conflicts with grizzly bears, respectively (Manley, 2005). Ninety-five percent were confirmed grizzly bear conflicts and of these, about 95 percent were from private landowners living in or adjacent to grizzly bear habitat. Conflicts involved grizzly bears seeking unnatural foods in yards or actually causing property damage by trying to access foods in vehicles and buildings. Thirty-one grizzly bears were captured in 2004; 40 percent in the summer and 40 percent in the fall, compared to 20 percent captured in the spring. Eighty-eight percent of the captures were on private property, the rest on public lands. In comparison, only 13 grizzlies were captured in 2003, all on private property.

### ***Effects of Sanitation/Food Storage and Habituation in the Action Area***

There is a food storage special order in effect for that portion of the NCDE recovery zone managed by the U.S. Forest Service (U.S. Forest Service, 2000). Similar food storage orders have been in place since 1995. There is no food storage order in place for BLM lands, however, the proposed action requires that a food storage strategy be developed that will minimize grizzly bear-human encounters and provide for user safety and the protection of the grizzly bear. A food storage strategy would substantially reduce the potential for adverse effects to bears as a result of food conditioning and habituation. The measures in the food storage requirements would help to reduce the potential for or eliminate human-grizzly bear conflicts and the potential for adverse effects to grizzly bears.

No grizzly bear mortalities or management actions towards grizzly bears associated with improper food storage have been reported on BLM lands within the action area (Sarah LaMarr, pers. comm.). However, food conditioning of grizzly bears occurs on private lands adjacent to BLM lands and the potential for adverse impacts to grizzly bears on BLM lands does exist. Throughout the distribution of grizzly bears, food conditioning remains a fairly serious problem in relation to grizzly bear mortality.

Habituation and food conditioning of grizzly bears is a serious concern in all grizzly bear populations. All agencies follow the IGBC Guidelines (Interagency Grizzly Bear Committee 1986) for nuisance bear management. Within public lands inside recovery zones grizzly bears must be determined to be a nuisance by specific criteria before they can be controlled (Interagency Grizzly Bear Committee, 1986, U.S. Forest Service, 1986). Information in the biological assessment indicates that there have been no grizzly bear conflicts reported and no management removal of bears as a result of food or attractants in the action area. However, as the number of grizzly bears increase and the number of people residing in and visiting the area increase, the number of grizzly bear-human conflicts related to food and attractant storage may increase as well. Therefore, it is reasonable to expect that some risk of adverse impacts to grizzly bears exists.

### **Livestock Grazing**

Effects of livestock grazing on grizzly bears are generally related to depredations of livestock by grizzly bears, disposal of livestock carcasses, storage of human food and stock feed, and grizzly bear habituation, food conditioning and mortality risk associated with these activities. Depredating bears may become food conditioned resulting in management actions that remove bears from the population. The BLM has several cattle allotments but no sheep allotments within the action area.

Although grizzly bear conflicts with cattle do exist, the more significant problems have been with sheep (Orme and Williams, 1986). The adverse effects of domestic sheep grazing on grizzly bears are well documented (Knight and Judd, 1983; Johnson and Griffel, 1982). Sheep grazing in occupied grizzly bear habitat poses substantive risks to grizzly bears since bears kill sheep much more readily than other livestock and because sheep are often closely tended by herders typically armed and protective of their flock. In one study in the YGBE, of 24 grizzly bears known to use livestock allotments, 10 were known to kill livestock (Knight and Judd, 1983). Of these bears, 7 killed sheep and 5 were trapped and instrumented. All but one instrumented grizzly bear cub that had the opportunity to kill sheep did so. Grizzly bears that kill livestock include a range of ages and both sexes (Johnson and Griffel, 1982).

Being an opportunistic feeder, any individual grizzly bear can learn to exploit livestock as an available food source just as easily as they habituate to other human food sources (Johnson and Griffel, 1982). Knight and Judd (1983) reported several differences between cattle and sheep conflicts with grizzly bears. They found that all radio-collared grizzly bears known to have come in close contact with sheep killed sheep, but most grizzly bears that encountered cattle did not make kills. They also found that all known cattle kills were carried out by adult bears 7 years or older, while both adults and

subadults from 1 to 13 year old killed sheep. An attractant such as a sheep allotment outside the recovery zone may draw bears from within the recovery zone and affect recovery of the NCDE grizzly bear population. Grizzly bears that killed sheep, usually took multiple sheep over several days. However in each instance when the sheep were moved out of the area the predation ended (Johnson and Griffel, 1982).

Short term domestic sheep or goat grazing could occur under the Butte RMP in areas occupied or potentially occupied by grizzly bears. Long term effects of this program are expected to improve habitat conditions for wildlife in general, including grizzly bears. It is possible that conflicts with grizzly bears could occur, but are unlikely due to the conservation measures adopted to prevent grizzly bear interactions with sheep in this program (BLM 2007, pg. 33, outlined below).

1. Domestic sheep grazing to control noxious weeds would not be used previous livestock depredations have occurred from grizzly bear and wolves.
2. Domestic sheep would be removed from a project area if depredation or encounters occur from grizzly bears and wolves.
3. Any contracts or agreements to use domestic sheep grazing to control noxious weeds would specify that no control actions against grizzly bears or wolves would be requested by the contractor if depredations or encounters occur as part of the weed grazing action. Any encounters with wolves or grizzly bears would be reported to Montana Fish, Wildlife and Parks and the USDA Wildlife Services.
4. Domestic sheep would be herded, and attended by guard dogs at all times.
5. Temporary, predator-proof electric fencing would be used to protect night bedding areas where potential for predation by grizzly bears or wolves exists.

No grizzly bear mortalities or removals have occurred on BLM lands in the Butte RMP area. However, if the BLM adds sheep, and to a lesser extent cattle, in areas outside the recovery zone the potential for conflicts to occur would be expected to increase. Our concern is that allotments may become attractants for grizzly bears living both in and outside the recovery zone, resulting in grizzly bear mortality sinks.

#### Effects Summary

BLM lands in the action area outside of the recovery zone are not primarily managed for grizzly bears. As anticipated in the Recovery Plan, grizzly bears are expanding their range outside of the recovery zone. Grizzly bears outside the recovery zone probably experience a higher level of adverse impacts due to land management actions than do grizzly bears inside. However, a number of grizzly bears are apparently able to live in habitat on BLM lands outside of the recovery zone. As grizzly bears expand their range, it is possible that BLM will experience increasing conflicts involving grizzly bears and people as a result of access management, sanitation/food storage and livestock depredation. This may lead to a grizzly bear being either intentionally or inadvertently killed or removed from the population.

Road density, authorized under the RMP or predating it, has the potential to adversely affect grizzly bears in the action area. Some areas have no motorized activity while other areas receive heavy motorized use. Areas with high road densities may lead to the under-use of suitable habitat by grizzly bears. Access management for the analysis area outside of the recovery zone has not been calculated according to the access protocol. However, a rough depiction of road density was presented in the biological assessment. Road densities are high in the action area in some areas outside the recovery zone. These tend to be areas of private or state land ownership. BLM lands have lower average road densities, with some high densities in localized areas. Inside the recovery zone the U.S. Forest Service provides large amounts of secure habitat and low total and open road densities. We have determined that the NCDE recovery zone includes enough land area to provide for a recovered grizzly bear population (U.S. Fish and Wildlife Service, 1993).

The management of roads in grizzly bear habitat continues to be a difficult management issue. Road reclamation is costly and road use restrictions can be socially contentious. However, the BLM continues to make progress in reducing impacts of motorized transport. We expect that road densities will be reduced in grizzly bear habitat through the implementation of the proposed Butte RMP. The RMP access management guidance outside of the recovery zone provides for use by grizzly bears but likely at lower numbers than for areas inside the recovery zone.

Human access into grizzly bear habitat can lead to the habituation of grizzly bears to humans. Habituation in turn increases the potential for conflicts between people and grizzly bears. Habituated grizzly bears often obtain human food or garbage and become involved in nuisance bear incidences, and/or threaten human life or property. Such grizzly bears generally experience high mortality rates as they are eventually destroyed or removed from the population through management actions. Habituated grizzly bears are also more vulnerable to illegal killing because of their increased exposure to people. No grizzly bear mortalities have been reported on BLM lands related to improper food storage. However, food conditioning occurs on adjacent lands and the potential for adverse impacts to grizzly bears continues to be an issue on the Butte RMP area. BLM has taken actions to minimize adverse effects on grizzly bears as shown above through the

RMP, past accomplishments, and current management direction. As grizzly bears increase in numbers outside of areas with regulated attractant storage, we anticipate an increased risk that grizzly bears would become food habituated and subject to potential management removal. With the commitment in the RMP to develop a food storage strategy, we believe that the contribution of BLM lands to food conditioning of grizzly bears and subsequent conflicts with people would be minimal.

Conflicts arising from livestock grazing are recognized as a source of human-caused mortality of grizzly bears. Grizzly bears habituated to livestock as a food source are more likely to be destroyed or removed from the population due to management control and defense of property actions. Further, as the presence of grizzly bears increase in the action area outside of the recovery zone, we expect an increase in the number of grizzly bears subject to potential management removal as a result of grizzly bear-livestock conflicts. However, the lack of livestock conflicts in the past on BLM lands with cattle allotments suggests that such conflicts will be rare.

Although the BLM's management of grizzly bear habitat outside of the NCDE recovery zone results in direct and indirect adverse effects on individual grizzly bears, we do not anticipate that these effects will have appreciable negative impacts on the NCDE grizzly bear population. Thus we do not expect BLM management outside of the recovery zone to negatively affect recovery of the population. The areas in which the BLM allows continued and expanded road use, does not have a mandatory food storage order are outside of the recovery zone and are not considered to be essential to the conservation of the grizzly bear. The Recovery Plan stated that grizzly bears living within the recovery zone are crucial to recovery goals and hence to delisting. Grizzly bears inside and outside of the recovery zone are listed as threatened under the Act, but only lands inside the recovery zone are considered essential to, and therefore managed primarily for, the recovery and survival of the grizzly bear as a species. In developing the NCDE recovery zone, all areas necessary for the conservation of the grizzly bear were included.

Even though the RMP areas outside the recovery zone are not essential to the conservation of the species, the BLM has managed the lands in such a way that they have allowed grizzly bears to expand into these zones, survive and reproduce. Thus, although access management, sanitation/food storage and livestock grazing may adversely affect individual grizzly bears, we anticipate that grizzly bears will continue to be able to inhabit these areas into the future under the RMP.

## **VI. CUMULATIVE EFFECTS**

Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

In 2002, Montana Fish, Wildlife and Parks prepared the Grizzly Bear Management Plan for Southwestern Montana 2002-2012 and Final Programmatic Environmental Impact Statement with input from the Montana Grizzly Bear Working Group and other interested parties (Montana Fish, Wildlife and Parks, 2002). This document is expected to be a strategy for initiating, implementing and learning and these efforts and resulting recommended programs will likely become part of the State Grizzly Bear Management Plan. The State Grizzly Bear Management Plan will entail developing a set of plans on the scale of Ranger Districts, Conservation Districts or valleys and local strategies would be cooperatively designed (Montana Fish, Wildlife and Parks, 2002).

Private lands in and adjacent to BLM lands are being developed for residential or business use. The human population in the area has experienced relatively high growth during the recent decade and growth is expected to continue. As more people use private land and adjoining federal land for homes, recreation or business, the challenge to accommodate those uses in ways that continue to protect the grizzly bear population increases. The large federal land ownership, large blocks of wilderness within which human access is restricted by regulation and topography, and highly regulated national park back country serve to reduce the impacts of larger residential human populations on grizzly bears. Recreation, livestock grazing and sanitation issues on private land continue to create grizzly bear- human conflicts. Federal land management cannot entirely compensate for such impacts on private land. However, despite the recent growth of the human population the grizzly bear population in the ecosystem appears, by all reasonable measures, to be increasing as well.

## **VII. CONCLUSION**

After reviewing the current status of the grizzly bear, the environmental baseline for the action area, the effects of the action and the cumulative effects, it is the Service's opinion that the effects of the continued implementation of the Butte RMP on grizzly bears that occur on the resource area outside the NCDE recovery zone are not likely to jeopardize the continued existence of the grizzly bear. No critical habitat has been designated for this species; therefore, none will be affected. Implementing regulations for section 7 (50 CFR 402) define "jeopardize the continued existence of" as to "engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both

the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.”

The Service concludes that grizzly bears living outside the recovery zone experience higher levels, in some areas considerably higher levels, of adverse affects from implementation of actions under the RMP than those bears living inside the recovery zone. However, new actions proposed under the Butte RMP serve to conserve grizzly bears and their habitat to varying degrees. As documented earlier, grizzly bears have apparently expanded their range during the past decade and now occur outside the recovery zone. Outside the recovery zone, grizzly bears occur more frequently in some areas within the distribution line than others. Female grizzly bears with young have been observed, leading to the assumption that females are able to establish home ranges and find the resources needed to survive and reproduce outside the recovery zone. Previous RMP direction apparently has been adequate to provide for a number of grizzly bears to exist outside the recovery zone, even though human-caused mortality risk is higher, as are other potential adverse effects.

The Service also concludes that adverse affects to grizzly bears may occasionally occur due to the BLM program direction for access management, sanitation/food storage and livestock grazing outside the recovery zone. The level of impact on BLM lands is not likely to become of serious consequence to the NCDE grizzly bear population.

- The best available information suggests the NCDE grizzly bear population is expanding its range. In part due to grizzly bear expansion into areas that had previously been unoccupied, the number of grizzly bear-human conflicts has increased. Much of the recent grizzly bear mortality is associated with conflicts arising from attractants on private lands. Many of the unprecedented number of conflicts in 2004 can be attributed to the huckleberry crop failure. Despite the recent growth of the human population and the associated increase in the number of grizzly bear-human conflicts and grizzly bear mortalities, the grizzly bear population in the ecosystem appears to be increasing as well (pers. comm. Manley 2005 *in* U.S. Forest Service 2005b). Preliminary population research results show that with 81 percent of the samples analyzed thus far, at least 471 known individual grizzly bears have been identified from samples obtained in the NCDE during 2004 (K. Kendall, USGS, unpublished 2006). Despite the recent years of increased grizzly bear mortality, the Service is cautiously optimistic regarding the NCDE grizzly bear population, based on the best information.

It is the Service’s opinion that the level of open and total road densities, and security core areas, within the recovery zone adequately conserves effective grizzly bear habitat and promotes the recovery and survival of the NCDE grizzly bear population. Considering the status of grizzly bear habitat within the recovery zone, it is our opinion that the RMP direction for access management in the action area outside of the recovery zone does not appreciably reduce the likelihood of both the survival and recovery of grizzly bears.

- Inside the recovery zone road densities are moderate and core area is substantial.
- Additionally, the entire NCDE recovery zone contains large amounts of secure habitat and low total and open road densities in the majority of the subunits. For the subunits in the entire NCDE recovery zone that have greater than 75 percent Forest Service ownership, the mean secure habitat is 66.5 percent, the mean TMAD is 15.0 percent and the mean OMAD is 18.1 percent (U.S. Forest Service, 2004; 2005a; 2005b; U.S. Forest Service *in litt.*, 2005;).
- High road density facilitates human access into grizzly bear habitats with a reasonable assumption that an increased frequency of human and bear encounters and adverse impacts to grizzly bears would result. Such high road densities in the action area outside the recovery zone may result in displacement of some grizzly bears. However, some grizzly bears are able to persist in areas with higher levels of human pressure, as documented by reports of grizzly bears, including females with cubs, outside of the recovery zone.
- It is expected that within the distribution of grizzly bears in the RMP area, road densities will be maintained below 1 mi/mi<sup>2</sup> or, in areas where they already exceed that standard, road densities will trend lower until that standard is met.
- In 2001, the OHV EIS decision (U.S. Bureau of Land Management and U.S. Forest Service 2001) closed BLM lands to off-route wheeled motorized travel, significantly reducing the acreage available to wheeled travel and resulting in an increase in grizzly bear secure habitat.
- Further, the Recovery Plan states that recovery zones include areas large enough and of sufficient habitat quality to support recovered grizzly bear populations, and that although grizzly bears are expected to reside in areas outside the recovery zones, only habitat within the recovery is to be managed primarily for grizzly bears.

It is the Service’s opinion that the development of a food storage strategy as required by the RMP will contribute to the survival and recovery of the grizzly bear population. Lack of a mandatory food storage order in areas outside the recovery zone may result in grizzly bear-human conflicts and grizzly bear mortalities but this is not likely to jeopardize the

survival and recovery of the NCDE grizzly bear population. We do not anticipate that the level of conflict and grizzly bear mortality occurring under RMP direction would increase to a level that would appreciably reduce the likelihood of both the survival and recovery of the grizzly bears.

- Although food conditioning may occur on private lands adjacent to BLM lands and the potential for adverse impacts to grizzly bears on BLM lands does exist, adoption of a food storage strategy as required by the RMP will further reduce the probability of conflicts in the future and no reported grizzly bear mortalities or management actions related to improper food storage have occurred on BLM lands within the action area.
- The BLM has made an effort to minimize adverse effects on grizzly bears as shown above through the RMP, past accomplishments, and current management direction and efforts to reduce adverse effects on grizzly bears due to food attractants are continuing.

RMP direction for livestock grazing may result in grizzly bear-human conflicts and grizzly bear mortalities but this will be minimized by the lack of sheep grazing allotments on BLM lands and will not affect survival and recovery of the NCDE grizzly bear population. We do not anticipate that the level of conflict and grizzly bear mortality occurring under RMP direction would increase to a level that would appreciably reduce the likelihood of both the survival and recovery of grizzly bears.

Recovery zones were established to identify areas necessary for the recovery of a species and are defined as the area in each grizzly bear ecosystem within which the population and habitat criteria for recovery are measured. Areas within the NCDE recovery zone are managed primarily for grizzly bear habitat. The NCDE recovery zone is an area adequate for managing and promoting the recovery and survival of the NCDE grizzly bear population (U.S. Fish and Wildlife Service, 1993). The recovery zone contains large portions of wilderness and national park lands, which are protected from the influence of many types of human uses occurring on lands elsewhere. As anticipated in the Recovery Plan, grizzly bears are expanding their range outside of the recovery zone. Grizzly bears outside the recovery zone probably experience a higher level of adverse impacts due to land management actions than do grizzly bears inside. Considering the large size of the NCDE, land management within the recovery zone, and the status of the grizzly bear population in the NCDE, we do not expect this level of adverse affects to appreciably reduce the likelihood of both the survival and recovery of the grizzly bear.

### ***INCIDENTAL TAKE STATEMENT***

Section 9 of the Act, and Federal regulations pursuant to section 4(d) of the Act, prohibit the take of endangered and threatened species, respectively without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission that creates the likelihood of injury to listed wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary and must be undertaken by the BLM so that they become binding conditions of any grant or permit issued, as appropriate, for the exemption in section 7(o)(2) to apply. The BLM has a continuing duty to regulate the activity that is covered by this incidental take statement. If the BLM (1) fails to assume and implement the terms and conditions or (2) fails to require an applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the BLM must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50CFR 402.14(i)(3)].

This incidental take statement applies to the effects of access management, sanitation/food storage and livestock grazing under the implementation of the RMP.

### **Amount or Extent of Take Anticipated**

The Service defines harm of grizzly bears in terms of adverse habitat conditions caused by high road densities. Significant avoidance of habitat by grizzly bears can occur when open motorized access density exceeds 1 mile per square mile and when total motorized access density exceeds 2 miles per square mile. The Service maintains that, as a result of access management under the RMP, this avoidance of otherwise suitable habitat constitutes incidental take of grizzly bears through "harm" as a result of significant habitat alteration that disrupts breeding, feeding and/or sheltering.

High road densities and lack of core or secure areas exist across many areas within the grizzly bear distribution area outside of the NCDE recovery zone. The RMP does not preclude additional road construction. The Service believes that it is reasonable to assume that the level of permanent roads in areas outside the recovery zone will not substantively increase in the next decade, with some local exceptions. This assumption is based on the commitments made in the proposed RMP, and the current BLM road system that in many cases is adequate for resource management.

Although a moving windows analysis has not been completed for access management in the action area, we have concluded that a degraded baseline exists based upon high open and total linear road densities and intense human use. Some construction of and motorized use of roads will result from site-specific projects under the RMP and would increase the likelihood of disturbance and displacement in the analysis area. Due to roads and activities in the project areas and new road construction and use allowed by the RMP, the Service anticipates that adverse effects to grizzly bears are likely to cause some low level of impairment of breeding, feeding or sheltering, especially during the spring period.

Under the RMP, temporary roads built for resource extraction such as timber harvest or mining may remain on the landscape for several years and receive a substantive amount of use. Such roads may also impair grizzly bears through displacement from key habitats. The Service expects that temporary roading will occur on lands within the distribution of grizzly bears on the resource area, outside the recovery zone. The Service also anticipates some level of impairment to grizzly bears with home ranges impacted by these temporary roads.

High road densities increase the risk of take of grizzly bears by habituating some individuals and displacing some individuals. However, habituation of grizzly bears is largely a function of private lands and or attractants. Human-caused mortality records for the BLM indicate that habituation on BLM lands is likely infrequent.

The continued implementation of the RMP and related access management would result in take due to displacement of grizzly bears, specifically female bears, from essential habitat. We expect take in the form of harm or harassment as a result of disturbance from roads or from alteration of habitat (high road densities) to the extent female bears significantly under-use important habitat. Such under-use of habitat likely leads to some level of impairment of normal breeding and feeding behavior in females. Significant levels of displacement from key habitats could result in a female bear's failure to obtain adequate food resources, which in turn could result in reduced fitness and either failure to breed or mortality of cubs prior to or after parturition. We do not expect adult or subadult grizzly bear mortality as a result of displacement. We do not expect mortality, injury, or significant impairment of breeding, feeding or sheltering of male or subadult grizzly bears as a result of displacement.

The effects of displacement of grizzly bears from key habitats are difficult to quantify and may be measurable only as long-term effects on the species' habitat and population levels. We believe that incidental take will occur from the effects of high road densities persisting in some areas of the resource area, outside of the recovery zone. However, grizzly bears are individualistic and display a wide variation in their tolerance of and response to human activity and road density. The best scientific and commercial data available at this time are not sufficient to enable the Service to determine a specific amount of incidental take of the grizzly bears due to displacement. The reasons for this difficulty are in part based on the lack of ongoing, intensive grizzly bear research. We lack information related to the following:

- the number of grizzly bears living on the resource area
- the individual response of adult females whose home range encompasses areas with high road densities
- demographic parameters, such as survivorship and fecundity
- detection of loss of cubs prior to or after parturition

The level of take is also difficult to detect. Failure to breed, or loss of cubs prior to or after parturition is exceedingly difficult to detect, and the reasons for such are exceedingly difficult to discern. Therefore, in such cases where take is difficult to enumerate, the Service uses surrogate measures to gauge the level of take. The best available information indicates that female grizzly bears display significant under-use of habitat near roads and areas of high road densities. Research provided a composite home range for female grizzly bears that survived to adulthood to successfully produce cubs. From this home range information, the surrogate measures of OMAD, TMAD and security core were derived to limit, measure and monitor the displacement impacts and resulting level of incidental take. In the action area outside of the recovery zone, based on recent past and planned future BLM projects, we assume that there will be increases in road densities associated with specific projects. These increases will generally be temporary, and post-project road densities will not diverge significantly from the present. This level of roading represents the surrogate measure to limit the take we anticipate from continued implementation of the RMP in regards to access management in the action area outside of the recovery zone.

A food storage strategy will be developed for the resource area. This strategy will further reduce the already low probability of food conditioning of grizzly bears on BLM lands. The BLM has not had any reports of grizzly bear mortalities or management actions towards grizzly bears associated with improper food storage.

The Service concludes that the lack of a mandatory sanitation and food storage requirements across the entire action area outside of the recovery zone may contribute to the habituation of grizzly bears and modification of natural feeding behavior and the resulting removal or death of grizzly bears due to necessary management removal and other human-caused mortality. Until a resource area-wide food storage order is in place, the potential for grizzly bears to have access and become habituated to improperly stored food items on the resource area will persist. Thus, the potential for incidental take of grizzly bears through habituation and food conditioning will remain.

Based on recent trends in grazing, we assume there will be no establishment of sheep grazing allotments on lands managed by BLM. If additional sheep, and to a lesser extent cattle, allotments are filled in areas outside the recovery zone, the level of conflicts may increase and the risk of adverse impacts to grizzly bears does exist. Of most concern are the allotments that become attractants for grizzly bears living both in and outside the recovery zone, and result in grizzly bear mortality sinks. An attractant such as a sheep allotment outside the recovery zone may draw bears from within the recovery zone and affect recovery of the NCDE grizzly bear population. However, there have been no management removals or mortalities of grizzly bears on BLM lands in the Butte resource area due to grazing conflicts.

Although no grizzly bear mortality or management actions have occurred in the action area related to sanitation/food storage or livestock grazing, the Service assumes that the risk for such is likely to increase as grizzly bears continue to expand outside the recovery zone.

We anticipate that no more than one grizzly bear will be removed from the action area for management purposes related to authorizations made under the RMP during any ten year period related to sanitation/food storage and/or livestock grazing. Therefore, should more than one grizzly bear be taken incidentally in the action area as a result of authorizations made under the RMP related to sanitation/food storage and/or livestock grazing during any ten year period, the BLM must reinitiate consultation with the Service. Additionally, should the level of incidental take associated with the RMP reach, but not exceed, the anticipated incidental take level, the BLM should informally consult with the Service regarding the adequacy of existing mechanisms to minimize potential take.

### **Effect of the Take**

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species. The BLM is implementing several measures that would sufficiently minimize impacts to grizzly bears. See the proposed action and “Positive Actions toward Grizzly Bear Recovery on the resource area” (above) in the accompanying biological opinion for a list of these measures. Critical habitat has not been designated for the grizzly bear; therefore none would be affected.

### **Reasonable and Prudent Measures**

Biological opinions provide reasonable and prudent measures that are expected to reduce the amount of incidental take. Reasonable and prudent measures are those measures necessary and appropriate to minimize incidental take resulting from proposed actions. Reasonable and prudent measures are nondiscretionary and must be implemented by the agency in order for the exemption in section 7(o)(2) to apply.

The Service believes that the measures displayed in the accompanying biological opinion, specifically in the proposed action and under “Positive Actions toward Grizzly Bear Recovery on the resource area”, direction provided in the proposed Preferred Alternative in the RMP the commitment to develop food storage guidelines, and administrative direction on livestock grazing, minimize adverse effects to grizzly bears within the action area. The following reasonable and prudent measure is also necessary and appropriate to minimize the impacts of incidental take resulting from the proposed action:

1. Reduce the potential for mortality and displacement of grizzly bears within the mapped distribution area for grizzly bears on the resource area outside of the NCDE recovery zone.

### **Terms and Conditions**

In order to be exempt from the prohibitions of section 9 of the Act, the BLM must comply with the following terms and conditions that implement the reasonable and prudent measure described above and outline reporting and monitoring requirements. These terms and conditions are non-discretionary:

To implement the reasonable and prudent measure:

1. *BLM will include a clause in all new and revised grazing permits for allotments within the grizzly bear distribution area (U.S. Forest Service, 2002), requiring the permittee to notify the BLM as soon as is practical of any grizzly bear depredation on livestock or conflicts between grizzly bears and livestock, even if the conflict does not result in the loss of livestock. The BLM shall coordinate with Montana Fish, Wildlife and Parks (FWP) and USDA APHIS Wildlife Services personnel to determine appropriate action.*
2. *BLM will include a clause in all new and revised grazing permits for the area within the grizzly bear distribution line (U.S. Forest Service, 2002) requiring the permittee to properly treat or dispose of livestock carcasses as deemed necessary on a case-by-case basis by BLM in coordination with USFWS, so as to eliminate any potential attractant for bears. BLM will include guidance to permittees to contact FWP if they need carcass disposal assistance.*

### Reporting Requirements

3. *The BLM will maintain an up-to-date record of the grizzly bear conflicts and management actions that occur on lands managed by the Butte Field Office. "Conflict" is defined by the IGBC (1986) as "a confrontation between man and/or his property and bear(s) in which the safety of man and/or bear(s) is jeopardized and/or property loss occurs." This information shall be submitted to the Service's Montana Field Office in written form annually by June 1 for the preceding calendar year.*
4. *The BLM shall notify the Service's Montana Field Office if a change in the status of sheep grazing on the resource area is being considered if the change could increase sheep grazing in or adjacent to occupied grizzly bear habitat. Changes that increase sheep grazing include increased sheep AUMs in established allotments or conversion of cattle allotments to sheep.*
5. *The BLM shall notify the Service's Montana Field Office, within 72 hours of discovery of any livestock depredation by grizzly bears, grizzly bear-human conflict resulting from improper storage of food or attractants or the management removal or human-caused death of a grizzly bear.*

### Closing Statement

The Service is unable to precisely quantify the number of grizzly bears that will be incidentally taken as a result of the implementation of the Butte RMP. Based on the commitments made in the RMP we anticipate that adverse effects of BLM actions will continue to decrease over the life of the plan. We also anticipate that no more than one grizzly bear will be removed from the resource area as a result of authorizations made under the RMP related to sanitation/food storage and/or livestock grazing in any ten-year period. Reasonable and prudent measures, with their implementing terms and conditions, are typically designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, the Service believes that the level of take occurring exceeds that anticipated in this incidental take statement, such incidental take represents new information requiring reinitiation of consultation and review of the incidental take statement. The federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

## CONSERVATION RECOMMENDATIONS

Sections 7(a)(1) of the Act directs federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans or to develop information. The recommendations provided here relate only to the proposed action and do not necessarily represent complete fulfillment of the agency's section 7(a)(1) responsibility for the species.

1. Participate in ongoing interagency efforts to identify, map and manage linkage habitats essential to grizzly bear movement between ecosystems. Much of the resource area may be an important link to the Bitterroot Ecosystem, Bitterroot National Forest, the Beaverhead-Deerlodge National Forest, the Helena National Forest, and the Yellowstone ecosystem. Please contact the Service's grizzly bear recovery coordinator at (406) 243-4903 or Montana Fish, Wildlife and Parks for information.
2. Continue to manage access on the resource area to achieve lower road densities. By managing motorized access, several grizzly bear management objectives could be met including: 1) minimize human interaction and potential grizzly bear mortality; 2) minimize displacement from important habitats; 3) minimize habituation to

humans; and 4) provide relatively secure habitat where energetic requirements can be met (Interagency Grizzly Bear Committee 1998). Additionally, lower road densities would also benefit other wildlife and public resources. Lower road densities may result in lower maintenance costs that free up funding for other resource needs.

3. Grizzly bears concentrate in certain areas during specific time periods to take advantage of concentrated food sources or because the area provides a high seasonal food value due to diversity in vegetation and plant phenology (e.g., important spring or fall range). Where grizzly bear use is known or likely to occur and where practicable, delay disturbing activities during the spring in spring habitats to minimize displacement of grizzly bears.

## REINITIATION NOTICE

This concludes consultation on the action outlined in your May 25, 2006 request for consultation on the effects of the Butte RMP on grizzly bears. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

The incidental take statement is based on the implementation of the RMP management activities, including the minimization measures described in the biological assessment, the RMP, special orders and administrative decisions; as well as effects analysis of this biological opinion. To ensure protection for a species for which surrogate measures are used to gauge the level of take due to activities related to the continued implementation of RMP activities, reinitiation may be required if the terms and conditions are not adhered to or the magnitude of the proposed activities exceed the scope of this biological opinion. Determination of reinitiation of consultation pursuant to the Act will depend upon the nature and extent of noncompliance with the implementation of RMP activities, and the terms and conditions of this incidental take statement, and may result in loss of take exemption from the prohibitions of section 9 of the Act.

Thank you for your continued assistance in the conservation of endangered, threatened, and proposed species. If you have any questions or comments on this biological opinion, please contact myself or Anne Vandehey of my staff at 406-449-5225.

Sincerely,

R. Mark Wilson  
Field Supervisor

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## APPENDIX H – RECREATION OPPORTUNITY SPECTRUM CLASSES

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Defining recreation opportunities is used as a tool to help recreation managers create and maintain the appropriate recreation experiences that suits various types of land and visitors. The ROS continuum characterizes recreation opportunities in terms of setting,

activity, and experience. The spectrum contains six classes: primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, roaded modified, rural, and urban.

ROS	Class Descriptions
Primitive	Opportunity for isolation from man-made sights, sounds, and management controls in an unmodified natural environment. Only facilities essential for resource protection are available. A high degree of challenge and risk are present. Visitors use outdoor skills and have minimal contact with other users or groups. Motorized use is prohibited.
Semi-primitive non-motorized	Some opportunity for isolation from man-made sights, sounds, and management controls in a predominantly unmodified environment. Opportunity to have a high degree of interaction with the natural environment, to have moderate challenge and risk and to use outdoor skills. Concentration of visitors is low, but evidence of users is often present. On-site managerial controls are subtle. Facilities are provided for resource protection and the safety of users. Motorized use is prohibited.
Semi-primitive motorized	Some opportunity for isolation from man-made sights, sounds, and management controls in a predominantly unmodified environment. Opportunity to have a high degree of interaction with the natural environment, to have moderate challenge and risk and to use outdoor skills. Concentration of visitors is low, but evidence of other area users is present. On-site managerial controls are subtle. Facilities are provided for resource protection and the safety of users. Motorized use is permitted.
Roaded Natural	Mostly equal opportunities to affiliate with other groups or be isolated from sights and sounds of man. The landscape is generally natural with modifications moderately evident. Concentration of users is low to moderate, but facilities for group activities may be present. Challenge and risk opportunities are generally not important in this class. Opportunities for both motorized and non-motorized activities are present. Construction standards and facility design incorporate conventional motorized uses.
Roaded Modified	Similar to the Roaded Natural setting, except this area has been heavily modified (roads or recreation facilities). This class still offers opportunity to have a high degree of interaction with the natural environment and to have moderate challenge and risk and to use outdoor skills.
Rural	Area is characterized by a substantially modified natural environment. Opportunities to affiliate with others are prevalent. The convenience of recreation sites and opportunities are more important than a natural landscape or setting. Sights and sounds of man are readily evident, and the concentration of users is often moderate to high. Developed sites, roads, and trails are designed for moderate to high uses.
Urban	Area is characterized by a substantially urbanized environment, although the background may have natural-appealing elements. High levels of human activity and concentrated development, including recreation opportunities are prevalent. Developed sites, roads and other recreation opportunities are designed for high use.



# APPENDIX I – AREAS OF CRITICAL ENVIRONMENTAL CONCERN

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## US Department of the Interior

Bureau of Land Management  
Butte Field Office, Montana

March 2006



## Butte Resource Management Plan

# Final Report on Importance and Relevance Criteria and Findings for Areas of Critical Environmental Concern Considerations

*Prepared for:*



US Department of Interior, Bureau of Land Management  
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Butte, Montana 59701



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## LIST OF ACRONYMS

Acronym or Abbreviation	Full Phrase
ACEC	Area of Critical Environmental Concern
BLM	United States Department of the Interior, Bureau of Land Management
FLPMA	Federal Land Policy and Management Act
Forest Service	United States Department of Agriculture, Forest Service
MOU	memorandum of understanding
Planning Area	Butte Resource Management Plan planning area
RMP	resource management plan
US	United States
WSA	Wilderness Study Area

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# IMPORTANCE AND RELEVANCE CRITERIA AND FINDINGS FOR AREAS OF CRITICAL ENVIRONMENTAL CONCERN CONSIDERATIONS

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## 1. EXECUTIVE SUMMARY

As part of the land use planning process for the Butte Resource Management Plan (RMP), a US Department of the Interior, Bureau of Land Management (BLM) interdisciplinary team reviewed ten nominations for special designation as Areas of Critical Environmental Concern (ACECs). Five nominations were external (made by other agencies or the public), three were internal (made by BLM specialists), one was recommended for study in a 1979 BLM management plan (BLM 1979), and one is an existing ACEC. The team analyzed the ten areas to determine if they contain values that meet the relevance and importance criteria for consideration as potential ACECs.

Five areas were found to meet the relevance and importance criteria: Elkhorn Mountains, the existing Sleeping Giant ACEC, Spokane Creek, Ringing Rocks, and Humbug Spires. These areas are identified as potential ACECs. Various alternatives in the Draft RMP will recommend the areas for designation as ACECs (or continued designation in the case of Sleeping Giant ACEC) if special management is required to protect the relevant and important values. Areas found not to meet the relevance and importance criteria are not carried forward as potential ACECs.

## 2. INTRODUCTION

The Federal Land Policy and Management Act (FLPMA) and BLM policy (Manual 1613 [USDI-BLM 1988a]) require the BLM to give priority to the designation and protection of ACECs during the land use planning process. The BLM, Butte Field Office, is currently revising its older land use plans, the Headwaters RMP (BLM 1984) and the Dillon Management Framework Plan (BLM 1979). The revised RMP will provide a single, comprehensive land use plan that will guide management of public land administered by the Butte Field Office over the next 15 to 20 years. Only that public and federal mineral estate managed by BLM within the Butte Field Office boundary is the subject of this document.

The BLM Butte Field Office Planning Area is in mid-western Montana (**Figure 1**). Within the Planning Area, BLM administers about 307,300 acres of public surface land and 652,000 acres of federal mineral estate in Lewis and Clark, Jefferson, Broadwater, Deer Lodge, Beaverhead, Silver Bow, Gallatin, and Park Counties.

This analysis and the resultant findings for ACEC relevance and importance criteria has been performed pursuant to FLPMA Section 202 (43 US Code 1712[c][3]), 43 Code of Federal Regulations 1610.7-2 and BLM Manual 1613 (BLM 1988a).

### 2.1 What is an Area of Critical Environmental Concern?

FLPMA Section 103 (43 US Code 1702[a]) and 43 Code of Federal Regulations 1601.0-5(a) describes ACECs as “areas within the public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards.” Therefore, only BLM-administered lands are included in ACEC boundaries.

Designation of an ACEC in and of itself does not automatically prohibit or restrict other uses in the area. The one exception is that a mining plan of operation is required for any proposed mining activity within a designated ACEC. The ACEC designation is an administrative designation that is accomplished through the land use planning process. It is unique to BLM in that no other agency uses this form of designation.

The intent of Congress in mandating the designation of ACECs through FLPMA was to give priority to the designation and protection of areas containing unique and significant resource values. The BLM staff followed guidance set forth in BLM Manual 1613 for the process of identifying and evaluating potential ACECs. This report documents the first three steps in the process: compiling a list of areas recommended for ACEC designation, obtaining information

on relevance and importance, and evaluating each resource or hazard to determine if it meets both the relevance and importance criteria. The remaining two steps, public comment on proposed ACECs and ACEC designation, will be completed after publishing this draft report. Section 3 describes these steps.

### **3. STEPS IN THE ACEC PROCESS**

This section summarizes the five main steps in the identification and evaluation of ACECs.

#### **3.1 Nomination**

BLM staff, other agencies, or members of the public may nominate ACECs at any time, but they are only designated during the BLM land use planning process. External nominations from agencies and the public generally are solicited during an RMP's scoping process. In addition, BLM regulations require reconsideration of existing ACECs during RMP revision (BLM 1988a).

#### **3.2 Evaluation of Nominations for Relevance and Importance**

Each nominated area is evaluated to determine if it meets the relevance and importance criteria listed in BLM Manual 1613. A nomination must meet one or more of the relevance criteria *and* the importance criteria to be considered a potential ACEC.

##### ***Relevance Criteria***

Does the area contain one or more of the following values?

1. A significant historic, cultural, or scenic value (including but not limited to rare or sensitive archeological resources and religious or cultural resources important to native Americans);
2. A fish or wildlife resource (including but not limited to habitat for endangered, sensitive, or threatened species, or habitat essential for maintaining species diversity);
3. A natural process or system (including but not limited to endangered, sensitive, or threatened plant species; rare, endemic, or relict plants or plant communities that are terrestrial, aquatic, or riparian; or rare geological features); and/or
4. A natural hazard (including but not limited to areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous cliffs). A hazard caused by human action may meet the relevance criteria if it is determined through the RMP process that it has become part of a natural process.

##### ***Importance Criteria***

Does the value, resource, system, process, or hazard have substantial significance or value?  
Does it meet one or more of the following criteria?

1. Does it have more than locally significant qualities that give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource?
2. Does it have qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change?
3. Has it been recognized as warranting protection in order to satisfy national priority concerns or to carry out the mandates of FLPMA?
4. Does it have qualities that warrant highlighting in order to satisfy public or management concerns about safety and public welfare?
5. Does it pose a significant threat to human life and safety or property?

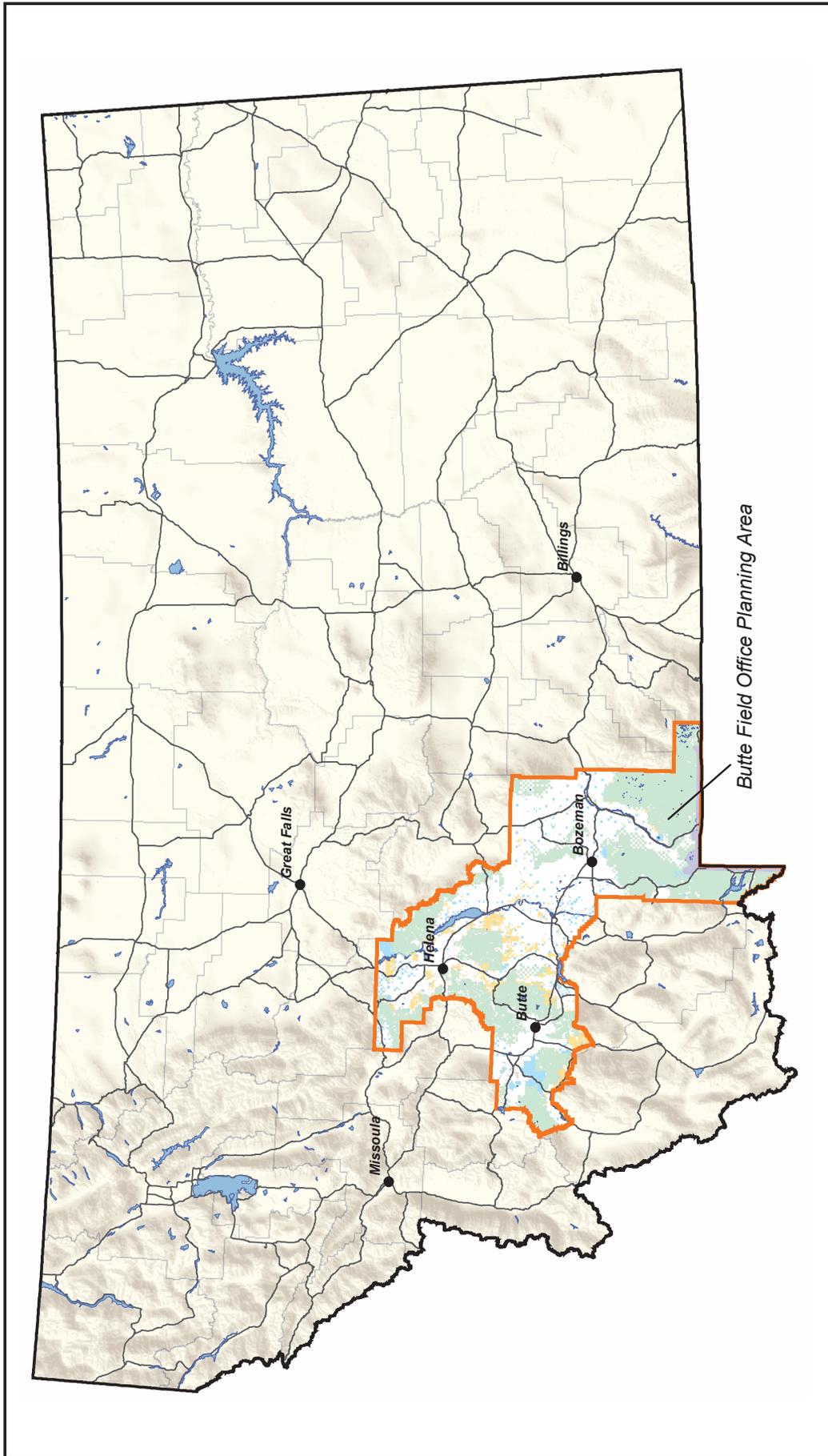


FIGURE 1  
Butte RMP Planning Area, Montana  
BLM, Butte Field Office  
Butte RMP and EIS

0 Miles 60  
No warranty is made by the Bureau of Land Management (BLM) for use of data for purposes not intended by BLM.

### 3.3 Consideration of Potential ACECs

Potential ACECs (those meeting the relevance and importance criteria) are considered as RMP alternatives are developed. Each potential ACEC is proposed for designation in at least one of the management alternatives in the Draft RMP. The need for special management and the resulting effects from applying such management are assessed in the associated draft environmental impact statement.

### 3.4 Comment on Proposed ACECs

Public feedback will be sought on the designation recommendations included in this draft report, and the public may comment on any aspect of the ACEC analysis. The comments are considered during preparation of the Proposed RMP and Final Environmental Impact Statement. After a 30-day protest period on the Proposed RMP, the BLM prepares a record of decision and approves the RMP.

### 3.5 Designation

A potential ACEC is proposed for designation if it requires special management to protect the important and relevant values. Special management is defined as management outside of standard or routine practices. Special management refers to management prescriptions developed expressly to protect the important and relevant values of the area from the potential effects of actions permitted by the RMP. They usually include more detail than other management prescriptions contained in the RMP. Special management is typically needed when one of the following conditions is met:

- Current management or management activities proposed in the alternative are not sufficient to protect the relevant and important resource values;
- The needed management action is considered unusual or outside of the normal range of management practices typically used; or
- The change in management is difficult to implement without ACEC designation.

Only if analysis determines that special management is required, the potential ACEC is recommended for designation. Designation of ACECs occurs when the record of decision is signed and the RMP is approved.

## 4. NOMINATIONS

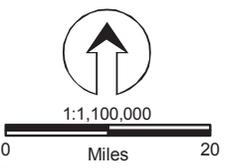
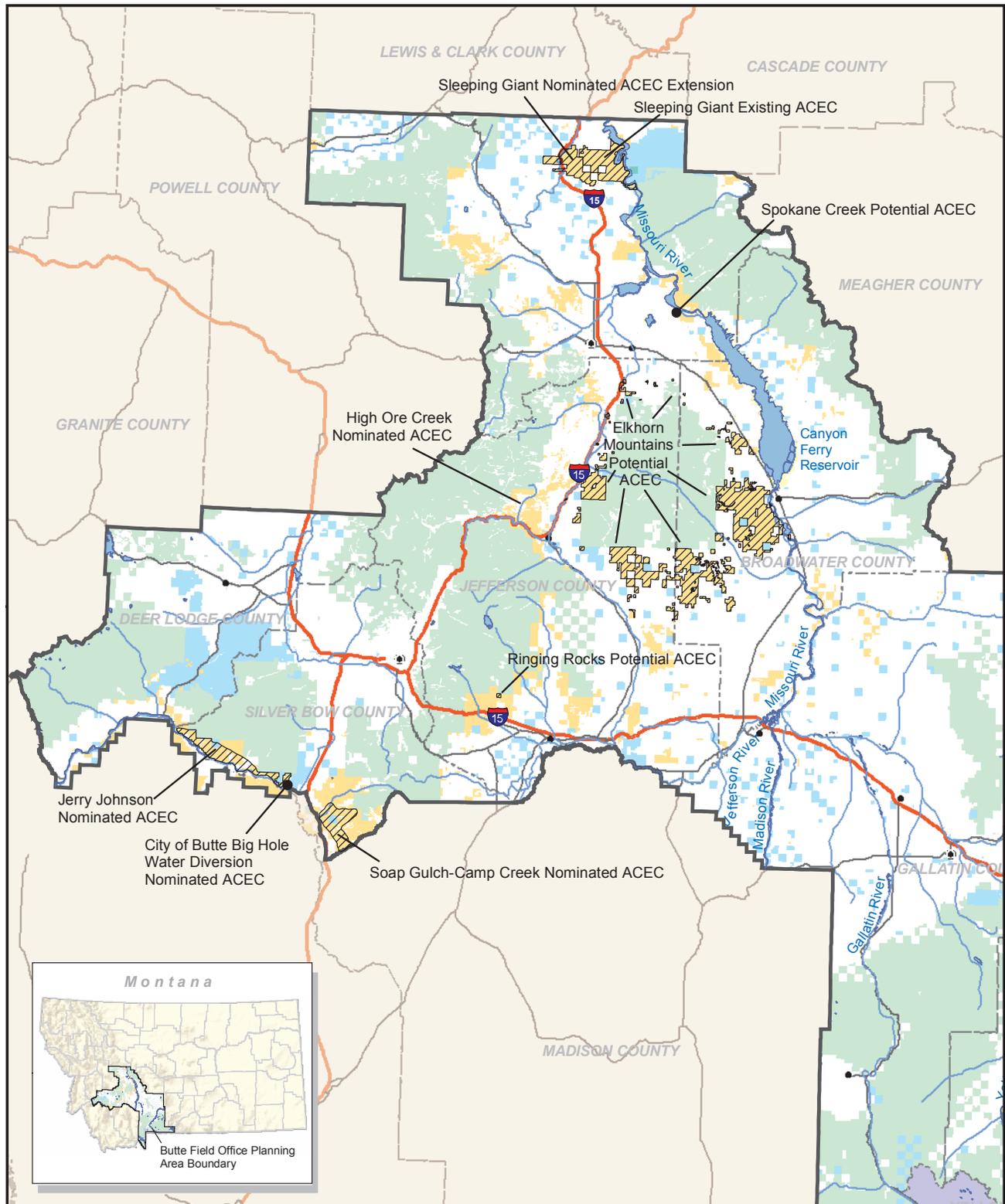
For the Butte RMP process, the notice of intent to prepare the RMP (December 2003) included the following request for nominations:

“The BLM is ... requesting public input for nominations considered worthy of ACEC designation. To be considered as a potential ACEC, an area must meet the criteria of relevance and importance as established and defined in 43 CFR 1610.7-2. Nominations must include descriptive materials, detailed maps, and evidence supporting the ‘relevance’ and ‘importance’ of the resource or area. ... All ACEC nominations within the planning area will be evaluated during development of the RMP” (Federal Register 2003).

The BLM received five external nominations from four different sources. Each nomination included a varying degree of descriptive materials, maps, and evidence supporting the relevance and importance of each area. In addition, the BLM interdisciplinary team evaluated three internal nominations, one existing ACEC (Sleeping Giant), and one area recommended for study in the Dillon Management Framework Plan (BLM 1979). **Figure 2** depicts the locations of the ten areas. Evaluations of each area are provided below.

## 5. IMPORTANCE AND RELEVANCE EVALUATIONS

The following information describes each area and whether or not it meets the relevance and importance criteria.



No warranty is made by the Bureau of Land Management (BLM) for use of data for purposes not intended by BLM.

- Potential Area of Critical Environmental Concern (ACEC)
- Butte Field Office Planning Area Boundary
- Rivers and Streams
- Interstates
- Roads
- County Boundaries
- Bureau of Land Management (BLM) Lands
- Bureau of Reclamation (BOR) Lands
- Private Lands
- State of Montana Lands
- USDA Forest Service Lands
- USDI Fish and Wildlife Service Lands

FIGURE 2

Nominated Areas of Critical Environmental Concern Considered BLM, Butte Field Office Butte RMP and EIS

## 5.1 Elkhorn Mountains

This external nomination was made during the public scoping process for the Butte RMP. The nominated area is shown in **Figure 3**.

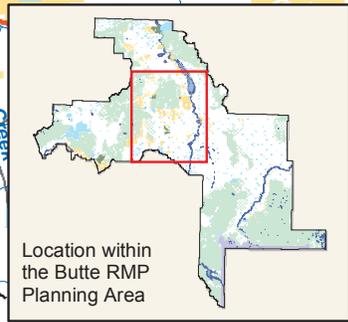
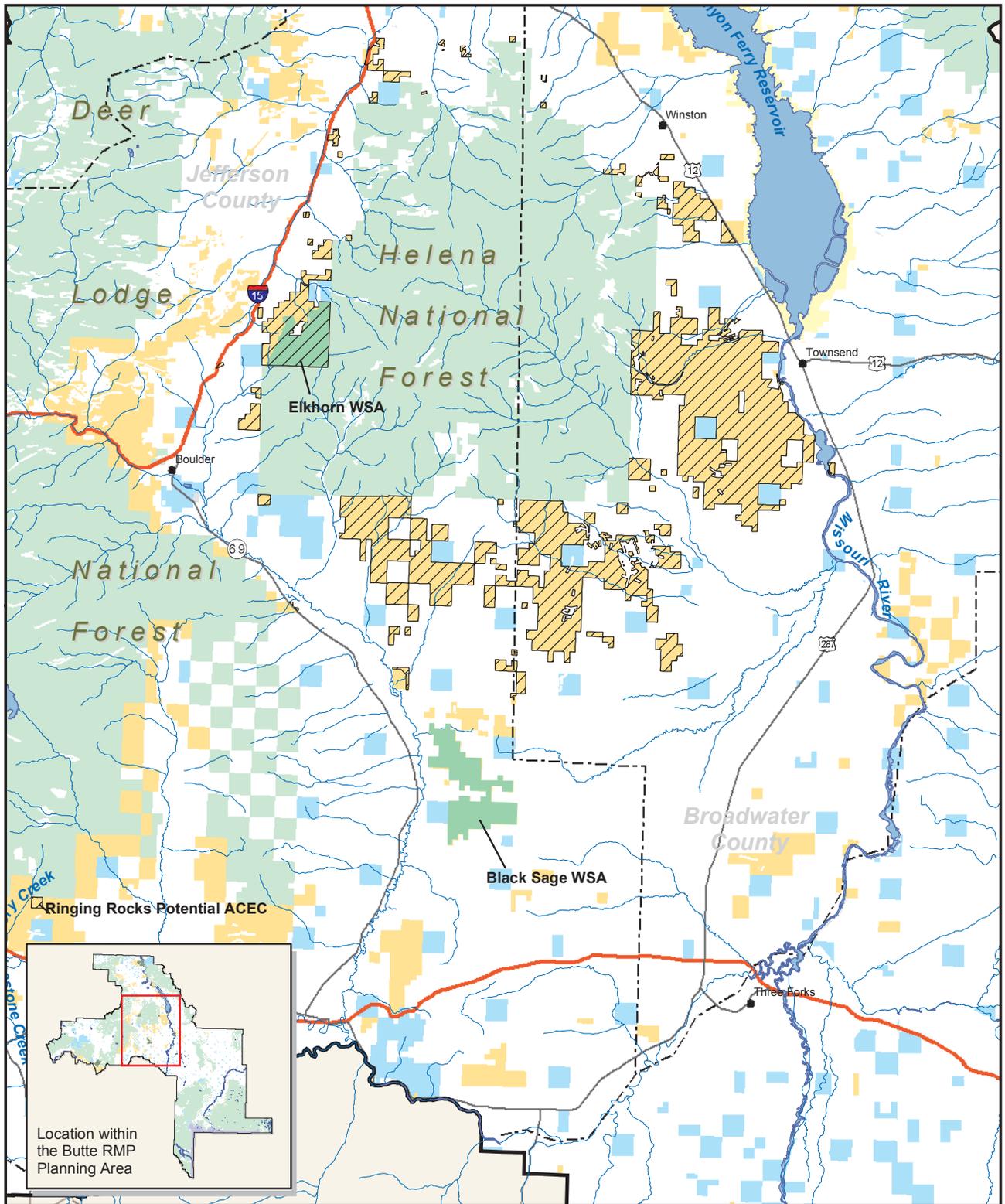
### *Description of Area/Nomination*

The Elkhorn Mountains are an island mountain range in southwest Montana, near the capital city of Helena. The communities of Townsend, Boulder, Three Forks, and Winston also border the range. The nominated Elkhorn Mountains ACEC is about 67,500 acres of BLM-administered lands in Jefferson and Broadwater Counties. The nominated ACEC encompasses the BLM-administered 3,575-acre Elkhorn Wilderness Study Area (WSA) on the west side of the Elkhorn Mountains; this WSA has not been studied for wilderness suitability. The BLM-administered lands in the nominated ACEC encircle (but do not include) about 160,000 acres managed by the US Department of Agriculture, National Forest Service (Forest Service); these lands comprise the only Wildlife Management Unit in the National Forest System. Included in these Forest Service lands, and adjacent to the BLM-administered Elkhorn WSA, is the 64,522-acre Elkhorn WSA that is administered by the US Forest Service.

The wildlife emphasis resulted from the decision on the Elkhorns Wilderness Study EIS done in the late 1970s. The study was controversial, and the public response was both vocal and conflicting. Throughout the debate, consensus emerged: the wealth of natural diversity in wildlife and habitats and the associated recreation values of the Elkhorn Mountains should be recognized and retained. In 1992, the BLM, Helena and Deerlodge National Forests, and Montana Fish, Wildlife, and Parks signed a Memorandum of Understanding (MOU) agreeing to work together to manage the Elkhorns as a mountain range. The MOU established the Elkhorn Cooperative Management Area as a unique, cooperatively administered geographic area. However, the BLM-managed lands have remained under full multiple use, whereas the Forest Service lands emphasize wildlife and recreation values.

### *Relevance Criteria*

This area meets Relevance Criteria 1 and 2. There are significant Native American cultural sites on BLM-managed lands in the Elkhorn Mountains, as well as historic mining and ranching localities (Relevance Criteria 1). The Elkhorn Mountains' highlight is its wealth of natural diversity in wildlife and habitats (Relevance Criteria 2). The ecosystem includes everything from prairie to alpine, and from mayflies (*Ameletus bellulus*) to mountain goat (*Oreamnos americanus*). Together, the Forest Service and BLM lands in the Elkhorn Mountains provide diverse, productive wildlife habitat essential for maintaining species diversity. The Elkhorn Mountains also provide expansive big game winter range on public land. The mountain range is also an important wildlife corridor between the Big Belt Mountains and the Continental Divide. The lower-elevation portion of the ecosystem includes BLM-managed lands that provide critical winter range for mule deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*), and elk (*Cervus elaphus*). The BLM-managed lands also provide habitat for mountain plover (*Charadrius montanus*) and for several sensitive species including westslope cutthroat trout (*Oncorhynchus clarki lewisi*), golden eagle (*Aquila chrysaetos*), northern goshawk (*Accipiter gentilis*), long-billed curlew (*Numenius americanus*), black-backed woodpecker (*Picoides arcticus*), American three-toed woodpecker (*Picoides dorsalis*), and Brewer's sparrow (*Spizella breweri*). These fish and wildlife values are recognized by the MOU between the BLM, Helena and Deerlodge National Forests, and Montana Fish, Wildlife, and Parks that establishes the Elkhorn Cooperative Management Area.



- Wilderness Study Area (WSA)
- Potential Area of Critical Environmental Concern (ACEC)
- Butte Field Office Planning Area Boundary
- Rivers and Streams
- Interstates
- Roads
- County Boundaries
- Bureau of Land Management (BLM) Lands
- Bureau of Reclamation (BOR) Lands
- Private Lands
- State of Montana Lands
- USDA Forest Service Lands
- USDI Fish and Wildlife Service Lands

FIGURE 3

Location of Potential Area of Critical Environmental Concern  
Elkhorn Mountains  
BLM, Butte Field Office  
Butte RMP and EIS

***Importance Criteria***

This area's fish and wildlife values, as recognized by the MOU, meet Importance Criteria 1, 2, and 3. The wildlife management unit, the Elkhorn Cooperative Management Area, has more than locally significant qualities that give it special worth and distinctiveness (Importance Criteria 1). The unique management of the Elkhorn Mountains across administrative boundaries has been nationally recognized as a model of collaborative management. The public has come to expect this seamless management of the Elkhorn Mountains and generally expects that management across the ecosystem favors wildlife. The public generally does not realize that the BLM, Butte Field Office, has a separate multiple-use plan for the Elkhorn Mountains. The relevant fish and wildlife values, as recognized by the MOU, also represent a unique wildlife management unit of national priority (Importance Criteria 3).

The Elkhorn Mountains' expansive big game winter range on public land is unique. The pure native westslope cutthroat trout also are unique, fragile, sensitive, rare, threatened, and vulnerable (Importance Criteria 2). Muskrat and Dutchman Creeks are unique because of these pure native westslope cutthroat trout. Pure strains of westslope cutthroat trout are found in only four streams of the Elkhorn Mountains, and two of these streams occur on BLM lands. Streams with westslope cutthroat trout are rare in the Elkhorn Mountains and are threatened by nonnative species and habitat degradation.

***Findings***

This area meets both the relevance and importance criteria and will be carried forward as a potential ACEC.

**5.2 Jerry Johnson Creek**

This area was formerly located within the BLM Dillon Field Office. The Dillon Management Framework Plan (BLM 1979) recommended that 15 areas, including Jerry Johnson Creek, be considered further for ACEC designation once guidance was available to conduct the evaluations. The BLM guidance finalized the process for identification and evaluation of ACECs in the 1980s, but a Dillon Management Framework Plan amendment was never completed for the 15 nominations. Because the area is now within the Butte Field Office boundary, it is being evaluated during the Butte RMP process. The nominated area is shown in **Figure 2**.

***Description of Area/Nomination***

This approximate 12,100-acre area in Silver Bow County includes BLM-administered lands adjacent to the north side of the Big Hole River from the town of Divide west about 2.5 miles to the Silver Bow-Deerlodge County line. Approximately 200 elk and 300 deer use the area for winter range.

***Relevance Criteria***

This nomination meets Relevance Criteria 2 for a fish and wildlife resource, because the winter range is necessary to maintain existing populations of deer and elk, and there is habitat for threatened and endangered species, including:

- Federally listed as threatened Canada lynx (*Lynx canadensis*);
- Federally listed as threatened grizzly bear (*Ursus arctos horribilis*); and
- Federally listed as endangered and experimental population gray wolf (*Canis lupus*).

***Importance Criteria***

The small area does not meet the importance criteria for a fish and wildlife resource. Though it contains threatened and endangered species habitat, there is nothing more than locally significant about this area, as these species occur elsewhere in Montana.

***Findings***

This nomination meets the relevance criteria for a fish and wildlife resource but does not meet importance criteria. As such, it will not be carried forward as a potential ACEC.

### 5.3 City of Butte Big Hole River Diversion

This external nomination was made during the public scoping process for the Dillon RMP in 2001. Because it is located in the Butte Field Office, it was not considered in the Dillon ACEC evaluation. The nominated area is shown in **Figure 2**.

#### *Description of Area/Nomination*

The City of Butte Big Hole River Diversion is on the Big Hole River one mile west of the town of Divide, in Silver Bow County. This nomination stated that all municipal watersheds should be considered as ACECs because they have immediate and important effects to humans. The description of this nomination was not adequate to determine exact locations or total acres of public lands. The nominator did not participate in the Butte RMP scoping process, so additional information was not solicited.

#### *Relevance Criteria*

This nomination does not meet any of the four relevance criteria. The municipal watershed does not have significant historic or cultural value (Relevance Criteria 1).

#### *Importance Criteria*

The importance criteria were not reviewed because the relevance criteria were not met.

#### *Findings*

This nomination does not meet any relevance criteria and will not be carried forward as a potential ACEC.

### 5.4 Soap Gulch-Camp Creek

This external nomination was made during the public scoping process for the Dillon RMP in 2001. The area is split between the Butte and Dillon Field Offices. The Dillon ACEC evaluation considered portions on Dillon Field Office lands. The nominated area is shown in **Figure 2**.

#### *Description of Area/Nomination*

This habitat area is split between the Butte and Dillon Field Offices and is north/northeast of the town of Melrose in Silver Bow County. The nominated area in the Butte Field Office totals about 9,300 acres. Bighorn sheep (*Ovis canadensis*) were reintroduced into historic habitat around Camp Creek in the mid-1960s and served as the basis for the Soap Gulch ACEC nomination in the 1979 Dillon Management Framework Plan (BLM 1979). The bighorn sheep population has expanded to occupy suitable habitat around this core area, including lands west of the Big Hole River (Melrose-Maiden Rock ACEC nomination in the Dillon RMP).

Wildlife viewing is a major regional interest with bighorn sheep seasonally present along Interstate 15 and the Big Hole River. A major die-off decimated this herd in 1995, but small bands of bighorn sheep have persisted throughout the previously occupied habitat, and a supplemental reintroduction was made in 2001. Current distribution of bighorn sheep exceeds the original core habitat area. No overall habitat management plan is in place.

#### *Relevance Criteria*

This nomination meets the Relevance Criteria 2 for a fish and wildlife resource. Bighorn sheep is a priority species for the BLM and occur in these areas.

#### *Importance Criteria*

This habitat area does not meet the importance criteria for a fish and wildlife resource. It does not have more than locally significant qualities or circumstances, as there are over 40 herds of bighorn sheep in Montana and many others in the western US. The nominated areas are not more or less important than other bighorn sheep areas in Montana or the Intermountain West. Bighorn sheep are susceptible to adverse change, but the habitats in the nominated area are not susceptible to these changes. The area is not considered fragile, nor has it been recognized as warranting special protection under the importance criteria.

***Findings***

This nomination meets the relevance criteria for a fish and wildlife resource but does not meet the importance criteria. Therefore, this nomination will not be carried forward as a potential ACEC.

**5.5 High Ore Creek**

This external nomination was made during the Butte RMP public scoping process in 2004. High Ore Creek is shown in **Figure 2**.

***Description of Area/Nomination***

The nomination stated that this area on High Ore Creek, west of the Boulder River in Jefferson County, should be considered for ACEC designation based on post-placer mining restoration that has significantly enhanced the water quality, aquatic integrity, and conservation value of this tributary. The potential to restore the High Ore Creek's native fishery provides another reason to consider ACEC protection. The exact location and size of the nominated area was not included in the nomination so is not known.

***Relevance Criteria***

This nomination does not meet any of the four relevance criteria. This is a mining reclamation area that is not part of the natural process (Relevance Criteria 3). While the condition of many of the historic properties is exceptional (Relevance Criteria 1), those resources are located on private land, and ACECs may only be considered on BLM-managed lands. The historic mining features on BLM-managed land are abandoned mine openings and ditches, and those site types are very common in the area. As such, the BLM-managed lands do not meet any relevance criteria.

***Importance Criteria***

The importance criteria were not reviewed because the relevance criteria were not met.

***Findings***

This nomination does not meet any relevance criteria and will not be carried forward as a potential ACEC.

**5.6 Sleeping Giant ACEC (Existing Designation)**

The Sleeping Giant ACEC (**Figure 4**) was designated an ACEC in the Headwaters RMP Record of Decision in 1984 (BLM 1984). The Sleeping Giant ACEC Management Plan (BLM 1988b) directs that the area is managed for the values for which it was designated. It is being reevaluated now because BLM regulations require reconsideration of existing ACECs during the RMP revision process (BLM 1988a).

***Description of Area/Nomination***

The 11,609-acre Sleeping Giant ACEC is adjacent to the Holter Lake Recreation Area complex, about 30 miles north of Helena in Lewis and Clark County. The ACEC is mostly comprised of the Sleeping Giant WSA and Sheep Creek WSA. The ACEC has steep irregular topography, with elevations ranging from 3,600 to 6,800 feet. About half the area is forested with mixed conifers, including Douglas-fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*), limber pine (*Pinus flexilis*), and lodgepole pine (*Pinus contorta*). Cottonwood trees (*Populus* spp.) and deciduous shrubs are associated with numerous riparian areas within the ACEC. The nonforested portions are composed of sedimentary rock ledges, talus slopes, and native grasslands. Twenty drainages dissect the area. Watershed values are high, and there are six important perennial streams.

***Relevance Criteria***

This area meets Relevance Criteria 1 for significant scenic values and Relevance Criteria 2 for a fish and wildlife resource. The most outstanding features or landmark in the ACEC is the Sleeping Giant, a formation created by the profile of the Beartooth Mountain and the rock

outcroppings of the lower ridgeline that extend toward the Missouri River. The Sleeping Giant is a well-known landmark visible from the city of Helena.

The overall terrain is highly natural, providing outstanding scenic values. Off-site vistas of the surrounding landscape also are outstanding. Seven miles of ridgeline hiking routes offer panoramic views of the Rocky Mountains. The nationally significant Lewis and Clark National Historic Trail traverses the area. Recreation opportunities are diverse and include fishing, camping, hiking, horse travel, hunting, nature study, photography, and snowshoeing. There is an abandoned homestead, consisting of a cabin, framed house, barn, outhouse, shed, and root cellar, in the area. Another important value includes 11 miles of Holter Lake/Missouri River shoreline (BLM 1991, 2004).

Important wildlife species include bighorn sheep, mountain goat, elk, American black bear (*Ursus americanus*), mule deer, furbearers, coldwater fisheries (particularly trout [*Oncorhynchus* spp.]), Canada goose (*Branta canadensis*), osprey (*Pandion haliaetus*), the federally listed as threatened grizzly bear, and the federally listed as threatened bald eagle (*Haliaeetus leucocephalus*).

#### ***Importance Criteria***

This area meets Importance Criteria 1 for scenic values and a fish and wildlife resource because the values have more than locally significant qualities that give the area special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resources. Also, the area meets Importance Criteria 2 for both relevant values because the values have qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.

#### ***Findings***

This nomination continues to meet the relevance and importance criteria and will be carried forward as a potential ACEC.

### **5.7 Sleeping Giant ACEC Extension**

This external nomination was made during the Butte RMP public scoping process in 2004. The nominated area is shown in **Figure 2**.

#### ***Description of Area/Nomination***

The nomination stated that the proposed Sleeping Giant Extension ACEC is at the west end of the existing Sleeping Giant ACEC on both sides of Interstate 15. It includes BLM lands in Sections 21, 22, 23, 26, 27, 28, 29, 31, 32, 33, 34, and 35 of Township 14 North, Range 4 West; and Sections 2, 3, 4, 5, 10, 11, 12, and 13 of Township 13 North, Range 4 West, and Section 18 of Township 13 North, Range 3 West, Montana Principal Meridian, Lewis and Clark County. The site is composed of approximately 8,000 acres within a diverse landscape of ridges, hills, grasslands, and aspen-sagebrush mosaics. The area includes Little Prickly Pear Creek and several hiking trails, logging roads, and all-terrain vehicle trails.

#### ***Relevance Criteria***

When the Sleeping Giant ACEC was originally evaluated in the early 1980s, the extension areas included in this nomination did not meet any relevance criteria. The relevant values of the Sleeping Giant ACEC – significant scenic and historical values (unique topographic and vegetation features and stage coach travel route and ford from Great Falls to Butte) (Relevance Criteria 1) and a wildlife resource (Relevance Criteria 2) – are not present in the nominated extension area.

#### ***Importance Criteria***

The importance criteria were not reviewed because the relevance criteria were not met.

#### ***Findings***

This nomination does not meet any of the relevance criteria so will not be carried forward as a potential ACEC.

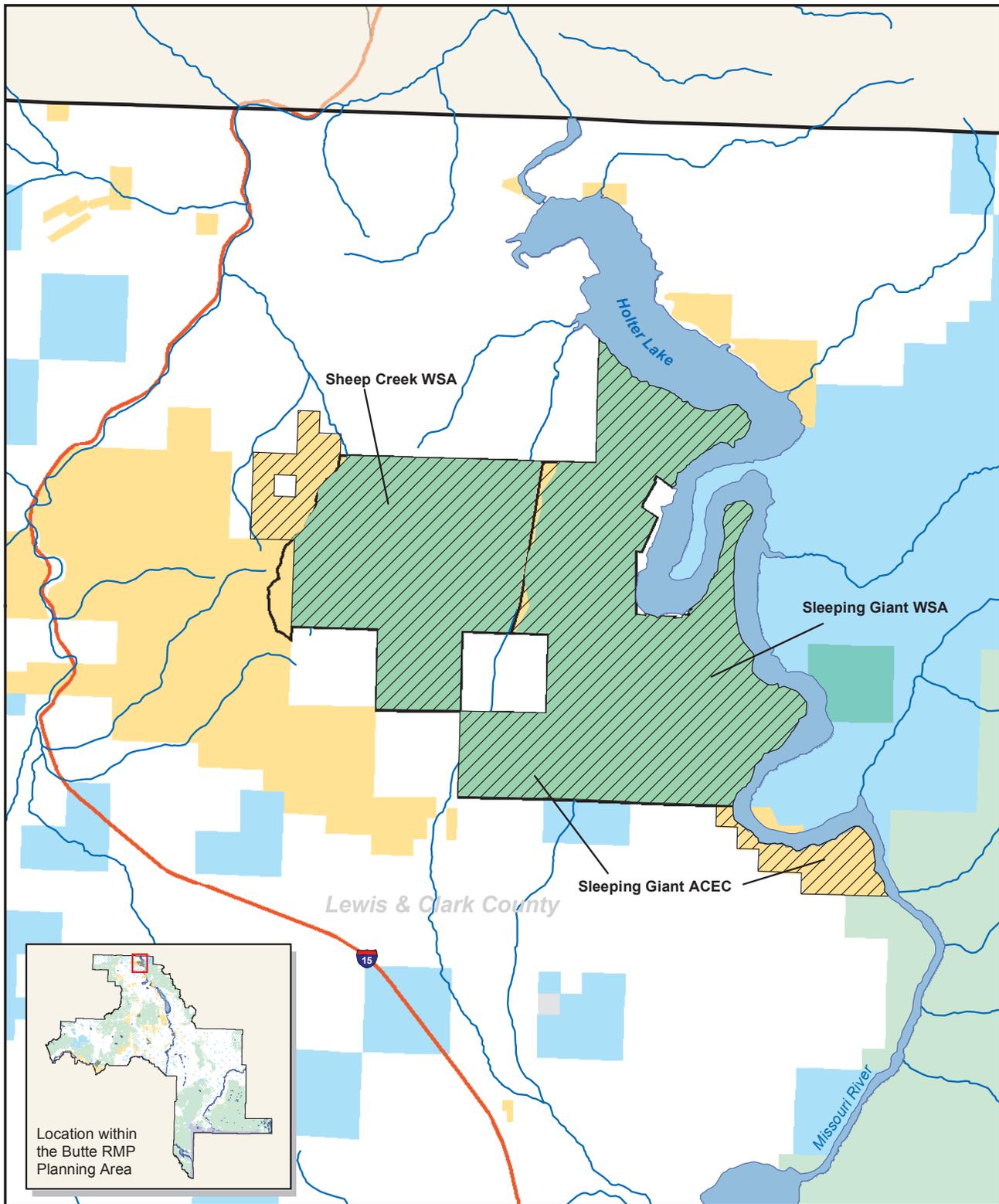
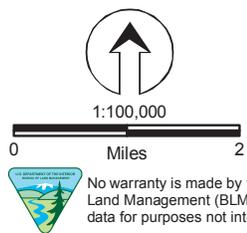


FIGURE 4

Location of Existing Area of Critical Environmental Concern Sleeping Giant BLM, Butte Field Office Butte RMP and EIS



- Wilderness Study Area (WSA)
- Potential Area of Critical Environmental Concern (ACEC)
- Butte Field Office Planning Area Boundary
- Rivers and Streams
- Interstates
- Roads
- County Boundaries
- Bureau of Land Management (BLM) Lands
- Bureau of Reclamation (BOR) Lands
- Private Lands
- State of Montana Lands
- USDA Forest Service Lands
- USDI Fish and Wildlife Service Lands

## 5.8 Spokane Creek

This internal nomination made by BLM specialists is depicted in **Figure 5**.

### *Description of Area/Nomination*

This area is part of the McMaster Ranch acquisition that was facilitated by The Conservation Fund and purchased by the BLM in 2004 with Land and Water Conservation Funds. The approximately 14-acre area is located on BLM-managed lands along Hauser Lake in Sections 4 and 5, Township 7 North, Range 4 West, Montana Principal Meridian, Lewis and Clark County (Figure 5).

The area is comprised of two converging perennial reaches of Spokane Creek and a diverse composition of riparian vegetation. It is immediately downstream of a 120-acre private parcel that is under a conservation easement. The Conservation Fund, and ultimately the BLM, has first right of purchase for the privately owned parcel if the private owners decide to sell in the future. Within the conservation easement, there are several large springs that contribute the majority of the stream flows through the nominated area. The BLM has been entrusted to manage the conservation easement and its water resources to maintain or enhance its natural values. Partnerships are currently underway to protect this important resource.

### *Relevance Criteria*

The natural characteristics of the nominated Spokane Creek area meet Relevance Criteria 2 and 3. The area provides essential habitat for maintaining both plant and animal diversity (Relevance Criteria 2). The aquatic and riparian plant communities provide a natural functioning system (Relevance Criteria 3).

### *Importance Criteria*

The relevant resource values are substantially significant and meet Importance Criteria 1, 2, and 3. Spokane Creek and its associated riparian vegetation, which provide a natural functioning system, present more than locally significant qualities of special worth, distinctiveness, and cause for concern (Importance Criteria 1). It is critically important as a natural spawning stream for three key sport fish species (brown trout [*Salmo trutta*], rainbow trout [*Oncorhynchus mykiss*] and Kokanee salmon [*Oncorhynchus nerka kennerlyi*]) in Hauser Lake and the Missouri River that attract anglers throughout Montana and the US. This important spawning stream also provides food sources for the federally listed as threatened bald eagle.

The relevant values are sensitive, rare, irreplaceable, unique, and vulnerable, which makes them worthy of special management and protection (Importance Criteria 2). These qualities are a result of Spokane Creek being the only properly functioning perennial, spawning stream that flows into Hauser Lake. The stream is primarily spring fed, has high water quality, maintains consistently cool temperatures, and provides excellent yearlong spawning habitat because of its abundant gravel bars, overhanging banks, and vegetative shading. In addition to its unique qualities for sustaining fisheries on Hauser Lake and the Missouri River, this nominated area provides habitat for bald eagle, osprey, and numerous species of waterfowl, and excellent opportunities for wildlife observation and nature study.

The FLPMA mandates that important fish and wildlife resources be protected through special management attention that ACEC designations provide (Importance Criteria 3).

### *Findings*

This nomination meets the relevance and importance criteria and will be carried forward as a potential ACEC.

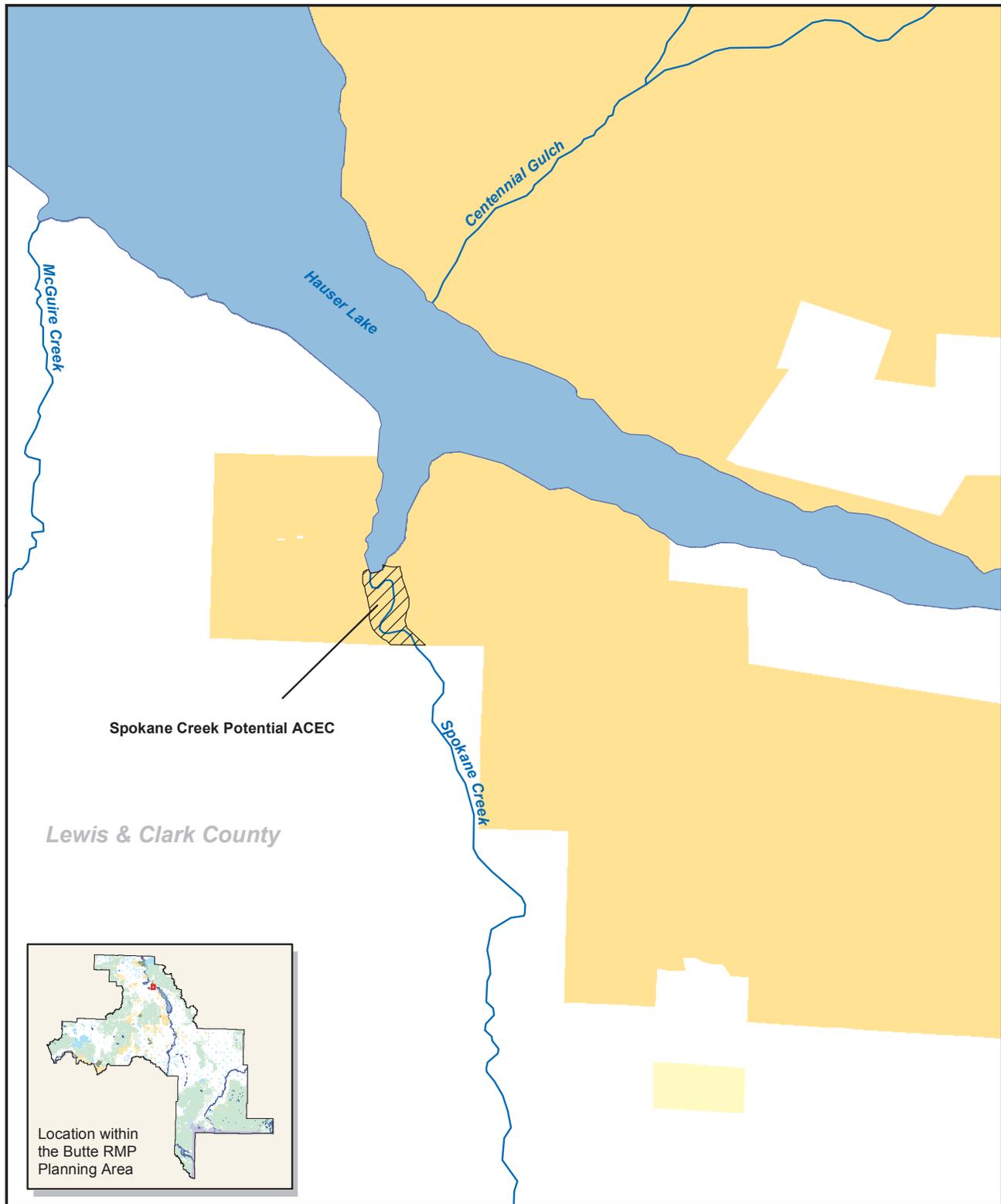
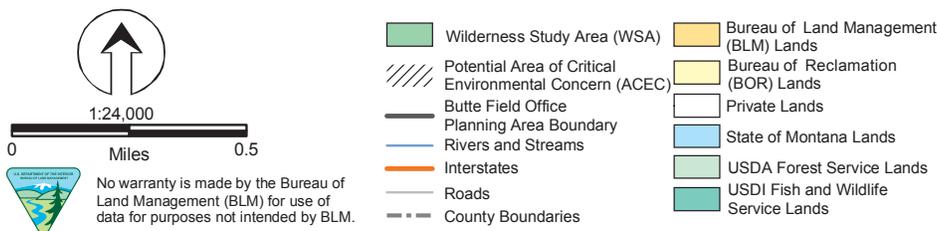


FIGURE 5

Location of Potential Area of Critical Environmental Concern  
 Spokane Creek  
 BLM, Butte Field Office  
 Butte RMP and EIS



## 5.9 Ringing Rocks

This internal nomination made by BLM specialists is depicted in **Figure 6**.

### *Description of Area/Nomination*

The Ringing Rocks are located approximately four miles northeast of the town of Pipestone and Interstate 90. The nominated ACEC is about 160 acres of BLM-administered lands in Section 9, Township 2 North, Range 5 West, Montana Principal Meridian, Jefferson County. The ACEC encompasses an approximate one-acre open outcrop of weathered monzonite with a wide range of weathered boulders. These weathered blocks range from 3 to 13 feet. The rocks ring with bell-like tones when struck lightly with a stout stick or rock hammer. The rocks only ring in outcrop; hand samples broken off will not ring.

### *Relevance Criteria*

This area meets Relevance Criteria 3 for a rare geological feature. Ringing rocks are reportedly found throughout the world, but they are not common. The only other site where ringing rocks are found in the US is in Bucks County, Pennsylvania.

### *Importance Criteria*

The geologic feature meets Importance Criteria 1 (more than locally significant distinctive geological feature) and 2 (rare and unique geological feature). The Ringing Rocks site is one of only two known sites in the continental US where rocks ring when struck, thus making this an extremely rare occurrence.

### *Findings*

This nomination meets the relevance and importance criteria and will be carried forward as a potential ACEC.

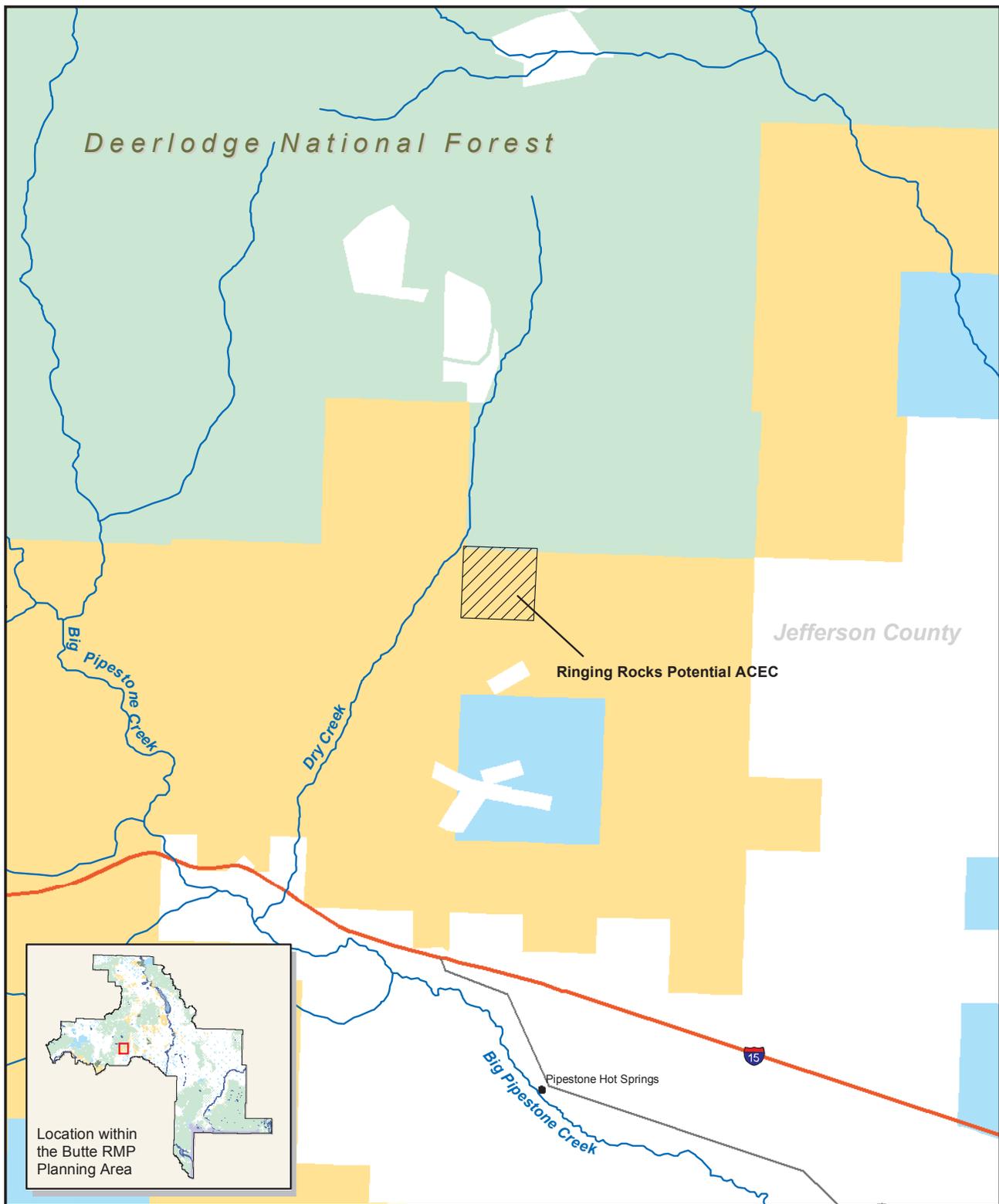


FIGURE 6

Location of Potential Area of Critical Environmental Concern  
 Ringing Rocks  
 BLM, Butte Field Office  
 Butte RMP and EIS



- Wilderness Study Area (WSA)
- Potential Area of Critical Environmental Concern (ACEC)
- Butte Field Office Planning Area Boundary
- Rivers and Streams
- Interstates
- Roads
- County Boundaries
- Bureau of Land Management (BLM) Lands
- Bureau of Reclamation (BOR) Lands
- Private Lands
- State of Montana Lands
- USDA Forest Service Lands
- USDI Fish and Wildlife Service Lands

## 5.10 Humbug Spires ACEC Nomination

This internal nomination by BLM specialists is depicted in Figure 7.

### *Description of Area/Nomination*

This potential ACEC includes the majority of both the Humbug Spires original Primitive Area designated in 1972 and the recommended wilderness Instant Study Area that was finalized in 1981. The potential ACEC totals about 8,400 acres of public land. The area is located in Silver Bow County in southwestern Montana, approximately 15 miles south of Butte and four miles east of Divide and Interstate 15. The area is accessible from I-15 via a primitive road from the Divide interchange and an improved gravel road from the Moose Creek interchange that leads to a developed trailhead.

The Humbug Spires potential ACEC is a highly natural and pristine area. The majority of the area is forested with dense stands of Douglas-fir and lodgepole pine. Small areas of old growth Douglas-fir trees exist within numerous drainage bottoms. Riparian areas of willows, dogwood, alder, aspen, and cottonwoods are scattered throughout the streams and upper tributaries. The topography is extremely diverse with numerous ridges and dissecting drainages. Geologically, there are hundreds of large granite spires throughout the area. About ten of these light gray spires are between 300 and 600 feet tall. Moose Creek is the primary perennial stream bisecting the area. Moose Creek supports small populations of brook, rainbow, and cutthroat trout. Important big-game species include elk, mule deer, black bear, moose, and bighorn sheep. Other wildlife species common to the area are mountain lion, coyote, fox, weasel, bobcat, beaver, squirrels, rabbits, grouse, and several species of raptors.

### *Relevance Criteria*

The natural characteristics of the Humbug Spires area meet Relevance criteria 1, 2, and 3. The natural and diverse topography, vegetation, streams, and rock spires of the area provide outstanding scenic values that are significant. The Visual Resource Management Classification of this area is Class 1 which is the highest and most protective BLM rating possible. These characteristics meet Criterion 1.

The area provides essential habitat for maintaining both plant and animal diversity, thus meeting relevance criterion 2. In addition the area provides active habitat for the following Threatened/Endangered/Sensitive species: Canada lynx, bald eagle, Northern goshawk, peregrine falcon, black-backed woodpecker, three-toed woodpecker, Townsend's big-eared bat, fringed myotis, long-legged myotis and the long-eared myotis.

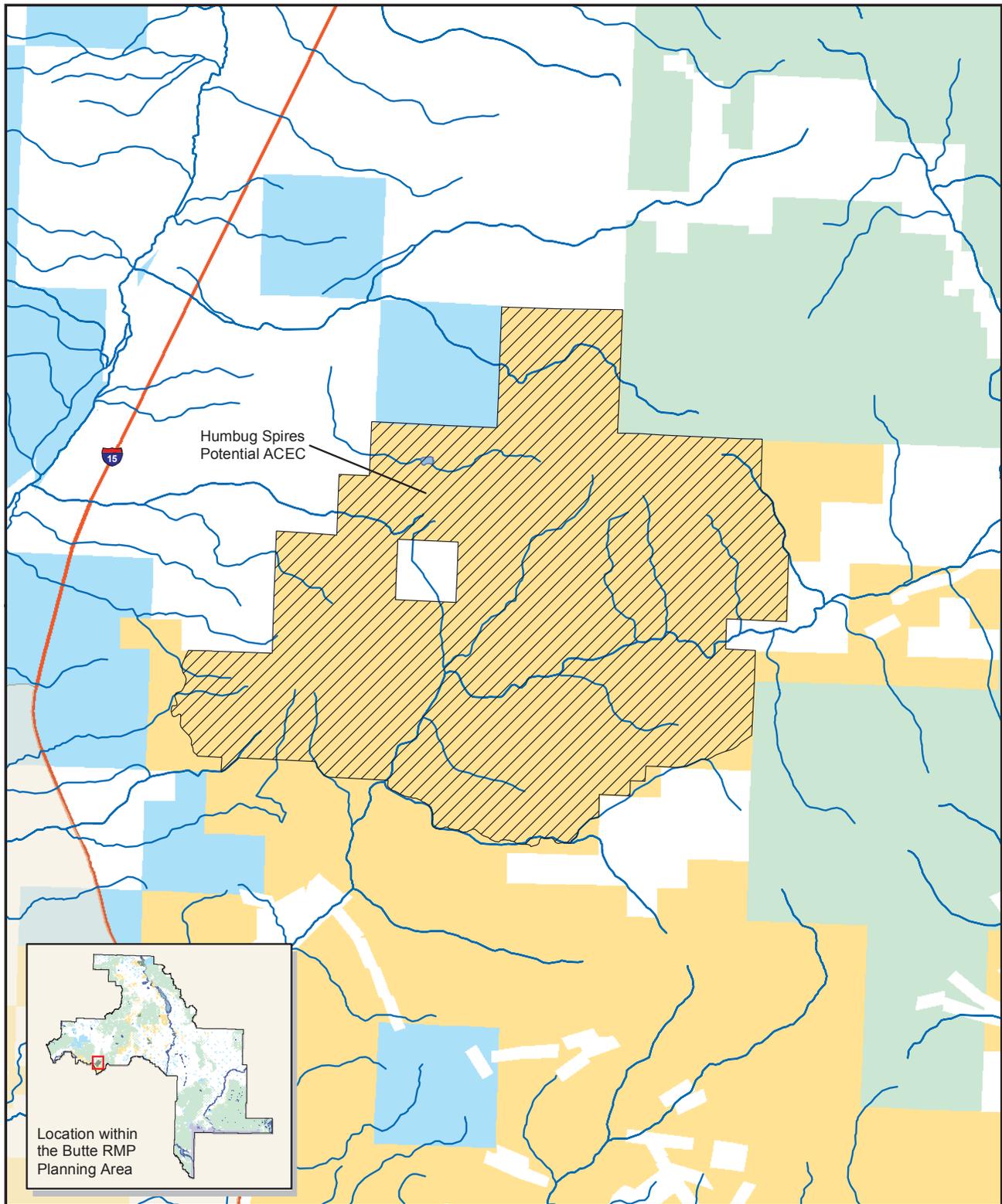
The aquatic and riparian plant communities associated with Moose Creek and its upper tributaries provide a natural functioning system. Sensitive plant species found within the area include Idaho sedge and Sapphire rockcress. These features meet relevance Criterion 3.

### *Importance Criteria*

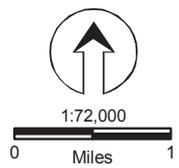
The above resource values are substantially significant and meet Importance Criteria 1, 2, and 3. The abundance, size, and quality of the granite spires represent more than locally significant geologic features that attract both regional and national recognition and visitation. The overall availability, setting, and distinctiveness of these geologic formations are exceptional and significant beyond the local level. These qualities meet importance Criterion 1 since they are more than locally significant.

This area has qualities that are sensitive, rare, irreplaceable, unique and vulnerable that makes it worthy of special management and protection. The area is highly natural in character and provides important habitat for several big-game species, as well as Threatened/Endangered/Sensitive species of both plants and animals. These characteristics meet importance Criterion 2.

Due to the outstanding qualities of scenery, naturalness, solitude, wildlife diversity, primitive and unconfined recreation opportunities, and the presence of Threatened/Endangered/Sensitive species, the area has been both designated as a Primitive Area as well as recommended for Wilderness designation. These qualities warrant continued protection and therefore meet importance Criterion 3.



Location within the Butte RMP Planning Area



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-  Potential Area of Critical Environmental Concern (ACEC)
-  Butte Field Office Planning Area Boundary
-  Rivers and Streams
-  Interstates
-  Roads
-  County Boundaries
-  Bureau of Land Management (BLM) Lands
-  Bureau of Reclamation (BOR) Lands
-  Private Lands
-  State of Montana Lands
-  USDA Forest Service Lands
-  USDI Fish and Wildlife Service Lands

FIGURE 7

Location of Potential Area of Critical Environmental Concern Humbug Spires BLM, Butte Field Office Butte RMP and EIS

## 6. SUMMARY AND CONCLUSIONS

A total of ten nominated areas and existing ACECs were evaluated. These included five external nominations (made by other agencies or the public), three internal nominations (made by BLM specialists), one recommendation from the Dillon Management Framework Plan (BLM 1979), and one existing ACEC. Five areas totaling approximately 87,700 acres meet the relevance and importance criteria and will be carried forward as potential ACECs (**Table 1**).

Various alternatives in the Draft RMP will recommend the areas for designation as ACECs (or continued designation in the case of Sleeping Giant ACEC) if special management is required to protect the relevant and important values. Areas found not to meet the relevance and importance criteria are not being carried forward as potential ACECs.

**Table 1**  
**Potential Areas of Critical Environmental Concern**

Potential ACEC	Size (acres)	Relevance Criteria Met	Importance Criteria Met
Elkhorn Mountains	67,500	1, 2	1, 2, 3
Sleeping Giant ACEC (existing designation)	11,609	1, 2	1, 2
Spokane Creek	14	2, 3	1, 2, 3
Ringing Rocks	160	3	1, 2
Humbug Spires	8,400	1, 2, 3	1, 2, 3

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- Federal Register. 2003. Notice of Intent To Prepare a Resource Management Plan for the Butte Field Office and Associated Environmental Impact Statement. Vol. 68, No. 244, page 70833. December 19, 2003.

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## GLOSSARY

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**AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC).** An area established through the planning process, as provided in FLPMA, where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values; or to fish and wildlife resources or other natural systems or processes; or to protect life and afford safety from natural hazards.

**IDENTIFICATION CRITERIA.** To be considered as a potential ACEC and analyzed in RMP alternatives, an area must meet the criteria of relevance and importance, as established and defined in 43 CFR 1610.7-2.

**RELEVANCE.** An area meets the relevance criterion if it contains one or more of the following:

1. A significant historic, cultural, or scenic value (including but not limited to rare or sensitive archeological resources and religious or cultural resources important to native Americans);
2. A fish and wildlife resource (including but not limited to habitat for endangered, sensitive, or threatened species, or habitat essential for maintaining species diversity);
3. A natural process or system (including but not limited to endangered, sensitive, or threatened plant species; rare, endemic, or relict plants or plant communities that are terrestrial, aquatic, or riparian; or rare geological features); and/or
4. Natural hazards (including but not limited to areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous cliffs). A hazard caused by human action may meet the relevance criteria if it is determined through the RMP process that it has become part of a natural process.

**IMPORTANCE.** The value, resource, system, process, or hazard described above must have substantial significance and values in order to satisfy the importance criteria. This generally means that the value, resource, system, process, or hazard is characterized by one or more of the following:

1. Has more than locally significant qualities that give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource;
2. Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change;
3. Has been recognized as warranting protection in order to satisfy national priority concerns or to carry out the mandates of FLPMA;
4. Has qualities that warrant highlighting in order to satisfy public or management concerns about safety and public welfare; and/or
5. Poses a significant threat to human life and safety or to property.

**PLANNING AREA.** The geographical area for which land use and resource management plans are developed and maintained.

**RESOURCE MANAGEMENT PLAN (RMP).** A land use plan that establishes land use allocations, multiple-use guidelines, and management objectives for a given planning area. The BLM has used the RMP planning system since about 1980.



# APPENDIX J – DRAFT REPORT ON WILD AND SCENIC RIVERS ELIGIBILITY & SUITABILITY DETERMINATIONS

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*Upper Big Hole River, Deer Lodge County, Montana*

## **BUTTE RESOURCE MANAGEMENT PLAN BUTTE FIELD OFFICE, MONTANA**

February 2006



US Department of Interior, Bureau of Land Management  
106 North Parkmont  
Butte, Montana 59701



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## LIST OF ACRONYMS

Acronym or Abbreviation	Full Phrase
BLM	United States Department of the Interior, Bureau of Land Management
EA	environmental assessment
EIS	environmental impact statement
FERC	Federal Energy Regulatory Commission
FLPMA	Federal Land Policy and Management Act
GIS	Geographic Information System
IM	Instruction Memorandum
MFWP	Montana Fish, Wildlife, and Parks
MDEQ	Montana Department of Environmental Quality
MOU	Memorandum of Understanding
NPS	United States Department of the Interior, National Park Service
NWSRS	National Wild and Scenic Rivers System
Planning Area	Butte Resource Management Plan planning area
PPL	Pennsylvania Power and Light Corporation
RMA	Recreation Management Area
RMP	resource management plan
TMDL	total maximum daily load
USC	United States Code
USFS	United States Department of Agriculture, Forest Service
VRM	Visual Resource Management
WSA	Wilderness Study Area
WSR	Wild and Scenic River
WSR Act	Wild and Scenic Rivers Act

# DRAFT WILD AND SCENIC RIVER ELIGIBILITY & SUITABILITY DETERMINATIONS

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## EXECUTIVE SUMMARY

As part of the land use planning process for the Butte Resource Management Plan (RMP), a US Department of the Interior, Bureau of Land Management (BLM) interdisciplinary team analyzed all river and stream segments in the Butte Field Office administrative area (Planning Area) that might be eligible for inclusion in the National Wild and Scenic Rivers System (NWSRS). This included screening all Planning Area rivers to identify those with BLM surface ownership. These initial screening and identification efforts resulted in a list of 164 rivers or river segments for further consideration in the inventory process.

Additional review focused on whether these 164 segments meet free-flowing criteria and contain any outstandingly remarkable values, as defined in the Wild and Scenic Rivers Act of 1968 (Public Law 90-542 [as amended], 16 United States Code 1271-1287) (WSR Act). Of the 164 river segments, four segments totaling 12 miles meet the eligibility criteria. These include segments on the Big Hole River, Missouri River, Moose Creek, and Muskrat Creek. Tentative classifications are assigned to each eligible segment as follows: Big Hole River – Recreational; Missouri River – Scenic; Moose Creek – Scenic; and Muskrat Creek – Scenic.

## INTRODUCTION

Section 5(d)(1) of the WSR Act directs Federal agencies to consider potential wild and scenic rivers in their land and water planning processes (*“In all planning for the use and development of water and related land resources, consideration shall be given by all Federal agencies involved to potential national wild, scenic and recreational river areas”*). To fulfill this requirement, whenever the BLM undertakes a land use planning effort (e.g., an RMP), it analyzes river and stream segments that might be eligible for inclusion in the NWSRS. The BLM, Butte Field Office, is revising its older land use plans, namely the Headwaters RMP (BLM 1984) and the Dillon Management Framework Plan (BLM 1979). The revised RMP will provide a single, comprehensive land use plan that will guide management of public land administered by the Butte Field Office.

This report is a record of the wild and scenic river study that is being conducted concurrently with the Butte RMP revision. This report documents BLM’s examination of Butte Field Office river segments as they relate to eligibility, suitability, and classification criteria in the WSR Act.

The BLM Butte Field Office Planning Area is in mid-western Montana (**Figure 1**). Within the Planning Area, BLM administers about 311,000 acres of public surface land and 656,000 acres of Federal mineral estate in Lewis and Clark, Jefferson, Broadwater, Deer Lodge, Silver Bow, Gallatin, and Park Counties.

## WHAT IS A WILD AND SCENIC RIVER?

Congress enacted the WSR Act to provide a national policy for preserving and protecting selected rivers and river segments in their free-flowing condition for the benefit and enjoyment of present and future generations. The WSR Act provides criteria that must be considered during the analysis. The eligibility process is depicted in **Figure 2**. No rivers in the Planning Area are currently managed under the WSR Act.

## STEPS IN THE WILD AND SCENIC RIVERS STUDY PROCESS

The wild and scenic river study process is comprised of two main components: the inventory phase and the study phase. The inventory phase includes identifying eligible river and stream segments, assigning tentative classification (Wild, Scenic, or Recreational), and describing protective management for the eligible segments. The study phase includes determining the suitability of eligible segments for inclusion in the NWSRS and describing interim management measures. The inventory is conducted during the data-gathering stage of RMP revision, and the study phase is done during formulation of the Draft RMP and Proposed RMP.

### *Inventory Phase*

The purpose of the inventory is to identify eligible rivers and river segments in the Planning Area and to assign them a tentative classification. The WSR Act directs agencies to consider a wide variety of internal and external sources to identify potentially eligible rivers. The goal is to avoid overlooking river segments that could be included in the NWSRS. In cases where a particular river segment is predominantly non-Federal in ownership and contains interspersed BLM-administered lands, BLM shall evaluate only its segment as to eligibility and defer to the state or private landowners' discretion as to their determination of eligibility (BLM 2003).

#### *Identification of Eligible River Segments*

The BLM applies standard criteria to identified river segments to determine eligibility. To be eligible, a river segment must be free-flowing and must possess at least one river-related value considered outstandingly remarkable. The specific criteria for free-flowing and outstandingly remarkable values are listed in Appendix A.

There are several sources generally used to identify potentially eligible rivers, as follows:

- *The Outstanding Rivers List* (Huntington and Echeverria 1991). This was compiled by the American Rivers Organization as a comprehensive nationwide compilation of rivers that possess some outstanding ecological, recreational, natural, cultural, or scenic values. Rivers protected by legislation and rivers currently unprotected are included. The list includes more than 15,000 outstanding United States river segments, roughly 300,000 river miles. Some of this information is redundant with the Nationwide Rivers Inventory, which is included within the Outstanding Rivers List, but much of it is additional information.
- *The Nationwide Rivers Inventory* (NPS 2004). This inventory was initially completed in 1982 and is maintained and periodically updated by the National Park Service. Additions have been made as a result of BLM and U.S. Forest Service (USFS) inventories, done as part of their land use planning processes. It is a listing of more than 3,400 free-flowing river segments in the United States that are believed to possess one or more "outstandingly remarkable" natural or cultural values judged to be of more than local or regional significance.
- *Montana Fish, Wildlife, and Parks' Class One Streams List* (MWFP 2004a). This lists Class I streams, which are blue ribbon fisheries, throughout Montana.
- *The Montana Statewide Comprehensive Outdoor Recreation Plan* (MWFP 2004b). The 2003-2007 Statewide Comprehensive Outdoor Recreation Plan outlines Montana's five-year plan for outdoor recreation management, conservation, and development. It provides the strategic framework for recreation facility managers to use as a guideline in planning and prioritizing resources for staff and funding and includes a timeline for implementation.
- The USFS, Helena National Forest Wild and Scenic Rivers Eligibility Study (Helena National Forest 1989). The Helena National Forest conducted eligibility studies on some reaches that are considered in this report. Prior to 1989, segments of four streams located on Helena National Forest-administered lands were determined eligible: portions of Copper Creek, Little Blackfoot River, Beaver Creek, and the Missouri River from Hauser Dam to Cochran Gulch (Helena National Forest 2004). Helena National Forest will conduct suitability studies on these eligible reaches in the future. These include the three-mile free-flowing stretch of the Missouri River located below Hauser Dam and above Holter Lake (in the Helena National Forest), which is located in the very northern portion of the Butte Field Office; this was tentatively classified as scenic.
- *River segments identified in public scoping during the RMP revision process*. No river segments were identified by the public during the scoping process.

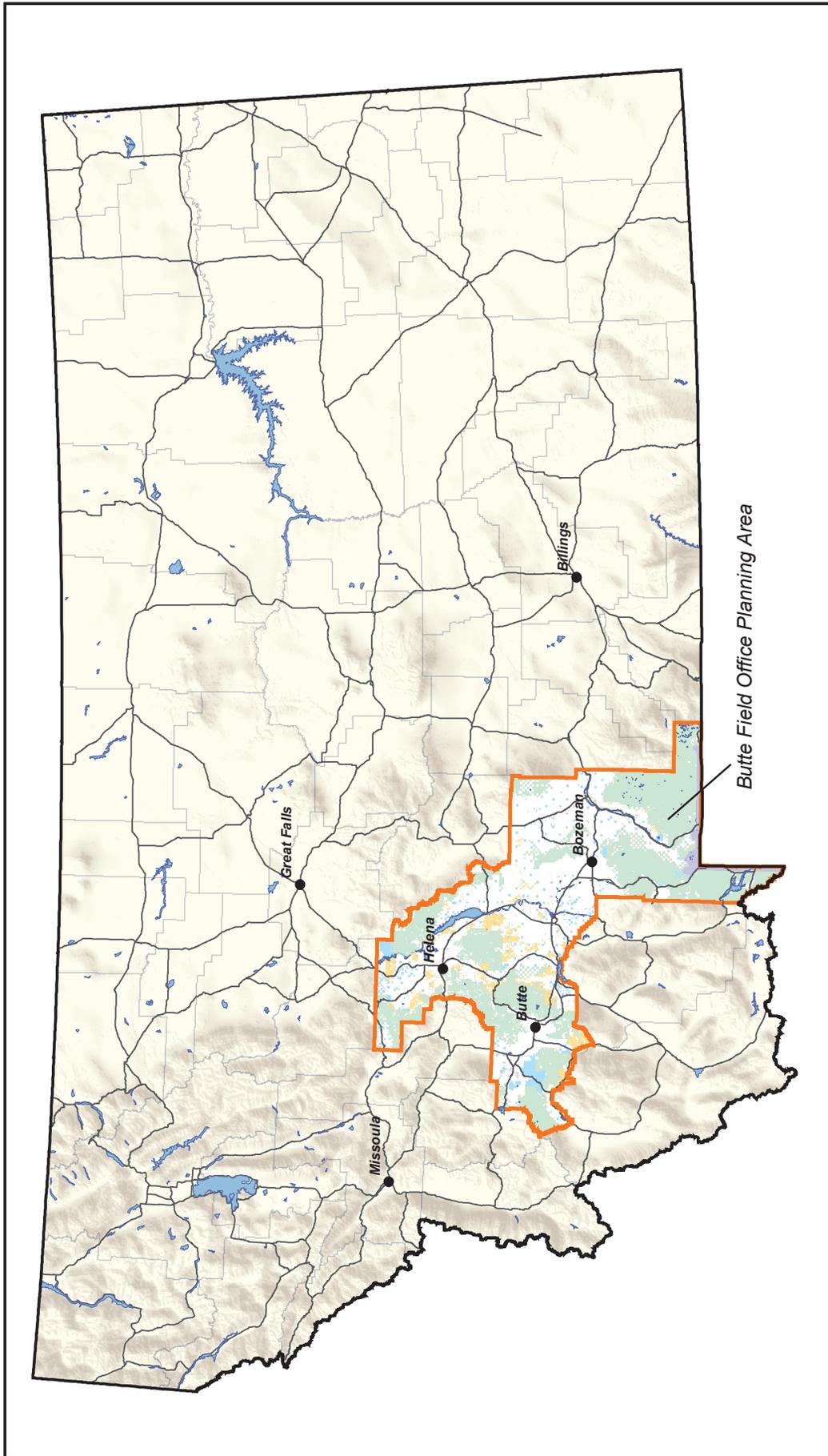
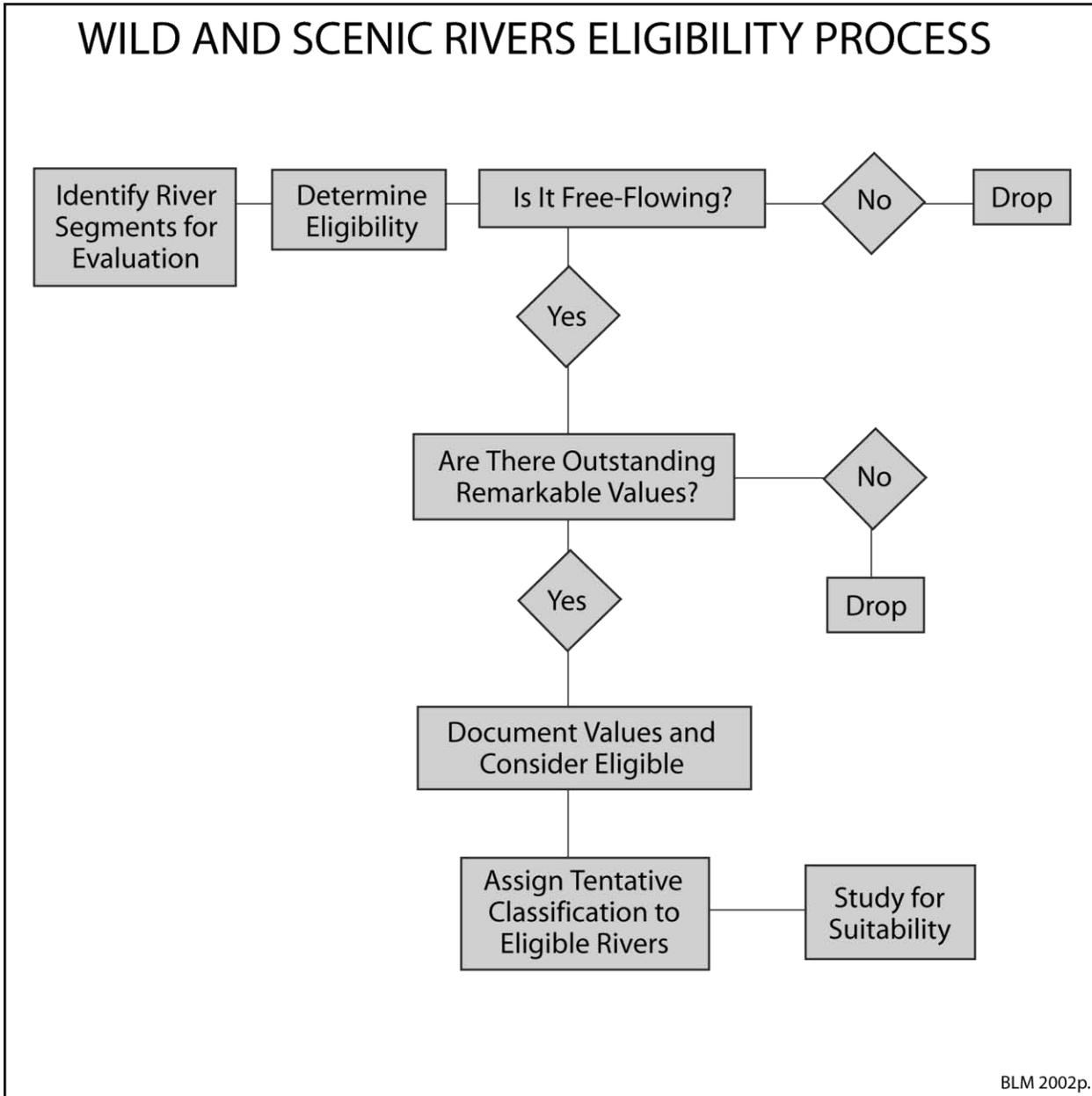


FIGURE 1  
Butte RMP Planning Area, Montana  
BLM, Butte Field Office  
Butte RMP and EIS

0 Miles 60

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Figure 2 Wild and Scenic Rivers Eligibility Process Flow Chart



The BLM inventories and evaluates rivers when it develops a RMP. The inventory is conducted during the data gathering stage of RMP development, and the study phase is done during the formulation of the Draft and Proposed RMP.

*Wild and Scenic Rivers Eligibility Process Flow Chart*

Listing on any of these source lists does not represent an official determination of eligibility and, conversely, absence from these source lists does not indicate a river's noneligibility.

#### Tentative Classification

Once a river segment is considered eligible, it is assigned a tentative classification. There are three classes for rivers designated under the WSR Act: Wild, Scenic, and Recreational. The criteria for classification are defined in Section 2(b) of the WSR Act and are described in Appendix B. Classes are based on the type and degree of human development and access associated with the river and adjacent lands at the time of the inventory.

The classification does not reflect the types of values present along a river segment. The classification assigned during the inventory phase is tentative. Final classification is a congressional legislative determination, along with designation of a river segment as part of the NWSRS.

#### Interim Protective Management of Eligible Rivers

Rivers or river segments determined eligible must be managed to protect the free flow, outstandingly remarkable values, and tentative classification until a suitability study of the segment has been completed. Management guidelines to protect eligible candidate rivers are detailed in Appendix C, *Interim Protection for Candidate Wild and Scenic Rivers*.

During the interim phase, any proposed action that could adversely affect or be inconsistent with wild and scenic river values would require management decisions based on a National Environmental Policy Act analysis and Section 202 of the Federal Land Policy and Management Act of 1976 (FLPMA), as follows:

- Any proposed action that may be inconsistent with or adversely affect identified wild and scenic river values would require a site-specific environmental assessment (EA), opportunity for public involvement, and at least a 30-day public comment period. The decision notice record for the EA (involving these types of actions) would be conducted and signed at the field office level. However, before the decision notice record is signed, a copy of supporting documentation would be forwarded to the applicable state director for review and concurrence.
- If the preparers of the EA determine that the proposal could have a major action significantly affecting the environment, a separate environmental impact statement (EIS) apart from the BLM RMP/EIS would be required.
- Should the preparers of the EA or EIS determine that the action as proposed, or with appropriate mitigation or an acceptable alternative, would not have irreversible or irretrievable adverse impacts and would maintain or enhance identified wild and scenic river values, such action may be approved.
- If the preparers of the EA or EIS determine that the action as proposed would have irreversible or irretrievable adverse impacts to identified wild and scenic river values, the decision on the action would be held temporarily in suspension until wild and scenic river evaluations are address and resolved through the BLM planning process.

#### Suitability Study Phase

The purpose of the study phase is to determine whether eligible river segments are suitable or unsuitable for inclusion in the NWSRS, per WSR Act criteria. The suitability evaluation does not result in actual designation but only a suitability determination for designation. Only Congress can designate a wild and scenic river. In some instances, the Secretary of the Interior may designate a wild and scenic river when the governor of a state, under certain conditions, petitions for a river to be designated. Congress would ultimately choose the legislative language if any suitable segments are presented to them. Water-protection strategies and measures to meet the purposes of the WSR Act would be the responsibility of Congress in any legislation proposed.

Rivers found unsuitable would be dropped from further consideration and would be managed according to the objectives outlined in the RMP.

The preliminary suitability evaluation is completed as the Draft RMP is prepared. Impacts that would occur from designation and non-designation of the eligible river segments then would be analyzed in the EIS associated with the RMP. Public review and comment on preliminary suitability determinations included in the Draft RMP/EIS would be considered before the BLM makes final suitability determinations in the proposed RMP.

#### Suitability Criteria

The following 13 factors, identified in BLM Manual Section 8351 (BLM 1992), are applied to each eligible river segment when completing the suitability study:

1. Characteristics that do or do not make the river a worthy addition to the NWSRS;
2. The status of land ownership, minerals, use in the area, including the amount of private land involved, and associated or incompatible uses;
3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS and values that would be foreclosed or diminished if the area were not protected as part of the NWSRS;
4. Federal or state agency that will administer the river should it be added to the NWSRS;
5. Federal, state, tribal, local, public, or others with an interest in designation or non-designation of the river, including the extent to which the agency proposes that administration of the river, including the costs thereof, be shared by state, local, or other agencies and individuals;
6. Estimated cost to the United States of acquiring necessary lands, interests in lands, and administering the area should it be added to the NWSRS;
7. A determination of the degree to which the state or its political subdivision(s) might participate in the preservation and administration of the river should it be proposed for inclusion in the NWSRS;
8. The Federal agency's ability or other mechanisms to protect and manage the identified river-related values other than designation into the NWSRS;
9. An evaluation of the adequacy of local zoning and other land use controls in protecting the river's outstandingly remarkable values by preventing incompatible development;
10. Support or opposition to designation;
11. Historical or existing rights that could be adversely affected with designation; and
12. The consistency of designation with other agency plans, programs, or policies in meeting regional objectives; and
13. The contribution to a river system, watershed, or basin integrity.

#### Interim Management of Suitable Segments

The WSR Act requires that interim management measures be developed to protect the free-flowing nature, outstandingly remarkable values, and recommended classification of suitable segments until Congressional action regarding designation is taken. Guidelines for interim management are included in Appendix C.

### **INVENTORY PHASE FOR THE BUTTE RMP REVISION**

Various resource personnel from the BLM's Butte Field Office were consulted to conduct the wild and scenic rivers inventory in support of the RMP revision currently underway. The interdisciplinary team was composed of BLM staff specialists in lands and realty, wildlife/fisheries/riparian biology, range/riparian resources, recreation, visual resources, cultural resources, minerals, and geology.

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**IDENTIFICATION OF ELIGIBLE RIVER SEGMENTS**

To avoid overlooking potentially eligible river segments, a combination of sources were used. The primary source was the BLM's geographic information system (GIS) rivers and streams layer (BLM 2004b), which is a comprehensive list of potentially free-flowing waterbodies within the Planning Area. The GIS was cross-referenced with additional sources, including the Outstanding Rivers List (Huntington and Echeverria 1991), Nationwide Rivers Inventory (NPS 2004), Montana Fish, Wildlife, and Parks' (MFWP) Class One Streams List (MFWP 2004a), and Montana Statewide Comprehensive Outdoor Recreation Plan (MFWP 2004b). The Nationwide Rivers Inventory includes two river segments on BLM-administered lands in the Planning Area: 1.06 miles of the Yellowstone River in Park County (Township 7 South, Range 7 East, Sections 19 and 20, Montana Principal Meridian) and the 3.1-mile segment of the Missouri River, between Hauser Dam and Upper Holter Lake (NPS 2004).

From these sources, the BLM interdisciplinary team compiled an inventory of all rivers on BLM-administered surface lands in the Planning Area. BLM limited the inventory to the lands it administers, per recent changes to BLM Manual 8351, *Wild and Scenic Rivers—Policy and Program Direction for Identification, Evaluation, and Management*. The manual revision states that “In cases where a particular river segment is predominantly non-Federal in ownership and contains interspersed BLM-administered lands, BLM shall evaluate only its segment as to eligibility and defer to the State or to the private landowners' discretion as to their determination of eligibility” (BLM 2003). As part of the initial screening process, all Planning Area rivers were divided into multiple segments based on BLM surface ownership. Initial screening resulted in a list of 164 river segments on BLM-administered lands for further consideration. These river segments are located along 55 rivers. These rivers or river segments include those listed in Appendix D which are depicted on **Figure 3**.

Additional review focused on whether any of these 164 segments met free-flowing criteria and contained any outstandingly remarkable values, as defined in the WSR Act. Members of the BLM interdisciplinary team conducted this review for each of their areas of expertise, using their knowledge of the area and consulting available inventory information. This information was considered against the outstandingly remarkable values criteria provided in Appendix A. Based on their findings, team members proposed four river segments, Big Hole River, Missouri River, Muskrat Creek, and Moose Creek, as eligible for further study because they contain outstandingly remarkable values and are free flowing (**Figure 4** and **Table 1**). Following Table 1 is a description of outstandingly remarkable values for each candidate river segment.

Indian Creek Segment 5 was initially found to be eligible. Further evaluation during the suitability phase determined the segment not to be free flowing. The extensive historic and current mining activities have resulted in a channel which does not meet the “natural condition” requirements of free flowing. Numerous placer piles along the segment have resulted in severe modification of the natural channel.

The BLM interdisciplinary team determined that the Yellowstone River segment included in *The Nationwide Rivers Inventory* does not contain any outstandingly remarkable values. The Missouri River segment between Hauser Dam and Upper Holter Lake (the same segment described above and in Table 1), which also is included in *The Nationwide Rivers Inventory*, does have outstandingly remarkable values, as shown in Table 1.

As part of their RMP revision, the BLM Dillon Field Office evaluated one river segment located in the Butte Field Office, the Lower Madison from Black's Ford to Gray Cliff. The Dillon RMP final eligibility report found this segment eligible with a temporary classification of Recreational. The segment was not found suitable in the Dillon RMP.

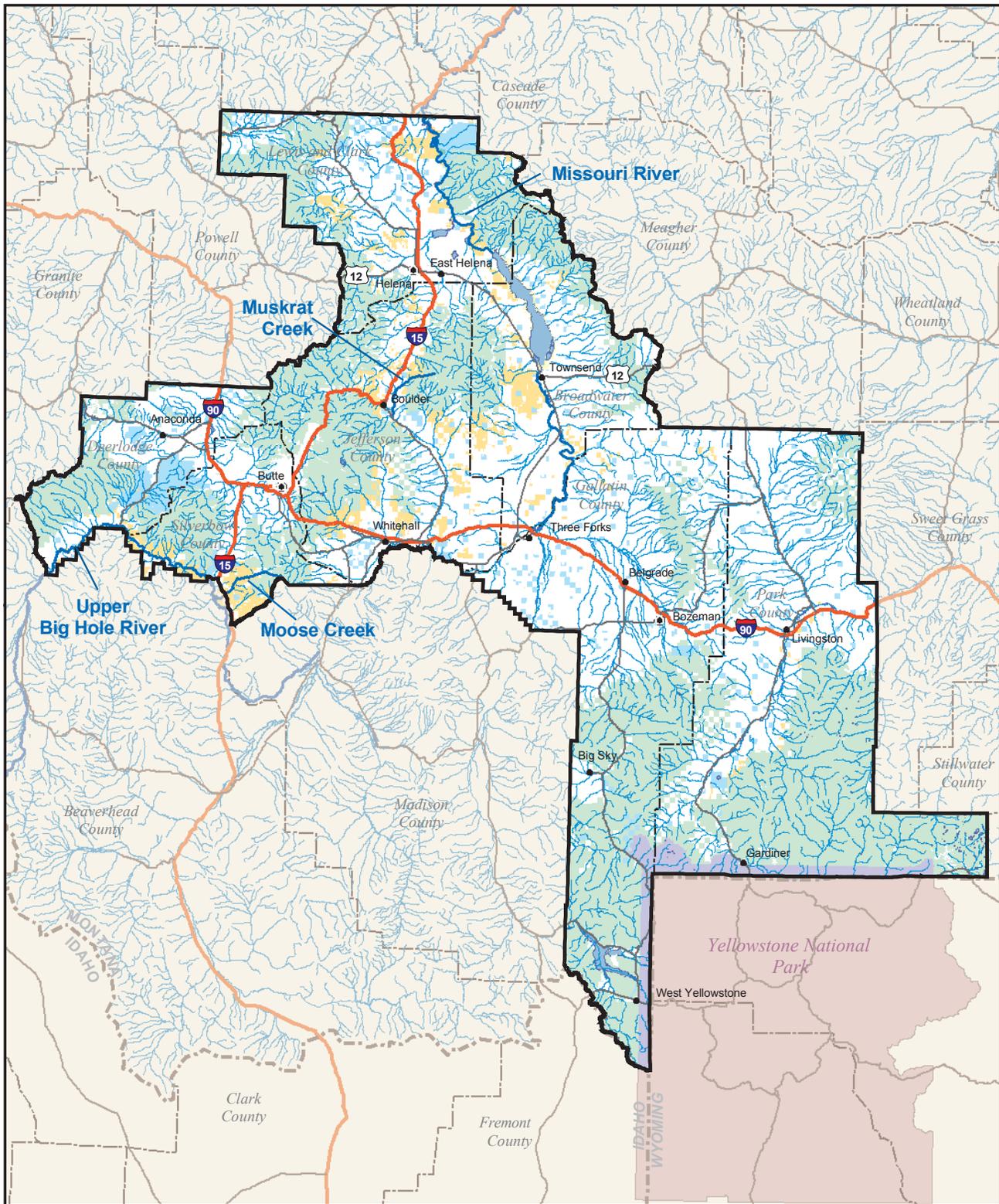


FIGURE 3

Planning Area Rivers with Eligible Segments  
BLM, Butte Field Office  
Butte RMP and EIS

0 Miles 25

No warranty is made by the Bureau of Land Management (BLM) for use of data for purposes not intended by BLM.

- |             |               |                            |
|-------------|---------------|----------------------------|
| BLM         | State         | Interstates                |
| BOR         | Other Federal | Roads                      |
| Local Gov't | USFS          | Rivers and Streams         |
| NPS         | USFWS         | Rivers of Interest         |
| Private     | Unknown       | BFO Planning Area Boundary |
| Water       | Water         | County Boundaries          |
|             |               | State Boundaries           |

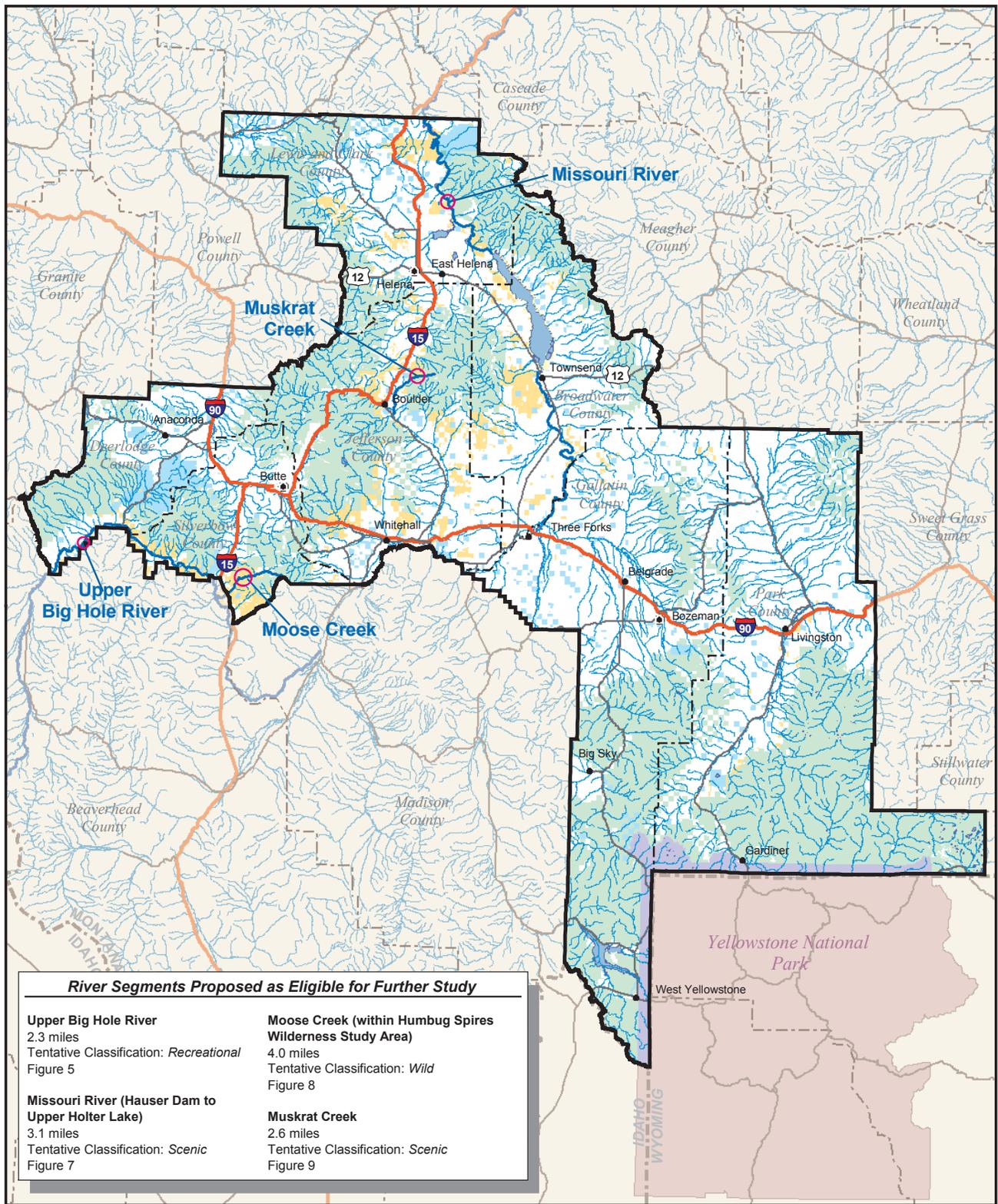


FIGURE 4

No warranty is made by the Bureau of Land Management (BLM) for use of data for purposes not intended by BLM.

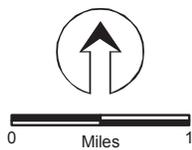
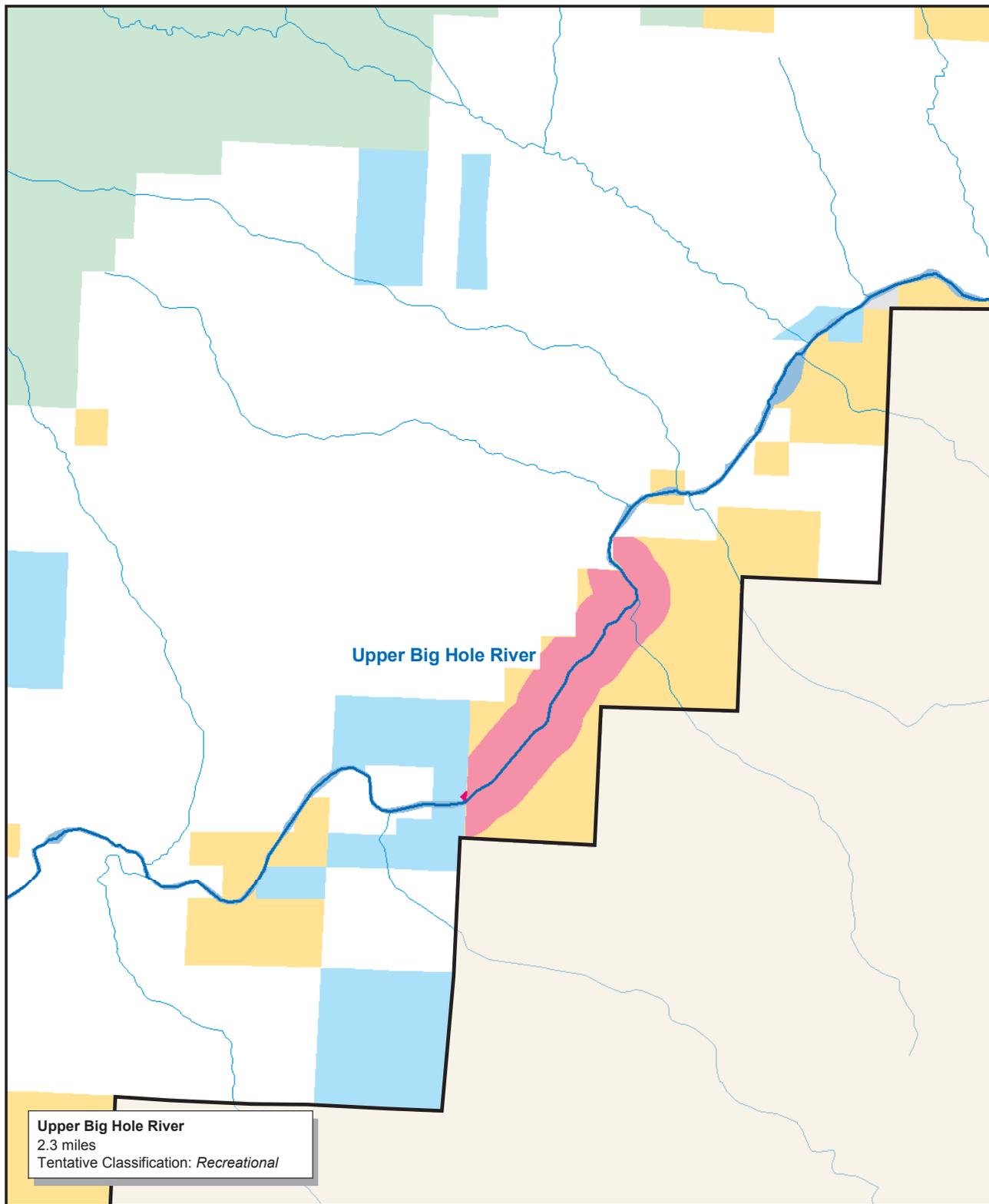
BLM	USFS	Interstates
BOR	USFWS	Roads
Local Gov't	Unknown	Rivers and Streams
NPS	Water	Rivers of Interest
Private	County Boundaries	BFO Planning Area Boundary
State	State Boundaries	Eligible River Segments
Other Federal		

Planning Area River Segments Proposed as Eligible for Further Study  
BLM, Butte Field Office  
Butte RMP and EIS

**Table 1  
Eligible River Segments and Tentative Classification**

<b>Segment</b>	<b>General Location</b>	<b>Legal Description<sup>1</sup></b>	<b>Length</b>	<b>Outstandingly Remarkable Values</b>	<b>Free-Flowing?</b>	<b>Tentative Classification</b>	<b>Proposed Boundary</b>
1. Upper Big Hole River	About 11 miles west of Dickie Bridge Recreation Area and 16 miles northeast of town of Wisdom	T1N R13W Sec 8, 17, 18, 19, Deerlodge County	2.3 miles <b>(Figure 5)</b>	Recreational Fish	Yes	Recreational	0.25-mile on each side
2. Missouri River	Hauser Dam to Upper Holter Lake	T12N R3W Sec 13 and T12N R2W Sec 19, 29, 30 Lewis and Clark County	3.1 miles <b>(Figure 6)</b>	Recreational Wildlife Scenic	Yes	Scenic	0.25-mile on each side
3. Moose Creek	Entire creek length within Humbug Spires Wilderness Study Area	T1S R8W Sec 9, 10 Silver Bow County	4.0 miles <b>(Figure 7)</b>	Scenic Recreational	Yes	Scenic	0.25-mile on each side
4. Muskrat Creek	About 5 miles northeast of town of Boulder	T7N R3W Sec 31, 32, 33 Jefferson County	2.6 miles <b>(Figure 8)</b>	Fish	Yes	Scenic	0.25-mile on each side

<sup>1</sup>T=Township, N=North, W=West, R=Range, Sec=Section, Montana Principal Meridian



No warranty is made by the Bureau of Land Management (BLM) for use of data for purposes not intended by BLM.

- BLM
- USFS
- Private
- Water
- State
- BFO Boundary
- Eligible River Segments (Shaded area is 0.25 mile on either side of river where on BLM Land)
- Roads
- Rivers and Streams
- Rivers of Interest

FIGURE 5

Upper Big Hole River  
BLM, Butte Field Office  
Butte RMP and EIS

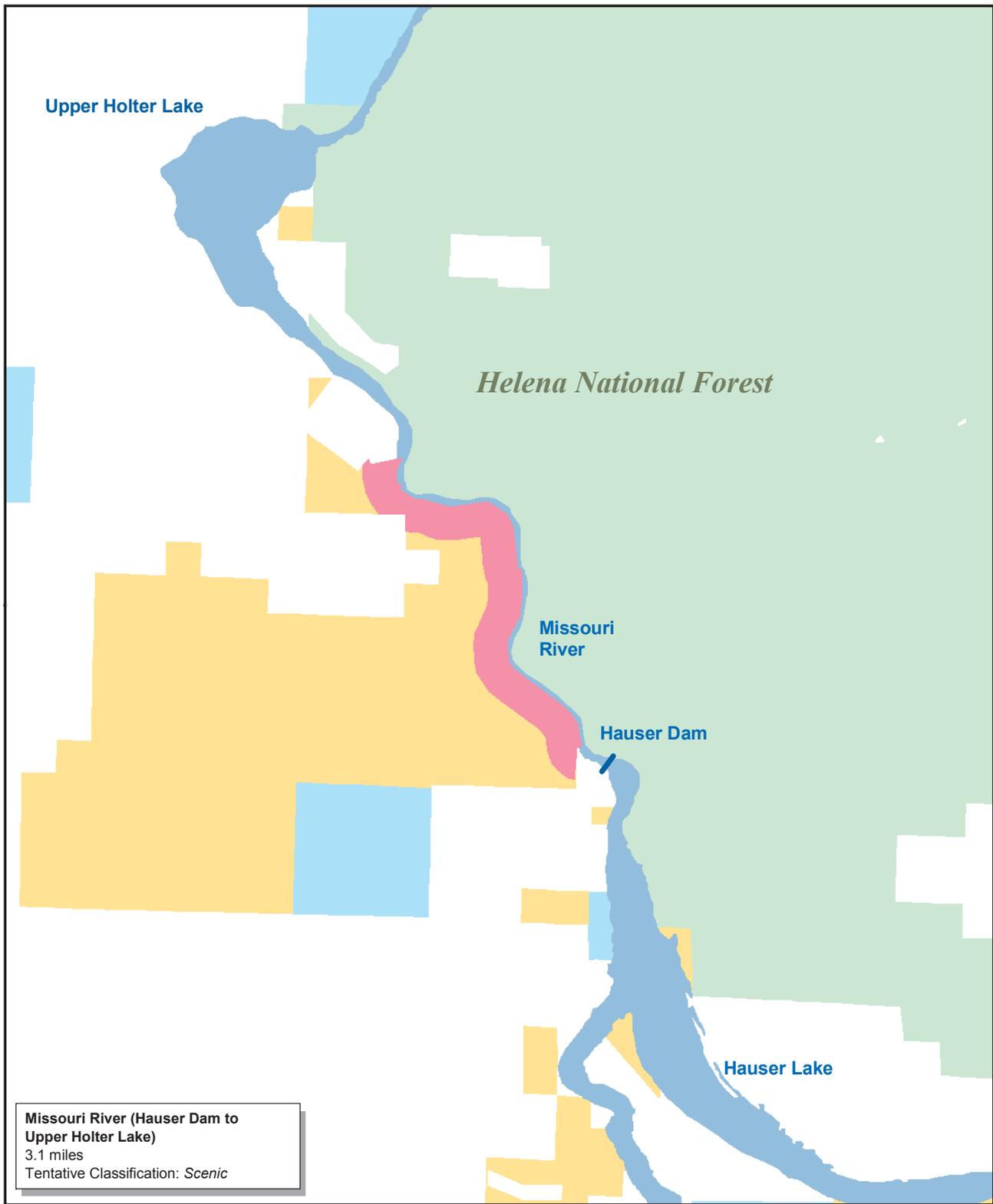


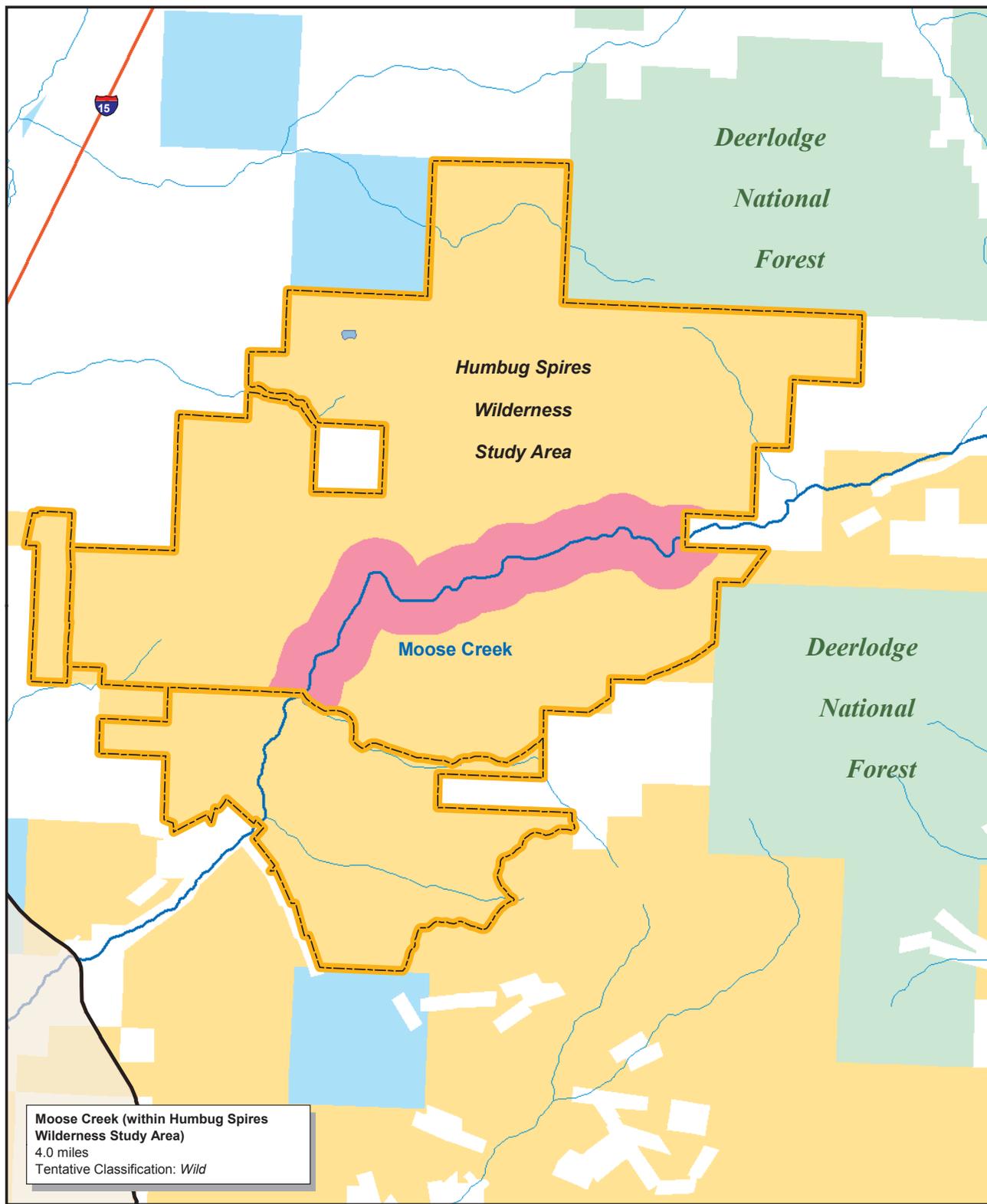
FIGURE 6

Missouri River  
 BLM, Butte Field Office  
 Butte RMP and EIS


No warranty is made by the Bureau of Land Management (BLM) for use of data for purposes not intended by BLM.

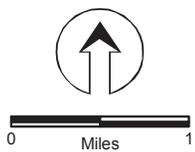
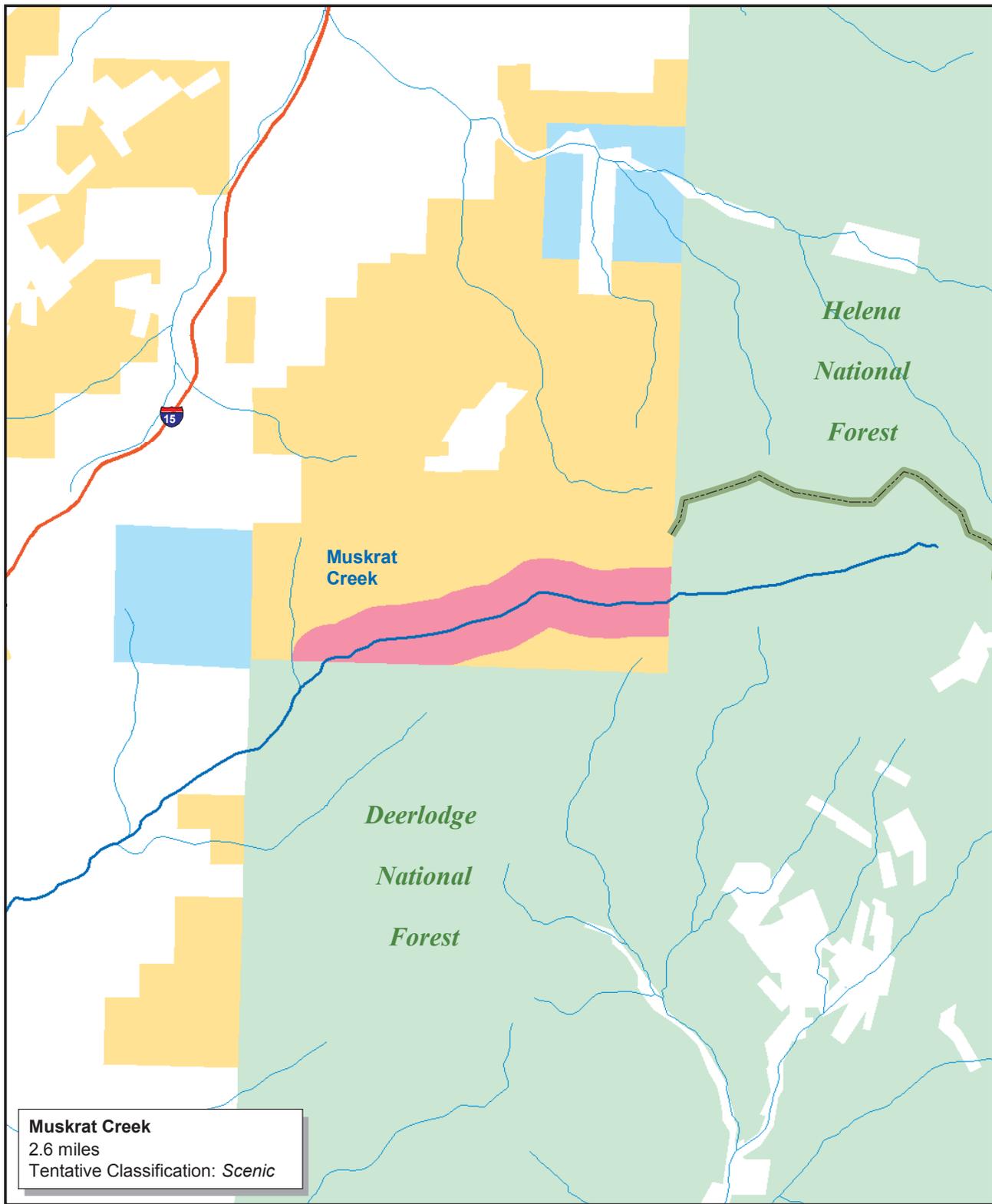
- BLM
- Local Gov't
- Private
- State
- USFS
- Water
- BFO Boundary
- Eligible River Segments (Shaded area is 0.25 mile on either side of river where on BLM Land)



No warranty is made by the Bureau of Land Management (BLM) for use of data for purposes not intended by BLM.

- BLM
- Private
- USFS
- State
- BFO Boundary
- Humbug Spires Wilderness Study Area
- Rivers and Streams
- Rivers of Interest
- Interstate
- Eligible River Segments (Shaded area is 0.25 mile on either side of river where on BLM Land)

**FIGURE 7**  
Moose Creek  
BLM, Butte Field Office  
Butte RMP and EIS



No warranty is made by the Bureau of Land Management (BLM) for use of data for purposes not intended by BLM.

- BLM
- Private
- State
- USFS
- BFO Boundary
- Rivers and Streams
- Rivers of Interest
- Interstate
- National Forest Boundary
- Eligible River Segments (Shaded area is 0.25 mile on either side of river where on BLM Land)

**FIGURE 8**  
**Muskrat Creek**  
BLM, Butte Field Office  
Butte RMP and EIS

## IMPAIRED WATER BODIES

Section 303(d) of the Clean Water Act requires that water bodies violating state or tribal water quality standards be identified as impaired and placed on a 303(d) list. It is the state's responsibility to develop its own 303(d) list and to establish a total maximum daily load for the parameter(s) causing impairment. Moose Creek and Muskrat Creek are identified as impaired water bodies on the Montana Department of Environmental Quality's (MDEQ) 2004 Draft 303(d) list (MDEQ 2005).

An impaired stream cannot be classified as Wild but could be classified as Scenic or Recreational. The classification criteria specify that rivers will not be precluded from Scenic or Recreational classification because of poor water quality at the time of their study, provided that a water quality improvement plan exists or is being developed in compliance with applicable Federal and State laws. The MDEQ has established a schedule to prepare water quality improvement plans on all impaired water bodies by 2007. As such, Moose Creek and Muskrat Creek are not precluded from tentative Scenic or Recreational classifications. Further evaluations, as described below, show a discrepancy between the MDEQ listing of Muskrat Creek and current conditions. Further investigation is necessary, and this segment may need to be reclassified. If the eligible segment is determined not to be water quality impaired, this segment would be eligible for Wild classification.

## TENTATIVE CLASSIFICATION

Tentative classification of each of the four segments is listed in Table 1.

### ***Segment 1: Upper Big Hole River***

Eligible segment length on BLM-administered lands: 2.3 miles (Figure 5)

Tentative Classification: Recreational

The outstandingly remarkable values for this segment are described below.

#### *Recreational*

This river reach is rated as a Class 1, Blue Ribbon Fisheries. MFWP assessed this sport fisheries value based on a combination of fish abundance, fishing pressure, aesthetics, and access. This is the highest rating given for state rivers. This reach attracts numerous national and international visitors, and out-of-state visitors represent about 30 percent of the annual use each year (MFWP 2004a). The area is famous for its fly-fishing, especially during the salmon/stone fly hatches. Other quality recreational uses, although not outstandingly remarkable, include river floating (May through July), hiking, camping, wildlife observation, and hunting.

#### *Fish*

Fish species include rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), and brook trout (*Salvelinus fontinalis*), and the State-listed and BLM sensitive species, Montana arctic grayling (*Thymallus arcticus montanus*). This is the only free-flowing river in the lower 48 states that supports the Montana arctic grayling.

### ***Segment 2: Missouri River (Hauser Dam to Upper Holter Lake)***

Eligible segment length on BLM-administered lands: 3.1 miles (Figure 6)

Tentative Classification: Scenic

The outstandingly remarkable values for this segment are described below.

#### *Recreational*

This river reach is rated as a Class 1—Blue Ribbon Fisheries, which is the highest rating given for state rivers. MFWP assessed this sport fisheries value, based on a combination of fish abundance, fishing pressure, aesthetics, and access. This reach attracts numerous national and international anglers for brown and rainbow trout and Kokanee salmon (*Oncorhynchus nerka kennerlyi*).

This reach is also part of the Lewis and Clark National Historic Trail. The Lewis and Clark Expedition passed through this reach on July 20, 1805, on their westward trek to the Pacific Ocean. On that day, Meriwether Lewis was traveling along the river, while William Clark was exploring the uplands and hunting game. This reach is expected to receive higher visitation from out-of-state residents during the bicentennial of the Lewis and Clark Expedition in 2005 and 2006. The corridor is highly natural, and for the most part still appears as seen by the Expedition.

Other high-quality recreational opportunities associated with this river segment and the adjoining BLM lands include river floating, primitive camping, hiking, wildlife observation, and big-game hunting.

#### Wildlife

There is significant habitat for regionally important populations of Federally-listed threatened bald eagle (*Haliaeetus leucocephalus*), bighorn sheep (*Ovis canadensis*), golden eagle (*Aquila chrysaetos*), peregrine falcon (*Falco peregrinus anatum*), and osprey (*Pandion haliaetus*).

#### Scenic

Transitions in geology and topography provide outstanding vistas with stark contrasts. The upstream portion of the segment is bounded by steep colorful canyon walls that transition into rolling hill topography as one proceeds downstream. The alternating distant vistas contrasted with steep canyon walls provide a unique visual experience. The area is rated A for scenic quality, as defined in the BLM *Visual Resource Inventory Handbook*, H-8410-1 (BLM 1986).

Shoreline development criteria for Wild designation requires that development be primitive, with little evidence of human activity. The presence of a few inconspicuous structures, particularly those of historic or cultural value, is acceptable. However, due to the development visible from the river along this segment (e.g. the Beaver Creek parking area and a pit toilet) the Missouri River is not suitable for Wild designation.

#### **Segment 3: Moose Creek**

Eligible segment length on BLM-administered lands: 4.0 miles (Figure 7)

Tentative Classification: Scenic

The outstandingly remarkable values for this segment are described below.

#### Scenic

The scenic quality of this area is rated A. The combination of contrasting land features with pronounced rock spires, irregular topography, and the variety of color patterns along this creek corridor provide outstanding visual values that are managed as a Visual Resource Management (VRM) Class I area. The area immediately adjacent to the creek varies from wooded to meadow with a meandering creek and a well-developed riparian area. Upstream of where the trail diverges from the creek, it becomes steeper with water cascading through boulders. The creek returns to a meadow-type creek near the upstream end of the segment where it enters private land.

#### Recreational

The outstanding recreation opportunities associated with Moose Creek and the adjoining lands in the Humbug Spires Wilderness Study Area (WSA) attract visitors both nationally and internationally. The area was one of the first BLM Primitive Areas to be established and is protected as a WSA. This area was studied and recommended for wilderness in 1981.

The most popular forms of recreation include rock climbing, sightseeing, hiking, backpacking, hunting, wildlife observation, and primitive camping. Of these, the most unique and outstanding opportunity is for rock climbing. The granite spires provide some of the highest quality hard-rock climbing in Montana. There are about 10 spires between 300 and 600 feet high, and an additional 50 others that range between 50 and 300 feet. The spires are not located within the Moose Creek study corridor, but the hiking trail through the corridor provides access to the spires.

Hiking opportunities were also assessed as excellent in the Humbug Spires WSA, given the diversity in landform types and vegetation. Hiking challenges range from gentle maintained trails to adventurous game trails with numerous elevation changes. Hikers are afforded high-quality scenic views, wildlife observations, colorful wildflowers, remote campsites, and trout fishing along this perennial stream. The scenic and recreational values of the study corridor are not duplicated in any other proposed or existing wilderness area. The experiences to be found when visiting the Humbug Spires are unique and cannot be compared to those found anywhere else in the region (BLM undated).

The eligible segment's tentative classification would have been Wild if it were not listed as an impaired water body on MDEQ's Draft 2004 and Final 2002 303(d) list (MDEQ 2005), as discussed above in the section, "*Inventory Phase for the Butte RMP Revision, Impaired Water Bodies.*" The portion of Moose Creek south of the Humbug Spires WSA is not included in the eligible segment because it does not contain any outstandingly remarkable values.

#### ***Segment 4: Muskrat Creek***

Eligible segment length on BLM-administered lands: 2.6 miles (Figure 8)

Tentative Classification: Scenic

The outstandingly remarkable values for this segment are described below.

#### ***Fish***

Muskrat Creek, a tributary to the Boulder River, provides significant habitat for westslope cutthroat trout (*Oncorhynchus clarki lewisi*). Genetically pure westslope cutthroat trout are estimated to exist in only two to four percent of their historic stream distribution (Montana Chapter of the American Fisheries Society 2004). Muskrat Creek contains genetically pure westslope cutthroat trout, and the headwaters of the stream are in a roadless area of BLM- and Forest Service-administered lands that is essentially primitive in nature.

MFWP, the BLM, and the USFS are collaborating to conserve westslope cutthroat trout in Muskrat Creek. A wooden barrier was constructed near the Forest Service boundary at river mile 7.6 in 1997. Since 1996, brook trout have been annually removed (using electrofishing) from Muskrat Creek upstream of the barrier to a natural barrier at river mile 9. In 1997, native westslope cutthroat trout also were relocated above the natural barrier (formerly a fishless section of stream). The westslope cutthroat trout relocated above the natural barrier survived and reproduced in the upper basin, and, by 2002, westslope cutthroat trout had expanded upstream to the headwaters (approximately river mile 13.5), as well as downstream throughout the stream.

Brook trout have been successfully removed between the manmade barrier and natural barrier. In the summer of 2003, only 18 brook trout were found in July, and no brook trout were captured during an extensive effort of four electrofishing passes in October. All the brook trout captured during July 2003 were age two and older, confirming that no brook trout successfully recruited to the population during the past two to three years. Approximately 4.5 miles of Muskrat Creek is once again considered to have a healthy population of westslope cutthroat trout. No brook trout were captured in 2004 or 2005 indicating that brook trout have been eradicated upstream of the constructed barrier. The Muskrat Creek population is considered the most secure and strongest westslope cutthroat trout population in the Elkhorn Mountains. Sampling will continue in the future.

Riparian vegetation is in excellent condition along Muskrat Creek on BLM- and USFS-administered lands. The riparian vegetation provides exceptionally high-quality habitat for numerous wildlife species, including critical winter habitat for elk (*Cervus elaphus*).

#### **FINAL ELIGIBILITY DETERMINATIONS**

Public comment will be accepted on eligibility recommendations in this report. The BLM will review comments and make adjustments if comments show eligibility criteria are not met. This could affect final decisions on eligible rivers and ultimately suitability decisions.

## SUITABILITY STUDY PHASE FOR THE BUTTE RMP REVISION

The preliminary suitability evaluation is completed as the Draft RMP is prepared. Impacts that would occur from designation or nondesignation of the eligible river segments then would be analyzed in the EIS associated with the RMP. Public review and comment on preliminary suitability determinations included in the Draft RMP/EIS would be considered before the BLM makes final suitability determinations in the proposed RMP.

The WSR Act requires that interim management measures be developed to protect the free-flowing nature, outstandingly remarkable values, and recommended classification of suitable segments until Congressional action regarding designation is taken. Guidelines for interim management are included in Appendix C.

### SUITABILITY CRITERIA FOR ELIGIBLE SEGMENTS

This section contains a discussion of the suitability factors related to each of the four eligible segments.

#### *Segment 1: Upper Big Hole River*

Length within Planning Area: 2.3 miles (Figure 5)

Tentative Classification: Recreational

Proposed Boundary: Approximately 0.25-mile from river bank on either side of the river.

#### 1. Characteristics that do or do not make the river a worthy addition to the NWSRS:

The eligible segment contains recreational and fisheries outstandingly remarkable values, making the segment worthy of addition to the NWSRS. This segment of the Big Hole River provides important habitat for Montana arctic grayling.

A river ford used predominantly by hunters accessing the Beaverhead-Deerlodge National Forest is present within the segment. The feasibility of crossing varies depending on time of year and flows. Numerous vehicles have been mired while crossing, requiring a tow to extract them from the river. Consequently, the presence of this ford presents a safety hazard to many users. Use of this ford potentially impacts the Big Hole River water quality by increasing sediment, disturbing the bank, and leaking of oil and gas. Additionally, weeds are spread downstream as the river washes the undercarriage of vehicles.

There are no known water quality issues with this segment of the Big Hole River. Downstream of the eligible segment, from Divide Creek to the confluence with the Jefferson River, the Big Hole River has been identified as water quality impaired by the MDEQ 303d list (MDEQ 2005). This listing does not pertain to the eligible segment.

#### 2. The status of landownership, minerals, use in the area, including the amount of private land involved and associated or incompatible uses:

Landownership within the 0.25-mile study corridor is predominantly Federal. The BLM manages 678 acres (89 percent). The BLM manages lands on both sides of the river for almost the entire segment (Figure 5). A private landowner controls the land along the western bank for approximately 0.25-mile at the northern end of the segment. There are two additional points where private land is within the 0.25-mile study corridor but not adjacent to the river along the western side.

The area has low oil and gas potential and very limited lode gold potential. There are no current or anticipated minerals uses in the area.

#### 3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS and values that would be foreclosed or diminished if the area is not protected as part of the NWSRS:

Grazing is permitted along this entire segment. Potential impacts from livestock grazing within the river corridor may include increased sedimentation resulting from bank erosion, transport of weed species, and increased nutrient input in the river. Designation of this segment could result in increased monitoring to ensure grazing activities are not adversely impacting the recreational and fisheries outstandingly remarkable values. If adverse impacts

are observed or anticipated, management of grazing in this segment would be more restricted on BLM land. Grazing occurring upstream on private land would not be subject to BLM's authority.

There is no active timber harvest occurring within the corridor. If the segment were included in the NWSRS, timber harvest within the study corridor would be prohibited.

Currently, recreational use within the study corridor consists of occasional camping and fishing. There are no developed facilities present. In addition, the ford described earlier provides hunting access to the Beaverhead-Deerlodge National Forest. In general, use is relatively light, the area is not well known outside the Butte area. Designation of this segment would bring national recognition to this segment and would likely attract visitors from a much greater area. Because of the small acreage of BLM land, increased use would be difficult to disperse and manage. This could cause significant negative impacts to the riparian habitat and stream and reduce the value of this segment as a National WSR. Consequently, camping and fishing access would either need to be developed and intensely managed or restricted as popularity increases.

4. Federal or State agency that will administer the river should it be added to the NWSRS.

If the river were added to the NWSRS, this segment would be administered by the BLM.

5. Federal, State, Tribal, local, public, or other interest in designating or not designating the river, including the extent to which the agency proposes that administration of the river, including the costs thereof, be shared by state, local, or other agencies and individuals:

No comments were received during the scoping period pertaining to designation of this segment. Other Federal agencies, the State, local, public and other interests will have the opportunity to review and comment on this report. Any interest in designating or not designating would be identified during this period, and this section would be revised accordingly.

6. Estimated cost to the United States of acquiring necessary lands, interests in lands, and administering the area should it be added to the NWSRS:

The 2.3-mile segment being studied is predominantly Federal land. The outstandingly remarkable values could be protected or enhanced without further acquisition of land. The BLM would consider the acquisition of fee title or conservation easements on the remaining 27 acres of private land within the 0.25-mile study corridor. Cost of acquisition would be approximately \$1,000 per acre.

7. A determination of the degree to which the State or its political subdivision(s) might participate in the preservation and administration of the river should it be proposed for inclusion in the NWSRS:

MFWP would continue to regulate floating outfitters. Regulations currently limit the days of the week outfitters are permitted to float certain sections of the Big Hole River. These regulations serve to maintain the recreational outstandingly remarkable values and reduce fishing pressure in certain areas.

The State controls a small parcel of land immediately upstream of the segment. Currently, State management of this parcel is compatible with the protection and enhancement of the recreational and fisheries outstandingly remarkable values within the eligible segment. Because it is immediately upstream of the eligible segment, activities on the State parcel could impact water quality within the eligible segment. Management would need to be coordinated with the State.

8. The Federal agency's ability or other mechanisms to protect and manage the identified river related values other than WSR designation:

The BLM currently has a Big Hole River Plan which describes management for all BLM parcels along the river, including the eligible segment. This plan provides management measures which would protect the outstandingly remarkable values in the eligible segment. Management measures from the Big Hole River Plan include the following:

- Visual qualities on BLM lands as seen from the river will be maintained to protect recreation quality and scenic viewing in accordance with VRM Classifications. Currently, most of the corridor is managed on VRM Class II. Under this Classification, changes in the basic elements due to management action should not be evident within the landscape as seen from the river.
- Do not issue grazing leases on BLM parcels within the Recreation Management Area (RMA) that are currently unleased or not allotted.
- No surface occupancy stipulations within ¼ mile of the river or in critical seen areas should be established for new oil and gas leases. In addition, leases will be subject to vehicle use restrictions.
- All road construction on BLM lands within the RMA must be compatible with the specific management objectives of this plan.
- Enact travel restrictions within developed and undeveloped recreation sites as necessary to protect resources
- All BLM lands within a one mile corridor from each side of the river shall be retained in public ownership
- Acquire additional land within the RMA corridor as feasible to provide for increased recreational opportunities and protect scenic resource.
- Do not issue commercial recreation use permits on the Big Hole River and limit permits for commercial camps and other uses within the RMA based on available space and public uses.

This segment is categorized as a VRM Class II area. The management objective for Class II areas is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

The BLM, within the site specific travel plan is assessing management alternatives for the use of the ford, which presents both water quality and safety concerns. Current management allows unrestricted crossings, which could adversely affect water quality and therefore fisheries values in the segment. Management changes such as prohibiting use of the ford or limiting use to game retrieval would only reduce the potential degradation of water quality and bank erosion. River flows within the upper reach are subject to seasonal moisture conditions and existing water rights. These conditions typically reduce flow in late summer to levels that impact fishery resources and prevent recreational floating.

9. An evaluation of the adequacy of local zoning and other land use controls in protecting the river's outstandingly remarkable values by preventing incompatible development:

The 27 acres (4 percent) of private land would be subject to local zoning controls. Local zoning would not be adequate to prevent new construction on the private land holdings within the WSR study corridor. No new development is allowed within 150 feet of the high water mark along the Big Hole River, and a permit is required for construction within 500 feet of the high water mark. It is possible, that construction would be permitted within the ¼ mile study corridor. All 27 acres are within the floodplain.

10. Support or opposition to designation:

As of the time of the preliminary suitability determination there has been no known support or opposition to designation of this segment. Any comments received pertaining to this segment during the review of the draft RMP would be incorporated into this report and considered when making a final suitability determination.

11. Historical or existing rights that could be adversely affected with designation:

There are no known historical or existing rights that would be affected with designation.

12. The consistency of designation with other agency plans, programs, or policies in meeting regional objectives:

Designation of this segment would be consistent with the Big Hole River Management Plan, and VRM II classification, provided designation does not result in a significant increase in use. However, national recognition of this segment could result in a significant increase in the number of people visiting this segment, which could be incompatible with these other plans, given the high riparian and natural value of the area.

13. The contribution to a river system, watershed, or basin integrity:

The eligible segment provides important habitat for salmonid fish species, including the Montana arctic grayling. Aquatic habitat in this segment helps support the fish populations throughout the river system.

***Segment 2: Missouri River (Hauser Dam to Upper Holter Lake)***

Length within Planning Area: 3.1 miles (Figure 6)

Tentative Classification: Scenic

Proposed Boundary: Approximately 0.25-mile on from river bank on either side of the river.

1. Characteristics that do or do not make the river a worthy addition to the NWSRS:

The outstandingly remarkable recreational, scenic and wildlife values associated with this segment make it a worthy addition to the NWSRS. These values are described in detail in the eligibility portion of this report.

Flows are controlled by releases from Canyon Ferry and Hauser Dams, located near the segment's upstream end. The amount of water released is governed by the Federal Energy Regulatory Commission (FERC) license for operations with the Pennsylvania Power and Light Corporation (PPL) Montana. The FERC license provides adequate flows for recreational and fisheries needs. These flows are sufficient to protect the recreational, fisheries, and scenic outstandingly remarkable values described for this segment. The dam is only visible at the very upstream end of this segment. The river immediately takes a bend through the canyon, obscuring view of the dam. Generally, good water quality supports high quality fisheries.

The segment has limited access and very little development along the shore. These relatively primitive conditions provide a setting similar to what Lewis and Clark would have experienced during their journey westward.

The USFS maintains a small access area within the 0.25-mile study corridor at the mouth of Beaver Creek. This facility provides fishing access and consists of a toilet, small parking lot, and fence. During the site visit in August 2005, this area was barely visible from the river. Vegetation obscured views of the fence and parking lot, but the toilet was visible for a brief period where there was a gap in vegetation. The area is likely more visible during the fall and winter when foliage is not as thick. This is a relatively minor intrusion on the scenic values of this segment. Overnight camping at this site is not permitted.

2. The status of landownership, minerals, use in the area, including the amount of private land involved and associated or incompatible uses:

Almost all lands (93 percent) within 0.25-mile of the river bank along this segment are Federally-managed. The USFS, Helena National Forest manages lands along the eastern bank for the entire length. The BLM manages all lands along the western bank for the entire segment length. There is a small private landholding located near the downstream end of the segment west of the river channel approximately 1/8-mile inland from the shore. This private landholding is not essential to the protection and enhancement of outstandingly remarkable values and could be excluded from the designated corridor. These lands are not at risk to development given the conditions of an existing easement on the property.

The USFS has found this segment to be eligible for inclusion in the NWSRS but has not completed a suitability study.

Land uses include some permitted grazing on BLM land along the western shoreline. The area is not fenced, and cattle have access to the river. It appears that grazing pressure along this segment is relatively light because rough terrain limits access to the river corridor.

This segment of the Missouri River has no significant mineral potential. The general area has moderate potential for oil and gas discoveries, but exploration is not likely to take place along the river. There are no current mineral resource uses along this segment.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS and values that would be foreclosed or diminished if the area is not protected as part of the NWSRS:

Although unlikely, any increase in the height of Holter Dam would be prohibited if the river were designated. Such an increase would change the free-flowing nature of the river in this segment. Increasing the height of Holter Dam and the resulting increase in the size of Holter Lake and Upper Holter Lake is not likely to occur and may be physically infeasible because of the area's topography and the number of residences and other structures located along the shores of Holter Lake and Upper Holter Lake.

If the segment were to become part of the NWSRS, potential changes in Hauser Dam operations, outside the current FERC license, which could be considered the next time the FERC license is renewed would need to consider how such change could affect the outstandingly remarkable values. Significant reduction or increase in water releases from Hauser Dam could adversely affect the recreational, scenic, and wildlife values associated with this segment. As a Federal agency, FERC would need to ensure protection of these values when relicensing.

Grazing on the BLM land could be subject to increased restrictions if the segment were included in the NWSRS. The BLM would monitor the effects of cattle access to the river to ensure that grazing use is not adversely affecting the outstandingly remarkable values. If restrictions are necessary to protect river values, the BLM would work with the grazing allotment permittee to establish adequate restrictions.

Designation of this segment would prevent the sale of Federal lands within the corridor and would prevent extensive development along its shoreline. This segment is part of the Lewis and Clark National Historic Trail and is currently in a condition similar to how it was during their expedition. Not designating this segment could potentially result in changes to the landscape, altering the primitive nature of this segment.

4. Federal or State agency that will administer the river should it be added to the NWSRS.

Administration of this segment would ultimately be decided by Congress. All lands included in the river corridor are Federally-managed. Administration would likely be joint management between BLM and USFS, as each agency currently manages half of the corridor.

5. Federal, State, Tribal, local, public, or other interest in designating or not designating the river, including the extent to which the agency proposes that administration of the river, including the costs thereof, be shared by state, local, or other agencies and individuals:

The FERC and PPL Montana would have an interest in the designation of this segment as it pertains to water releases from Hauser Dam. Current operations, as identified in the FERC license, provide adequate flows to maintain the recreational, wildlife, and scenic outstandingly remarkable values associated with this segment. Although these flow requirements are not likely to change, relicensing efforts in the future would need to consider the protection of outstandingly remarkable values.

6. Estimated cost to the United States of acquiring necessary lands, interests in lands, and administering the area should it be added to the NWSRS:

All lands adjacent to the river segment are Federally-managed. Approximately 68 acres of land within 0.25-mile of the river are privately owned. This includes the private lands within 0.25-mile both upstream and downstream of the segment. The BLM would be capable of managing for the protection and enhancement of the outstandingly remarkable values without acquiring any lands. However, if BLM seeks acquisition of this small parcel of private land in order to have a continuous 0.25-mile corridor, land prices are approximately \$600 per acre.

The private parcel at the upstream end is owned by PPL Montana and is used for maintenance of the dam; acquisition is not likely.

Lands upstream would not be available or necessary to purchase as property is part of an administrative site owned by PPL Montana for operations at the dam. This utility company provides for river launching at this site which would compliment the management of the WSR designation. The parcel downstream would not be necessary to purchase to protect resource values as the private land is under an easement which prohibits residential development.

7. A determination of the degree to which the State or its political subdivision(s) might participate in the preservation and administration of the river should it be proposed for inclusion in the NWSRS:

MFWP would likely continue to manage for the recreational fisheries in this segment. This would be complimentary to the recreational outstandingly remarkable value that is linked to fishing opportunities.

8. The Federal agency's ability or other mechanisms to protect and manage the identified river related values other than WSR designation:

The BLM is able to manage its lands along the west bank of the segment for the protection of identified river-related values through its RMP. The eastern bank is managed by the USFS, Helena National Forest. River designation would provide for common goals and management objectives for the two Federal agencies.

9. An evaluation of the adequacy of local zoning and other land use controls in protecting the river's outstandingly remarkable values by preventing incompatible development:

This criterion is not applicable because all lands adjacent to this segment are Federally-managed.

10. Support or opposition to designation:

This is the suitability study report. During the scoping period, no support or opposition to designation of this segment was submitted. The public review of the draft RMP would provide an opportunity for other agencies and the public to review the preliminary findings and voice opposition or support.

11. Historical or existing rights that could be adversely affected with designation:

There are no known historic or existing rights that would be adversely affected with designation.

12. The consistency of designation with other agency plans, programs, or policies in meeting regional objectives:

Designation of this segment would be consistent with the objectives of the BLM's Butte RMP.

Designation of this segment would compliment the fisheries and recreational goals of the MFWP.

The USFS has not completed a suitability study for this segment. Designation would be consistent with the USFS eligibility determination, but successful management would depend on a similar suitability determination from USFS.

13. The contribution to a river system, watershed, or basin integrity:

Almost the entire flow in this segment is provided by releases from Hauser Dam. Only a small amount of water is added from the Beaver Creek tributary. This segment provides a very important contribution to the fisheries in the Missouri River watershed from Hauser Dam to Holter Dam downstream by providing important spawning habitat.

***Segment 3: Moose Creek***

Length within Planning Area: 4.0 miles (Figure 7)

Tentative Classification: Scenic

Proposed Boundary: Approximately 0.25-mile on from river bank on either side of the river.

1. Characteristics that do or do not make the river a worthy addition to the NWSRS:

Moose Creek contains outstandingly remarkable scenic and recreational values, as described in the eligibility section of this report, which make the river a worthy addition to the NWSRS.

Moose Creek from the headwaters to the mouth of the creek at the Big Hole River is identified as water quality impaired on the MDEQ 303d list (MDEQ 2005). The probable causes of impairment are dewatering and flow alteration. The probable sources of impairment are agriculture and crop-related sources. There is extensive agriculture upstream of the eligible segment located on private land. The BLM does not have authority to regulate activities on these lands and is subject to receive water from these areas into Moose Creek. The creek is categorized as 4C – Total Maximum Daily Loads (TMDLs) are not required; no pollutant-related use impairment identified. As a result, no plan for improving water quality in this segment is being developed.

2. The status of landownership, minerals, use in the area, including the amount of private land involved and associated or incompatible uses:

The entire eligible segment is located on BLM land within the Humbug Spires WSA. Upstream of the eligible segment, Moose Creek passes through private land. The private land is predominantly used for cattle grazing.

The area is currently used predominantly for recreational purposes such as hiking, camping, and providing access to climbing areas. These uses are compatible with the protection and enhancement of the segment's outstandingly remarkable values.

This segment has very low oil and gas potential. There are some known placer deposits along the creek and there is some limited potential for the discovery of lode gold deposits. There are no current mineral resource uses along this segment.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS and values that would be foreclosed or diminished if the area is not protected as part of the NWSRS:

If the Humbug Spires WSA continues to be a WSA or becomes a designated Wilderness, reasonably foreseeable potential land uses would be compatible with the protection and enhancement of the segment's outstandingly remarkable values. If the WSA designation is removed by Congress without designating it as Wilderness, then the area could be opened to an array of potential land uses. If the segment were designated as part of the NWSRS, cattle grazing would continue to not occur along this segment.

Extraction of mineral in the area does not currently occur in accordance with the WSA designation. If the WSA designation were removed and the segment were designated in the NWSRS, mineral leasing and extraction would continue to be restricted.

4. Federal or State agency that will administer the river should it be added to the NWSRS.

The BLM, as the sole land manager, would administer the river should it be added to the NWSRS.

5. Federal, State, Tribal, local, public, or other interest in designating or not designating the river, including the extent to which the agency proposes that administration of the river, including the costs thereof, be shared by state, local, or other agencies and individuals:

The upstream landowner has not yet been contacted regarding this potential designation. It is expected that the landowner will review and comment on the suitability findings during the draft RMP review period. It is anticipated, given the necessity of the United States to acquire property or easements, that the landowner may be opposed to designation. Reasons for the necessity of acquisition are described in criteria 1 and 6.

6. Estimated cost to the United States for acquiring necessary lands, interests in lands, and administering the area should it be added to the NWSRS:

To adequately address water quality impairment resulting from upstream land uses, the United States would need to acquire the upstream lands either in fee title or through conservation easements. It is not anticipated that the upstream landowners would be willing sellers. Without acquisition, dewatering and flow alteration problems would continue to affect the eligible segment, in addition to water quality problems associated with cattle grazing. The cost of acquisition would be a minimum of \$500 per acre, requiring 690 acres to be acquired. One option would be within ¼ mile of the stream for the entire length upstream of BLM, currently private to the USFS boundary.

7. A determination of the degree to which the state or its political subdivision(s) might participate in the preservation and administration of the river should it be proposed for inclusion in the NWSRS:

The land within the study corridor is entirely BLM administered. It is not anticipated that the State or its political subdivision would be required to participate in the administration of the river should it be proposed for inclusion in the NWSRS.

8. The Federal agency's ability or other mechanisms to protect and manage the identified river related values other than WSR designation:

Protection and enhancement of the recreational and scenic outstandingly remarkable values are currently provided by the areas designation as a WSA. The management goals and objectives within the Humbug Spires WSA are compatible with management as an eligible segment. WSA designation is temporary. Congress has the ability to either designate the area as Wilderness under the Wilderness Act, or remove the WSA designation entirely. If WSA designation is removed, the area would be managed in accordance with the RMP. Removal of WSA designation, without making it a designated Wilderness area, could open the area to land uses such as timber harvest and mineral activity. Introduction of these land uses in the area could degrade the riparian corridor and result in impacts on the recreational and scenic outstandingly remarkable values that make the segment a worthy addition to the NWSRS.

BLM does not have the authority to regulate land uses upstream of the eligible segment. Water quality problems resulting from cattle grazing activities upstream would continue to occur.

9. An evaluation of the adequacy of local zoning and other land use controls in protecting the river's outstandingly remarkable values by preventing incompatible development:

Current local zoning and other land uses controls upstream of the eligible segment are not adequate to address the water quality issues.

10. Support or opposition to designation:

It is anticipated that the upstream landowner may be opposed to designation. Should the landowner provide comments either on the draft RMP or through direct communication with the BLM, this statement would be revised accordingly.

11. Historical or existing rights that could be adversely affected with designation:

There are no known historical or existing rights that could be adversely affected with designation.

12. The consistency of designation with other agency plans, programs, or policies in meeting regional objectives:

Designation would be consistent with current management prescriptions as a WSA and with the Butte RMP.

13. The contribution to a river system, watershed, or basin integrity:

Below the eligible segment, Moose Creek flows for several miles before entering the Big Hole River at Maiden Rock. Water in Moose Creek contributes to the water quality and quantity of the Big Hole River system.

***Segment 4: Muskrat Creek***

Length within Planning Area: 2.6 miles (Figure 8)

Tentative Classification: Scenic

Proposed Boundary: Approximately 0.25-mile on from river bank on either side of the river.

1. Characteristics that do or do not make the river a worthy addition to the NWSRS:

Muskrat Creek contains fisheries outstandingly remarkable values related to its population of genetically pure westslope cutthroat trout. MFWP, BLM, and USFS have actively removed eastern brook trout and have installed a barrier downstream to prevent non-westslope cutthroat trout from migrating into the segment.

The high-quality riparian corridor provides critical winter habitat for elk and serves as a migration corridor for elk, moose, and bear.

*Water Quality*

Muskrat Creek from its headwaters to the mouth at the Boulder River has been identified as water quality impaired on the MDEQ 303d list (MDEQ 2005). However, there is some discrepancy between the MDEQ assessment and current conditions within the segment. The 303d list identifies the creek as not supporting aquatic life or coldwater fisheries or as a drinking water supply. The probable causes listed are copper, lead, metals, and other habitat alterations. Probable sources are listed as agriculture (grazing-related sources), and resource extraction (abandoned mines). There is no agriculture occurring either within or upstream of the eligible segment. An abandoned mine (Iron Mine) is located upslope of the headwaters of Muskrat Creek near Elkhorn Peak. The data used for the 303d assessment includes the following note: Iron Mine sediment samples were not obtained from Muskrat Creek substrate, but were obtained in the headwaters uplands (MDEQ 2005). It appears that the metals contamination listed has not been observed within the creek sediments, but rather is found upslope of the headwaters. Muskrat Creek is scheduled for a TMDL to address water quality issues between 2008 and 2012.

Based on BLM field observations, the eligible segment does not have the water quality issues described above and is capable of supporting aquatic life and coldwater fisheries. Data has not been collected to determine if the segment would be a suitable drinking water supply. Current conditions in the segment include significant habitat for westslope cutthroat trout, as described in the eligibility section of this report. MFWP, BLM, and USFS are collaborating to conserve westslope cutthroat trout within this segment and upstream on the USFS land. Measurements of pH have been taken at several points within the eligible segment and the results (7.3 to 10) indicate that the area is not contaminated with heavy metals. In addition, BLM has begun conducting invertebrate surveys and has found healthy populations indicative of good water quality. Water quality impairment may be an issue downstream of the eligible segment where the creek enters agricultural areas.

Invasive species are present within the corridor, as they are virtually everywhere. Some small patches of yellow toadflax (*Linaria vulgaris*) were observed along the trail. In addition, patches of trees were observed to be infected with mountain pine beetle (*Dendroctonus ponderosae*).

2. The status of landownership, minerals, use in the area, including the amount of private land involved and associated or incompatible uses:

All land within 0.25-mile of the eligible segment is Federally-managed. BLM manages lands on both sides of the creek for the entire length (Figure 8). Lands both upstream and downstream of the eligible segment are managed by the USFS, Deerlodge National Forest.

This segment has very low oil and gas potential. There are some known placer occurrences along the creek and there is some limited potential for the discovery of lode gold deposits. There are no current mineral resource uses along this segment.

3. Reasonably foreseeable potential uses of the land and related waters that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS and values that would be foreclosed or diminished if the area is not protected as part of the NWSRS:

The area would continue to be available for mountain biking, hiking, horseback riding, and dispersed camping. Foreclosing or curtailing these activities as a result of designation is not anticipated.

Current management does not permit mining within the study corridor. Historic mining (Iron Mine) occurred up slope of the headwaters on USFS land.

4. Federal or State agency that will administer the river should it be added to the NWSRS.

The eligible segment would be administered by BLM should it be added to the NWSRS.

5. Federal, State, Tribal, local, public, or other interest in designating or not designating the river, including the extent to which the agency proposes that administration of the river, including the costs thereof, be shared by state, local, or other agencies and individuals:

The USFS manages land upstream and downstream of the eligible segment. The USFS did not find either the segments on its land eligible for inclusion in the NWSRS.

6. Estimated cost to the United States of acquiring necessary lands, interests in lands, and administering the area should it be added to the NWSRS:

Acquisition of land or interests in lands would not be necessary.

7. A determination of the degree to which the State or its political subdivision(s) might participate in the preservation and administration of the river should it be proposed for inclusion in the NWSRS:

MFWP is actively involved in a westslope cutthroat trout restoration program with the BLM and USFS in this segment. It is expected that their involvement in the protection and enhancement of the fisheries outstandingly remarkable values would continue.

8. The Federal agency's ability or other mechanisms to protect and manage the identified river related values other than WSR designation:

The surrounding USFS land is managed as the Elkhorn Wildlife Management Unit. BLM has a Memorandum of Understanding (MOU) with USFS to manage the lands surrounding the eligible segment for the benefit of recreation and wildlife, including fisheries. Management in accordance with the MOU is compatible with the protection and enhancement of the fisheries outstandingly remarkable value. No timber harvest or mining is permitted within the study corridor or within the Elkhorns WSA. Although current management is compatible with the protection of the outstandingly remarkable values, the time frame of these management goals are limited to the expiration of the MOU and subject to RMP amendments. Designation into the NWSRS would more permanently protect these values.

9. An evaluation of the adequacy of local zoning and other land use controls in protecting the river's outstandingly remarkable values by preventing incompatible development:

Local zoning and other land use controls do not pertain to this segment because it is entirely located on Federal lands.

10. Support or opposition to designation:

This is the suitability study report. During the scoping period, no support or opposition to designation of this segment was submitted. The public review of the draft RMP would provide an opportunity for other agencies and the public to review the preliminary findings and voice opposition or support.

11. Historical or existing rights that could be adversely affected with designation:

There are no known historical or existing rights that would be adversely affected by designation.

12. The consistency of designation with other agency plans, programs, or policies in meeting regional objectives:

Designation would be consistent with the Butte BLM RMP and the MOU with the USFS regarding management of this segment. A non-motorized hiking trail exists along the creek and is currently managed by the USFS under a BLM right-of-way.

13. The contribution to a river system, watershed, or basin integrity:

Muskrat Creek flows into the Boulder River.

## **PRELIMINARY SUITABILITY DETERMINATION SUMMARY**

Two of the four eligible segments were determined suitable for inclusion in the NWSRS. Below is a brief summary of each of the four segments.

### ***Segment 1: Upper Big Hole River***

This segment contains outstandingly remarkable recreational and fisheries values. The recreational values include readily accessible camping and fishing opportunities in a section rated as a Class I, Blue Ribbon Fisheries. The fisheries values include a population of BLM sensitive Montana arctic grayling. The segment supports high quality grayling habitat on the Big Hole River and lacks the high-density populations of rainbow and brown trout, which compete with grayling. The segment meets the tentative classification as a Recreational river due to the presence of a road parallel to the segment. There are several physical and management challenges associated with this segment. BLM control of water quality within the segment is somewhat limited. Upstream of the segment is a small state-owned parcel (approximately 0.25-mile) followed by extensive private land holdings. Without acquisition of private lands, the Federal government would have very little control over the potential water quality impacts related from private land uses such as grazing. Within the segment, the ford and grazing create potential water quality impacts. The BLM could more restrictively manage these land uses to further protect water quality. The largest management challenge could arise as a result of inclusion of this segment in the NWSRS. Designation in the NWSRS would bring national recognition to this relatively small (2.3-mile) section of the Big Hole River. Increased use of this segment would alter the recreational experiences that are currently identified as outstandingly remarkable. The dispersed camping opportunities would not be feasible with increased use given the small amount of BLM land between the road and the river and the important riparian areas. Consequently, it is likely BLM would have to institute more restrictive management measures regarding recreation in the area or develop campsites and provide facilities. These changes would alter the values currently associated with the segment. As a result, this segment has been determined **not suitable** for designation as a Recreational river within the NWSRS.

### ***Segment 2: Missouri River (Hauser Dam to Upper Holter Lake)***

This segment contains outstandingly remarkable recreational, wildlife, and scenic values. The segment, which is primarily accessible by boat, is rated as a Class I, Blue Ribbon Fisheries, attracting national and international anglers. The river corridor provides significant habitat for bald eagle, osprey, golden eagle, peregrine falcon and bighorn sheep. Bald and golden eagle, osprey, and peregrine falcon depend upon the fisheries for food and the riparian corridor for nesting and perching habitats. Big horn sheep primarily use the river corridor for water and forage. Although flows are controlled by Canyon Ferry and to a lesser degree Hauser Dam, the FERC license requires adequate flows for fisheries habitat. These required flows maintain the free-flowing nature of the segment and provide flows suitable for the protection of the recreational, wildlife, and scenic outstandingly remarkable values. The segment meets classification criteria as Scenic because there is limited access to the segment, no parallel roads and development along the segment is limited to the Beaver Creek parking area and a pit toilet maintained by the USFS. Some dispersed camping occurs along the segment, but there are no developed sites. Due to the Beaver Creek parking area and pit toilet, both visible from the river, this segment is not designated as Wild because it does not meet the criteria that shoreline development be primitive. Designation of this segment as Scenic would result in minimal changes to existing management but would result in legislatively protecting the riparian corridor and provide a common goal for BLM and USFS coordination of the segment. As of this report, the USFS has found this segment to be eligible for inclusion in the NWSRS but has not completed a suitability study of the segment (Helena National Forest 1989). Because the BLM manages one side of the river and the USFS manages the other, successful management of this segment depends on cooperative management between the BLM and USFS. This segment has been determined **preliminarily suitable for designation**

as a **Scenic river** within the NWSRS. Because successful management of this segment depends on coordination with the USFS, the final BLM suitability determination will be deferred until the USFS completes a suitability study of this segment.

***Segment 3: Moose Creek (segment within Humbug Spires WSA)***

This segment contains outstandingly remarkable recreational and scenic values. The recreational values are related to the hiking, fishing, and primitive camping opportunities including providing a scenic hiking trail that provides access to the Humbug Spires for rock climbing. The scenic values are related to the variety of color patterns and habitats within the river corridor, which change from meandering through meadows, to wooded, to cascading boulders, returning to meadow at the upstream end. In addition, at several locations along the creek, generous views of the spires are available. The entire segment is located within the Humbug Spires WSA with access limited to the trailhead located at the downstream end of the segment. A hiking trail parallels the creek for the lower third; the upper two-thirds are accessible only by bushwhacking, as no trail exists. The primary characteristic making this segment not worthy of designation is water quality. The segment is listed as water quality impaired by the MDEQ 303d list, and there is no restoration plan in place or planned for development. The causes of water quality impairment are related to private land uses upstream of the eligible segment. Federal agencies, including BLM, do not have authority to regulate these land uses. In order, to remedy the water quality issues, the BLM would need to acquire these lands or an interest in the lands (through easement) along the river corridor. Such acquisition would be fairly expensive, and likely against the wishes of the landowner. Protection of the recreational and scenic outstandingly remarkable values within the BLM authority is currently provided by the WSA designation. However, the protections afforded by WSA designation are dependent upon the continued WSA designation or legislative action to formally designate the area as Wilderness under the Wilderness Act. Removal of WSA designation could result in the introduction of commodity based land uses, which could impact the recreational and scenic values of this segment. As a result of the water quality issues, this segment has been determined **not suitable** for inclusion in the NWSRS.

***Segment 4: Muskrat Creek***

This segment contains outstandingly remarkable fisheries values related to its population of westslope cutthroat trout. Muskrat Creek, through the efforts of BLM, MFWP, and USFS, is considered to have a healthy genetically pure westslope cutthroat trout population. The high-quality riparian habitat provides critical winter elk habitat and a migration corridor for elk, moose and bear. The only potential detracting characteristic of this segment is related to water quality. A trail parallels the segment for its entire length. The only development along this segment consists of a small wooden footbridge located approximately 1.5 miles upstream from the trailhead. Remnants of another small footbridge were observed near the upstream end of the segment. The MDEQ has listed Muskrat Creek including the eligible segment as water quality impaired and is developing a TMDL to restore water quality. However, observations within this segment show no evidence of water quality impairment. Further investigation is necessary for confirmation, but it appears that the segment may need to be removed from the 303d list. Designation of this segment would result in minimal changes from current management but would ensure protection of the fisheries values through legislative designation. This segment has been determined **suitable for designation as a Scenic river** within the NWSRS. If further examination determines that the segment has good water quality, and is subsequently removed from the MDEQ 303d list, the segment would be **suitable for designation as a Wild river** within the NWSRS. This suitability study has examined only the portion of Muskrat Creek on BLM land as a stand alone segment. The USFS manages portions of Muskrat Creek both upstream and downstream of this segment which may also be suitable for designation. If the USFS completes an eligibility and suitability determination, the total length of the segment worthy for designation within the NWSRS may increase.

## INTERIM MANAGEMENT

Interim protection for preliminarily suitable segments is described in Appendix C.

### *Missouri River*

Current BLM management of this segment is sufficient to protect the free-flowing nature and outstandingly remarkable values within BLM's authority that make this segment suitable for designation as a Scenic river in the NWSRS. Successful long-term management of this segment needs to be closely coordinated with the USFS, which manages the opposite shoreline.

### *Muskrat Creek*

Current BLM management of this segment is sufficient to protect the free-flowing nature and outstandingly remarkable fisheries values that make this segment suitable for designation within the NWSRS. Continued coordination with USFS and MFWP would be critical to maintain the genetic purity of westslope cutthroat trout in the segment. Although it appears that heavy metals from the abandoned Iron Mine are not reaching the creek, an assessment of potential impact should be conducted. It may be necessary to take additional protective measures to ensure that contamination does not occur.

Although the Upper Big Hole River and Missouri River segments were preliminarily found not suitable, if an alternative is chosen that includes these segments as being recommended suitable, protective management would apply.

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## GLOSSARY

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**ELIGIBLE RIVER SEGMENT.** A section of a river that qualifies for inclusion in the National Wild and Scenic River System through determination that it is free-flowing and with its adjacent land area possessing at least one river-related value considered to be outstandingly remarkable.

**PLANNING AREA.** The geographical area for which land use and resource management plans are developed and maintained.

**RESOURCE MANAGEMENT PLAN (RMP).** A land use plan that establishes land use allocations, multiple-use guidelines, and management objectives for a given planning area. The BLM has used the RMP planning system since about 1980.

**SUITABLE RIVER.** A river segment found, through administrative study by an appropriate agency, to meet the criteria for designation as a component of the National Wild and Scenic Rivers system, specified in Section 4(a) of the Wild and Scenic Rivers Act.

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## ELIGIBILITY CRITERIA

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### *INTRODUCTION*

For the purpose of classification, a river area may be divided into segments. For example, changes in river character, such as the presence of dams and reservoirs, significant changes in types or amounts of development, significant changes in physiographic character, tributaries, or features, and/or significant changes in land status, should be considered in identifying river segments for evaluation. Management strategies necessary to administer the entire river area should also be taken into account. As such, excessive segmentation should be avoided. Each segment, considered as a whole, needs to conform to either the Wild, Scenic, or Recreational classification. There are no specific requirements for segment length. Congress has designated a segment as short as four miles. A river segment is of sufficient length if a specific outstandingly remarkable value or values can be protected (a factor in the suitability determination, not eligibility determination), should the segment be designated. An entire stream could be one segment.

Each identified river segment in the RMP planning area must be evaluated to determine whether or not it is eligible for inclusion in the NWSRS. To be eligible, a river segment must be “free-flowing” and must possess at least one “outstandingly remarkable” value. Free-flowing means “existing or flowing in a natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the water.” Please note the following:

- A river below a dam or impoundment can still be eligible;
- A river need not be navigable by water craft in order to be eligible; and
- There are no specific requirements concerning the flow of an eligible river segment. Flows are sufficient if they sustain or complement the outstandingly remarkable values for which the segment would be designated. As such, intermittent and ephemeral streams can be eligible.

### *OUTSTANDINGLY REMARKABLE VALUES*

The determination of whether a river area contains “outstandingly remarkable” values is a professional judgment and needs to be documented in the study report. In order to be considered as outstandingly remarkable, a river-related value must be a unique, rare, or exemplary feature that is significant at a comparative regional or national scale. While the spectrum of resources that may be considered is broad, all values should be directly river related. That is, they should have the following characteristics:

- Be located in the river or on its immediate shorelands (for the purposes of this study, the preliminary boundary is 0.25 mile on either side of the river);
- Contribute substantially to the functioning of the river ecosystem; or
- Owe their location or existence to the presence of the river.

The following are general guidelines for the outstandingly remarkable values for which river segments can be eligible. Only one such value is needed for eligibility.

### **SCENIC**

The landscape elements of landform, vegetation, water, color, and related factors result in notable or exemplary visual features or attractions. When analyzing scenic values, additional factors, such as seasonal variations in vegetation, scale of cultural modifications, and the length of time negative intrusions are viewed, may be considered. Scenery and visual attractions may be highly diverse over most of the river or river segment.

### **RECREATIONAL**

Recreational opportunities are or have the potential to be popular enough to attract visitors from throughout or beyond the region of comparison or are unique or rare within the region. Visitors are willing to travel long distances to use the river resources for recreational

purposes. River-related opportunities could include, but are not limited to, sightseeing, wildlife observation, camping, photography, hiking, fishing and boating.

- Interpretive opportunities may be exceptional and may attract or have the potential to attract visitors from outside the region of comparison.
- The river may provide or have the potential to provide settings for national or regional usage or competitive events.

#### **GEOLOGICAL**

The river, or the area within the river corridor, contains one or more examples of a geologic feature, process, or phenomenon that are unique or rare within the region of comparison. The features may be in an unusually active stage of development, represent a textbook example, or represent a unique or rare combination of geologic features (erosional, volcanic, glacial, or other geologic structures).

#### **FISH**

Fish values may be judged on the relative merits of either fish populations or habitat or a combination of the following river-related conditions:

- *Populations.* The river is nationally or regionally one of the top producers of resident, indigenous, or anadromous fish species. Of particular significance may be the presence of wild or unique stocks or populations of state- or US-listed or candidate threatened and endangered species.
- *Habitat.* The river provides exceptionally high quality habitat for fish species indigenous to the region. Of particular significance is habitat for state- or US-listed or candidate threatened and endangered species.

#### **WILDLIFE**

Wildlife values may be judged on the relative merits of either wildlife populations or habitat, or a combination of the following conditions:

- *Populations.* The river or area within the river corridor contains nationally or regionally important populations of resident or indigenous wildlife species dependent on the river environment. Of particular significance may be species considered to be unique or populations of state- or US-listed or candidate threatened and endangered species.
- *Habitat.* The river or area within the river corridor provides exceptionally high quality habitat for wildlife of national or regional significance or may provide unique habitat or a critical link in habitat conditions for state- or US-listed or candidate threatened and endangered species. Contiguous habitat conditions are such that the biological needs of the species are met.

#### **CULTURAL**

The river or area within the river corridor contains a site or sites where there is evidence of occupation or use by Native Americans. Sites must be rare or must have unusual characteristics or exceptional human-interest values. Sites may have national or regional importance for interpreting prehistory; may be rare; may represent an area where culture or a cultural period was first identified and described; may have been used concurrently by two or more cultural groups; or may have been used by cultural groups for rare or sacred purposes.

#### **HISTORIC**

The river or area within the river corridor contains a site or sites or feature or features associated with a significant event, an important person, or a cultural activity of the past that was rare or unusual in the region. A historic site or feature in most cases is 50 years old or older. Sites or features listed in or eligible for inclusion in the National Register of Historic Places may be of particular significance.

**OTHER SIMILAR VALUES**

While no specific evaluation guidelines have been developed for the other similar values category, additional values deemed relevant to the eligibility of the river segment should be considered in a manner consistent with the foregoing guidance, including, but not limited to, hydrologic, ecologic/biologic diversity, paleontologic, botanic, and scientific study opportunities.

## CLASSIFICATION CRITERIA FOR WILD, SCENIC, AND RECREATIONAL RIVER AREAS

**Table B-1**  
**Classification Criteria for Wild, Scenic, and Recreational River Areas**

Attribute	Wild	Scenic	Recreational
Water Resources Development (impoundments, diversions, etc.)	Free of impoundment	Free of impoundment	Some existing impoundment or diversion. The existence of low dams, diversions, riprap, or other modifications of the waterway is acceptable, provided the waterway remains generally natural and riverine in appearance.
Shoreline Development	Essentially primitive. Little or no evidence of human activity. The presence of a few inconspicuous structures, particularly those of historic or cultural value, is acceptable. A limited amount of domestic livestock grazing or hay production is acceptable. Little or no evidence of past timber harvest. No ongoing timber harvest.	Largely primitive and undeveloped. No substantial evidence of human activity. The presence of small communities or dispersed dwellings or farm structures is acceptable. The presence of grazing, hay production, or row crops is acceptable. Evidence of past or ongoing timber harvest is acceptable, provided the forest appears natural from the riverbank.	Some development. Substantial evidence of human activity. The presence of extensive residential development and a few commercial structures is acceptable. Lands may have been developed for the full range of agricultural and forestry uses. May show evidence of past and ongoing timber harvest.

**Table B-1**  
**Classification Criteria for Wild, Scenic, and Recreational River Areas (continued)**

Attribute	Wild	Scenic	Recreational
Accessibility	Generally inaccessible except by trail. No roads, railroads, or other provision for vehicular travel within the river area. A few existing roads leading to the boundary of the river area is acceptable.	Accessible in places by road. Roads may occasionally reach or bridge the river. The existence of short stretches of conspicuous or longer stretches of inconspicuous roads or railroads is acceptable.	Readily accessible by road or railroad. The existence of parallel roads or railroads on one or both banks, as well as bridge crossings and other river access points, including fords, is acceptable.
Water Quality	Meets or exceeds Federal criteria or Federally approved state standards for aesthetics, for propagation of fish and wildlife normally adapted to the habitat of the river, and for primary contact recreation (swimming), except where exceeded by natural conditions.	No criteria prescribed by the Wild and Scenic Rivers Act. The Federal Water Pollution Control Act Amendments of 1972 have made it a national goal that all waters of the United States be made fishable and swimmable. Therefore, rivers will not be precluded from scenic or recreational classification because of poor water quality at the time of their study, provided a water quality improvement plan exists or is being developed in compliance with applicable Federal and state laws.	

Source: Federal Register. National Wild and Scenic Rivers System; Final Revised Guidelines for Eligibility, Classification, and Management of River Areas. Section 1(3), Vol. 47, No. 173, page 39461. September 7, 1982.

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## INTERIM PROTECTION FOR CANDIDATE WILD AND SCENIC RIVERS

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**Table C-1**  
**Interim Protection for Candidate Wild and Scenic Rivers**

<b>Wild and Scenic Rivers Act, Section 5(d)(1)<sup>1</sup></b>		
<b>Issue/Action</b>	<b>Eligible<sup>2</sup></b>	<b>Suitable</b>
Study Boundary	Minimum of 0.25-mile from ordinary high-water mark.	Minimum of 0.25-mile from ordinary high-water mark.
	Boundary may include adjacent areas needed to protect identified values.	Boundary may include adjacent areas needed to protect identified values.
Preliminary Classification	Section 2(b): 3 classes: Wild, scenic, recreational, defined by statute.	Section 2(b): 3 classes: Wild, scenic, recreational, defined by statute.
	Criteria for classification described in Interagency Guidelines.	Criteria for classification described in Interagency Guidelines.
	Manage at preliminary classification.	Manage at preliminary classification.
Study Report Review Procedures		Notice of study report/draft EA <sup>3</sup> published in Federal Register.
		Comments/response from Federal, state, and local agencies and the public included in the study report/final EA <sup>4</sup> transmitted to the President and Congress.

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**Table C-1**  
**Interim Protection for Candidate Wild and Scenic Rivers** *(continued)*

<b>Wild and Scenic Rivers Act, Section 5(d)(1)<sup>1</sup></b>		
<b>Issue/Action</b>	<b>Eligible<sup>2</sup></b>	<b>Suitable</b>
Private Land *Administration *Acquisition	Affect private land uses through voluntary partnership with state/local governments and landowners.  No regulatory authority.  No ability to acquire interest in land under the Act's authority prior to designation.	Affect private land uses through voluntary partnership with state/local governments and landowners.  No regulatory authority.  No ability to acquire interest in land under the act's authority prior to designation.  Typically an evaluation of the adequacy of local zoning and land use controls is a component of suitability determination <sup>5</sup> .
Water Resources Project	River's free-flowing condition protected to the extent of other agency authorities; not protected under the act.	River's free-flowing condition protected to the extent of other agency authorities; not protected under the act.
Land Disposition	Agency discretion to retain lands within river corridor in Federal ownership.	Agency discretion to retain lands within river corridor in Federal ownership.
Mining and Mineral Leasing	Protect free flow, water quality, and outstandingly remarkable values through other agency authorities.	Protect free flow, water quality, and outstandingly remarkable values through other agency authorities.
Actions of Other Agencies	Affect actions of other agencies through voluntary partnership.	Affect actions of other agencies through voluntary partnership.
Protect Outstandingly Remarkable Values	No regulatory authority conferred by the act; agency protects through other authorities.  Section 11(b) 1: Limited financial or other assistance to encourage participation in the acquisition, protection, and management of river resources <sup>6</sup> .	No regulatory authority conferred by the act; agency protects through other authorities.  Section 11(b) 1: Limited financial or other assistance to encourage participation in the acquisition, protection, and management of river resources <sup>6</sup> .

<sup>1</sup> Agency-identified study rivers as directed by Section 5(d)(1) of the act.

<sup>2</sup> A number of sources are available for identifying rivers under Section 5(d)(1). Under a Presidential Directive issued in 1979, each Federal agency, as part of its normal planning and environmental review processes, is required to avoid or mitigate adverse effects on rivers in the National Rivers Inventory.

<sup>3</sup> Draft environmental assessment

<sup>4</sup> Final environmental assessment

<sup>5</sup> For an agency-identified study river that includes private lands, there is often the need to evaluate existing state and local land use controls and, if necessary, to assess the willingness of state and local government to protect river values.

<sup>6</sup> Section 11(b)1 authorizes the Secretary of the Interior and Secretary of Agriculture or the head of any other Federal agency to provide for "limited financial or other assistance to encourage participation in the acquisition, protection, and management of river resources." This authority "applies within or outside a Federally administered area and applies to rivers which are components of the National Wild and Scenic Rivers System and to other rivers." The recipients of Federal assistance include states or their political subdivisions, landowners, private organizations, or individuals. Some examples of assistance under this section include, but are not limited to, riparian restoration, riparian fencing to protect water quality and riparian vegetation, of vegetative screening to enhance scenery/recreation experience.

## **RIVER SEGMENTS FROM INITIAL IDENTIFICATION EFFORTS**

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Table D-1 lists the Planning Area river and stream segments considered during initial identification efforts for the Wild and Scenic Rivers study process.

**Table D-1  
River Segments from Initial Identification Efforts**

River Segment	Total Segment Length (miles)	Length on BLM-administered Lands (miles)	Free Flowing	Outstandingly Remarkable Values							Determination		
				Scenic	Recreation	Geological	Fish	Wildlife	Historic	Cultural	Other	Not Eligible	Eligible
<b>Big Hole River</b>	<b>15.20</b>	<b>6.96</b>										X	
segment 1		0.39										X	
segment 2		0.34										X	
segment 3		0.79										X	
segment 4		0.16										X	
segment 5		0.95										X	
segment 6		0.40										X	
segment 7		0.28										X	
segment 8		2.30	Yes		X		X						X
segment 9		0.73										X	
segment 10		0.26										X	
segment 11		0.15										X	
segment 12		0.21										X	
<b>Big Pipestone Creek</b>	<b>5.57</b>	<b>3.26</b>										X	
<b>Blackfoot River</b>	<b>2.22</b>	<b>1.90</b>										X	
segment 1		1.62										X	
segment 2		0.28										X	
<b>Boulder River</b>	<b>8.74</b>	<b>3.76</b>										X	
segment 1		0.03										X	
segment 2		0.06										X	
segment 3		0.17										X	
segment 4		0.27										X	
segment 5		1.48										X	

**Table D-1**  
**River Segments from Initial Identification Efforts** *(continued)*

River Segment	Total Segment Length (miles)	Length on BLM-administered Lands (miles)	Free Flowing	Outstandingly Remarkable Values								Determination	
				Scenic	Recreation	Geological	Fish	Wildlife	Historic	Cultural	Other	Not Eligible	Eligible
segment 6		0.13										X	
segment 7		0.91										X	
segment 8		0.71										X	
<b>Cabin Creek</b>	<b>2.51</b>	<b>2.51</b>										X	
<b>Camp Creek</b>	<b>10.74</b>	<b>5.34</b>										X	
segment 1		1.58										X	
segment 2		3.76										X	
<b>Cataract Creek</b>	<b>1.88</b>	<b>0.37</b>										X	
segment 1		0.06										X	
segment 2		0.25										X	
segment 3		0.06										X	
<b>Charcoal Creek</b>	<b>1.77</b>	<b>1.31</b>										X	
segment 1		1.13										X	
segment 2		0.18										X	
<b>Chicken Gulch</b>	<b>2.09</b>	<b>2.09</b>										X	
<b>Clark Gulch</b>	<b>2.20</b>	<b>1.07</b>										X	
<b>Cline Gulch</b>	<b>1.38</b>	<b>1.34</b>										X	
<b>Confederate Gulch</b>	<b>5.43</b>	<b>3.28</b>										X	
segment 1		0.85										X	
segment 2		0.36										X	
segment 3		0.16										X	
segment 4		1.06										X	
segment 5		0.11										X	



**Table D-1**  
**River Segments from Initial Identification Efforts** *(continued)*

River Segment	Total Segment Length (miles)	Length on BLM-administered Lands (miles)	Free Flowing	Outstandingly Remarkable Values								Determination	
				Scenic	Recreation	Geological	Fish	Wildlife	Historic	Cultural	Other	Not Eligible	Eligible
<b>High Ore Creek</b>	<b>5.22</b>	<b>2.19</b>										X	
segment 1		0.15										X	
segment 2		1.01										X	
segment 3		0.15										X	
segment 4		0.07										X	
segment 5		0.07										X	
segment 6		0.56										X	
segment 7		0.19										X	
<b>Homestake Creek</b>	<b>2.21</b>	<b>2.21</b>										X	
<b>Horse Gulch</b>	<b>2.43</b>	<b>2.43</b>										X	
<b>Indian Creek</b>	<b>9.30</b>	<b>6.73</b>										X	
segment 1		1.10										X	
segment 2		0.85										X	
segment 3		3.67										X	
segment 4		1.10										X	
segment 5*		9.10							X			X	
<b>Jackson Creek</b>	<b>2.98</b>	<b>0.50</b>										X	
segment 1		0.39										X	
segment 2		0.11										X	
<b>Jimmie New Creek</b>	<b>1.87</b>	<b>1.87</b>										X	
<b>Johnny Gulch</b>	<b>8.14</b>	<b>5.18</b>										X	
segment 1		0.29										X	
segment 2		0.31										X	



**Table D-1**  
**River Segments from Initial Identification Efforts** *(continued)*

River Segment	Total Segment Length (miles)	Length on BLM-administered Lands (miles)	Free Flowing	Outstandingly Remarkable Values								Determination	
				Scenic	Recreation	Geological	Fish	Wildlife	Historic	Cultural	Other	Not Eligible	Eligible
<b>Lost Horse Creek</b>	<b>5.40</b>	<b>0.85</b>										X	
segment 1		0.02										X	
segment 2		0.15										X	
segment 3		0.27										X	
segment 4		0.24										X	
segment 5		0.17										X	
<b>Lump Gulch</b>	<b>7.91</b>	<b>2.56</b>										X	
segment 1		1.27										X	
segment 2		1.03										X	
segment 3		0.26										X	
<b>Missouri River</b>	<b>43.79</b>	<b>29.21</b>										X	
segment 1		3.05	Y		X								X
segment 2		5.47										X	
segment 3		2.77										X	
segment 4		14.21										X	
segment 5		1.66										X	
segment 6		0.13										X	
segment 7		0.14										X	
segment 8		0.27										X	
segment 9		0.48										X	
segment 10		0.76										X	
segment 11		0.27										X	



**Table D-1**  
**River Segments from Initial Identification Efforts** *(continued)*

River Segment	Total Segment Length (miles)	Length on BLM-administered Lands (miles)	Free Flowing	Outstandingly Remarkable Values								Determination	
				Scenic	Recreation	Geological	Fish	Wildlife	Historic	Cultural	Other	Not Eligible	Eligible
<b>Sevenmile Creek</b>	<b>1.35</b>	<b>1.28</b>										X	
<b>Sheep Creek</b>	<b>3.74</b>	<b>3.09</b>										X	
<b>Silver Creek</b>	<b>5.25</b>	<b>2.81</b>										X	
segment 1		0.12										X	
segment 2		0.28										X	
segment 3		0.37										X	
segment 4		0.38										X	
segment 5		0.25										X	
segment 6		0.88										X	
segment 7	0.53	0.53										X	
<b>Skelly Gulch</b>	<b>0.91</b>	<b>0.79</b>										X	
<b>Soap Creek</b>	<b>8.28</b>	<b>5.02</b>										X	
segment 1		0.93										X	
segment 2		0.71										X	
segment 3		0.91										X	
segment 4		0.31										X	
segment 5		2.15										X	
<b>Teddy Creek</b>	<b>1.78</b>	<b>1.56</b>										X	
<b>Towhead Gulch</b>	<b>2.95</b>	<b>1.64</b>										X	
segment 1		0.71										X	
segment 2		0.93										X	
<b>Virginia Creek</b>	<b>3.44</b>	<b>1.79</b>										X	

Note:

\* = Indian Creek Segment 5 was initially found to be eligible. Further evaluation during the suitability phase determined the segment not to be free flowing. The extensive historic and current mining activities have resulted in a channel which does not meet the "natural condition" requirements of free flowing. Numerous placer piles along the segment have resulted in severe modification of the natural channel.



# APPENDIX K– CULTURAL RESOURCES

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## USE CATEGORIES FOR MANAGEMENT OF CULTURAL RESOURCES SITES

### BLM MANUAL SERIES 8110.4 - .43

#### .4 Categorizing as to Uses

Categorizing cultural resources according to their potential uses is the culmination of the identification process and the bridge to protection and utilization decisions. Use categories establish what needs to be protected, and when or how use should be authorized. All cultural resources have uses, but not all should be used in the same way. Cultural resources can be allocated to the various recognized use categories even before they are individually identified. The clear advantage in doing this is that it allows Field Office managers to know in advance how to respond to conflicts that arise between specific cultural resources and other land uses. Relative to the national Programmatic Agreement, categorizing resources to uses provides a mechanism for the Field Office manager and the SHPO to confer and concur on how to handle most routine cases of conflict in advance, enabling the Field Office manager to put decisions into effect in the most appropriate, and most timely manner.

#### .41 Allocations to Use Categories

Field Office managers shall allocate to appropriate use categories all cultural properties known and projected to occur in a plan area. Allocations are made in regional plans, local interdisciplinary plans, or project plans, as relevant and timely, and may be applied either to individual properties or to classes of similar properties. Appropriately qualified staff professionals recommend suitable uses for each cultural property or class of properties, considering the properties' characteristics, condition, setting, location, and accessibility, and especially their perceived values and potential uses. A cultural property may be allocated to more than one use category. When allocations have not been made in other planning decisions they should be made during the compliance process for land use authorizations, to allow Field Office managers to analyze needs and develop appropriate mitigation and treatment options. Allocations should be reevaluated and revised, as needed, when circumstances change or new data become available. Allocations should be consistent with historic context documents and State Historic Preservation Plans.

#### .42 Use Categories

A. Scientific Use. This category applies to any cultural property determined to be available for consideration as the subject of scientific or historical study at the present time, using currently available research techniques.

Study includes methods that would result in the property's physical alteration or destruction. This category applies almost entirely to prehistoric and historic archaeological properties, where the method of use is generally archaeological excavation, controlled surface collection, and/or controlled recordation (data recovery). Recommendations to allocate individual properties to this use must be based on documentation of the kinds of data the property is thought to contain and the data's importance for pursuing specified research topics. Properties in this category need not be conserved in the face of a research or data recovery (mitigation) proposal that would make adequate and appropriate use of the property's research importance.

B. Conservation for Future Use. This category is reserved for any unusual cultural property which, because of scarcity, a research potential that surpasses the current state of the art, singular historic importance, cultural importance, architectural interest, or comparable reasons, is not currently available for consideration as the subject of scientific or historical study that would result in its physical alteration. A cultural property included in this category is deemed worthy of segregation from all other land or resource uses, including cultural resource uses that would threaten the maintenance of its present condition or setting, as pertinent, and will remain in this use category until specified provisions are met in the future.

C. Traditional Use. This category is to be applied to any cultural resource known to be perceived by a specified social and/or cultural group as important in maintaining the cultural identity, heritage, or well-being of the group. Cultural properties assigned to this category are to be managed in ways that recognize the importance ascribed to them and seek to accommodate their continuing traditional use.

D. Public use. This category may be applied to any cultural property found to be appropriate for use as an interpretive exhibit in place, or for related educational and recreational uses by members of the general public. The category may also be applied to buildings suitable for continued use or adaptive use, for example as staff housing or administrative facilities at a visitor contact or interpretive site, or as shelter along a cross-country ski trail.

E. Experimental Use. This category may be applied to a cultural property judged well-suited for controlled experimental study, to be conducted by BLM or others

concerned with the techniques of managing cultural properties, which would result in the property's alteration, possibly including loss of integrity and destruction of physical elements. Committing cultural properties or the data they contain to loss must be justified in terms of specific information that would be gained and how it would aid in the management of other cultural properties. Experimental study should aim toward understanding the kinds and rates of natural or human-caused deterioration, testing the effectiveness of protection measures, or developing new research or interpretation methods and similar kinds of practical management information. It should not be applied to cultural properties with strong research potential, traditional cultural importance, or good public use potential, if it would significantly diminish those uses.

F. Discharged from Management. This category is assigned to cultural properties that have no remaining identifiable use. Most often these are prehistoric and historic archaeological properties, such as small surface scatters of artifacts or debris, whose limited research potential is effectively exhausted as soon as they have been documented. Also, more complex archaeological properties that have had their salient information

collected and preserved through mitigation or research may be discharged from management, as should cultural properties destroyed by any natural event or human activity. Properties discharged from management remain in the inventory, but they are removed from further management attention and do not constrain other land uses. Particular classes of unrecorded cultural properties may be named and described in advance as dischargeable upon documentation, but specific cultural properties must be inspected in the field and recorded before they may be discharged from management.

.43 Relationship between Evaluation and Allocation

Cultural properties are evaluated with reference to National Register criteria for the purpose of assessing their historical values and their public significance. Such evaluations should be carefully considered when cultural properties are allocated to use categories and decisions are made regarding the appropriateness of National Register nomination and/or long-term preservation. Although preservation and nomination priorities must be weighed on a case-by-case basis, the following table can serve as a general guide to illustrate the relationship between National Register evaluation and allocation to use categories.

<b>Cultural Resource Use Category</b>	<b>National Register Eligibility</b>	<b>Preservation/National Register Nomination</b>
Scientific Use	Usually eligible	Long-term preservation not critical; medium National Register nomination priority.
Conservation for Future Use	Always eligible	Long-term preservation is required; highest nomination priority.
Traditional Use	May be eligible	Long-term preservation is desirable; nomination priority is determined in consultation with the appropriate cultural group(s).
Public Use	Usually eligible	Long-term preservation is desirable; high nomination priority.
Experimental Use	May be eligible	Long-term preservation not anticipated; low nomination priority.
Discharged from Management	Not eligible	Long-term preservation and management are not considerations; nomination is inappropriate.

## INDIAN AFFAIRS: LAWS AND TREATIES VOL. II, TREATIES

### TREATY WITH THE BLACKFEET, 1855.

**COMPILED AND EDITED BY CHARLES J. KAPPLER. WASHINGTON: GOVERNMENT  
PRINTING OFFICE, 1904.**

**Oct. 17, 1855. | 11 Stat., 657. | Ratified Apr. 15, 1856. | Proclaimed Apr. 25, 1856.**

Articles of agreement and convention made and concluded at the council-ground on the Upper Missouri, near the mouth of the Judith River, in the Territory of Nebraska, this seventeenth day of October, in the year one thousand eight hundred and fifty-five, by and between A. Cumming and Isaac I. Stevens, commissioners duly appointed and authorized, on the part of the United States, and the undersigned chiefs, headmen, and delegates of the following nations and tribes of Indians, who occupy, for the purposes of hunting, the territory on the Upper Missouri and Yellowstone Rivers, and who have permanent homes as follows: East of the Rocky Mountains, the Blackfoot Nation, consisting of the Piegan, Blood, Blackfoot, and Gros Ventres tribes of Indians. West of the Rocky Mountains, the Flathead Nation, consisting of the Flathead, Upper Pend d'Oreille, and Kootenay tribes of Indians, and the Nez Percé tribe of Indians, the said chiefs, headmen and delegates, in behalf of and acting for said nations and tribes, and being duly authorized thereto by them.

#### ARTICLE 1.

Peace, friendship, and amity shall hereafter exist between the United States and the aforesaid nations and tribes of Indians, parties to this treaty, and the same shall be perpetual.

#### ARTICLE 2.

The aforesaid nations and tribes of Indians, parties to this treaty, do hereby jointly and severally covenant that peaceful relations shall likewise be maintained among themselves in future; and that they will abstain from all hostilities whatsoever against each other, and cultivate mutual good-will and friendship. And the nations and tribes aforesaid to furthermore jointly and severally covenant, that peaceful relations shall be maintained with and that they will abstain from all hostilities whatsoever, excepting in self-defense, against the following-named nations and tribes of Indians, to wit: the Crows, Assineboins, Crees, Snakes, Blackfeet, Sans

#### ARTICLE 4.

The parties to this treaty agree and consent, that the tract of country lying within lines drawn from the Hell Gate or Medicine Rock Passes, in an easterly direction, to the nearest source of the Muscle Shell River, thence down

Arcs, and Aunce-pa-pas bands of Sioux, and all other neighboring nations and tribes of Indians.

#### ARTICLE 3.

The Blackfoot Nation consent and agree that all that portion of the country recognized and defined by the treaty of Laramie as Blackfoot territory, lying within lines drawn from the Hell Gate or Medicine Rock Passes in the main range of the Rocky Mountains, in an easterly direction to the nearest source of the Muscle Shell River, thence to the mouth of Twenty-five Yard Creek, thence up the Yellowstone River to its northern source, and thence along the main range of the Rocky Mountains, in a northerly direction, to the point of beginning, shall be a common hunting-ground for ninety-nine years, where all the nations, tribes and bands of Indians, parties to this treaty, may enjoy equal and uninterrupted privileges of hunting, fishing and gathering fruit, grazing animals, curing meat and dressing robes. They further agree that they will not establish villages, or in any other way exercise exclusive rights within ten miles of the northern line of the common hunting-ground, and that the parties to this treaty may hunt on said northern boundary line and within ten miles thereof.

Provided, That the western Indians, parties to this treaty, may hunt on the trail leading down the Muscle Shell to the Yellowstone; the Muscle Shell River being the boundary separating the Blackfoot from the Crow territory.

And provided, That no nation, band, or tribe of Indians, parties to this treaty, nor any other Indians, shall be permitted to establish permanent settlements, or in any other way exercise, during the period above mentioned, exclusive rights or privileges within the limits of the above-described hunting-ground. And provided further, That the rights of the western Indians to a whole or a part of the common hunting-ground, derived from occupancy and possession, shall not be affected by this article, except so far as said rights may be determined by the treaty of Laramie.

said river to its mouth, thence down the channel of the Missouri River to the mouth of Milk River, thence due north to the forty-ninth parallel, thence due west on said parallel to the main range of the Rocky Mountains, and thence southerly along said range to the place of

beginning, shall be the territory of the Blackfoot Nation, over which said nation shall exercise exclusive control, excepting as may be otherwise provided in this treaty. Subject, however, to the provisions of the third article of this treaty, giving the right to hunt, and prohibiting the establishment of permanent villages and the exercise of any exclusive rights within ten miles of the northern line of the common hunting-ground, drawn from the nearest source of the Muscle Shell River to the Medicine Rock Passes, for the period of ninety-nine years. Provided also, That the Assiniboins shall have the right of hunting, in common with the Blackfeet, in the country lying between the aforesaid eastern boundary line, running from the mouth of Milk River to the forty-ninth parallel, and a line drawn from the left bank of the Missouri River, opposite the Round Butte north, to the forty-ninth parallel.

#### **ARTICLE 5.**

The parties to this treaty, residing west of the main range of the Rocky Mountains, agree and consent that they will not enter the common hunting ground, nor any part of the Blackfoot territory, or return home, by any pass in the main range of the Rocky Mountains to the north of the Hell Gate or Medicine Rock Passes. And they further agree that they will not hunt or otherwise disturb the game, when visiting the Blackfoot territory for trade or social intercourse.

#### **ARTICLE 6.**

The aforesaid nations and tribes of Indians, parties to this treaty, agree and consent to remain within their own respective countries, except when going to or from, or whilst hunting upon, the "common hunting ground," or when visiting each other for the purpose of trade or social intercourse.

#### **ARTICLE 7.**

The aforesaid nations and tribes of Indians agree that citizens of the United States may live in and pass unmolested through the countries respectively occupied and claimed by them. And the United States is hereby bound to protect said Indians against depredations and other unlawful acts which white men residing in or passing through their country may commit.

#### **ARTICLE 8.**

For the purpose of establishing travelling thoroughfares through their country, and the better to enable the President to execute the provisions of this treaty, the aforesaid nations and tribes do hereby consent and agree, that the United States may, within the countries respectively occupied and claimed by them, construct roads of every description; establish lines of telegraph and military posts; use materials of every description found in the Indian country; build houses for agencies, missions, schools, farms, shops, mills, stations, and for any other purpose for which they may be required, and

permanently occupy as much land as may be necessary for the various purposes above enumerated, including the use of wood for fuel and land for grazing, and that the navigation of all lakes and streams shall be forever free to citizens of the United States.

#### **ARTICLE 9.**

In consideration of the foregoing agreements, stipulations, and cessions, and on condition of their faithful observance, the United States agree to expend, annually, for the Piegan, Blood, Blackfoot, and Gros Ventres tribes of Indians, constituting the Blackfoot Nation, in addition to the goods and provisions distributed at the time of signing the treaty, twenty thousand dollars, annually, for ten years, to be expended in such useful goods and provisions, and other articles, as the President, as his discretion, may from time to time determine; and the superintendent, or other proper officer, shall each year inform the President of the wishes of the Indians in relation thereto: Provided, however, That if, in the judgment of the President and Senate, this amount be deemed insufficient, it may be increased not to exceed the sum of thirty-five thousand dollars per year.

#### **ARTICLE 10.**

The United States further agree to expend annually, for the benefit of the aforesaid tribes of the Blackfoot Nation, a sum not exceeding fifteen thousand dollars annually, for ten years, in establishing and instructing them in agricultural and mechanical pursuits, and in educating their children, and in any other respect promoting their civilization and Christianization: Provided, however, That to accomplish the objects of this article, the President may, at his discretion, apply any or all the annuities provided for in this treaty: And provided, also, That the President may, at his discretion, determine in what proportions the said annuities shall be divided among the several tribes.

#### **ARTICLE 11.**

The aforesaid tribes acknowledge their dependence on the Government of the United States, and promise to be friendly with all citizens thereof, and to commit no depredations or other violence upon such citizens. And should any one or more violate this pledge, and the fact be proved to the satisfaction of the President, the property taken shall be returned, or, in default thereof, or if injured or destroyed, compensation may be made by the Government out of the annuities. The aforesaid tribes are hereby bound to deliver such offenders to the proper authorities for trial and punishment, and are held responsible, in their tribal capacity, to make reparation for depredations so committed.

Nor will they make war upon any other tribes, except in self-defense, but will submit all matter of difference, between themselves and other Indians, to the Government of the United States, through its agents, for

adjustment, and will abide thereby. And if any of the said Indians, parties to this treaty, commit depredations on any other Indians within the jurisdiction of the United States, the same rule shall prevail as that prescribed in this article in case of depredations against citizens. And the said tribes agree not to shelter or conceal offenders against the laws of the United States, but to deliver them up to the authorities for trial.

#### ARTICLE 12.

It is agreed and understood, by and between the parties to this treaty, that if any nation or tribe of Indians aforesaid, shall violate any of the agreements, obligations, or stipulations, herein contained, the United States may withhold, for such length of time as the President and Congress may determine, any portion or all of the annuities agreed to be paid to said nation or tribe under the ninth and tenth articles of this treaty.

#### ARTICLE 13.

The nations and tribes of Indians, parties to this treaty, desire to exclude from their country the use of ardent spirits or other intoxicating liquor, and to prevent their people from drinking the same. Therefore it is provided, that any Indian belonging to said tribes who is guilty of bringing such liquor into the Indian country, or who drinks liquor, may have his or her proportion of the annuities withheld from him or her, for such time as the President may determine.

#### ARTICLE 14.

The aforesaid nations and tribes of Indians, west of the Rocky Mountains, parties to this treaty, do agree, in consideration of the provisions already made for them in existing treaties, to accept the guarantees of the peaceful occupation of their hunting-grounds, east of the Rocky Mountains, and of remuneration for depredations made by the other tribes, pledged to be secured to them in this treaty out of the annuities of said tribes, in full compensation for the concessions which they, in common with the said tribes, have made in this treaty.

The Indians east of the mountains, parties to this treaty, likewise recognize and accept the guarantees of this treaty, in full compensation for the injuries or depredations which have been, or may be committed by the aforesaid tribes, west of the Rocky Mountains.

#### ARTICLE 15.

The annuities of the aforesaid tribes shall not be taken to pay the debts of individuals.

#### ARTICLE 16.

This treaty shall be obligatory upon the aforesaid nations and tribes of Indians, parties hereto, from the date hereof, and upon the United States as soon as the same shall be ratified by the President and Senate.

In testimony whereof the said A. Cumming and Isaac I. Stevens, commissioners on the part of the United States, and the undersigned chiefs, headmen, and delegates of the aforesaid nations and tribes of Indians, parties to this treaty, have hereunto set their hands and seals at the place and on the day and year hereinbefore written.

A. Cumming. [L. S.]

Isaac I. Stevens [L. S.]

CuI. Stevens [LS.]

#### Piegans:

*Nee-ti-nee, or "the only chief," now called the Lame Bull, his x mark. [L. S.]*

*Mountain Chief, his x mark. [L. S.]*

*Low Horn, his x mark. [L. S.]*

*Little Gray Head, his x mark. [L. S.]*

*Little Dog, his x mark. [L. S.]*

*Big Snake, his x mark. [L. S.]*

*The Skunk, his x mark. [L. S.]*

*The Bad Head, his x mark. [L. S.]*

*Kitch-ee-pone-istah, his x mark. [L. S.]*

*Middle Sitter, his x mark. [L. S.]*

#### Bloods:

*Onis-tay-say-nah-que-im, his x mark. [L. S.]*

*The Father of All Children, his x mark. [L. S.]*

*The Bull's Back Fat, his x mark. [L. S.]*

*Heavy Shield, his x mark. [L. S.]*

*Nah-tose-onistah, his x mark. [L. S.]*

*The Calf Shirt, his x mark. [L. S.]*

#### Gros Ventres:,

*Bear's Shirt, his x mark. [L. S.]*

*Little Soldier, his x mark. [L. S.]*

*Star Robe, his x mark. [L. S.]*

*Sitting Squaw, his x mark. [L. S.]*

*Weasel Horse, his x mark. [L. S.]*

*The Rider, his x mark. [L. S.]*

*Eagle Chief, his x mark. [L. S.]*

*Heap of Bears, his x mark. [L. S.]*

#### Blackfeet:

*The Three Bulls, his x mark. [L. S.]*

*The Old Kootomais, his x mark. [L. S.]*

*Pow-ah-que, his x mark. [L. S.]*

*Chief Rabbit Runner, his x mark. [L. S.]*

Nez Percés:

*Spotted Eagle, his x mark. [L. S.]*

*Looking Glass, his x mark. [L. S.]*

*The Three Feathers, his x mark. [L. S.]*

*Eagle from the Light, his x mark. [L. S.]*

*The Lone Bird, his x mark. [L. S.]*

*Ip-shun-nee-wus, his x mark. [L. S.]*

*Jason, his x mark. [L. S.]*

*Wat-ti-wat-ti-we-hinck, his x mark. [L. S.]*

*White Bird, his x mark. [L. S.]*

*Stabbing Man, his x mark. [L. S.]*

*Jesse, his x mark. [L. S.]*

*Plenty Bears, his x mark. [L. S.]*

Flathead Nation:

*Victor, his x mark. [L. S.]*

*Alexander, his x mark. [L. S.]*

*Moses, his x mark. [L. S.]*

*Big Canoe, his x mark. [L. S.]*

*Ambrose, his x mark. [L. S.]*

*Kootle-cha, his x mark. [L. S.]*

*Michelle, his x mark. [L. S.]*

*Francis, his x mark. [L. S.]*

*Vincent, his x mark. [L. S.]*

*Andrew, his x mark. [L. S.]*

*Adolphe, his x mark. [L. S.]*

*Thunder, his x mark. [L. S.]*

Piegans:

*Running Rabbit, his x mark, [L. S.]*

*Chief Bear, his x mark. [L. S.]*

*The Little White Buffalo, his x mark. [L. S.]*

*The Big Straw, his x mark. [L. S.]*

Flathead:

*Bear Track, his x mark. [L. S.]*

*Little Michelle, his x mark. [L. S.]*

*Palchinah, his x mark. [L. S.]*

Bloods:

*The Feather, his x mark. [L. S.]*

*The White Eagle, his x mark. [L. S.]*

Executed in presence of—

*James Doty, secretary.*

*Alfred J. Vaughan, jr.*

*E. Alw. Hatch, agent for Blackfeet.*

*Thomas Adams, special agent Flathead Nation.*

*R. H. Lansdale, Indian agent Flathead Nation.*

*W. H. Tappan, sub-agent for the Nez Percés.*

Blackfoot interpreters:

*James Bird,*

*A. Culbertson,*

*Benj. Deroche,*

**Flat Head interpreters:**

*Benj. Kiser, his x mark,*

*Witness, James Doty,*

*Gustavus Sohon,*

**Nez Percé interpreters:**

*W. Craig,*

*Delaware Jim, his x mark,*

*Witness, James Doty,*

*A Cree Chief (Broken Arm,) his mark.*

*Witness, James Doty.*

*A. J. Hoeekeorsg,*

*James Croke,*

*E. S. Wilson,*

*A. C. Jackson,*

*Charles Shucette, his x mark.*

*Christ. P. Higgins,*

*A. H. Robie,*

*S. S. Ford, jr.*

## TREATY WITH THE CROWS, 1868

COMPILED AND EDITED BY CHARLES J. KAPPLER. WASHINGTON: GOVERNMENT  
PRINTING OFFICE, 1904.

May 7, 1868. | 15 Stats., 649. | Ratified, July 25, 1868. | Proclaimed, Aug. 12, 1868.

*Articles of a treaty made and concluded at Fort Laramie, Dakota Territory, on the seventh day of May, in the year of our Lord one thousand eight hundred and sixty-eight, by and between the undersigned commissioners on the part of the United States, and the undersigned chiefs and head-men of and representing the Crow Indians, they being duly authorized to act in the premises.*

### ARTICLE 1.

From this day forward peace between the parties to this treaty shall forever continue. The Government of the United States desires peace, and its honor is hereby pledged to keep it. The Indians desire peace and they hereby pledge their honor to maintain it. If bad men among the whites or among other people, subject to the authority of the United States, shall commit any wrong upon the person or property of the Indians, the United States will, upon proof made to the agent and forwarded to the Commissioner of Indian Affairs at Washington City, proceed at once to cause the offender to be arrested and punished according to the laws of the United States, and also reimburse the injured person for the loss sustained.

If bad men among the Indians shall commit a wrong or depredation upon the person or property of any one, white, black, or Indian, subject to the authority of the United States and at peace therewith, the Indians herein named solemnly agree that they will, on proof made to their agent and notice by him, deliver up the wrong-doer to the United States, to be tried and punished according to its laws; and in case they refuse willfully so to do the person injured shall be reimbursed for his loss from the annuities or other moneys due or to become due to them under this or other treaties made with the United States. And the President, on advising with the Commissioner of Indian Affairs, shall prescribe such rules and regulations for ascertaining damages under the provisions of this article as in his judgment may be proper. But no such damages shall be adjusted and paid until thoroughly examined and passed upon by the Commissioner of Indian Affairs, and no one sustaining loss while violating, or because of his violating, the provisions of this treaty or the laws of the United States shall be reimbursed therefore.

### ARTICLE 2.

The United States agrees that the following district of country, to wit: commencing where the 107th degree of longitude west of Greenwich crosses the south boundary of Montana Territory; thence north along said 107th

meridian to the mid-channel of the Yellowstone River; thence up said mid-channel of the Yellowstone to the point where it crosses the said southern boundary of Montana, being the 45th degree of north latitude; and thence east along said parallel of latitude to the place of beginning, shall be, and the same is, set apart for the absolute and undisturbed use and occupation of the Indians herein named, and for such other friendly tribes or individual Indians as from time to time they may be willing, with the consent of the United States, to admit amongst them; and the United States now solemnly agrees that no persons, except those herein designated and authorized so to do, and except such officers, agents, and employees of the Government as may be authorized to enter upon Indian reservations in discharge of duties enjoined by law, shall ever be permitted to pass over, settle upon, or reside in the territory described in this article for the use of said Indians, and henceforth they will, and do hereby, relinquish all title, claims, or rights in and to any portion of the territory of the United States, except such as is embraced within the limits aforesaid.

### ARTICLE 3.

The United States agrees, at its own proper expense, to construct on the south side of the Yellowstone, near Otter Creek, a warehouse or store-room for the use of the agent in storing goods belonging to the Indians, to cost not exceeding twenty-five hundred dollars; an agency-building for the residence of the agent, to cost not exceeding three thousand dollars; a residence for the physician, to cost not more than three thousand dollars; and five other buildings, for a carpenter, farmer, blacksmith, miller, and engineer, each to cost not exceeding two thousand dollars; also a school-house or mission-building, so soon as a sufficient number of children can be induced by the agent to attend school, which shall not cost exceeding twenty-five hundred dollars.

The United States agrees further to cause to be erected on said reservation, near the other buildings herein authorized, a good steam circular saw-mill, with a grist-mill and shingle-machine attached, the same to cost not exceeding eight thousand dollars.

### ARTICLE 4.

The Indians herein named agree, when the agency-house and other buildings shall be constructed on the reservation named, they will make said reservation their permanent home, and they will make no permanent settlement elsewhere, but they shall have the right to hunt on the unoccupied lands of the United States so

long as game may be found thereon, and as long as peace subsists among the whites and Indians on the borders of the hunting districts.

**ARTICLE 5.**

The United States agrees that the agent for said Indians shall in the future make his home at the agency-building; that he shall reside among them, and keep an office open at all times for the purpose of prompt and diligent inquiry into such matters of complaint, by and against the Indians, as may be presented for investigation under the provisions of their treaty stipulations, as also for the faithful discharge of other duties enjoined on him by law. In all cases of depredation on person or property, he shall cause the evidence to be taken in writing and forwarded, together with his finding, to the Commissioner of Indian Affairs, whose decision shall be binding on the parties to this treaty.

**ARTICLE 6.**

If any individual belonging to said tribes of Indians, or legally incorporated with them, being the head of a family, shall desire to commence farming, he shall have the privilege to select, in the presence and with the assistance of the agent then in charge, a tract of land within said reservation, not exceeding three hundred and twenty acres in extent, which tract, when so selected, certified, and recorded in the "land book" as herein directed, shall cease to be held in common, but the same may be occupied and held in the exclusive possession of the person selecting it, and of his family, so long as he or they may continue to cultivate it.

Any person over eighteen years of age, not being the head of a family, may in like manner select and cause to be certified to him or her, for purposes of cultivation, a quantity of land not exceeding eighty acres in extent, and thereupon be entitled to the exclusive possession of the same as above directed.

For each tract of land so selected a certificate, containing a description thereof and the name of the person selecting it, with a certificate endorsed thereon that the same has been recorded, shall be delivered to the party entitled to it by the agent, after the same shall have been recorded by him in a book to be kept in his office, subject to inspection, which said book shall be known as the "Crow land book."

The President may at any time order a survey of the reservation, and, when so surveyed, Congress shall provide for protecting the rights of settlers in their improvements, and may fix the character of the title held by each. The United States may pass such laws on the subject of alienation and descent of property as between Indians, and on all subjects connected with the government of the Indians on said reservations and the internal police thereof, as may be thought proper.

**ARTICLE 7.**

In order to insure the civilization of the tribe entering into this treaty, the necessity of education is admitted, especially by such of them as are, or may be, settled on said agricultural reservation; and they therefore pledge themselves to compel their children, male and female, between the ages of six and sixteen years, to attend school; and it is hereby made the duty of the agent for said Indians to see that this stipulation is strictly complied with; and the United States agrees that for every thirty children, between said ages, who can be induced or compelled to attend school, a house shall be provided, and a teacher, competent to teach the elementary branches of an English education, shall be furnished, who will reside among said Indians, and faithfully discharge his or her duties as a teacher. The provisions of this article to continue for twenty years.

**ARTICLE 8.**

When the head of a family or lodge shall have selected lands and received his certificate as above directed, and the agent shall be satisfied that he intends in good faith to commence cultivating the soil for a living, he shall be entitled to receive seed and agricultural implements for the first year in value one hundred dollars, and for each succeeding year he shall continue to farm, for a period of three years more, he shall be entitled to receive seed and implements as aforesaid in value twenty-five dollars per annum.

And it is further stipulated that such persons as commence farming shall receive instructions from the farmer herein provided for, and whenever more than one hundred persons shall enter upon the cultivation of the soil, a second blacksmith shall be provided, with such iron, steel, and other material as may be required.

**ARTICLE 9.**

In lieu of all sums of money or other annuities provided to be paid to the Indians herein named, under any and all treaties heretofore made with them, the United States agrees to deliver at the agency house, on the reservation herein provided for, on the first day of September of each year for thirty years, the following articles, to wit:

For each male person, over fourteen years of age, a suit of good substantial woolen clothing, consisting of coat, hat, pantaloons, flannel shirt, and a pair of woolen socks.

For each female, over twelve years of age, a flannel skirt, or the goods necessary to make it, a pair of woolen hose, twelve yards of calico, and twelve yards of cotton domestics.

For the boys and girls under the ages named, such flannel and cotton goods as may be needed to make each a suit as aforesaid, together with a pair of woollen hose for each.

And in order that the Commissioner of Indian Affairs may be able to estimate properly for the articles herein named, it shall be the duty of the agent, each year, to forward to him a full and exact census of the Indians, on which the estimate from year to year can be based.

And, in addition to the clothing herein named, the sum of ten dollars shall be annually appropriated for each Indian roaming, and twenty dollars for each Indian engaged in agriculture, for a period of ten years, to be used by the Secretary of the Interior in the purchase of such articles as, from time to time, the condition and necessities of the Indians may indicate to be proper. And if, at any time within the ten years, it shall appear that the amount of money needed for clothing, under this article, can be appropriated to better uses for the tribe herein named, Congress may, by law, change the appropriation to other purposes; but in no event shall the amount of this appropriation be withdrawn or discontinued for the period named.

And the President shall annually detail an officer of the Army to be present and attest the delivery of all the goods herein named to the Indians, and he shall inspect and report on the quantity and quality of the goods and the manner of their delivery; and it is expressly stipulated that each Indian over the age of four years, who shall have removed to and settled permanently upon said reservation, and complied with the stipulations of this treaty, shall be entitled to receive from the United States, for the period of four years after he shall have settled upon said reservation, one pound of meat and one pound of flour per day, provided the Indians cannot furnish their own subsistence at an earlier date. And it is further stipulated that the United States will furnish and deliver to each lodge of Indians, or family of persons legally incorporated with them, who shall remove to the reservation herein described, and commence farming, one good American cow and one good, well-broken pair of American oxen, within sixty days after such lodge or family shall have so settled upon said reservation.

#### ARTICLE 10.

The United States hereby agrees to furnish annually to the Indians the physician, teachers, carpenter, miller, engineer, farmer, and blacksmiths as herein contemplated, and that such appropriations shall be made from time to time, on the estimates of the Secretary of the Interior, as will be sufficient to employ such persons.

#### ARTICLE 11.

No treaty for the cession of any portion of the reservation herein described, which may be held in common, shall be of any force or validity as against the said Indians unless executed and signed by, at least, a majority of all the adult male Indians occupying or

interested in the same, and no cession by the tribe shall be understood or construed in such a manner as to deprive, without his consent, any individual member of the tribe of his right to any tract of land selected by him as provided in Article 6 of this treaty.

#### ARTICLE 12.

It is agreed that the sum of five hundred dollars annually, for three years from the date when they commence to cultivate a farm, shall be expended in presents to the ten persons of said tribe who, in the judgment of the agent, may grow the most valuable crops for the respective year.

*W. T. Sherman,*  
*Lieutenant-General.*

*Wm. S. Harney,*  
*Brevet Major-General and Peace Commissioner.*

*Alfred H. Terry,*  
*Brevet Major-General.*

*C. C. Augur,*  
*Brevet Major-General.*

*John B. Sanborn.*

*S. F. Tappan.*

*Ashton S. H. White, Secretary.*

*Che-ra-pee-ish-ka-te, Pretty Bull, his x mark. [SEAL.]*

*Chat-sta-he, Wolf Bow, his x mark. [SEAL.]*

*Ah-be-che-se, Mountain Tail, his x mark. [SEAL.]*

*Kam-ne-but-sa, Black Foot, his x mark. [SEAL.]*

*De-sal-ze-cho-se, White Horse, his x mark. [SEAL.]*

*Chin-ka-she-arache, Poor Elk, his x mark. [SEAL.]*

*E-sa-woor, Shot in the Jaw, his x mark. [SEAL.]*

*E-sha-chose, White Forehead, his x mark. [SEAL.]*

*—Roo-ka, Pounded Meat, his x mark. [SEAL.]*

*De-ka-ke-up-se, Bird in the Neck, his x mark. [SEAL.]*

*Me-na-che, The Swan, his x mark. [SEAL.]*

*Attest:*

*George B. Wills, phonographer.*

*John D. Howland.*

*Alex. Gardner.*

*David Knox.*

*Chas. Freeman.*

*Jas. C. O'Connor.*

## TREATY WITH THE SHOSHONI—NORTHWESTERN BANDS, 1863.

COMPILED AND EDITED BY CHARLES J. KAPPLER. WASHINGTON: GOVERNMENT PRINTING OFFICE, 1904.

JULY 30, 1863. | 13 STATS., 663. | RATIFIED MAR. 7, 1864 | PROCLAIMED JAN. 17, 1865.

Articles of agreement made at Box Elder, in Utah Territory, this thirtieth day of July, A. D. one thousand eight hundred and sixty-three, by and between the United States of America, represented by Brigadier-General P. Edward Connor, commanding the military district of Utah, and James Duane Doty, commissioner, and the northwestern bands of the Shoshonee Indians, represented by their chiefs and warriors:

### ARTICLE 1.

It is agreed that friendly and amicable relations shall be re-established between the bands of the Shoshonee Nation, parties hereto, and the United States, and it is declared that a firm and perpetual peace shall be henceforth maintained between the said bands and the United States.

### ARTICLE 2.

The treaty concluded at Fort Bridger on the 2nd day of July, 1863; between the United States and the Shoshonee Nation, being read and fully interpreted and explained to the said chiefs and warriors, they do hereby give their full and free assent to all of the provisions of said treaty, and the same are hereby adopted as a part of this agreement, and the same shall be binding upon the parties hereto.

### ARTICLE 3.

In consideration of the stipulations in the preceding articles, the United States agree to increase the annuity to the Shoshonee Nation five thousand dollars, to be paid in the manner provided in said treaty. And the said northwestern bands hereby acknowledge to have received of the United States, at the signing of these articles, provisions and goods to the amount of two thousand dollars, to relieve their immediate necessities, the said bands having been reduced by the war to a state of utter destitution.

### ARTICLE 4.

The country claimed by Pokatello, for himself and his people, is bounded on the west by Raft River and on the east by the Porteneuf Mountains.

### ARTICLE 5.

Nothing herein contained shall be construed or taken to admit any other or greater title or interest in the lands embraced within the territories described in said treaty in said tribes or bands of Indians than existed in them upon the acquisition of said territories from Mexico by the laws thereof.

Done at Box Elder, this thirtieth day of July, A. D. 1863.

*James Duane Doty,*  
*Governor and acting superintendent of Indian affairs in Utah Territory.*

*P. Edw. Connor,*  
*Brigadier-General U. S. Volunteers, commanding District of Utah.*

*Pokatello, his x mark, chief.*

*Toomontso, his x mark, chief.*

*Sanpitz, his x mark, chief.*

*Tosowitz, his x mark, chief.*

*Yahnoway, his x mark, chief.*

*Weerahsoop, his x mark, chief.*

*Pahragoosahd, his x mark, chief.*

*Tahkwetoonah, his x mark, chief.*

*Omashee, (John Pokatelloaposs brother,) his x mark, chief.*

Witnesses:

*Robt. Pollock, colonel Third Infantry, C. V.*

*M. G. Lewis, captain Third Infantry, C. V.*

*S. E. Jocelyn, first lieutenant Third Infantry, C. V.*

*Jos. A. Gebone, Indian interpreter.*

*John Barnard, jr., his x mark, special interpreter.*

*Willis H. Boothe, special interpreter.*

*Horace Wheat*

## **TREATY WITH THE FLATHEADS, ETC., 1855.**

**JULY 16, 1855. | 12 STATS., 975. | RATIFIED MAR. 8, 1859. | PROCLAIMED APR. 18, 1859.**

Articles of agreement and convention made and concluded at the treaty-ground at Hell Gate, in the Bitter Root Valley, this sixteenth day of July, in the year one thousand eight hundred and fifty-five, by and between Isaac I. Stevens, governor and superintendent of Indian affairs for the Territory of Washington, on the part of the United States, and the undersigned chiefs, head-men, and delegates of the confederated tribes of the Flathead, Kootenay, and Upper Pend d' Oreilles Indians, on behalf of and acting for said confederated tribes, and being duly authorized thereto by them. It being understood and agreed that the said confederated tribes do hereby constitute a nation, under the name of the Flathead Nation, with Victor, the head chief of the Flathead tribe, as the head chief of the said nation, and that the several chiefs, head-men, and delegates, whose names are signed to this treaty, do hereby, in behalf of their respective tribes, recognise Victor as said head chief.

### **ARTICLE 1.**

The said confederated tribe of Indians hereby cede, relinquish, and convey to the United States all their right, title, and interest in and to the country occupied or claimed by them, bounded and described as follows, to wit: Commencing on the main ridge of the Rocky Mountains at the forty-ninth (49th) parallel of latitude, thence westwardly on that parallel to the divide between the Flat-bow or Kootenay River and Clarke's Fork, thence southerly and southeasterly along said divide to the one hundred and fifteenth degree of longitude, (115°,) thence in a southwesterly direction to the divide between the sources of the St. Regis Borgia and the Coeur d' Alene Rivers, thence southeasterly and southerly along the main ridge of the Bitter Root Mountains to the divide between the head-waters of the Koos-koos-kee River and of the southwestern fork of the Bitter Root River, thence easterly along the divide separating the waters of the several tributaries of the Bitter Root River from the waters flowing into the Salmon and Snake Rivers to the main ridge of the Rocky Mountains, and thence northerly along said main ridge to the place of beginning.

### **ARTICLE 2.**

There is, however, reserved from the lands above ceded, for the use and occupation of the said confederated tribes, and as a general Indian reservation, upon which may be placed other friendly tribes and bands of Indians of the Territory of Washington who may agree to be consolidated with the tribes parties to this treaty, under the common designation of the Flathead Nation, with Victor, head chief of the Flathead tribe, as the head chief of the nation, the tract of land included within the following boundaries, to wit:

Commencing at the source of the main branch of the Jocko River; thence along the divide separating the waters flowing into the Bitter Root River from those flowing into the Jocko to a point on Clarke's Fork between the Camash and Horse Prairies; thence northerly to, and along the divide bounding on the west the Flathead River, to a point due west from the point half way in latitude between the northern and southern extremities of the Flathead Lake; thence on a due east course to the divide whence the Crow, the Prune, the Soni-el-em and the Jocko Rivers take their rise, and thence southerly along said divide to the place of beginning.

All which tract shall be set apart, and, so far as necessary, surveyed and marked out for the exclusive use and benefit of said confederated tribes as an Indian reservation. Nor shall any white man, excepting those in the employment of the Indian department, be permitted to reside upon the said reservation without permission of the confederated tribes, and the superintendent and agent. And the said confederated tribes agree to remove to and settle upon the same within one year after the ratification of this treaty. In the meantime it shall be lawful for them to reside upon any ground not in the actual claim and occupation of citizens of the United States, and upon any ground claimed or occupied, if with the permission of the owner or claimant.

Guaranteeing however the right to all citizens of the United States to enter upon and occupy as settlers any lands not actually occupied and cultivated by said Indians at this time, and not included in the reservation above named. And provided, That any substantial improvements heretofore made by any Indian, such as fields enclosed and cultivated and houses erected upon the lands hereby ceded, and which he may be compelled to abandon in consequence of this treaty, shall be valued under the direction of the President of the United States, and payment made therefore in money, or improvements of an equal value be made for said Indian upon the reservation; and no Indian will be required to abandon the improvements aforesaid, now occupied by him, until their value in money or improvements of an equal value shall be furnished him as aforesaid.

### **ARTICLE 3.**

And provided, that if necessary for the public convenience roads may be run through the said reservation; and, on the other hand, the right of way with free access from the same to the nearest public highway is secured to them, as also the right in common with citizens of the United States to travel upon all public highways.

The exclusive right of taking fish in all the streams running through or bordering said reservation is further secured to said Indians; as also the right of taking fish at

all usual and accustomed places, in common with citizens of the Territory, and of erecting temporary buildings for curing; together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land.

#### **ARTICLE 4.**

In consideration of the above cession, the United States agree to pay to the said confederated tribes of Indians, in addition to the goods and provisions distributed to them at the time of signing this treaty the sum of one hundred and twenty thousand dollars, in the following manner—that is to say: For the first year after the ratification hereof, thirty-six thousand dollars, to be expended under the direction of the President, in providing for their removal to the reservation, breaking up and fencing farms, building houses for them, and for such other objects as he may deem necessary. For the next four years, six thousand dollars each year; for the next five years, five thousand dollars each year; for the next five years, four thousand dollars each year; and for the next five years, three thousand dollars each year.

All which said sums of money shall be applied to the use and benefit of the said Indians, under the direction of the President of the United States, who may from time to time determine, at his discretion, upon what beneficial objects to expend the same for them, and the superintendent of Indian affairs, or other proper officer, shall each year inform the President of the wishes of the Indians in relation thereto.

#### **ARTICLE 5.**

The United States further agree to establish at suitable points within said reservation, within one year after the ratification hereof, an agricultural and industrial school, erecting the necessary buildings, keeping the same in repair, and providing it with furniture, books, and stationery, to be located at the agency, and to be free to the children of the said tribes, and to employ a suitable instructor or instructors. To furnish one blacksmith shop, to which shall be attached a tin and gun shop; one carpenter's shop; one wagon and plough-maker's shop; and to keep the same in repair, and furnished with the necessary tools. To employ two farmers, one blacksmith, one tinner, one gunsmith, one carpenter, one wagon and plough maker, for the instruction of the Indians in trades, and to assist them in the same. To erect one saw-mill and one flouring-mill, keeping the same in repair and furnished with the necessary tools and fixtures, and to employ two millers. To erect a hospital, keeping the same in repair, and provided with the necessary medicines and furniture, and to employ a physician; and to erect, keep in repair, and provide the necessary furniture the buildings required for the accommodation of said employees. The said buildings and establishments to be maintained and kept in repair as aforesaid, and the employees to be kept in service for the period of twenty years.

And in view of the fact that the head chiefs of the said confederated tribes of Indians are expected and will be called upon to perform many services of a public character, occupying much of their time, the United States further agree to pay to each of the Flathead, Kootenay, and Upper Pend d'Oreilles tribes five hundred dollars per year, for the term of twenty years after the ratification hereof, as a salary for such persons as the said confederated tribes may select to be their head chiefs, and to build for them at suitable points on the reservation a comfortable house, and properly furnish the same, and to plough and fence for each of them ten acres of land. The salary to be paid to, and the said houses to be occupied by, such head chiefs so long as they may be elected to that position by their tribes, and no longer. And all the expenditures and expenses contemplated in this article of this treaty shall be defrayed by the United States, and shall not be deducted from the annuities agreed to be paid to said tribes. Nor shall the cost of transporting the goods for the annuity payments be a charge upon the annuities, but shall be defrayed by the United States.

#### **ARTICLE 6.**

The President may from time to time, at his discretion, cause the whole, or such portion of such reservation as he may think proper, to be surveyed into lots, and assign the same to such individuals or families of the said confederated tribes as are willing to avail themselves of the privilege, and will locate on the same as a permanent home, on the same terms and subject to the same regulations as are provided in the sixth article of the treaty with the Omahas, so far as the same may be applicable.

#### **ARTICLE 7.**

The annuities of the aforesaid confederated tribes of Indians shall not be taken to pay the debts of individuals.

#### **ARTICLE 8.**

The aforesaid confederated tribes of Indians acknowledge their dependence upon the Government of the United States, and promise to be friendly with all citizens thereof, and pledge themselves to commit no depredations upon the property of such citizens. And should any one or more of them violate this pledge, and the fact be satisfactorily proved before the agent, the property taken shall be returned, or, in default thereof, or if injured or destroyed, compensation may be made by the Government out of the annuities. Nor will they make war on any other tribe except in self-defence, but will submit all matters of difference between them and other Indians to the Government of the United States, or its agent, for decision, and abide thereby. And if any of the said Indians commit any depredations on any other Indians within the jurisdiction of the United States, the same rule shall prevail as that prescribed in this article, in case of depredations against citizens. And the said tribes agree not to shelter or conceal offenders against

the laws of the United States, but to deliver them up to the authorities for trial.

#### **ARTICLE 9.**

The said confederated tribes desire to exclude from their reservation the use of ardent spirits, and to prevent their people from drinking the same; and therefore it is provided that any Indian belonging to said confederated tribes of Indians who is guilty of bringing liquor into said reservation, or who drinks liquor, may have his or her proportion of the annuities withheld from him or her for such time as the President may determine.

#### **ARTICLE 10.**

The United States further agree to guaranty the exclusive use of the reservation provided for in this treaty, as against any claims which may be urged by the Hudson Bay Company under the provisions of the treaty between the United States and Great Britain of the fifteenth of June, eighteen hundred and forty-six, in consequence of the occupation of a trading-post on the Pru-in River by the servants of that company.

#### **ARTICLE 11.**

It is, moreover, provided that the Bitter Root Valley, above the Loo-lo Fork, shall be carefully surveyed and examined, and if it shall prove, in the judgment of the President, to be better adapted to the wants of the Flathead tribe than the general reservation provided for in this treaty, then such portions of it as may be necessary shall be set apart as a separate reservation for the said tribe. No portion of the Bitter Root Valley, above the Loo-lo Fork, shall be opened to settlement until such examination is had and the decision of the President made known.

#### **ARTICLE 12.**

This treaty shall be obligatory upon the contracting parties as soon as the same shall be ratified by the President and Senate of the United States.

In testimony whereof, the said Isaac I. Stevens, governor and superintendent of Indian affairs for the Territory of Washington, and the undersigned head chiefs, chiefs and principal men of the Flathead, Kootenay, and Upper Pend d'Oreilles tribes of Indians, have hereunto set their

hands and seals, at the place and on the day and year hereinbefore written.

Isaac I. Stevens, [L. S.]

Governor and Superintendent Indian Affairs W. T.

*Victor, head chief of the Flathead Nation, his x mark. [L. S.]*

*Alexander, chief of the Upper Pend d'Oreilles, his x mark. [L. S.]*

*Michelle, chief of the Kootenays, his x mark. [L. S.]*

*Ambrose, his x mark. [L. S.]*

*Pah-soh, his x mark. [L. S.]*

*Bear Track, his x mark. [L. S.]*

*Adolphe, his x mark. [L. S.]*

*Thunder, his x mark. [L. S.]*

*Big Canoe, his x mark. [L. S.]*

*Kootel Chah, his x mark. [L. S.]*

*Paul, his x mark. [L. S.]*

*Andrew, his x mark. [L. S.]*

*Michelle, his x mark. [L. S.]*

*Battiste, his x mark. [L. S.]*

*Kootenays.*

*Gun Flint, his x mark. [L. S.]*

*Little Michelle, his x mark. [L. S.]*

*Paul See, his x mark. [L. S.]*

*Moses, his x mark. [L. S.]*

*James Doty, secretary.*

*R. H. Lansdale, Indian Agent.*

*W. H. Tappan, sub Indian Agent.*

*Henry R. Crosire,*

*Gustavus Sohon, Flathead Interpreter.*

*A. J. Hoecken, sp. mis.*

*William Craig.*

## TREATY OF FORT LARAMIE WITH SIOUX, ETC., 1851.

COMPILED AND EDITED BY CHARLES J. KAPPLER. WASHINGTON : GOVERNMENT  
PRINTING OFFICE, 1904.

Sept. 17, 1851. | 11 Stats., p. 749.

Articles of a treaty made and concluded at Fort Laramie, in the Indian Territory, between D. D. Mitchell, superintendent of Indian affairs, and Thomas Fitzpatrick, Indian agent, commissioners specially appointed and authorized by the President of the United States, of the first part, and the chiefs, headmen, and braves of the following Indian nations, residing south of the Missouri River, east of the Rocky Mountains, and north of the lines of Texas and New Mexico, viz, the Sioux or Dahcotahs, Cheyennes, Arrapahoes, Crows. Assinaboines, Gros-Ventre Mandans, and Arrickaras, parties of the second part, on the seventeenth day of September, A. D. one thousand eight hundred and fifty-one.<sup>a</sup>

### ARTICLE 1.

The aforesaid nations, parties to this treaty. having assembled for the purpose of establishing and confirming peaceful relations amongst themselves, do hereby covenant and agree to abstain in future from all hostilities whatever against each other, to maintain good faith and friendship in all their mutual intercourse, and to make an effective and lasting peace.

### ARTICLE 2.

The aforesaid nations do hereby recognize the right of the United States Government to establish roads, military and other posts, within their respective territories.

### ARTICLE 3.

In consideration of the rights and privileges acknowledged in the preceding article, the United States bind themselves to protect the aforesaid Indian nations against the commission of all depredations by the people of the said United States, after the ratification of this treaty.

### ARTICLE 4.

The aforesaid Indian nations do hereby agree and bind themselves to make restitution or satisfaction for any wrongs committed, after the ratification of this treaty, by any band or individual of their people, on the people of the United States, whilst lawfully residing in or passing through their respective territories.

### ARTICLE 5.

The aforesaid Indian nations do hereby recognize and acknowledge the following tracts of country, included within the metes and boundaries hereinafter designated, as their respective territories, viz:

The territory of the Sioux or Dahcotah Nation, commencing the mouth of the White Earth River, on the Missouri River: thence in a southwesterly direction to the forks of the Platte River: thence up the north fork of the Platte River to a point known as the Red Butte, or where the road leaves the river; thence along the range of mountains known as the Black Hills, to the headwaters of Heart River; thence down Heart River to its mouth; and thence down the Missouri River to the place of beginning.

The territory of the Gros Ventre, Mandans, and Arrickaras Nations, commencing at the mouth of Heart River; thence up the Missouri River to the mouth of the Yellowstone River; thence up the Yellowstone River to the mouth of Powder River in a southeasterly direction, to the head-waters of the Little Missouri River; thence along the Black Hills to the head of Heart River, and thence down Heart River to the place of beginning.

The territory of the Assinaboin Nation, commencing at the mouth of Yellowstone River; thence up the Missouri River to the mouth of the Muscle-shell River; thence from the mouth of the Muscle-shell River in a southeasterly direction until it strikes the head-waters of

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**<sup>a</sup>This treaty as signed was ratified by the Senate with an amendment changing the annuity in Article 7 from fifty to ten years, subject to acceptance by the tribes. Assent of all tribes except the Crows was procured (see Upper Platte C., 570, 1853, Indian Office) and in subsequent agreements this treaty has been recognized as in force (see post p. 776).**

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Big Dry Creek; thence down that creek to where it empties into the Yellowstone River, nearly opposite the mouth of Powder River, and thence down the Yellowstone River to the place of beginning.

The territory of the Blackfoot Nation, commencing at the mouth of Muscle-shell River; thence up the Missouri River to its source; thence along the main range of the Rocky Mountains, in a southerly direction, to the headwaters of the northern source of the Yellowstone River; thence down the Yellowstone River to the mouth of Twenty-five Yard Creek; thence across to the headwaters of the Muscle-shell River, and thence down the Muscle-shell River to the place of beginning.

The territory of the Crow Nation, commencing at the mouth of Powder River on the Yellowstone; thence up Powder River to its source; thence along the main range of the Black Hills and Wind River Mountains to the

head-waters of the Yellowstone River; thence down the Yellowstone River to the mouth of Twenty-five Yard Creek; thence to the head waters of the Muscle-shell River; thence down the Muscle-shell River to its mouth; thence to the head-waters of Big Dry Creek, and thence to its mouth.

The territory of the Cheyennes and Arrapahoes, commencing at the Red Butte, or the place where the road leaves the north fork of the Platte River; thence up the north fork of the Platte River to its source; thence along the main range of the Rocky Mountains to the head-waters of the Arkansas River; thence down the Arkansas River to the crossing of the Santa Fé road; thence in a northwesterly direction to the forks of the Platte River, and thence up the Platte River to the place of beginning.

It is, however, understood that, in making this recognition and acknowledgement, the aforesaid Indian nations do not hereby abandon or prejudice any rights or claims they may have to other lands; and further, that they do not surrender the privilege of hunting, fishing, or passing over any of the tracts of country heretofore described.

#### ARTICLE 6.

The parties to the second part of this treaty having selected principals or head-chiefs for their respective nations, through whom all national business will hereafter be conducted, do hereby bind themselves to sustain said chiefs and their successors during good behavior.

#### ARTICLE 7.

In consideration of the treaty stipulations, and for the damages which have or may occur by reason thereof to the Indian nations, parties hereto, and for their maintenance and the improvement of their moral and social customs, the United States bind themselves to deliver to the said Indian nations the sum of fifty thousand dollars per annum for the term of ten years, with the right to continue the same at the discretion of the President of the United States for a period not exceeding five years thereafter, in provisions, merchandise, domestic animals, and agricultural implements, in such proportions as may be deemed best adapted to their condition by the President of the United States, to be distributed in proportion to the population of the aforesaid Indian nations.

#### ARTICLE 8.

It is understood and agreed that should any of the Indian nations, parties to this treaty, violate any of the provisions thereof, the United States may withhold the whole or apportion of the annuities mentioned in the

preceding article from the nation so offending, until, in the opinion of the President of the United States, proper satisfaction shall have been made.

In testimony whereof the said D. D. Mitchell and Thomas Fitzpatrick commissioners as aforesaid, and the chiefs, headmen, and braves, parties hereto, have set their hands and affixed their marks, on the day and at the place first above written.

*D. D. Mitchell*

*Thomas Fitzpatrick*

*Commissioners.*

#### **Sioux:**

*Mah-toe-wha-you-whey, his x mark.*

*Mah-kah-toe-zah-zah, his x mark.*

*Bel-o-ton-kah-tan-ga, his x mark.*

*Nah-ka-pah-gi-gi, his x mark.*

*Mak-toe-sah-bi-chis, his x mark.*

*Meh-wha-tah-ni-hans-kah, his x mark.*

#### **Cheyennes:**

*Wah-ha-nis-satta, his x mark.*

*Voist-ti-toe-vetz, his x mark.*

*Nahk-ko-me-ien, his x mark.*

*Koh-kah-y-wh-cum-est, his x mark.*

#### **Arrapahoes:**

*Bè-ah-té-a-qui-sah, his x mark.*

*Neb-ni-bah-seh-it, his x mark.*

*Beh-kah-jay-beth-sah-es, his x mark.*

#### **Crows:**

*Arra-tu-ri-sash, his x mark.*

*Doh-chepit-seh-chi-es, his x mark.*

#### **Assinaboines:**

*Mah-toe-wit-ko, his x mark.*

*Toe-tah-ki-eh-nan, his x mark.*

*Mandans and Gros Ventres:*

*Nochk-pit-shi-toe-pish, his x mark.*

*She-oh-mant-ho, his x mark.*

#### **Arickarees:**

*Koun-hei-ti-shan, his x mark.*

*Bi-at-ah-tah-wetch, his x mark.*

**In the presence of—**

*A. B. Chambers, secretary.*

*S. Cooper, colonel, U. S. Army.*

*R. H. Chilton, captain, First Drags.*

*Thomas Duncan, captain, Mounted Riflemen.*

*Thos. G. Rhett, brevet captain R. M. R.*

*W. L. Elliott, first lieutenant R. M. R.*

*C. Campbell, interpreter for Sioux.*

*John S. Smith, interpreter for Cheyennes.*

*Robert Meldrum, interpreter for the Crows.*

*H. Culbertson, interpreter for Assiniboines and Gros Ventres.*

*Francois L'Etalie, interpreter for Arick areas.*

*John Pizelle, interpreter for the Arrapahoes.*

*B. Gratz Brown.*

*Robert Campbell.*

*Edmond F. Chouteau.*

**TREATY WITH THE SHOSHONI—NORTHWESTERN BANDS, 1863.**  
**COMPILED AND EDITED BY CHARLES J. KAPPLER. WASHINGTON : GOVERNMENT**  
**PRINTING OFFICE, 1904**

**July 30, 1863. | 13 Stats., 663. | Ratified Mar. 7, 1864 | Proclaimed Jan. 17, 1865.**

Articles of agreement made at Box Elder, in Utah Territory, this thirtieth day of July, A. D. one thousand eight hundred and sixty-three, by and between the United States of America, represented by Brigadier-General P. Edward Connor, commanding the military district of Utah, and James Duane Doty, commissioner, and the northwestern bands of the Shoshonee Indians, represented by their chiefs and warriors:

**ARTICLE 1.**

It is agreed that friendly and amicable relations shall be re-established between the bands of the Shoshonee Nation, parties hereto, and the United States, and it is declared that a firm and perpetual peace shall be henceforth maintained between the said bands and the United States.

**ARTICLE 2.**

The treaty concluded at Fort Bridger on the 2nd day of July, 1863; between the United States and the Shoshonee Nation, being read and fully interpreted and explained to the said chiefs and warriors, they do hereby give their full and free assent to all of the provisions of said treaty, and the same are hereby adopted as a part of this agreement, and the same shall be binding upon the parties hereto.

**ARTICLE 3.**

In consideration of the stipulations in the preceding articles, the United States agree to increase the annuity to the Shoshonee Nation five thousand dollars, to be paid in the manner provided in said treaty. And the said northwestern bands hereby acknowledge to have received of the United States, at the signing of these articles, provisions and goods to the amount of two thousand dollars, to relieve their immediate necessities, the said bands having been reduced by the war to a state of utter destitution.

**ARTICLE 4.**

The country claimed by Pokatello, for himself and his people, is bounded on the west by Raft River and on the east by the Porteneuf Mountains.

**ARTICLE 5.**

Nothing herein contained shall be construed or taken to admit any other or greater title or interest in the lands embraced within the territories described in said treaty in said tribes or bands of Indians than existed in them upon the acquisition of said territories from Mexico by the laws thereof.

Done at Box Elder, this thirtieth day of July, A. D. 1863.

*James Duane Doty,*  
*Governor and acting superintendent of Indian*  
*affairs in Utah Territory.*

*P. Edw. Connor,*  
*Brigadier-General U. S. Volunteers, commanding*  
*District of Utah.*

*Pokatello, his x mark, chief.*

*Toomontso, his x mark, chief.*

*Sanpitz, his x mark, chief.*

*Tosowitz, his x mark, chief.*

*Yahnoway, his x mark, chief.*

*Weerahsoop, his x mark, chief.*

*Pahragoosahd, his x mark, chief.*

*Tahkwetoonah, his x mark, chief.*

*Omashee, (John Pokatelloaposs brother,) his x mark,*  
*chief.*

*Witnesses:*

*Robt. Pollock, colonel Third Infantry, C. V.*

*M. G. Lewis, captain Third Infantry, C. V.*

*S. E. Jocelyn, first lieutenant Third Infantry, C. V.*

*Jos. A. Gebone, Indian interpreter.*

*John Barnard, jr., his x mark, special interpreter.*

*Willis H. Boothe, special interpreter.*

*Horace Wheat.*

## PALEONTOLOGICAL RESOURCE MANAGEMENT

### .01 Purpose

This Manual Section provides uniform policy and direction for the Bureau of Land Management's Paleontological Resource Management Program. This Manual Section is supplemented by Paleontological Resources Handbook 8270-1 (USDI-BLM 1998a). The Handbook contains detailed procedures and standards for implementing this Manual Section.

### .02 Objectives

The overall objective of BLM's Paleontological Resource Management Program is to provide a consistent and comprehensive approach in all aspects relating to the management of paleontological resources including identification, evaluation, protection and use. The specific objectives of this program are to:

- A. Locate, evaluate, manage and protect, where appropriate, paleontological resources on the public lands.
- B. Facilitate the appropriate scientific, educational, and recreational uses of paleontological resources, such as research and interpretation.
- C. Ensure that proposed land uses, initiated or authorized by BLM, do not inadvertently damage or destroy important paleontological resources on public lands.
- D. Foster public awareness and appreciation of our Nation's rich paleontological heritage.

### .03 Authority

BLM manages paleontological resources principally under the following authorities:

- A. Federal Land Policy and Management Act of 1976 (P.L. 94-579) requires that the public lands be managed in a manner that protects the ". . . quality of scientific . . ." and other values. The Act also requires the public lands to be inventoried and provides that permits may be required for the use, occupancy and development of the public lands.
- B. National Environmental Policy Act of 1969 (P.L. 91-190) requires that ". . . important historic, cultural and natural aspects of our national heritage . . ." be protected, and that ". . . a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences . . . in planning and decision making. . ." be followed.
- C. Title 43 C FR, Subpart 8365 addresses the collection of invertebrate fossils and, by administrative extension, fossil plants.

D. Title 43 CFR, Subpart 3622 addresses the free use collection of petrified wood as a mineral material for non-commercial purposes.

E. Title 43 CFR Subpart 3621 addresses collection of petrified wood for specimens exceeding 250 pounds in weight.

F. Title 43 CFR, Subpart 3610 addresses the sale of petrified wood as a mineral material for commercial purposes.

G. Title 43 CFR, Subparts 3802 and 3809 address protection of paleontological resources from operations authorized under the mining laws.

H. Title 43 CFR, Subpart 8200 addresses procedures and practices for the management of lands that have outstanding natural history values, such as fossils, which are of scientific interest.

I. Title 43 CFR, Subpart 1610.7-2 addresses the establishment of Areas of Critical Environmental Concern for the management and protection of significant natural resources, such as paleontological localities.

J Title 43 CFR Subpart 8364 addresses the use of closure or restriction of public lands to protect resources. Such closures or restrictions may be used to protect important fossil localities.

K. Title 43 CFR Subpart 8365.1-5 addresses the willful disturbance, removal and destruction of scientific resources or natural objects and 8360.0-7 identifies the penalties for such violations.

L. Title 36 CFR, Subpart 62 addresses procedures to identify, designate and recognize National Natural Landmarks, which include fossil areas.

M. 18 USC Section 641 addresses the unauthorized collection of fossils as a type of Government property.

N. Secretarial Order 3104 grants to BLM the authority to issue paleontological resource use permits for lands under its jurisdiction.

O. Onshore Oil and Gas Order No. 1 and 43 CFR Title 3162 provide for the protection of natural resources and other environmental concerns and can be used to protect paleontological resources where appropriate.

P. Offer to Lease and Lease for Oil and Gas Form 3100-11 provides for inventories and other short term studies to protect objects of scientific interest, such as significant fossil occurrences, and requires that operations conducted under oil and gas leases minimize adverse impacts to natural and cultural resources.

Q. Federal Cave Resources Protection Act of 1988 (P.L. 100-691) and Title 43 CFR Subpart 37 address

protection of significant caves and cave resources, including paleontological resources.

#### **.04 Responsibility**

A. The Director, through the Assistant Director, Renewable Resources and Planning, and the Group Manager, Cultural Heritage, Wilderness, Special Areas and Paleontology is responsible for overall direction, leadership and coordination of BLM's paleontology program. This is accomplished through the development of program policies, strategies, procedures and directives, and in coordination with other Headquarters Groups as appropriate. This responsibility also includes coordination with other Federal agencies and Departments at the National Headquarters level.

B. State Directors, within their respective geographical jurisdictions, are responsible for the implementation of Bureau policies respecting paleontological resources, and for monitoring and evaluating the effectiveness of the paleontology program within their State.

C. Field Office Managers are responsible for the local management and oversight of paleontological resources within their geographical jurisdictions by ensuring that Bureau policies are implemented and coordinated, and that established program technical standards are met.

D. Regional Paleontologists provide professional expertise in paleontology. They serve as program coordinators for all States in their respective regions, and as the program interface between field offices and the Washington Office. In some cases, the Regional Paleontologist also serves as the State Office Paleontologist.

E. Paleontology Program Contacts are responsible for working and coordinating with BLM Regional Paleontologists to assure implementation of paleontology program policies, identification and resolution of program needs, and to carry out other day-to-day activities associated with the management of paleontological resources. BLM State Offices and Field Offices shall identify such a paleontology program contact from their staff. While the Cultural Heritage Program is responsible for the providing base funding for paleontology, such office contacts may be selected from any disciplinary background, but should be chosen for their technical background in a related discipline, e.g. geology, biology, botany, archaeology, paleontological training, availability and their personal interest in supporting the goals of the paleontology program.

F. Other BLM staff are responsible within their normal duties for helping to ensure that the Bureau's goals for the management and protection of paleontological resources are met.

#### **.05 References**

A. Departmental Manual 411 DM 1-3, Policies and Standards for Managing Museum Collections, 1997.

B. Departmental Manual 516 DM, National Environmental Policy Act of 1969.

C. 44 L.D. 325, August 6, 1915, affirmed that fossils are not minerals within the meaning of the mining laws of the United States and are not locatable under such laws.

#### **.06 Policy**

A. The paleontological resources found on the public lands are recognized by the BLM as constituting a fragile and nonrenewable scientific record of the history of life on earth, and so represent an important and critical component of America's natural heritage. BLM will exercise stewardship of these resources as a part of its public land management responsibility. In meeting this responsibility, it shall be BLM's policy to:

1. Actively work with other Federal, State and Local Government Agencies, professional organizations, private landowners, educational institutions and other interested parties to enhance and further the Bureau's and the American public's needs and objectives for paleontological resources.
2. Consider paleontological resource management a distinct BLM program, to be given full and equal consideration in all its land use planning and decision making actions.
3. Maintain a staff of professional paleontologists to provide BLM decision makers with the most current and scientifically sound paleontological resource data and advice.
4. Mitigate adverse impacts to paleontological resources as necessary.
5. Facilitate appropriate public and scientific use of and interest in paleontological resources.
6. Utilize the additional skills and resources of the Bureau's recreation and minerals programs to develop and implement interpretation strategies and products to enhance public understanding, appreciation and enjoyment of paleontological resources.
7. Vigorously pursue the protection of paleontological resources from theft, destruction and other illegal or unauthorized uses.
8. Authorize land tenure adjustments, when appropriate, as means to protect paleontological localities.

#### **.07 File and Records Maintenance**

A. Paleontological locality information is non-public information listed under Category 3 of the Bureau's Record Access Category Listing and may be withheld if the following Freedom of Information Act (FOIA) exemptions apply.

1. Exemption 2 covers records related solely to the internal practices of an agency which are of a more substantial internal matter, the disclosure of which would risk circumvention of a legal requirement.

2. Exemption 3 provides for the withholding of information prohibited from disclosure by another statute. Paleontological resources located within significant caves, for example, are thus protected by the confidentiality requirements of the Federal Cave Resources Protection Act.

3. Exemption 4 protects trade secrets and other privileged or confidential information. The release of paleontological locality information for areas where consultants or others, such as educational institutions, are permitted, for example, could severely jeopardize their work.

B. Locality data and reports associated with permits, mitigation work or other paleontology projects shall be maintained as permanent records.

### **.08 Relationships to other Bureau Programs**

A. Resource Protection/Mitigation. All BLM programs that may have an adverse impact on paleontological resources through their actions or authorizations are responsible as benefiting activities for funding any necessary resource inventories, evaluations or other work needed to avoid or mitigate adverse impacts on paleontological resources.

B. Cultural Resources. In rare instances, paleontological resources may be found in association with cultural resources. Such occurrences fall under the provisions of the Archeological Resources Protection Act. In the event of such an occurrence, the authorized BLM Manager, in consultation with the State Office or Regional Paleontologist and the Cultural Resource Specialist will evaluate the discovery and determine an appropriate course of action that will safeguard both the paleontological and archaeological materials. The Cultural Resource Program also provides the Paleontological Resource Management Program with its linkage to the Bureau's budget system. Therefore, these program personnel are responsible for identifying and addressing funding needs for paleontology in the BLM's annual budget process.

C. Recreation. Paleontological resources have high public education and recreation values. Such values can be enhanced by publishing guides to selected collecting areas and developing interpretive trails. Working collaboratively, BLM Paleontologists and Recreation Specialists can develop responsible and outstanding recreational and educational opportunities involving paleontological resources that will enhance public understanding of fossils and the science of paleontology, and showcase BLM's stewardship role.

D. Minerals Management. Minerals management can have both positive and negative effects on paleontological resources. Mineral development, and related activities such as road building, can expose new fossil localities to scientific research or recreated in 43 CFR 3809 and 43 CFR 3162.5, as implemented and

supplemented by Onshore Oil and Gas Order No. 1, provide means, where necessary, to protect paleontological resources which may be adversely impacted by mineral development. BLM geologists can also provide valuable assistance in helping identify fossil localities, and develop interpretive and educational material related to paleontology. Fossils are not locatable under the mining laws.

E. Land Use Planning and Environmental Review. The management of paleontological resources shall be guided by and be in accordance with approved BLM land use plans.

1. Paleontological resources constitute a fragile and non-renewable scientific record of the history of life on earth. Once damaged, destroyed, or improperly collected, their scientific and educational value may be greatly reduced or lost forever. In addition to their scientific, educational and recreational values, paleontological resources can be used to inform land managers about interrelationships between the biological and geological components of ecosystems over long periods of time. It is the policy of BLM, therefore, to manage paleontological resources for these values, and to mitigate adverse impacts to them. To accomplish this goal, paleontological resources must be professionally identified and evaluated. Their values should be adequately addressed and integrated fully into the Bureau's planning system and environmental analysis documents. Generally, considerable time, money and effort may be saved by considering paleontological data as early as possible in the decision making process.

2. Paleontological Data Collection and Analysis for Planning. Locating, evaluating and classifying paleontological resources, and developing management strategies for them, must be based on the best scientific information available. Paleontological expertise is necessary to help managers and decision makers resolve issues involving paleontological resources. Because paleontological expertise is scarce within BLM, State Office or Regional Paleontologists are available and should be called upon to provide direct assistance or to identify other appropriate sources of assistance. (Detailed procedures and standards for planning for paleontological resources are contained in Handbook 8270-1 Chapter II. (USDI-BLM 1998a))

3. Mitigation. Adverse impacts to paleontological resources shall be mitigated as necessary. Any field surveys and/or inventories intended to protect paleontological resources will be targeted to specific areas or be issue driven as needed. Unless other arrangements have been made by the local manager, project proponents shall bear all costs associated with this activity. In keeping with the historical policies adopted by the Department of the Interior and the BLM, these mitigation requirements apply primarily to vertebrate fossils. However, where noteworthy occurrences of invertebrate or plant fossils are known or

expected, the same planning and mitigation policies and procedures shall be followed. (See 8270-1 Handbook Chapter III for mitigation standards and procedures. (USDI-BLM 1998a))

### **.09 Paleontological Resource Use**

The desired outcome of managing paleontological resources is to ensure their availability for scientific, educational and recreational uses. Such uses include collection, site interpretation, study and exhibition. Collection may or may not require a permit (See B. below). In cases where permits are required, the permitting process fulfills several important functions. Permits provide for the proactive management of paleontological resources by alerting managers to the presence of noteworthy occurrences of paleontological resources, their condition and vulnerability. When needed, permits facilitate research by qualified paleontologists and serve as a bridge for communication between land managers and researchers. The permitting process provides appropriate protection to other resources that may be impacted by permitted collecting activities, and provides a consistent administrative structure for BLM's management effort. An efficient and uniform permitting process is also essential to and consistent with BLM's customer-oriented focus.

A. A Paleontological Resource Use Permit is a land use authorization issued to a qualified applicant for the purpose of carrying out various paleontological activities, such as identification, survey, collection or excavation, on lands managed by BLM. Such permits are nonexclusive, noncompetitive, minimum impact permits, and are not subject to Notice of Realty Action, filing fees or cost reimbursement. State Offices are responsible for processing and issuing such permits in consultation with the appropriate Field Office and Regional Paleontologist.

B. Determining the need for a Paleontological Resource Use Permit

1. Invertebrate Fossils, Plant Fossils and Petrified Wood. In accordance with existing regulations, the public lands, except where otherwise posted or prohibited, are open for the collection of invertebrates, plant fossils and petrified wood. (See Section .03, Authority) Permits are not normally required for such collection. (See 8270-1 Handbook for collecting standards. (USDI-BLM 1998a)) However, in some situations, localities containing noteworthy occurrences of such fossils may be closed to collection except under permit. Such closures shall be established through the land use planning process, and shall be carried out in consultation with the BLM Regional Paleontologist.

2. Vertebrate Fossils. Unregulated collection of vertebrate fossils is not allowed in 43 CFR 8365.1-5. Therefore, permits are required for the collection of vertebrate fossils, including their trace fossils, such as

trackways and coprolites. Refer to 8270-1 Handbook (USDI-BLM 1998a) for permit procedures.

C. BLM issues two types of Paleontological Resource Use Permits.

1. Survey and Limited Surface Collection Permits are issued to expedite broad ranging survey/reconnaissance work in order to identify vertebrate fossil localities for scientific research, inventory or planning purposes, or in advance of projects which may threaten such localities. Collection of material for carrying out locality (site) investigations and evaluation/characterization studies, and where the use of such small sites as temporary field work stations will be restored to their natural condition within the same work season, is allowed, providing that such activities can ordinarily be expected to result in only negligible surface disturbance, i.e., less than 1 square meter, and can be done with hand tools. Such non-destructive paleontological data collection, inventory, research or monitoring activities are generally deemed to meet the provisions of Chapters 2 and 6, Appendices 1 and 5 respectively, of Departmental MS 516, Categorical Exclusions.

2. Excavation Permits are issued for the collection of vertebrate fossils where surface disturbance exceeds the limits permissible for the survey and limited surface collection work stated in C.1 above.

D. Permit Administration. Permittee qualifications and other matters relating to the administration of Paleontological Resource Use Permits may be found in the 8270-1 Handbook Chapter IV (USDI-BLM 1998a).

E. Commercial Collection. BLM does not authorize the commercial use of fossils collected on public lands. Petrified Wood may be purchased as a mineral material under procedures described in 43 CFR Subpart 3610.

F. Paleontological Resources in Special Areas.

1. Wilderness and Wilderness Study Areas. Paleontological resources may be found in designated Wilderness or Wilderness Study Areas. Scientific research involving collection and removal of paleontological resources is not considered incompatible with the concept of wilderness preservation as provided for in Section 4(b) of the 1964 Wilderness Act. Additionally, paleontological resources are considered to be supplemental values, as provided for in Section 2(c) of the Act. The following provisions are recommended for addressing the management of paleontological resources in such areas:

a. The BLM will permit on a case-by-case basis the survey and limited surface collection of fossils by qualified paleontologists, where such resources have important scientific value. Such activities must be carried out in a manner that would not degrade the wilderness character.

b. The use of motorized transportation or mechanized equipment in a wilderness area is prohibited except when approved as the minimum tool necessary to accomplish the work. Such use must be approved by the State Director.

c. Salvage, excavation and collection of fossils may be done only on a case-by-case basis where the project will not degrade the overall wilderness character of the area and where such activity is needed to preserve paleontological resources.

2. Other Special Management Areas. A variety of Special Area designations may be available to enhance the management and/or protection of paleontological resources. Such designations include Research Natural Areas, National Natural Landmarks and Areas of Critical Environmental Concern. Such areas are established through the land use planning process and shall be done in consultation with the BLM Regional Paleontologists.

G. Collection Management. Fossils collected under a Paleontological Resources Use Permit remain the property of the Federal Government and shall be curated in an approved repository in conformance with the

provisions of Departmental Manual 411. BLM managers shall select repositories which can appropriately maintain such collections from public lands and their associated records, and make this information available to BLM upon request. Repositories should be encouraged, if they have not already done so, to establish and maintain electronic databases of specimen, locality and other associated data.

H. Split Estate Lands. Split estate lands are those lands where title to the surface and mineral estate have been severed. Title to the different estates are often held by different parties. In many instances where the surface estate is not owned by the Federal Government, the mineral estate is, and is administered by the BLM. Paleontological resources are considered to be part of the surface estate. If BLM is going to approve an action involving the mineral estate that may affect the paleontological resources, the action should be conditioned with appropriate paleontological mitigation recommendations to protect the interests of the surface owner. In most States the owner may elect to waive these recommendations. Such a waiver shall be documented in the case file.

## APPENDIX L – LANDS AND REALTY

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Section 102(a)(1) of the Federal Land Policy Management Act (FLPMA) provides that Congress declares that it is the policy of the United States that... “the public lands be retained in Federal ownership, unless as a result of the land use planning procedure provided for in this Act, it is determined that disposal of a particular parcel will serve the national interest;...”

### GENERAL INFORMATION PERTAINING TO LAND OWNERSHIP ADJUSTMENTS

#### Land Exchanges

This type of real estate transaction is typically processed under the authority of the FLPMA and involves the discretionary, voluntary exchange of lands or interests in lands between the Federal government and a non-Federal party. It is required that:

- Sec. 206(b) - the Federal and non-Federal lands involved be located in the same state
- Sec. 206(b) - the Federal and non-Federal lands be of equal value, or in certain circumstances, approximately equal in value
- Sec. 206(a) - exchanges be completed only after a finding that the public interest would be well served

In considering whether an exchange is in the public interest, consideration is given to the opportunity to:

- Sec. 206(a) - achieve better management of Federal lands
- Sec. 206(a) - meet the needs of state and local residents and their economies
- Sec. 206(a) - secure important objectives, including but not limited to, protection of fish and wildlife habitats, cultural resources, watersheds, wilderness and aesthetic values; enhancement of recreation opportunities and public access; consolidation of lands and/or interests in lands; consolidation of split estate; expansion of communities; accommodation of land use authorizations; promotion of multiple-use values; and fulfillment of public needs

In making the public interest determination, there needs to be a finding that:

- the resource values and the public objectives that the Federal lands or interests to be conveyed may serve if retained in Federal ownership are not more than the resource values of the non-Federal lands or interests and the public objectives they could serve if acquired, and
- the intended use of the conveyed Federal lands will not significantly conflict with established

management objectives on adjacent Federal lands and Indian trust lands

#### Land Exchanges vs. Other Methods of Disposal/Acquisition

To help assure the integrity of state and local tax bases, land exchange would be the first priority for both acquisition of non-Federal land and the conveyance of Federal lands into non-Federal ownership of those parcels identified for disposal, except under the following circumstances: 1) where there is a competitive market situation and multiple entities are interested in a parcel of land, land sale may be considered, or 2) where one of the following situations apply, a disposal method other than exchange may be considered: a) resolving inadvertent unauthorized use or occupancy b) providing for community expansion and development c) meeting obligations completing state selections, and d) creating facilities or service for public health, safety and welfare.

#### Sales

Sales of public lands are authorized under section 203 of FLPMA and offered at not less than fair market value. Public lands determined suitable for sale are offered only on the initiative of the BLM. Such sales have to meet at least one of the following FLPMA sales criteria:

- Sec. 203(a)(1) – such tract because of its location or other characteristics is difficult and uneconomic to manage as part of the public lands, and is not suitable for management by another Federal department or agency; or
- Sec. 203(a)(2) – such tract was acquired for a specific purpose and the tract is no longer required for that or any other Federal purpose; or
- Sec. 203(a)(3) – disposal of such tract will serve important public objectives, including but not limited to, expansion of communities and economic development, which cannot be achieved prudently or feasibly on land other than public land and which outweigh other public objectives and values, including, but not limited to, recreation and scenic values, which would be served by maintaining such tract in Federal ownership.

The preferred method of sale of public lands is by competitive bidding at public auction. However, modified competitive bidding may be used to protect on-going uses, to assure compatibility of the possible uses with adjacent lands, or to avoid dislocation of existing users. Direct sale may be used when the public lands offered for sale are completely surrounded by lands in one ownership with no public access, or where the lands are needed by state or local governments or non-profit

corporations, or where necessary to protect existing equities in the lands or resolve inadvertent unauthorized use or occupancy.

### **Conveyance of Federally-Owned Mineral Interests – Section 209(b), FLPMA**

Section 209(b) of FLPMA provides for the conveyance of mineral interests owned by the United States where the surface is or will be in non-Federal ownership. There must be a finding that: 1) there are no known mineral values in the land, or 2) that the reservation of the mineral rights in the United States is interfering with or precluding appropriate non-mineral development of the land and that such development is a more beneficial use of the land than mineral development.

Such conveyance of mineral interests can only be made to the existing or proposed record owner of the surface upon payment of administrative costs and the fair market value of the interests being conveyed.

#### **Direct Purchases**

Direct purchases of lands or interest in lands would be limited to cases where no practical alternatives exist, high public values would be obtained, and purchase funds are appropriated. Such actions would need to meet the acquisition criteria for the particular alternative being considered.

#### **Methods of Acquisition**

Acquisition of lands or interests in lands would be by methods such as exchange, purchase, donation, or public agency jurisdictional transfer.

#### **Methods of Disposal**

Disposal methods to implement land ownership adjustment actions would not vary by alternative, and generally would include the following: a) exchanges b) sales c) Recreation and Public Purposes Act conveyances d) airport grants e) public agency jurisdictional transfers f) state grants

Mineral patents are not considered a land ownership adjustment for the purposes of this plan.

### **LAND OWNERSHIP ADJUSTMENT CRITERIA**

Three types of land ownership adjustment criteria will be adopted (retention, disposal, and acquisition) to provide guidance in categorizing BLM administered land, and in making decisions concerning specific actions.

#### **General Criteria**

1. Requirements of applicable laws, executive orders, and regulations will be followed.
2. Priority will be determined by the area directly impacted and the significance of the resources in descending order of National, regional, statewide, and

local. Both economic and non-economic values will be considered in assessing resource significance.

3. A critical level of significance will be assigned to resource values if they are adversely impacted over an area larger than the specific tract being considered for any land ownership adjustment action.

4. Public value losses which cannot be mitigated will be assigned a higher level of significance than those which can be mitigated.

5. A higher level of significance will be assigned to public values which are associated with solving chronic management problems.

#### **RETENTION CRITERIA**

These are land tracts which will likely remain as BLM administered land. Although the underlying philosophy is long-term public ownership, adjustments in retention areas involving exchanges and/or sales may occur when the public interest is served.

1. Areas containing moderate to high resource values and/or characteristics. These include but are not limited to:

- Land along rivers, streams, lakes, dams, ponds, springs, and trails
- Riparian areas, community watersheds and/or flood plains
- Areas that contain T&E species of wildlife or aquatic or vegetation
- Areas with special status wildlife species, or aquatic species or vegetative species
- Important general wildlife habitat areas
- Recreation sites and areas
- Significant cultural resource sites
- Geologic areas containing unique or rare features or formations
- Areas with important or unique forest/woodland values
- Other areas containing moderate to high resource values and/or characteristics

2. Lands with a combination of moderate to high multiple-use values which dictate retention in public ownership.

3. Areas of National environmental significance: These include but are not limited to:

- Wilderness, Wilderness Study Areas and former WSAs being studied for protective management
- Wild & Scenic Rivers
- National Scenic & Historic Trails and Study Trails

- Lands containing nationally significant cultural resource sites nominated to or eligible for the National Register of Historic Places
  - National Conservation areas
  - Wetlands and Riparian Areas under Executive Order 11990
  - Other Congressionally Designated Areas and Study Areas
  - Areas of Critical Environmental Concern
4. Areas of National economic significance. These include but are not limited to:
- Designated Mineral Resource Areas where disposal of the surface would unnecessarily interfere with the logical development of the mineral estate, e.g., surface minerals, coal, phosphate, known geologic structures, etc.
  - Lands containing strategic minerals needed for National defense.
5. Lands used in support of National defense: These include but are not limited to U.S. Military and National Guard maneuver areas.
6. Areas where future plans will lead to further consolidation and improvement of land patterns and management efficiency.
7. Areas which the general public, state and local government consider suitable for public ownership.
8. Lands withdrawn by the BLM or other Federal agencies for which the purpose of the withdrawal remains valid and the resource uses can be managed concurrently by BLM.
9. Lands that contribute significantly to the stability of the local economy by virtue of Federal ownership.
10. Lands which provide public access and contain previously mentioned public values which, when considered together, warrant their retention.
11. Guidelines for the retention of the mineral estate are fairly well described and are mandated under FLPMA. These require that the mineral estate be reserved by the U.S. in all land disposals except in some cases where exchanges are involved. In exchanges, the mineral estate may be reserved by both parties presuming there will be no material interference with development of the mineral resource due to disposal of the surface estate. If values are equal, mineral estate title may pass with the surface estate.

#### **ACQUISITION CRITERIA**

The following criteria will be used to evaluate proposals which would result in the acquisition of non-Federal lands and/or interest in lands through exchange, fee purchase, donation or other transactions. Priority will be

determined on the basis of multiple-use analysis. The greater the number of resource programs and public values served, the higher the priority for acquisition. All proposals will be evaluated to determine if the non-Federal lands meet any of the following specific criteria:

1. Contain moderate to high resource values and/or characteristics.
  - Land along rivers, streams, lakes, dams, ponds, springs, and trails
  - Riparian areas, community watersheds and/or flood plains
  - Areas that contain T&E species of wildlife or aquatic or vegetation
  - Areas with special status wildlife species, or aquatic species or vegetative species
  - Important general wildlife habitat areas
  - Recreation sites and areas
  - Significant cultural resource sites
  - Geologic areas containing unique and/or scarce features
  - Areas with important or unique forest/woodland values
  - Other areas containing moderate to high resource values and/or characteristics
2. Have the potential for enhancement, manageability or investment opportunity of existing BLM administered lands.
3. Facilitate access to BLM administered land retained for long-term public use.
4. Enhance congressionally designated areas, rivers, or trails.
5. Primarily focused in the "retention" areas. (Acquisition outside of retention areas may be considered if the action leads to and/or facilitates long-term needs or program objectives).
6. Facilitate National, state and local BLM priorities or mission statement needs.
7. Will enhance existing or future activity plans on BLM administered land.
8. Stabilize or enhance local economies or values.
9. Meet long-term BLM land management goals as opposed to short-term BLM land management goals.
10. Are of sufficient size to improve use of adjoining BLM administered land or, if isolated, large enough to allow for the identified potential public land use.
11. Allow for more diverse use, more intensive use, or a change in uses to better fulfill the Bureau's mission.

12. Enhance the opportunity for new or emerging BLM administered land uses or values.

13. Contribute to a wide spectrum of uses or large number of public land users.

14. Secure for the public significant water related land interests. These interests will include lake shore, dam shore, river front, stream, and pond or spring sites.

15. Consolidate mineral estates with surface estates to improve potential for development while improving resource management and economic values of existing BLM administered lands.

Avoid the following when considering acquisition proposals:

Acquiring lands or interests in lands that present management problems that outweigh the expected benefits of such an acquisition, including but not limited to:

- presence of hazardous materials
- abundance of noxious weeds
- access situation is inadequate for managing the property for the purpose(s) for which it would be obtained, etc.
- acquisition of small, isolated tracts

#### **ACCESS CRITERIA**

The BLM shall endeavor to maintain existing access, provide future access, and manage access to BLM administered lands in coordination with other Federal agencies, state and local governments, and private landowners.

#### **Specific Access Criteria**

1. Obtain access to BLM administered lands in retention areas. (Acquisition of access outside of retention areas may be considered if the action leads to and/or facilitates long term needs or program objectives).

2. Protect, maintain, and manage existing access to BLM administered lands.

3. Manage access to BLM administered lands within BLM's multiple-use mandate.

4. Acquire access on the basis of the following considerations:

- Where there are moderate to high resource values on existing BLM administered land.
- Where there is public demand which is closely tied to resource values.
- Access to larger blocks or parcels of BLM administered land have priority. The presence of important resource values may justify acquiring access to smaller tracts.

- For those projects on BLM administered lands in which substantial public monies have been spent, and in which continuing diverse public use is expected, permanent exclusive access for the general public should be obtained. For lesser investment projects and/or those to which general public use will need to be limited, nonexclusive easements should be obtained.

- Although the Bureau is not required to provide access to mineral resources, the acquisition of such access could be useful in controlling the construction of multiple and unnecessary access routes within the same general area.

- Priority would be placed on acquiring easements on roads where landowners are willing to allow public access through their lands.

#### **DISPOSAL CRITERIA**

These are lands identified for potential removal from BLM administration through transfer to other Federal agencies, or by exchange, sale or R&PP Patent to state, county or local public entities, or by exchange or sale to private entities, private groups, private organizations or individuals. Disposal decisions will be made in the public interest based upon the following criteria:

1. Lands with high public values proper for management by other Federal agencies, or state or local governments.

2. Small parcels of BLM administered land contiguous to National Forest land may be considered for transfer to the U.S. Forest Service through a Public Land Order. Other BLM administered land may be considered for transfer where appropriate.

3. Small parcels of BLM administered lands contiguous to State land may be considered for transfer to the State of Montana. Other BLM administered land may be considered for transfer where appropriate.

4. Lands of limited public value.

5. Widely scattered parcels which are difficult and uneconomical to manage with anything beyond minimal custodial administration and have no significant public values.

6. Lands which will serve important public objectives (such as community expansion) as provided in FLPMA.

7. Lands where disposal would aid in aggregating or repositioning other BLM administered lands or land resource values in retention areas to facilitate National, state and local objectives.

8. Lands acquired for a specific Federal purpose which are no longer required for that or any other Federal purpose.

9. Lands with general unauthorized use problems, if the lands are not required for public purposes.

10. Lands with unauthorized occupancy use where permanent structures are involved.

### Potential Disposal Parcels

The following lands, totaling 8,901 acres, are potentially suitable for disposal through sale under section 203(a) of FLPMA if important recreation, wildlife, watershed,

threatened or endangered species habitat, and/or cultural values are not identified during disposal clearance reviews and no viable exchange proposals for them can be identified. These lands would also be available for transfer to another agency or to local governments, as needed, to accommodate community expansion and other public purposes.

Potential Disposal Parcels			
Legal Description			Acreege
T. 1 N., R. 6 W.	Section 10	SE $\frac{1}{4}$ SE $\frac{1}{4}$	40.00
		SW $\frac{1}{4}$ SE $\frac{1}{4}$	40.00
	Section 11	SW $\frac{1}{4}$ SW $\frac{1}{4}$	40.00
	Section 12	NW $\frac{1}{4}$ SW $\frac{1}{4}$	40.00
	Section 14	NW $\frac{1}{4}$ NW $\frac{1}{4}$	40.00
		SW $\frac{1}{4}$ NW $\frac{1}{4}$	40.00
	Section 22	Lot 4	8.09
	Section 27	Lot 5	34.80
		Lot 6	34.80
		Lot 7	22.63
	Section 29	SE $\frac{1}{4}$ NE $\frac{1}{4}$	40.00
NE $\frac{1}{4}$ SE $\frac{1}{4}$		40.00	
T. 1 N., R. 9 W.	Section 4	Lot 1	22.27
		Lot 2	23.04
		Lot 5	39.52
		N $\frac{1}{2}$ SW $\frac{1}{4}$	80.00
		SE $\frac{1}{4}$ SW $\frac{1}{4}$	40.00
T. 1 N., R. 11 W.	Section 31	Lot 3	39.95
		Lot 4	39.99
T. 1 N., R. 14 W.	Section 10	Lot 3	43.89
	Section 28	NW $\frac{1}{4}$ NE $\frac{1}{4}$	40.00
T. 2 N., R. 1 W.	Section 2	Lot 3	37.91
		Lot 4	37.81
		S $\frac{1}{2}$ NW $\frac{1}{4}$	80.00
	Section 6	Lot 1	40.70
		Lot 2	40.50
		Lot 3	40.30
		Lot 4	31.76
		Lot 5	32.32
		Lot 6	32.32
		Lot 7	33.59
		SE $\frac{1}{4}$ NE $\frac{1}{4}$	40.00
Section 34	SE $\frac{1}{4}$ SW $\frac{1}{4}$	40.00	
	S $\frac{1}{2}$ SE $\frac{1}{4}$	80.00	

Potential Disposal Parcels			
Legal Description			Acreage
T. 3 N., R. 1 W.	Section 32	N½	320.00
T. 4 N., R. 2 W.	Section 6	Lot 1	17.32
		Lot 3	15.42
		Lot 4	13.23
		Lot 5	39.37
		Lot 6	39.58
		Lot 7	39.79
		SE¼NE¼	40.00
T. 4 N., R. 2 W.	Section 6	SE¼NW¼	40.00
	Section 24	NE¼NE¼	40.00
		SE¼NE¼	40.00
T. 5 N., R. 3 W.	Section 6	Lot 3	35.13
		Lot 4	39.73
		Lot 5	41.31
		SE¼NW¼	40.00
	Section 19	Lot 4	38.10
T. 6 N., R. 4 W.	Section 3	Segregated Survey	41.02
	Section 5	Lot 12	38.54
		Lot 23	2.70
	Section 8	Lot 3	30.56
		Lot 14	0.47
T. 7 N., R. 3 W.	Section 4	Lot 8	48.47
T. 7 N., R. 4 W.	Section 3	Lot 8	0.43
		Lot 11	0.12
		Lot 12	0.31
		Lot 14	3.19
		Lot 16	0.60
		Lot 21	0.01
	Section 4	Lot 28	0.67
		Lot 29	0.66
	Section 7	Lot 16	0.43
	Section 8	Lot 22	0.11
		Lot 23	0.09
		Lot 27	0.54
		Lot 31	1.0008
		Lot 34	1.36
		Lot 41	0.19
		Lot 42	0.33
	Section 9	Lot 14	1.89
Lot 15		0.10	
Lot 16		0.13	

Potential Disposal Parcels				
Legal Description			Acreage	
T. 7 N., R. 4 W.	Section 9	Lot 17	0.26	
		Lot 20	0.05	
		Lot 21	1.16	
		Lot 22	0.0034	
		Lot 23	2.08	
		Lot 24	15.31	
		Lot 25	0.35	
		Lot 26	2.99	
		Lot 27	2.90	
		Lot 28	0.75	
	Section 10	Lot 11	0.04	
		Lot 14	0.85	
		Govt. Lot 14	0.36	
		Lot 15	0.10	
		Lot 17	1.79	
	Section 15	Lot 3	0.96	
		Lot 8	0.56	
		Lot 9	6.65	
		Lot 10	4.30	
	Section 16	Lot 3	0.02	
		Lot 4	0.10	
	Section 17	Lot 4	0.11	
		Lot 18	0.15	
		Lot 19	0.28	
	Section 18	Lot 10	2.32	
	Section 21	Lot 7	1.30	
		Lot 8	0.07	
		Lot 9	0.13	
		Lot 10	0.69	
		Lot 11	1.35	
		Lot 17	1.88	
		Lot 19	0.07	
		Lot 20	0.17	
	Section 24	SE $\frac{1}{4}$ NE $\frac{1}{4}$	40.00	
		NE $\frac{1}{4}$ SE $\frac{1}{4}$	40.00	
	Section 35	Segregated Survey	8.5 est.	
	T. 8 N., R. 3 W.	Section 9	Lot 6	2.27
			SE $\frac{1}{4}$ NE $\frac{1}{4}$	40.00
		Section 10	Lot 1	38.93
			Lot 6	1.79
Lot 7			31.87	

Potential Disposal Parcels			
Legal Description			Acreage
T. 8 N., R. 3 W.	Section 10	Lot 10	29.34
		Lot 11	0.26
		Lot 16	19.74
	Section 15	NE $\frac{1}{4}$ NW $\frac{1}{4}$	40.00
	Section 29	SE $\frac{1}{4}$ SE $\frac{1}{4}$	40.00
	Section 32	NW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$	10.00
T. 8 N., R. 4 W.	Section 12	(metes and bounds)	5.00 est.
	Section 13	NW $\frac{1}{4}$ NW $\frac{1}{4}$	40.00
		Lot 1	39.39
	Section 14	Lot 20	4.58
		Lot 21	4.15
		Lot 22	2.71
		(metes and bounds)	2.72
	Section 23	Lot 15	5.87
		Lot 16	0.93
		Lot 17	6.94
		Lot 18	0.85
	T. 9 N., R. 1 W.	Section 30	Lot 7
Lot 8			7.55
Unsurveyed Lots in NW $\frac{1}{4}$ SE $\frac{1}{4}$			8.441
T. 9 N., R. 2 W.	Section 20	Lot 7	2.36
		Lot 9	28.04
	Section 21	Lot 2	31.33
		Lot 6	20.27
		Lot 7	0.22
		Lot 8	0.90
		Lot 9	0.90
		Lot 10	0.45
		Lot 5	0.12
	Section 22	Lot 6	19.46
	Section 32	Lot 14	1.43
T. 9N., R. 3 W.	Section 17	Lot 7	31.43
		Lot 8	4.95
		Lot 9	18.84
		Lot 10	2.56
		Lot 11	2.56
		Lot 12	2.56
		Lot 13	2.56
		Lot 14	2.56
		Lot 15	2.56
		Lot 16	2.56

Potential Disposal Parcels				
Legal Description			Acreage	
T. 9N., R. 3 W.	Section 18	Lot 12	6.10	
		Lot 13	10.06	
		Lot 19	4.65	
	Section 32	Lot 14	1.43	
T. 10 N., R. 1 W.	Section 6	(metes and bounds)	.640	
		(metes and bounds)	.06	
		(metes and bounds)	.57	
	Section 32	SE¼NE¼	40.00	
	Section 33	Segregated Survey	18.00	
T. 10 N., R. 4 W.	Section 36	Lot 41 (metes and bounds)	.023	
T. 10 N., R. 5 W.	Section 3	Lot 22	18.09	
		Lot 23	31.78	
		Lot 24	35.06	
		Lot 25	1.06	
		Lot 26	39.09	
		Lot 27	10.89	
		Lot 28	20.24	
		Lot 29	3.88	
	Section 4	Lot 14	34.93	
	Section 5	Lot 7	41.20	
		Lot 16	12.67	
		Lot 17	42.85	
		Lot 18	31.50	
		Lot 20	41.26	
		Lot 21	18.77	
		Lot 23	1.77	
		Lot 24	21.22	
	Section 13	Lot 26	1.31	
	T. 11 N., R. 4 W.	Section 36	Lot 2	20.31
			Lot 4	8.26
Lot 6			.82	
Lot 7			6.27	
T. 11 N., R. 5 W.	Section 4	Lot 14	40.71	
	Section 9	Lot 8	41.86	
	Section 15	Lot 3	17.73	
	Section 16	Lot 5	44.09	
	Section 27	Lot 4	43.69	
	Section 28	Lot 6	40.11	
	Section 34	Lot 8	35.21	
Lot 9		28.32		

Potential Disposal Parcels			
Legal Description			Acreage
T. 11 N., R. 5 W.	Section 36	Lot 8	38.99
		Lot 9	40.31
		Lot 11	12.00
T. 12 N., R. 5 W.	Section 5	Non-lotted vacant federal land bounded by Lots 5 & 6 in Patent 585745	12.00
T. 12 N., R. 6 W.	Section 15	SW $\frac{1}{4}$ SE $\frac{1}{4}$	40.00
	Section 36	Lot 35 (metes and bounds)	.10
T. 12 N., R. 7 W.	Section 23	SE $\frac{1}{4}$ NE $\frac{1}{4}$	40.00
		SE $\frac{1}{4}$ NW $\frac{1}{4}$	40.00
T. 14 N., R. 3 W.	Section 4	Lot 6 (metes and bounds)	3.89
	Section 27	Lot 10 (metes and bounds)	.20
T. 14 N., R. 4 W.	Section 4	Lot 4	36.58
		SE $\frac{1}{4}$ SE $\frac{1}{4}$	40.00
	Section 9	Lot 9	39.14
		Lot 10	16.31
		Lot 11	16.84
		Lot 12	17.78
		Lot 13	12.80
		Lot 15	16.33
	Section 10	SE $\frac{1}{4}$ NE $\frac{1}{4}$	40.00
	Section 28	(metes and bounds)	1.0 est.
T. 1 N., R. 2 E.	Section 14	W $\frac{1}{2}$ W $\frac{1}{2}$	160.00
T. 2 N., R. 2 E.	Section 12	N $\frac{1}{2}$	320.00
T. 3 N., R. 1 E.	Section 12	NW $\frac{1}{4}$	160.00
T. 3 N., R. 7 E.	Section 30	E $\frac{1}{2}$ NE $\frac{1}{4}$	80.00
T. 4 N., R. 2 E.	Section 34	SW $\frac{1}{4}$	160.00
T. 4 N., R. 3 E.	Section 26	SW $\frac{1}{4}$ SE $\frac{1}{4}$	40.00
T. 4 N., R. 6 E.	Section 6	Lot 3	21.20
		Lot 4	15.76
T. 5 N., R. 5 E.	Section 26	NW $\frac{1}{4}$ SW $\frac{1}{4}$	40.00
	Section 34	N $\frac{1}{2}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$	20.00
		N $\frac{1}{2}$ S $\frac{1}{2}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$	10.00
		N $\frac{1}{2}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$	20.00
		N $\frac{1}{2}$ S $\frac{1}{2}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$	10.00
		E $\frac{1}{2}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$	5.00
		W $\frac{1}{2}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$	5.00
		NW $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$	2.50
		NE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$	2.50
		N $\frac{1}{2}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$	20.00
N $\frac{1}{2}$ S $\frac{1}{2}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$	10.00		

Potential Disposal Parcels			
Legal Description			Acreage
T. 5 N., R. 5 E.	Section 34	S $\frac{1}{2}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$	20.00
		SW $\frac{1}{4}$ SW $\frac{1}{4}$	40.00
T. 6 N., R. 3 E.	Section 20	W $\frac{1}{2}$ SW $\frac{1}{4}$	80.00
T. 7 N., R. 3 E.	Section 6	Lot 7	39.15
		SE $\frac{1}{4}$ SW $\frac{1}{4}$	40.00
T. 8 N., R. 1 E.	Section 8	NE $\frac{1}{4}$ NE $\frac{1}{4}$	40.00
	Section 18	NW $\frac{1}{4}$ NE $\frac{1}{4}$	40.00
		NE $\frac{1}{4}$ NW $\frac{1}{4}$	40.00
		E $\frac{1}{2}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$	20.00
T. 8 N., R. 3 E.	Section 5	Segregated Survey	59.4
T. 9 N., R. 2 E.	Section 16	Lot 1	18.24
		Lot 5	12.19
		Lot 6	39.22
T. 10 N., R. 1 E.	Section 14	Lot 3	39.69
		Lot 4	39.73
		Lot 5	39.94
	Section 17	NW $\frac{1}{4}$ SW $\frac{1}{4}$	40.00
T. 1 S., R. 1 W.	Section 4	W $\frac{1}{2}$ SE $\frac{1}{4}$	80.00
T. 1 S., R. 6 W.	Section 4	SW $\frac{1}{4}$ NW $\frac{1}{4}$	40.00
	Section 12	N $\frac{1}{2}$ NE $\frac{1}{4}$	80.00
		NW $\frac{1}{4}$	160.00
		W $\frac{1}{2}$ SW $\frac{1}{4}$	80.00
		SE $\frac{1}{4}$ SW $\frac{1}{4}$	40.00
		NE $\frac{1}{4}$ SE $\frac{1}{4}$	40.00
	S $\frac{1}{2}$ SE $\frac{1}{4}$	80.00	
Section 14	All	640.00	
T. 2 S., R. 9 W.	Section 14	SE $\frac{1}{4}$ NE $\frac{1}{4}$	40.00
		NE $\frac{1}{4}$ SE $\frac{1}{4}$	40.00
		SE $\frac{1}{4}$ SE $\frac{1}{4}$	40.00
Section 24	NE $\frac{1}{4}$ SW $\frac{1}{4}$	40.00	
T. 2 S., R. 9 E.	Section 24	SE $\frac{1}{4}$ SE $\frac{1}{4}$	40.00
T. 1 S., R. 1 E.	Section 14	NW $\frac{1}{4}$ NE $\frac{1}{4}$	40.00
T. 2 S., R. 2 E.	Section 3	NE $\frac{1}{4}$ SW $\frac{1}{4}$	40.00
T. 2 S., R. 10 E.	Section 2	SW $\frac{1}{4}$ NW $\frac{1}{4}$	40.00
		NW $\frac{1}{4}$ SW $\frac{1}{4}$	40.00
		SW $\frac{1}{4}$ SW $\frac{1}{4}$	40.00
	Section 3	SW $\frac{1}{4}$ NE $\frac{1}{4}$	40.00
		SE $\frac{1}{4}$	160.00
	Section 10	NE $\frac{1}{4}$	160.00
NE $\frac{1}{4}$ NW $\frac{1}{4}$		40.00	
T. 2 S., R. 12 E.	Section 27	NE $\frac{1}{4}$ NE $\frac{1}{4}$	40.00

<b>Potential Disposal Parcels</b>			
<b>Legal Description</b>			<b>Acreage</b>
T. 3 S., R. 12 E.	Section 9	W $\frac{1}{2}$ NW $\frac{1}{4}$	80.00
T. 4 S., R. 8 E.	Section 14	NE $\frac{1}{4}$ NE $\frac{1}{4}$	40.00
		S $\frac{1}{2}$ NE $\frac{1}{4}$	80.00
		SE $\frac{1}{4}$	160.00
		NW $\frac{1}{4}$ SE $\frac{1}{4}$	40.00
T. 4 S., R. 9 E.	Section 20	S $\frac{1}{2}$ SE $\frac{1}{4}$	80.00
	Section 30	SW $\frac{1}{4}$	160.00
	Section 32	NW $\frac{1}{4}$ SW $\frac{1}{4}$	40.00
T. 6 S., R. 8 E.	Section 9	S $\frac{1}{2}$ ,SE $\frac{1}{4}$ SE $\frac{1}{4}$ , Tract 37	.70

# APPENDIX M – FLUID MINERALS

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# FLUID MINERALS

## OIL AND GAS REASONABLY FORESEEABLE DEVELOPMENT (RFD)

### INTRODUCTION

At the time the 1984 Headwaters RMP was prepared little additional leasing was anticipated to take place because most available leases had already been acquired under existing established leasing regulations with appropriate stipulations for special conditions. It was also anticipated that a relatively large number of permits to drill might be sought, given the accelerated level of exploration activity that was being driven by economic conditions at the time and relatively new discovery of prospects for deep structurally trapped oil in the Montana Overthrust Belt. Laws, regulations, and rules were in-place to provide guidance with these leasing and permitting activities. It was anticipated that oil and gas drilling would be a part of the foreseeable future of resource development within the Planning Area.

Despite the flurry of exploration activity in the Montana Overthrust Belt in 1983, the only two areas of oil and gas production were in Teton and Ponderosa counties, east of the Rocky Mountain Front in areas that have since been removed from the Planning Area.

The Reasonably Foreseeable Development scenario is an estimate of oil and gas activity expected because of resumed oil and gas leasing in the Planning Area. The scenario is hypothetical in that drilling may occur anywhere in the planning area where an oil and gas lease allowing surface occupancy is issued. Actual drilling proposals that result from leasing, if any, will likely differ in location from those anticipated by this RFD scenario. It is also possible that leasing could result in either more or fewer drilling proposals than presented in the scenario.

The RFD scenario attempts to portray the most reasonable and likely number of wells expected from a leasing decision on the Butte Field Office Planning Area. It is derived from knowledge of the USGS plays, Energy Information Administration price forecasts, oil and gas occurrence and development potential classifications for the Planning Area, and historical activity.

Development potential is a ranking system, which is created so planners can evaluate the potential cumulative impacts of an oil and gas leasing decision on a designated area. BLM petroleum geologists rank the development potential of the planning area based on the probability, at this point in time, of oil and gas drilling occurring in the future. It is important to understand that development potential is a dynamic ranking system, which changes with time as new data and ideas become

available. The development potential can also change as a function of the economics of oil supply and demand.

## OCCURRENCE AND DEVELOPMENT POTENTIAL

### Occurrence and Development Potential Rankings

BLM staff geologists have classified the potential for occurrence and development of oil and gas resources within the Butte Field Office Planning Area. Their analysis is based on bedrock geologic mapping, geophysical data, and 110 oil and gas wells drilled in Planning Area. A summary of the used for discussion and development of the occurrence and development potential sections of this report can be found in the mineral report prepared for this RMP. The potential for oil and gas resource development within the Planning Area is shown on **Figure A-1**.

On **Figure A-1**, areas have been designated as having moderate, low, and very low potential for the occurrence and development of oil and gas resources. As with the occurrence potential, there are no areas of “high” development potential within the Butte Field Office Planning Area. High development potential areas occur only within proven producing petroleum provinces or in areas with a significant number of hydrocarbon “shows”. Areas of moderate development potential have a significant thickness of sedimentary section present that includes possible source and reservoir rocks. An area having a low potential for development has a thin sedimentary section present or there is insufficient subsurface data available to analyze the potential. It also lacks source or reservoir rocks or is metamorphosed. An area of very low development potential has no sedimentary section at the surface or insufficient data for a different classification. These areas also include areas of Federal lands that are unavailable for leasing. Development potential is not a prediction of precise future drilling locations and should not be used as a gauge of future interest or lack of interest in leasing. Oil and gas companies have numerous sources of proprietary data not available to the BLM (such as seismic data or internal geologic reports), which they use prior to making financial commitments to lease or drill. Therefore, even though an area is rated as very low development potential at this time with a low probability for any wells being drilled, a company may still be interested in leasing that area, should it be made available.

### Drilling Activity Forecast

In order for the BLM to be able to analyze the effects of renewed oil and gas leasing, and possible impacts related to exploration, development, and cumulative effects, it is

necessary to estimate how many wells industry might drill in the next 20 years. The following RFD scenario has been developed using historical oil and gas development, and oil “play” information from the USGS, potential development maps and other data from BLM files, and a number of other technical sources.

The BLM has mapped the potential for occurrence of oil and gas under the Butte Field Office Planning Area and the potential for industry to develop those possible resources. The classification of development potential is depicted on **Figure A-1**. From these maps and other information, including leasing history and past and present economics, a forecast of the number of wells that might be drilled in the Planning Area on lands of all mineral ownerships is made.

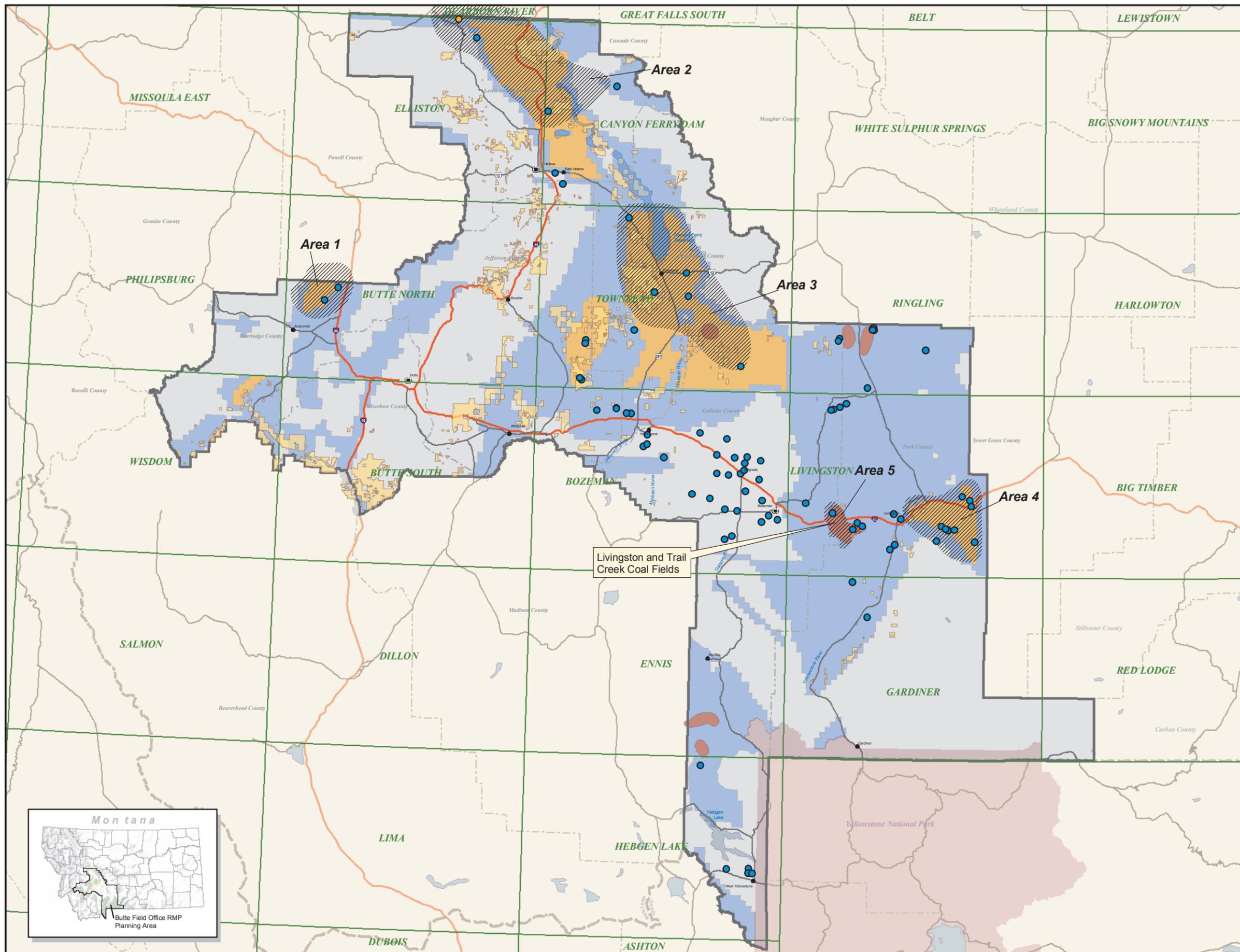
Based on this analysis, an estimate was made that as many as nineteen (19) conventional oil and gas wildcat wells (exploratory wells drilled in an area with no existing production) might be drilled in the Butte Field Office Planning Area in the next 15 to 20 years (**Table 1**). Of these nineteen (19) wells, it is estimated that thirteen (13) would be “dry” holes (no economically producible oil or gas is discovered). Dry holes would be plugged and abandoned with surface reclamation occurring shortly afterward. It is further estimated that six (6) of the wells could have oil or gas discoveries, with two located on Federal minerals, and the others located on private or State lands. Each of the discovery wells would probably prompt additional step-out wells. A “step-out well” is a well drilled adjacent to or near a proven well to establish the limits and continuity of the oil or gas reservoir and/or to assist with production. It was estimated that a total of twelve (12) step-out wells would be drilled, two for each discovery. In addition to conventional oil and gas wells, it is anticipated that as many as 40 wells (**Table 1**) would be drilled for coal bed natural gas in limited and scattered areas of known sub-bituminous coal resources located Gallatin and Park Counties; most likely in the Trail Creek Road area near Bozeman Pass (Livingston and Trail Creek Fields).

The first four general geographic areas within the Butte Field Office Planning Area, where conventional oil and gas exploration is predicted to occur are shown on **Figure A-1**. Each of the four areas is associated with one or more play areas described above in the section entitled USGS Hydrocarbon Provinces and Plays. It is anticipated that the 15 projected wildcat wells would be drilled somewhere within the boundaries of these four play areas. (**Table 1**)

**Area # 1** - Area #1 is referred to on **Figure A-1** as the “Southern Deerlodge Valley Basin Area”. This area occurs in the southernmost portion of a fault bounded Tertiary-aged basin that is located in the Deerlodge Valley. Along the eastern edge of this basin volcanic rocks obscure a thin section of Tertiary age basin fill sediments that in turn overlie Boulder Batholith rocks (Kirk 2005). Further to the west within this basin, rocks of Miocene to Eocene age have been encountered in previous drilling. The rocks are all non-marine and consist of sands and gravels of alluvial channels interlayered with sand, silt, and clay-rich alluvial overbank deposits that are interspersed with fine-grained sediments deposited in lakes and marshes. These sediments have accumulated in thickness as great as 10,000 feet (3,048 meters). Fluvial sandstones are thought to be potential reservoir rocks with the source of oil and gas being either organic material buried deeply in the Tertiary basin proper or having migrated from Paleozoic sediments that lie beneath the Tertiary basin fill or across the basin margin faults. The thickest and most complete section of Paleozoic rocks lies to the west of the holes shown in the area of moderate potential (**Figure A-1**). Two holes have been drilled within the Planning Area and five more have been drilled in a similar geologic setting immediately to the north of this area. These holes were drilled from 6,411 feet (1,954 meters) to as much as 11,774 feet (3,589 meters) deep (Kirk 2005). One well, the Amoco 1 Johnson, encountered good oil shows in the Tertiary basin fill sediments. Two exploratory wells for oil and gas might be expected in the next 15-20 years in this portion of the

**Table 1**  
**Drilling Activity Forecast (RFD)**  
**Mineral Assessment Report**

Area	Total Wildcat Wells	Dry Holes (Wildcats)	Wildcat Discoveries	Step-out Wells	Commodity
Area 1	2	2	0	0	
Area 2	5	4	1	2	Gas
Area 3	4	3	1	2	Gas
Area 4	4	2	1 deep 1 shallow	2 2	Gas Oil
Barrett Corp. Wells	4	2	2	4	Gas
<b>Total Conventional Wells</b>	<b>19</b>	<b>13</b>	<b>6</b>	<b>12</b>	
<b>Area 5 (Coalbed Natural Gas Only)</b>	<b>16</b>	<b>10</b>	<b>6</b>	<b>24</b>	<b>Coal bed Natural Gas</b>



**Occurrence Potential**

- Moderate
- Low
- Very low

**Development Potential**

- Area of Reasonably Foreseeable Development and Drilling Activity

**Other Symbols**

- MBOGC Oil and Gas Wells
- Currently Drilling Well
- Livingston and Trail Creek Coal Fields
- Minor Coal Fields

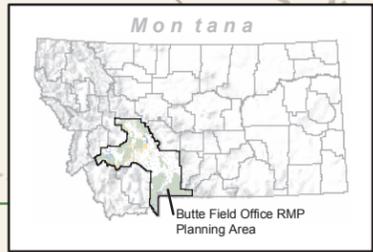
**Map Features**

- BFO Boundary
- 1:100,000 Map Boundaries
- Bureau of Land Management (BLM) Land

**Scale and Orientation**

N  
 0 Miles 20

No warranty is made by the Bureau of Land Management (BLM) for use of data for purposes not intended by BLM.



**FIGURE A-1**  
 Oil and Gas Occurrence and Development Potential  
 Mineral Assessment Report  
 BLM, Butte Field Office  
 Butte RMP and EIS

Planning Area. They would probably lie to the north and west of the holes shown, closer to basin margin faults with potentially thicker sequences of Paleozoic source rocks underlying Tertiary basin fill adjacent to the fault zone. As only about 20 percent of the land within this basin is underlain by federally administered subsurface mineral rights and more than 87 percent of the surface is privately owned (no BLM surface ownership), it is unlikely that any of the wells would be drilled on federal lands. It is also unlikely that there would be any discoveries in this area.

**Area #2** - Area #2 is referred to on **Figure A-1** as the “Imbricate Thrust Zone”. The area occurs both to the north and east of Helena, Montana, in a sequence of sediments that are thick and structurally thickened by imbricate thrust faulting associated with the Eldorado and Reff thrust faults. Here Cenozoic sediments unconformably overly Mesozoic and Paleozoic sediments, and basement Precambrian-age rocks. Only two oil and gas wells have been completed in this area between 1975 and 1990. One, the Getty well, was spudded in Mississippian Lodgepole Limestone and drilled in Paleozoic sediments to a final depth of 12,731 feet (3,880 meters). It encountered eleven thrust faults that repeated the Lodgepole Limestone eight (8) times. The other well drilled by Arco, was completed at a depth of 5,002 feet (1,525 meters). It was spudded in the Precambrian Belt sediments and drilled through the Eldorado thrust fault at 2,500 feet (762 meters) and into good potential host rocks of the Mississippian Madison Formation, in which it remained until the bottom of the hole. Unocal drilled a third, very deep (17,818 feet or 5,431 meters) dry well, in the northern portion of this area (**Table 1**). The recently drilled Suncor well, described in the Exploration Drilling section, is present in the northernmost portion of the Planning Area on the Sieban Ranch near Flesher Pass. Area 2 is thought to have moderate oil and gas potential because of the significant thicknesses of Paleozoic sediment (known to contain good reservoir and source rocks) in a zone that is complicated and repeated by thrust faulting that can create stratigraphic and structurally controlled traps by folding and the juxtapositioning of rocks across the thrust faults. Five wells are expected to be drilled in this area within the next 15-20 years. One of these wells is predicted to have significant shows of oil and gas warranting offset drilling of two additional wells. The tests in this area can be deep and expensive, and the structure complex and difficult to understand. Most of the BLM lands in Area 2 occur in two continuous blocks and when combined with split estate lands with federal minerals make up about 20% of the entire area. The large contiguous area in the northeastern portion of Area 2 lies to the east of the intensely imbricated thrust fault zone that has seen exploration drilling along the western margin of this play area. It is possible that one or more of the five exploration wells could be drilled on federal lands, but with a small likelihood of a discovery.

**Areas #3** - Area #3 is referred to as the “Helena Salient Gas Play Zone”. This zone occurs over a very large area in the east-central portion of the Planning Area (**Figure A-1**). The area is underlain by Jurassic (locally Cretaceous) through Cambrian age rocks in a sediment package as much as 10,000 feet (3,048 meters) thick. The area has been thrust faulted along north-south structures that have resulted in a series of parallel north-south anticlines and synclines. The entire sequence can be overlain by 1,600 feet (488 meters) (in the west) to as much as 5,000 feet (1,524 meters) (in the east) of volcanics in the Elkhorn Mountain area. Hydrocarbons have been reported from a well along the east flank of the Mauldow Basin in a well drilled to 11,592 feet (3,533 meters) into Precambrian rock. Gas shows were reported from Cambrian sediments at a depth of about 11,000 feet (3,353 meters). Elsewhere in the area, several shallow wells (<1,005 feet or 306 meters) had oil shows in the Cambrian and Devonian portion of the section. It may be necessary to drill through sub-thrust Precambrian rocks to find deep potential reservoir rocks (10,000-12,000 feet or 3,048-3,658 meters) in the western portion of the area and 15,000-25,000 feet (4,572-7,620 meters) in the eastern portion of the area. Areas of moderate potential in the Helena Salient area are coincident with the location of mapped anticlinal structures. Three wells have been drilled since 1975, one of which was a dry hole drilled in 1991. Four wells are anticipated in the next 15-20 years, additional shows are expected, and one discovery well is predicted with one or two offset wells (limited number of wells because of depth and cost of drilling). Although the BLM owns surface and mineral rights to some 37,000 acres, about 20% of Area 3) more than half of that area lies within the Limestone Hill Montana Army National Guard Training area, which is contaminated with unexploded military ordinance and the subject of a current Legislative EIS that proposes to withdraw the area from future mineral entry. It is unlikely that any federal wells would be drilled in Area 3. Mineral withdrawal normally does not apply to access for the Mineral Leasing Act, therefore access for fluid mineral drilling within the Limestone Hills Training Area may be possible. Assuming the issue involving safe access with respect to unexploded ordinance can be resolved one well may be drilled on Federal lands within the Limestone Hills Training Area.

**Area #4** - Area #4 consists of the “Crazy Mountain Oil and Gas Play” on **Figure A-1**. This area occupies most of the northern portions of Gallatin and Park Counties in the easternmost portion of the Planning Area as a broad extensive area of potential oil and gas resources. In particular the area east of Livingston appears to have a moderate potential. Non-marine Upper Cretaceous rocks of the Livingston group cover most of the area and range in thickness from 9,000 feet (2,743 meters) (in the west between Belgrade and Bozeman) to about 1,000 feet (305 meters) along the eastern Planning Area boundary.

Concealed beneath these sediments are Cretaceous marine sediments and beneath them a complete sequence of Paleozoic sediments that have locally been thrust faulted, repeating the section. In this area, the Superior 22-25 Windsor well was drilled on the Hunter Anticline to a depth of 8,990 feet (2,740 meters). This well encountered gas in the Cretaceous Eagle sandstone at 1,950 feet (594 meters). Thrust faults were encountered in this well that bottomed in Cambrian sediments, suggesting that multiple stacked targets may be present at depths of 10,000-20,000 feet (3,048-3,658 meters), in addition to the shallow Cretaceous gas targets. Numerous anticlines have been identified in the section that may represent structural traps. Six wells have been drilled since 1975 and none in recent years (post 1990). It is envisioned that four (4) wells may be drilled in this area including one deep well east of Livingston around the interstate and three shallow wells exploring for Cretaceous gas resources. It is envisioned that the deep well and one of the shallow wells would yield discoveries that warranted step-out drilling of two holes for each discovery. These wells will be either on National Forest System Lands, or more likely, on lands with private mineral rights that make up about 94% of Area 4.

**Area #5** - Other places within the Butte Field Office Planning Area, where gas exploration is predicted to occur are areas of coal bed natural gas potential associated with known sub-bituminous coal deposits. Areas of coal bed natural gas potential where activity is predicted in the reasonably foreseeable development scenario occur in one area labeled Area 5 on **Figure A-1**. Overall it is envisioned that initially ten exploration wells would be drilled, and that six of these would discover coal bed natural gas resources that would warrant the drilling of an additional 24 step-out wells to develop the resources (**Table 1**). These would all likely be non-federal wells.

The reasonably foreseeable development scenarios for these areas have been developed for Gallatin and Park Counties by the Bureau of Land Management and the Montana Board of Oil and Gas Conservation (BLM and MBOGC, 2003). It has been estimated that as many as five to 15 wells would be drilled in Gallatin County and that of these, as many as five to 10 would be producing wells from one field (BLM and State of Montana, 2003). Two locations were permitted for exploration drill holes for coal bed natural gas on untested private land in section 13 and 14 of T. 2 S., R. 7E. in the Trail Creek coal field by the state of Montana in 2001. The wells were scheduled to be drilled to depths of about 5,500 feet (1,676 meters) to test the Upper Cretaceous-age Telegraph Creek-Eagle Sandstone interval along the crest of an anticlinal structure. However, legal challenges involving Gallatin County and the formation of a local zoning district tied up the drilling process and the permits to drill expired in January of 2003. Legal issues need to be resolved in the Trail Creek area before

drilling of this previously permitted well might be undertaken. The BLM administers a small number of isolated tracts of split estate minerals in the Trail Creek coal deposit area, but most of the exploration potential lies on private land with separated surface and mineral estate. Assuming that natural gas prices remain high, it is likely that exploration drilling will ultimately be permitted on private land in this area.

In Park County it has been estimated that as many as 10-25 coal bed natural gas exploratory wells might be drilled with as many as 10 to 20 becoming producing wells also from one field (BLM and state of Montana, 2003).

The Bill Barrett Corporation recently (May 2, 2007) initiated a four well drilling program in northern Park County within the Butte Field Office boundaries. The four locations are located in T. 4 N., R. 8 E. and T. 5 N., R. 8 E., None of the locations are located on Federal minerals. The first well in the program (the Draco #10-15, NW1/4, SE1/4, Sec. 15, T. 4N, R. 8E) to be spud in has reached total depth and it has apparently had production casing set (September 14, 2007, Rocky Mountain Oil Journal). The Press has announced that it will be tested in the fall of 2007. The second well is being drilled as this is written (October, 2007). For purposes of this RMP it is assumed by the BLM that two of the wells in this drilling program will be producing wells and that these two wells would each have two producing development wells drilled of which one would be on BLM minerals. The BLM has also assumed that these would be gas wells. This area is an actual prospect that is being drilled. The BLM does not have detailed information on the prospect and does not wish to guess on its size and surface dimensions. As such we have not defined it as a specific area.

## Surface Disturbance Impacts

This part of the Reasonable Foreseeable Development Scenario includes information to characterize the type of disturbance projected. The first section **Table 2** predicts the number of acres of ground surface disturbance resulting from exploration and field production activities, regardless of surface ownership. The calculation of acres disturbed relies upon assumptions derived from past exploration activity in western Montana including the Dillon Field Office and the Butte Field Office and existing production from the Overthrust Belt and south central Montana. All calculations assume a maximum acreage figure for analysis purposes if past activities show a range (e.g., 3.5 acres would be used if the range is 2.5-3.5 acres). This assumption was made in order to portray what the largest amount of disturbance could reasonably be expected to be. Reclaimed lands are also included in these calculations. Although no production exists in the Butte Field Office, there have been 110 test wells in the general area of the Butte Field Office. The area is still considered a wildcat area with no commercial discoveries. Therefore, in order to model a

**Table 2 – Estimation of Surface Disturbance Assumptions****Conventional Oil and Gas**

- The maximum area cleared per well pad would be **3.5 acres** (about 380 ft. x 400 ft.) and 2.3 acres would be stabilized in about 2 years.
- The maximum area cleared per access road per well would be **17 acres** (about 40 ft. x 18480 ft.) and 9 acres would be stabilized in about 2 years.
- All field gathering pipelines for gas (2-4 inch diameter) will follow existing or new access roads and no additional disturbance would result.
- The maximum area cleared for trunk lines to transport gas from four different fields to the existing transmission lines running through the Butte Field Office would be **254.5 acres** (about 25 ft. x 443,520 ft.) and the entire area of disturbance would be stabilized in about 2 years. All perennial stream crossings would use horizontal drilling to avoid disturbance to the stream, its bed, and banks.
- Produced oil would be trucked from the well sites.
- Dry and abandoned wells would be reclaimed.

**Coal Bed Natural Gas**

- The maximum area disturbed per well site would be **0.25 acres** per well pad. Most sites are not cleared (no pad is constructed).
- Access to individual well sites would be two track trails.
- Surface disturbance for field and sales compressors would be 0.5 miles.
- Gathering lines from the well sites to the field and sales compressors would follow access routes and be buried.

production scenario, many assumptions are necessary. These assumptions include location, productive capability, reservoir parameters, and hydrocarbon type and are based on information from representative oil and gas fields in Western Montana. Assumptions for both gas and oil fields are included here. **Table 1** lists the total number of wells (conventional and coal bed methane) forecast for the Butte Field Office.

It is assumed that 6 conventional oil and gas wells would prove to be productive. Additional step-out wells would be drilled. For production the access roads and rights of way would be stabilized by seeding the cut and fill slopes and surfacing the top of the road bed. A small portion of the road rights of way would be returned to a pre-disturbance condition. A major portion of the well pads (up to two thirds) would be rehabilitated. The gas/oil gathering lines would be constructed along existing or new access roads resulting in no additional disturbance. Gas trunk lines would be completely rehabilitated.

It is assumed that 30 coal bed methane wells (including the original discoveries and additional step-out wells) would prove to be productive. Access routes would be two track trails wherever possible requiring no reclamation. When constructed roads are required they will be built to the lowest standard appropriate and the right of way partially reclaimed for use during production. Pipelines would be constructed along existing or new access routes minimizing disturbance.

**Table 3** displays the estimated amount of disturbance (in acres) expected from drilling and production activity predicted in the drilling activity forecast. It is based on the previously discussed assumptions and successful reclamation after construction operations are completed or oil and gas and coal bed methane operations cease.

**Table 4, Table 5, and Table 6** provide technical assumptions for oil and gas and coal bed natural gas activity in the Butte Field Office.

<b>Table 3 - Direct Cumulative Surface Disturbance</b>				
	<b>Unsuccessful Wildcat Wells</b>		<b>Productive Wells</b>	
	<b>Acres Disturbed Pre-Site Reclamation</b>	<b>Post-Site Reclamation</b>	<b>Acres Disturbed Pre-Site Reclamation</b>	<b>Post-Site Reclamation<sup>1</sup></b>
<b>Conventional Oil and Gas Activity</b>				
Well Sites	45.5	0	63	21.5 (2 years)
Access Roads	221	0	189.6	103.7 (2 years)
Pipelines	0	0	254.5	0 (2 years)
<b>Coal Bed Natural Gas Activity</b>				
Well Sites	1	0	7.5	5 (2 years)
Compressors, Pipelines, and Access Roads	3	0	220	147 (2 years)
<b>TOTAL ACRES DISTURBED</b>	<b>270.5</b>	<b>0</b>	<b>734.6</b>	<b>277.2 (2 years)</b>

<sup>1</sup>The figures in this column represent acres required for existing facilities after interim reclamation.

<b>Table 4 - Gas Field Assumptions</b>
<ul style="list-style-type: none"> <li>Gas fields would be discovered east of Lincoln (Area #2), northeast of Townsend (Area #3), east of Livingston (Area #4) and near Wilsall (where the Barrett Corporation is now drilling).</li> <li>Fields would be roughly 3 square miles in surface area except for the field developed near Wilsall where the Barrett Corporation is drilling which would be 6 square miles.</li> <li>Full development would require 3 wells (one discovery and two step-out wells) except for the field being tested by Barrett. That field would consist of 2 discoveries and 2 dry holes. The 2 discoveries would each have two step-out wells. 3-D seismic would be run to refine step out well locations.</li> <li>Gas would be transported by pipeline an order to be marketed. From Area #2 it would be transported west to a main north-south transmission line running through the Butte Field Office for approximately 18 miles. From Area #3 it would be transported approximately 30 miles to a main east-west transmission line running through the Butte Field Office. From Area #4 it would be transported approximately 6 miles north to a main east-west transmission line running through the Butte Field Office. From the area being explored by the Barrett Corporation it would be transported approximately 30 miles south to the main east-west transmission line running through the Butte Field Office.</li> <li>Compressor stations would be necessary along the pipeline route, with one of those stations being within one mile of the main line in order to boost the pipeline gas to the pressure of the main line.</li> <li>Wells would be drilled 10,000 to 15,000 feet deep. One well would be drilled from each well pad. Only one development well would be drilled at a time.</li> <li>Wells would take approximately 300 days to drill.</li> <li>Condensate, gas, and water separation would occur at the wellsites. Water disposal would be into a lined pit at the surface or water would be injected into the subsurface through a dry hole converted into a water disposal well. Condensate would be shipped by truck (1 truck every 4 days).</li> <li>The field is expected to produce for 25 years.</li> <li>Well servicing, repair, and maintenance would continue throughout the life of the field. Well servicing operations would take 5 days per well and occur 6 times /well of the 25 year life of the field. A well tender would make one trip per well per day.</li> </ul>

**Table 5 - Oil Field Assumptions**

- An oil field is possible in the vicinity of Livingston.
- Field would be roughly 1 ½ square miles in surface area.
- Full field development would require 3 wells (one discovery and two step-out wells), 3-D seismic would be run to refine step out well locations.
- Oil would be transported by truck to the appropriate refining facility.
- Wells would be 2,500 to 3,500 feet deep. One well would be drilled from each well pad. Only one development well would be drilled at a time.
- The wells would take approximately 21 days to drill.
- Oil, gas, and water separation would occur at the well sites. Water disposal would be into a lined pit at the surface or water would be injected into the subsurface through a dry hole converted into a water disposal well. Gas would be used on lease to separate oil and water and to heat oil. Gas not used on lease would be sold or vented/flared to the atmosphere. If sufficient gas quantities are produced this gas may also be captured and sold. For this analysis all unused gas is assumed to be reinjected for pressure maintenance
- The field is expected to produce for 25 years.
- Well servicing, repair, and maintenance continue throughout the life of the field. Well servicing operations would take 5 days per well and occur 6 times/well over the 25 year life of the field. A well tender would make one trip per day.

**Table 6 - Coal Bed Natural Gas Field Assumptions**

- Two coalbed natural gas fields are expected in the area of Bozeman Pass within the Trail Creek-Livingston coal field.
- Each field would be approximately 1.75 square miles in surface area.
- Each field would require 1 field compressor and one may sales compressor may be needed depending on where the wells are located.
- Ten to 27 miles of plastic low-pressure gathering lines would be required. These would be laid in the travel routes and follow existing roads to field compressors. Two to four miles of low-pressure steel lines would be laid from the field compressors to the sales compressor.
- No more than 20 miles of sales lines would be laid to the main transmission line in the area.
- Total disturbance excluding the actual well sites including compressors, pipelines, and access routes would be 220 acres.

## PROCEDURES IN OIL AND GAS RECOVERY AND OPERATIONS

### GEOPHYSICAL OPERATIONS

Oil and gas reservoirs are discovered by either direct or indirect exploration methods. Direct methods include mapping of surface geology, observing oil or gas seeps, and gathering information on hydrocarbon shows observed in drilling wells. Indirect methods include various types of geophysical exploration such as seismic, gravity, and magnetic surveys, which use remote data gathering techniques to delineate subsurface structures or lithologic changes that are not directly

observable, but that may contain or trap oil and gas. Data is often acquired using equipment mounted on surface vehicles or aircraft. Information from geophysical exploration can lead oil companies or others to request that lands be offered for lease, or assist in the selection of drill sites on existing leases. However, a federal oil and gas lease is not required in order to conduct geophysical operations. Existing road systems are used where available. Roads may be cleared of vegetation and loose rocks to improve access for trucks if the permit allows that action.

Blading and road construction for seismic operations are not usually allowed so that environmental impacts are minimized. In areas with rugged terrain or without

access roads, and during certain seasons of the year, seismic work is conducted by helicopter rather than by ground vehicles. Other geophysical operations that do not cause additional surface disturbance include remote sensing, and gravity, and aeromagnetic surveying.

## **Geophysical Permitting Procedures and Regulations**

Geophysical operations on and off an oil and gas lease are reviewed by the Federal Surface Management Agency (SMA), which can include the BLM, Bureau of Reclamation, or U.S. Forest Service (USFS). Close cooperation between the operator and the managing agency during geophysical operations minimizes surface impacts and protects other resources.

### ***Notification Process***

Geophysical operations on public lands are reviewed by the BLM. Geophysical exploration on public lands requires review and approval following the procedures in 43 CFR Subparts 3150, 3151, and 3154. In the Butte Field Office, the Field Manager is authorized to approve geophysical operations. The responsibilities of the geophysical operator and the Field Manager during geophysical operations are described below.

### ***Geophysical Operator***

The operator is required to file a Notice of Intent to Conduct Oil and Gas Exploration Operations (form 3150-4) for operations on public lands administered by the BLM. Maps (preferably 1:24,000 scale topographic maps) showing the location of the proposed lines, access routes and ancillary facilities must accompany the Notice of Intent. When the Notice of Intent is filed, the authorized officer may request a prework conference or field inspection. Special requirements or procedures that are identified by the authorized officer are included in the Terms and Conditions for Notice of Intent to Conduct Geophysical Exploration (form 3150-4 and a copy of the state requirements). Any changes in the original Notice of Intent must be submitted in writing to the authorized officer. Written approval must be secured before activities proceed.

Bonding of the operator is required. A copy of proof of satisfactory bonding shall accompany the Notice of Intent. Proper bonding may include a \$5,000 individual, \$25,000 statewide, or \$50,000 nationwide geophysical exploration bond. In lieu of an exploration bond, a statewide or nationwide oil and gas bond may be used if it contains a rider for geophysical exploration. The operator is required to comply with applicable federal, state, and local laws such as Federal Land Policy and Management Act of 1976, the National Historic Preservation Act of 1966, and the Endangered Species Act of 1973, as amended. Earth-moving equipment shall not be used without prior approval. Operators may be required to submit an archeological evaluation and the

agency provide NEPA documentation for cultural and wildlife resources if dirt work or other surface disturbance is contemplated, or if there is reason to believe that these resources may be adversely affected.

When geophysical operations have been completed including any required reclamation or rehabilitation, the operator is required to file a Notice of Completion (form 3150-5) including certification that all terms and conditions of the approved Notice of Intent have been fulfilled. The operator must also submit a map that shows the actual line location, access route, and other survey details.

### ***BLM Field Manager (authorized officer)***

The authorized officer is required to contact the operator within five working days after receiving the Notice of Intent to explain the terms of the notice, including the “Terms and Conditions for Notice of Intent to Conduct Geophysical Exploration,” current laws, and BLM-administrative requirements. At the time of the prework conference or field inspection, written instructions or orders are given to the operator. The authorized officer is responsible for the examination of resource values to determine appropriate surface protection and reclamation measures. Compliance inspections during the operation ensure that stipulations are followed. The authorized officer is required to make a final inspection following filing of the Notice of Completion. Compliance inspections upon completion of work ensure that required reclamation is properly completed. When reclamation is approved, obligation against the operator’s bond is released. The BLM has 30 days after receipt of the Notice of Completion to notify the operator whether the reclamation is satisfactory or if additional reclamation work is needed. Bonding liability will automatically terminate within 90 days after receipt of the Notice of Completion unless the authorized officer notifies the operator of the need for additional reclamation work.

### ***State Standards***

Geophysical operators register with the state through the County Clerk and Recorder’s office. State regulations include requirements for permitting geophysical activities such as shothole locations, drilling techniques, plugging techniques, bonding, and reclamation.

### ***Mitigation***

When a geophysical Notice of Intent is received, restrictions may be placed on the application to protect resource values or to mitigate impacts. Many of these requirements may be the same as the oil and gas lease stipulations adopted in the RMP. Other less restrictive measures may be used when impacts to resource values will be less severe. This is due in part to the temporary nature of geophysical exploration. Seasonal restrictions may be imposed to reduce conflicts with wildlife, watershed damage, and hunting activity. The decisions

concerning the level of protection required are made on a case-by-case basis when a Notice of Intent is received.

## LEASING PROCESS

Federal oil and gas leasing authority is found in the 1920 Mineral Leasing Act, as amended, for public lands and the 1947 Acquired Lands Leasing Act, as amended, for acquired lands. Leasing of federal oil and gas is affected by other acts such as National Environmental Policy Act of 1969, the Wilderness Act of 1964, National Historic Preservation Act of 1966, the Endangered Species Act of 1973, Federal Land Policy and Management Act of 1976, and the Federal Onshore Oil and Gas Leasing Reform Act of 1987. Regulations governing federal oil and gas leasing are contained in 43 CFR Part 3100 with additional requirements and clarification found in Onshore Operating Orders and Washington office manuals, handbooks and instruction memorandums.

The 1920 *Mineral Leasing Act* provides that all public lands are open to oil and gas leasing unless a specific order has been issued to close an area. Leasing procedures for oil, conventional gas, and coal bed natural gas are the same.

The lease grants the right to explore, extract, remove, and dispose of oil and gas deposits that may be found in the leased lands. The lessee may exercise the rights conveyed by the lease subject to the lease terms and attached stipulations, if any.

Lease rights may be subject to lease stipulations and permit approval requirements. Stipulations and permit requirements describe how lease rights are modified. Lease constraints or requirements may also be applied to applications for permit to drill on existing leases provided the constraints or requirements are within the authority reserved by the terms and conditions of the lease. The stipulations and conditions of approval must be in accordance with laws, regulations, and lease terms. The lease stipulations and permit conditions of approval allow for management of federal oil and gas resources in concert with other resources and land uses. The BLM planning process is the mechanism used to evaluate and determine where and how federal oil and gas resources will be made available for leasing. In areas where oil and gas development may conflict with other resources, the areas may be closed to leasing. Areas where oil and gas development could coexist with other land uses or resources will be open to leasing. Leases in these areas will be issued with standard lease terms or with added stipulations based upon decisions in the land use document. Added stipulations are a part of the lease only when environmental and planning records demonstrate the necessity for the stipulations (modifications of the lease).

Currently, leases are issued as either competitive leases or noncompetitive leases with 10-year terms.

Competitive leases will be sold to the highest qualified bidder at oral auctions that are held at least quarterly. Tracts that receive no bid at the sale are available for the filing of noncompetitive offers for two years following the sale. All offers filed the day after the sale (referred to as day-after-the-sale filings) are considered simultaneously filed. This means that if there is more than one offer filed for a specific parcel the day after the sale, a drawing must be held to determine the priority on multiple offers. Noncompetitive offers filed after that time are on a first-come first-served basis. If there are no offers filed for a parcel for the two-year period after the sale, the lands must be nominated again for competitive leasing. Rental payments for these leases will be \$1.50 per acre for the first 5 years and \$2.00 per acre thereafter until production is established. If the lessee establishes hydrocarbon production, the leases can be held for as long as oil or gas is produced. The royalty rate for leases issued following the 1987 Oil and Gas Leasing Reform Act is 12-1/2 percent one-half of which is returned to the State of Montana on public domain lands (not acquired lands). Minimum royalty is the same amount as the rental. Future interest leases are available for entire or fractional mineral estates that have not reverted to federal ownership. These are minerals that are reserved by the grantor for a specific period of time in warranty deeds to the United States. Any future interest leases may be obtained only through the competitive bidding process and are made effective the date of vesting of the minerals with the United States.

## Resource Management Plan Maintenance

New information may lead to changes in existing resource inventories. New use areas and resource locations may be identified or use areas and resource locations that are no longer valid may be identified. These resources usually cover small areas requiring the same protection or mitigation as identified in this plan. Identification of new areas or removal of old areas that no longer have those resource values will result in the use of the same lease stipulation identified in this plan. These areas will be added to the existing data inventory without a plan amendment. In cases where the changes constitute a change in resource allocation outside the scope of this plan, a plan amendment would be required.

## Lease Stipulations

Certain resources in the planning area require protection from impacts associated with oil and gas activities. The specific resource and the method of protection are contained in lease stipulations. Lease stipulations are usually no surface occupancy, controlled surface use, or timing limitation. A notice may also be included with a lease to provide guidance regarding resources or land uses. While the actual wording of the stipulations may be adjusted at the time of leasing, the protection standards described will be maintained.

## Controlled Surface Use

Use or occupancy is allowed (unless restricted by another stipulation), but identified resource values require special operational constraints that may modify the lease rights. Controlled surface use is used for operating guidance, not as a substitute for the no surface occupancy or timing stipulations.

## No Surface Occupancy (NSO)

Use or occupancy of the land surface for fluid mineral exploration or development is prohibited in order to protect identified resource values. The no surface occupancy stipulation includes stipulations which may have been worded as No Surface Use and Occupancy,” “No Surface Disturbance,” “Conditional No Surface Occupancy,” and “Surface Disturbance or Occupancy Restriction (by location).”

## Timing Limitation (Seasonal Restriction)

Prohibits surface use during specified times to protect identified resource values. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

## Waivers, Exceptions, Modifications

Lessees must honor lease stipulations when an Application for Permit to Drill or other surface disturbing operations are proposed to explore and develop a lease, unless the BLM grants a waiver, exception, or modification to a lease stipulation. This RMP establishes the guidelines by which future waivers, exceptions, or modifications are granted within the Butte Field Office. Substantial modification or waiver is subsequent to lease issuance is subject to public review for at least a 30-day period.

**Exception:** A case-by case exemption from a lease stipulation. The stipulation continues to apply to all other sites within the leasehold to which the restrictive criteria apply.

**Modification:** Fundamental changes to the provisions of a lease stipulation, either temporarily or for the term of the lease. Therefore, a modification may include an exemption from or alteration to a stipulated requirement. Depending on the specific modification, the stipulation may or may not apply to all other sites within the leasehold to which the restrictive criteria apply.

**Waiver:** Permanent exemption from a lease stipulation. The stipulation no longer applies anywhere within the leasehold.

## PERMITTING

A federal lessee or operator is governed by procedures set forth in the Code of Federal Regulations at 43 CFR Part 3160, Onshore Oil and Gas Order No. 1, “Approval of Operations on Onshore Federal and Indian Oil I and Gas Leases,” issued under 43 Code of Federal Regulations (CFR) 3164 and other orders and notices.

The lessee may conduct lease operations after lease issuance. However, proposed drilling and associated activities must be approved in advance before beginning operations. Therefore, before beginning construction or the drilling of a well, the lessee or operator must file an Application for Permit to Drill (APD) with the BLM Great Falls Oil and Gas Field Station. A copy of the application will be posted in the Field Station and Butte Field Office, and if applicable, in the office of the Surface Management Agency (SMA) for a minimum of 30 days for review by the public. After 30 days, the application can be approved in accordance with (a) lease stipulations, (b) Onshore Oil and Gas Orders, and (c) Onshore Oil and Gas regulations (43 CFR Part 3160) if it is administratively and technically complete.

Evidence of bond coverage for lease operations must be submitted with the application. Bond amount must not be less than a \$10,000.00 lease bond, a \$25,000.00 statewide bond or a \$150,000.00 nationwide bond.

Pre-drill on-site inspections will be conducted for all wells. The inspection makes possible selection of the most feasible well site and access road from environmental, geological, and engineering points of view. The purpose of the field inspection is to evaluate the operator's plan, assess the situation for possible impacts, and to formulate resource protection stipulations. Surface use and reclamation requirements are developed during the on-site inspection that is usually conducted within 15 days after receipt of the Notice of Staking (NOS) or APD. For operations proposed on privately-owned surface, if the operator after a good-faith effort is unable to reach an agreement with the private surface owner, the operator must post a bond to cover loss of crops and damages to tangible improvements prior to approval of the APD.

Normally, site-specific mitigations in the form of conditions of approval are added to the APD for protection of surface and subsurface (including groundwater) resource values in the vicinity of the proposed activity. The BLM is responsible for preparing environmental documentation necessary to satisfy the National Environmental Policy Act (NEPA) requirements and provide any mitigation measures needed to protect the affected resource values.

Conditions of approval implement the lease stipulations and are part of the permit when environmental and field reviews demonstrate the necessity for operating constraints or requirements. A surface restoration plan is

part of an approved permit, either an APD or Sundry Notice that includes other surface-disturbing activities. The authorized officer will act on the application in one of two ways:

Within 30 days after the operator has submitted a complete application including incorporating any changes that resulted from the onsite inspection the BLM will:

(1) approve the application subject to reasonable conditions of approval if the requirements of the National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), Endangered Species Act (ESA), or other applicable law have been completed and, if on FS lands, FS has approved the Surface Use Plan of Operations; or

(2) notify the operator that it is deferring action on the permit. The notice of deferral must specify:

(a) any action the operator could take that would enable BLM to issue a final decision on the application, with FS concurrence if appropriate. Actions may include but are not limited to; assistance with data gathering or assistance with preparation of analyses and documents;

(b) and if necessary, a list of actions that BLM or the FS, if appropriate, need to take, including completing requirements of NEPA or other applicable law and a schedule for completing these actions.

The operator has 2 years from the date of the notice of deferral to take the action specified in the notice. If all analyses required by NEPA, NHPA, ESA and other applicable laws have been prepared, BLM and with FS concurrence, if appropriate, shall make a decision on the permit within 10 days of receiving a report from the operator addressing all of the issues or actions specified in the deferral notice and certifying that all required actions have been taken. If the operator has not completed the actions specified in the notice, BLM may deny the permit at any time later than 2 years from the operator's receipt of the deferral notice."

For drilling operations on lands with state or private mineral ownership, the lessee must meet the requirements of the mineral owner and the state regulatory agency. The BLM does not have jurisdiction over nonfederal minerals; however, the BLM has surface management responsibility in situations of BLM surface over nonfederal mineral ownership.

When final approval is given by the BLM, the operator may begin construction and drilling operations. Approval of an APD is valid for one year. If construction does not begin within one year, the permit must be reviewed prior to approving another APD.

A Sundry Notice is used to approve other surface and subsurface lease operations. When a well is no longer useful, the well is plugged and the surface reclaimed. A Sundry Notice is also used to approve well plugging and

reclamation operations, although verbal approval for plugging may be given for a well that was drilled but not completed for production.

The period of bond liability is terminated after all wells covered by the bond are properly plugged and the surface reclaimed. The lands may then become available for future leasing.

## **APPLICATION FOR PERMIT TO DRILL**

Applications for Permit to Drill are approved for the Butte Field Office by the supervisor of the Great Falls Oil and Gas Field Station. The approved APD includes Conditions of Approval, and Informational Notices that cite the regulatory requirements from the Code of Federal Regulations, Onshore Operating Orders and other guidance.

## **CONDITIONS OF APPROVAL**

Conditions of approval are mitigation measures that implement restrictions in light of site-specific conditions. General guidance for conditions of approval and surface operating standards is found in the BLM and USFS brochure entitled "Surface Operating Standards for Oil and Gas Exploration and Development" (USDI, BLM1989c) and BLM Manual 9113 entitled "Roads". The BLM commonly applies best management practices when approving APDs. The sources of many of these may be found in RMP Appendix D at page 4.

The following mitigation measures may be applied to approved permits to drill as conditions of approval. The listing is not all-inclusive, but presents some possible conditions of approval that may be used in the planning area. The wording of the condition of approval may be modified or additional conditions of approval may be developed to address specific conditions.

In addition to the best management practices identified in Appendix D, the BLM will also develop site-specific practices on a case-by-case basis as needed.

## **Surface Conditions**

- a) The access road on the BLM surface will not be bladed unless prior BLM approval is obtained.
- b) The operator will be responsible for weed control on the access road, well location, and pipeline for the life of the well.
- c) The operator will clean the undercarriage of all rigs prior to entering onto the leasehold to reduce the chances for noxious weed infestations.
- d) Topsoil is to be removed and stockpiled. Operator will be required to cover the topsoil pile to prevent the loss of topsoil to wind erosion. Operator must cover the topsoil with a biodegradable mesh fabric that allows water and air to circulate through the

- topsoil. Operator cannot cover the topsoil with any type of impermeable fabric. Operator will be responsible for weed control on the topsoil stockpile.
- e) Avoid constructing reserve pits in natural watercourses or areas of shallow groundwater. Water courses include lake beds, gullies, draws, streambeds, washes, arroyos, or channels that are delineated on a 1:24,000 USGS quadrangle map or have a hydrologic connection to streams, rivers, or lakes. The reserve pit should normally be located entirely in cut material. The preferred method of reserve pit construction on steeply sloping sites is to locate the pit on the drill pad next to the high wall. The pits are constructed totally in cut at such locations. If this is not possible, at least 50 percent of the reserve pit should be constructed below original ground level to help prevent failure of the pit dike. Fill dikes should be properly compacted in lifts. The necessary degree of compaction depends on soil texture and moisture content. The pit should be designed to contain all anticipated drilling muds, cuttings, fracture fluids, and precipitation while maintaining at least 2 feet of freeboard. Pits improperly constructed on slopes or poor soil types may leak along the plane between the natural ground level and the fill. There is a significant potential for pit failure in these situations. When constructing dikes for pits or impoundments with fill embankment, a keyway or core trench should be excavated to a minimum depth of 2 to 3 feet below the original ground level. The core of the embankment can then be constructed with compacted, water-impervious material.
- f) Containment structures sufficiently impervious to prevent a discharge to waters of the US, such as containment dikes, containment walls, drip pans, or equivalent protection actions are to be constructed and maintained around all qualifying bulk oil storage facilities, including tank batteries, consistent with the Environmental Protection Agency's Spill Prevention, Control, and Countermeasure (SPCC) regulation (40 CFR 112). The containment structure must have sufficient volume to contain, at a minimum, the content of the largest storage tank containing liquid hydrocarbons within the facility/battery and sufficient freeboard to contain precipitation, unless more stringent protective requirements are deemed necessary by the authorized officer. Containment dikes are not to be constructed with topsoil or coarse, insufficiently impervious spoil material. Containment is strongly suggested for produced water tanks. Chemicals should be placed within secondary containment and stored so that the containers are not in contact with soil or standing water and product and hazard labels are not exposed to weathering.
- g) Rehabilitation of upland sites following disturbance would use the plant species listed in **Table 7** for seeding. The species used for rehabilitation would vary depending on the adjacent habitat conditions, site potential, soils, and precipitation. Species not in the following list could be added if site conditions warrant, species availability changes or if there are large acreages are involved.
- h) All permanent structures will be painted the neutral color of Sand Beige (5Y 6/3), Desert Brown (10YR 6/3), Carlsbad Canyon (2.5Y 6/2) or Slate Gray (5Y 6/1) as displayed in the Standard Environmental Color chart (available at the BLM office) or other acceptable color approved by the authorized officer to blend in with the surrounding landscape.
- i) If the well is a dry hole, Operator will be required to fence the entire disturbed area of the location to allow the seedlings and vegetation to re-establish. This fencing must be stock tight and must remain in place until the BLM requests otherwise.
- j) The Operator will be responsible for control of noxious weeds occurring as a result of lease operations. The Surface Management Agency will be responsible for approval of weed control programs.
- k) Prior to the use of herbicides on public land, the applicant will have to obtain from the BLM authorized officer written approval of a plan showing the type and quantity of material to be used, weed(s) to be controlled, method of application, location of storage and disposal of containers and any other pertinent information deemed necessary by the authorized officer. Operators must monitor disturbed areas annually from June through August for the presence of noxious weeds. Monitoring must begin prior to disturbance.
- l) Within the Distribution Zone of grizzly bears, food storage regulations will be followed to minimize bear-human conflicts. Proper food storage is essential to successful human-bear management. "Food" includes actual food, trash, recyclables, toiletries, cosmetics, first aid kits, pet food, sunscreen, baby wipes, scented tissue, beverage cans and bottles, canned food, mosquito repellent, tobacco products, and any related items with a scent. All food items, garbage, beverages, coolers, stoves, grills, cooking utensils, food containers, and pet food not in immediate use (day or night) must be stored in Bear Resistant Containers (BRC), stored in a closed vehicle constructed of solid, nonpliable material or be hung from food poles where provided or limbs of trees. Food items must be hung 10 feet clear of the ground at all points and 4 feet horizontally from any supporting tree or pole. Camps and job sites must be clean at all times. No garbage will be burned or buried. All garbage will be removed from the site.

<b>Table 7 Rehabilitation Species List</b>			
<b>Common Name</b>	<b>Scientific Name</b>	<b>4 Code</b>	<b>6 Code</b>
<b>12 to 14 inch precipitation zone</b>			
Western Wheatgrass	<i>Pascopyrum smithii</i>	PASM	PASSMI
Bluebunch Wheatgrass	<i>Pseudoroegneria spicata</i>	PSSP6	PSESPI
Thickspike Wheatgrass	<i>Elymus macrourus</i>	ELMA7	ARGDAS
Slender Wheatgrass	<i>Elymus trachycaulus</i>	ELTR7	ELYTRA
Green Needlegrass	<i>Nassella viridula</i>	NAVI4	STIVIR
Needle And Thread	<i>Hesperostipa comata</i>	HECO26	STICOM
Blue Flax	<i>Linum perenne</i>	LIPE2	LINPER
Scarlet Globemallow	<i>Sphaeralcea coccinea</i>	SPCO	SPHCOC
Silky Lupine	<i>Lupinus sericeus</i>	LESE4	LUPSER
Wyoming Big Sage	<i>Artemisia tridentate</i>	ARTRW8	ARTTRIW
Woods' Rose	<i>Rosa woodsii</i>	ROWO	ROSWOO
<b>15 to 19 inch precipitation zone</b>			
Basin Wildrye	<i>Leymus cinereus</i>	LECI4	LEYCIN
Bluebunch Wheatgrass	<i>Pseudoroegneria spicata</i>	PSSP6	PSESPI
Slender Wheatgrass	<i>Elymus trachycaulus</i>	ELTR7	ELYTRA
Idaho Fescue	<i>Festuca idahoensis</i>	FEID	FESIDA
Sheep Fescue	<i>Festuca ovina</i>	FEOV	FESIVI
Sandberg Bluegrass	<i>Poa secunda</i>	POSE	POASEC
Blue Flax	<i>Linum perenne</i>	LIPE2	LINPER
Silky Lupine	<i>Lupinus sericeus</i>	DESE4	LUPSER
Wyoming Big Sage	<i>Artemisia tridentate</i>	ARTRV	ARTTRIV
Woods' Rose	<i>Rosa woodsii</i>	ROWO	ROSWOO

- m) Operator road use activities on BLM lands must conform to existing travel plans.

### Downhole Conditions

- Surface casing shall have centralizers on each of the bottom three joints and shall be cemented back to surface.
- BOP system shall be consistent with Onshore Oil and Gas Order No. 2, 2M system.
- The operator shall obtain verbal approval prior to initiating side-tracking operations. At the time of approval, the operator must identify the proposed azimuth, kick-off point, inclination rate (angle build rate), and the estimated closure or horizontal length to be drilled. All wellbore paths, i.e. different orientations of bottom hole locations, require prior approval.
- The operator shall have sufficient weighting materials and loss circulation materials on location

in the event of a pressure kick or in the event of loss circulation.

### Informational Notice

- Approval of this APD does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease, which would entitle the applicant to conduct operations thereon.
- The lessee shall comply with applicable laws and regulation; with the lease terms, Onshore Oil and Gas Orders; NTL's; and with other orders and instructions of the authorized officer.
- A complete copy of the approved APD must be on the well site and available for reference during the construction and drilling phase.
- Any deviation from the terms of this APD requires prior approval.
- This drilling permit is valid for either 1 year from the approval date or until lease expiration, whichever occurs first.

- f) Each drilling, producing, or abandoned well shall be identified with the operator's name, the lease serial number, the well number, and the surveyed description of the well (footages or the quarter section, the section, township, and range). All markings must be legible, and in a conspicuous place.

### Notification Requirements

- a) Notify this office at least 12 hours before beginning dirt work\*.
- b) Notify this office verbally at least 6 hours before the well is spudded.
- c) Notify this office verbally at least 6 hours prior to running/cementing casing.
- d) Notify this office verbally at least 6 hours prior to conducting BOP tests.
- e) Notify this office at least 6 hours prior to plugging for verbal plugging orders.
- f) BLM Representative – Great Falls Field Station Office Telephone No. (406) 791-7700:
- g) After hours and weekend contacts are:
- i. Petroleum Engineer Technician
  - ii. Petroleum Engineer
  - iii. Environmental Specialist
  - iv. Field Station Supervisor

### Plugging Requirements

- a) Prior approval for abandonment must be obtained. Initial approval for abandonment during drilling operations may be verbal but must be followed by written notification on Form 3160-5, in triplicate.
- b) Upon completion of the approved plugging, the operator will cut the casing off four feet below reclaimed ground level and a ¼" x 12" x 12" plate (with a ⅛" weep hole) shall be welded onto a fitting to be screwed into a collar either welded or screwed to the production casing. **The standard aboveground dry hole marker is accordance with 43 CFR 3162.6(d) has been waived by the Great Falls Field Station.** Pits must be fenced until dry or pumped and then filled in and recontoured unless otherwise approved by the Field Station Supervisor.
- c) The following minimum information shall be permanently placed on the plate: "Fed" or "Ind" as applicable; "Lease Number, Operator, Well Number, and Location by quarter/quarter, Section, Township, and Range."

### Reports and Notifications

- a) All submitted information not marked "CONFIDENTIAL INFORMATION" is subject to public disclosure in accordance with 43 CFR 3100.4.

- b) Production Startup Notification is required not later than the 5<sup>th</sup> business day after any well begins production on which royalty is due anywhere on a lease site or allocated to a lease site, or resumes production in the case of a well which has been off production for more than 90 days, the operator shall notify the authorized officer by letter or sundry notice, Form 3160-5, or orally to be followed by a letter or sundry notice, of the date on which such production has begun or resumed.

### Hazardous Materials

- a) Operators and their contractors are to ensure all production, use, storage, transport, and disposal of hazardous materials resulting from the proposed project is in accordance with all applicable Federal, State and local laws, regulations and guidelines, existing or hereafter enacted or promulgated that effect the management of hazardous material, as defined in this paragraph. Hazardous material means any substance, pollutant, or contaminant listed as a hazardous substance under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended, 42 USC 9601 et seq., and its regulations (found at 40 CFR 302). The definition of hazardous substances under CERCLA includes "hazardous waste" defined in the Resource Conservation and Recovery Act (RCRA) of 1976, as amended, 42 USC 6901 et seq., and its regulations. The term also includes any extremely hazardous substances defined by 40 CFR 355 and any nuclear or byproduct material defined by the Atomic Energy Act of 1954, as amended, 42 USC 2011 ET seq. The term does not include petroleum, including crude oil or any fraction thereof not otherwise listed or designated as a hazardous substance under CERCLA section 101 (14), 42 USC 9601 (14), or natural gas.
- b) Only drilling mud, drilling fluids, cuttings, native soils, cementing materials and/or approved pit solidifying materials will be placed in the reserve or working pits.
- c) Nonexempt wastes will not be mixed with exempt wastes.

### Environmental Obligations and Disposal of Produced Water

- a) The Operator is required to take all necessary steps to prevent any death of a migratory bird in pits or open vessels associated with the drilling, testing, completion, or production of this well. The death of any migratory bird found in such a pit or open vessel is a violation of the Migratory Bird Treaty Act and is considered a criminal act. Any deaths of migratory birds attributable to pits or open vessels associated with drilling, testing, completing, or production operations must be reported to this office

and the United States Fish and Wildlife Service within 24 hours.

- b) The BLM may require that the pit be designed or the open vessel be covered to deter the entry of birds in any facility associated with drilling, testing, completing, or production of this well. Fencing, screening, and netting of pits may be required as a means to deter bird entry. These conditions would most likely be imposed to prevent the entry of migratory birds if oil is left in pits or open vessels after the cessation of drilling or completion operations, if water disposal pits consistently receive oil, or if pits or open vessels are used repeatedly for emergency situations which result in the accumulation of oil.
- c) Voluntary pit fencing, screening, and netting, or sealing vessels is encouraged thus avoiding potential instances that may result in the death of a migratory bird.
- d) With BLM approval, water produced from newly completed wells may be temporarily disposed of into unlined pits for up to 90 days. During this initial period, application for the permanent disposal method must be made in accordance with Onshore Order No. 7.

### **Paleontological/Cultural Stipulations**

Paleontological and archaeological field checks by BLM personnel or other authorized personnel will occur prior to disturbance as deemed appropriate by the BLM. A BLM-approved archaeologist or paleontologist will conduct monitoring during surface-disturbing activities. Paleontological or cultural resource sites will be avoided or mitigated as necessary prior to disturbance. Any cultural or paleontological resource discovered by an operator or any person working on his/her behalf will be reported immediately to the BLM, and all operations that may further disturb such resources will be suspended until written authorization to proceed is issued by the BLM authorizing officer. An evaluation of the discovery will be made by the BLM to determine appropriate actions to prevent the loss of significant resources.

## **CONSTRUCTION**

Construction of the access road and the well site is necessary before drilling operations begin. The extent of surface disturbance necessary for construction depends on the terrain, depth of the well, drill rig size, circulating system, and safety standards.

The depth of the drill test determines the size of drill rig needed, and therefore, the size of the work area necessary, the need for all-weather roads, water requirements, and other needs. The terrain influences the construction problems and the amount of surface area to be disturbed. Reserve pit size may vary because of well depth, drill rig size, or circulating system.

Access roads to well sites in the planning area usually consist of running surfaces 14 to 24 feet wide that are ditched on one or both sides. Many of the roads constructed will follow existing roads or trails. New roads might be necessary because existing roads are not at an acceptable standard. For example, a road may be too steep so that realignment is necessary.

Roads can be permanent or temporary, depending on the success of the well. The initial construction can be for a temporary road; however, it is designed so that it can become permanent if the well produces. Not all temporary roads constructed are immediately rehabilitated when the drilling stops. A temporary road is often used as access to other drill sites. The main roads and temporary roads require graveling to be maintained as all-weather roads. This is especially important in the spring. Access roads may be required to cross public lands to a well site located on private or state lands. The portion of the access road on public land would require a BLM right-of-way.

The amount of level surface required for safely assembling and operating a drilling rig varies with the type of rig, but averages 300 feet by 400 feet. Approximately 3-1/2 acres would be impacted by well site construction. The area is cleared of large vegetation, boulders, or debris. Then the topsoil is removed and saved for reclamation. A level area is then constructed for the well site, which includes the reserve pit.

Bulldozers and motor scrapers are typically used to construct the well pad. The well pad is flat (to accommodate the drill rig and support equipment) and large enough to store all the equipment and supplies without restricting safe work areas. The drill rig must be placed on "cut" material rather than on "fill" material to provide a stable foundation for the rig. The degree of cutting and filling depends on terrain; that is, the flatter the site, the less dirt work is required.

Hillside locations are common, and the amount of dirt work varies with the steepness. A typical well pad will require a cut 10 feet deep against the hill and a fill 8 feet high on the outside. It is normal to have more cut than fill to allow for compaction, and any excess material is then stockpiled. Eventually, when the well is plugged and abandoned, excavated material is put back in its original place.

Reserve pits are normally constructed on the well pad. Usually the reserve pit is excavated in "cut" material on the well pad. The reserve pit is designed to hold water, drill cuttings, and used drilling fluids. Generally, reserve pits are rectangular in shape and 8 to 12 feet deep, however, the size and number of pits depends on the depth of the well, circulating system and anticipated down hole problems, such as excess water flows. The reserve pit can be lined with a synthetic liner to contain pit contents and reduce pit seepage. Not all reserve pits are lined; however, BLM can require a synthetic liner

based upon factors such as soils, pit locations, ground water, and drilling mud constituents. The operator can elect to line the reserve pit without that requirement. Pits may be divided into compartments separated by berms for the proper management of derived waste (e.g., drill cuttings, mud, water flows).

An adequate supply of water is required for drilling operations and other uses. During drilling operations, water is continually transported to the rig location. Approximately 1,680,000 gallons of water are required to drill an oil or gas well to the depth of 9,000 feet. The sources of water can be a water well at the drill site or remote sources such as streams, ponds, or wells. The water is transported to the site by truck or pipeline. Pipelines are normally small diameter surface lines. The operator must file for and obtain all necessary permits for water from the state of Montana. On public lands, an operator must have the BLM's permission before surface water can be used.

## **DRILLING OPERATIONS**

Starting to drill is called "spudding in" the well. Initially, drilling proceeds rapidly due to the presence of unconsolidated or shallow, poorly consolidated rock formations. Drilling is accomplished by rotating special bits under pressure at the end of drill pipe (string) extended down the hole as it advances. While drilling, the rig derrick and associated hoisting equipment bear most of the drill pipe (string) weight. The weight on the bit is generally a small fraction of the total drill string weight. The combination of rotary motion and weight on the bit causes rock to be chipped away at the bottom of the hole.

Drilling fluid or mud is circulated through the drill pipe to the bottom of the hole, through the bit, up the bore of the well, and finally to the surface. When the mud emerges from the hole, it goes through equipment used to screen and remove rock chips and sand-size solids. When the solids have been removed, the mud is placed into holding tanks and from the tanks it is pumped back into the well. The mud is maintained at a specific weight and viscosity to cool the bit, seal off any porous zones (protect aquifers or prevent damage to producing zone productivity), subsurface pressure control, lubrication of the drill string, clean the bottom of the hole, and bring the rock chips to the surface.

There are three common types of drilling fluids: water-based, oil-based, and synthetic. Water-based muds are the most common and are largely made up of water and bentonite, clay that has special properties used to maintain proper viscosity and other properties over a wide range of drilling conditions. Oil-based mud is used for subsurface conditions where water may react with shale and cause caving and sloughing of the sides of the well bore. Synthetic drilling fluids are used for special conditions and have become more common in recent

years. They are composed of organic polymers or other chemicals and are often designed to be environmentally benign. Additives are used to maintain the drilling mud properties for specific conditions that may be encountered during drilling.

As drilling progresses for a vertical well, pipe or casing is placed as a liner in the hole. Casing consists of steel pipe that is placed into the hole to prevent the collapse of the hole, to protect aquifers, and to isolate producing zones from other formations. Several strings of casing, that have different purposes, may be placed into the well. The first string of pipe is the conductor pipe, which stabilizes the hole near the surface. The second string of pipe placed in the hole is for surface casing, which is set deep enough to reach a competent rock below the deepest usable freshwater aquifer.

The surface casing is set and cemented in the hole by pumping cement between the casing and the well bore wall. Surface casing acts as a safety device to protect freshwater zones from drilling fluid contamination. To prevent the well from "blowing-out" in the event the drill bit hits a high-pressure zone, blowout preventers are mounted on top of the surface casing. If high-pressure zones are encountered that cannot be controlled with weighting using mud additives (drilling fluids are the first line of defense against a blowout), the blowout preventers can be closed through a system of hydraulically activated valves and manifolds to effectively seal the well and prevent the uncontrolled flow of fluids.

After the surface casing is set, a smaller drill bit that fits inside the surface casing is installed and drilling resumes. Depending on well conditions, additional strings of casing called intermediate casing may be installed and cemented into place. Conditions resulting in the need for intermediate casing include freshwater zones and sloughing formation zones. Casing prevents the flow of freshwater into the wellbore, and conversely prevents drilling fluids from infiltrating porous formations with low internal pressures. Casing also prevents mixing of waters from different formations (interformational mixing) where water within the formations is of differing quality.

All cementing operation plans are reviewed to assure cement is placed at the appropriate depths and a sufficient quantity is utilized to effectively seal all freshwater-bearing formations from contamination by interformational mixing or migration of fluids.

Drilling operations are continuous, 24 hours a day, 7 days a week. There are three 8-hour or two 12-hour shifts a day. Pickups or cars are used for workers' transportation to and from the location.

If no oil or gas is encountered, the well is called a "dry hole" and it is plugged with cement and abandoned in accordance with state and federal requirements. The drill site and access roads are rehabilitated according to

stipulations and conditions attached to the approved APD and the drilling equipment is moved to another location.

If the well is a producer, casing is set and cemented in place.

Directional drilling may be used where the drill site cannot be located directly over the drilling target. There are limits to both the degree that the well bore can be deviated from the vertical and the horizontal distance the well can be drilled away from the well site.

Horizontal wells are drilled similarly to directional wells, except that the bottomhole location of the well is not a single point, but rather a lateral horizontal section. They are drilled to increase the recovery oil and gas reserves from vertically fractured reservoirs, or reservoirs with directional permeability.

## ENVIRONMENT AND SAFETY

During drilling and production operations for any well the BLM will enforce the provisions of the regulations, Onshore Oil and Gas Operating Orders, and Notice to Lessees NTL-MSO-1-92, Report of Undesirable Events, to ensure operations are carried in a manner that protects the mineral resources, other natural resources, and environmental quality. Regulations at 43 CFR § 3162.5 require that the operator exercise due care and diligence to assure that leasehold operations do not result in undue damage to surface or subsurface resources or surface improvements. All produced water must be disposed of by methods approved by the BLM. Upon completion of operations the operator shall reclaim the surface in a manner approved of by the BLM. All spills or leakages of oil, gas, produced water, toxic liquids, blowouts, fires, personal injuries, and fatalities must be reported by the operator. The operator is required to exercise care in taking measures approved by the BLM to control and remove pollutants and extinguish fires. An operator's compliance with the regulations at 43 CFR § 3162.5 does not relieve him of the obligation to comply with any other law or regulations. Finally, the regulations authorize the BLM to require an operator to file a contingency plan describing procedures to be implemented to protect life, property, and the environment.

## PRODUCTION AND DEVELOPMENT

### Production

Production begins when a well yields oil or gas in commercial quantities. If formation pressure is sufficient to raise oil to the surface, the well is completed as a flowing well. A pumping unit is installed if the formation pressure is not sufficient to bring the oil to the surface.

When the well is completed as a free-flowing well, an assembly of valves and special connections known as a "Christmas tree" (so called because of its many branch-like fittings) is installed on top of the casing to regulate the flow of the well. Later, when the natural pressure declines, the Christmas tree can give way to a simple wellhead arrangement of valves and a pumping unit to lift the oil artificially. Many pumping units are "beam" style pumps that are powered by electric motors or gasoline engines. Most gas wells produce by natural flow and do not require pumping. Surface facilities at a flowing well are usually in a small area containing a gas well Christmas tree, a dehydrator, a produced water pit, and a meter house. Separators, condensate tanks, and compressors may be included. Some gas wells require continuous water pumping as water entering the well chokes off the gas flow.

### Development

New field development may be analyzed under NEPA by means of an environmental assessment (EA) or environmental impact statement (EIS) usually after the second or third confirmation well is drilled. The operator should then have an idea of the extent of drilling and disturbance required to extract and produce the oil and gas. When an oil or gas discovery is made, a well spacing pattern must be established before development drilling begins.

Development can take years and include from one or two wells to more than a hundred wells per field. However, the reasonably foreseeable development scenario for this planning document should only forecasts two additional wells per field. Roads to producing wells are upgraded to all-weather roads as necessary. Pipelines, electrical transmission lines, separators, dehydrators, sump pits, and compressor stations soon follow. Sometimes oil and gas processing facilities are built in or adjacent to the field.

### Further Seismic Testing

More detailed seismic work can be done to achieve better definition of the petroleum reservoir. Diagonal seismic lines can be required to tie the previous seismic work to the discovery well. The discovery well can be used to conduct studies to correct the previous seismic work and provide more accurate subsurface data.

### Spacing Requirements

A well spacing pattern must be established before development drilling begins. Information considered in establishment of a spacing pattern includes data from the discovery well on porosity, permeability, pressure, composition, and depth of formations in the reservoir; well production rates and type (predominantly oil or gas); and the economic effect of the proposed spacing on recovery. The state of Montana establishes well spacing patterns for both exploratory and development wells

which the BLM generally adopts. The state specifies the minimum distance from lease lines or government survey lines for the bottom hole location of the well bore depending upon depth of the well. The spacing regulations determine the acres assigned to each well. Spacing unit size is established to provide for the most efficient and economic recovery of oil or gas from a reservoir. Normal well spacing ranges from 40 acres to 640 acres (**Figures A-2 and A-3**). Wells deeper than 11,000 feet can be no closer than 1,650 feet to other producing wells below 11,000 feet. Only one producing well per formation is allowed in each 40, 80, 160, 320, and 640-acre unit.

### **Drilling of Development Wells**

The procedures used in drilling development wells are the same as those used for wildcat wells, but usually with less subsurface sampling, testing, and evaluation. The rate at which development wells are drilled in a field depends on factors such as whether the field is developed on a lease basis or unitized basis, the probability of profitable production, the availability of drilling equipment, lease requirements, and the degree to which limits of the field are known. Some fields go through several development phases, the first resulting from the original discovery and others from later discovery. A field can be considered fully developed and produce for several years, and then a well may be drilled to a deeper or shallower pay zone. Discovery of a new pay zone in an existing field is a “pool” discovery (as distinguished from a new field discovery). A pool discovery may lead to the drilling of additional wells, often from the same drilling pad as existing wells.

### **Inspections**

Geophysical operations and lease operations are inspected to determine compliance with approved permits, to resolve conflicts or correct problems and to determine effectiveness and need of lease stipulations. All inspections are documented. Operators are required to correct problems or violations.

### **Surface Requirements**

Field development activities that cause surface disturbance include access roads, well sites, production facility sites, flow line and utility line routes and waste disposal sites. Surface uses in a gas field will be less than in an oil field, because gas wells are usually drilled on larger spacing units. The spacing pattern of 640 acres per well, which is common in gas fields, will require only one well per section and might require only 1/2 mile of access roads and pipelines. Production facilities include separation and storage equipment. Separation equipment is required when production includes a combination of oil, gas, or water and storage equipment is required for holding liquids prior to sales.

### **Flow Lines**

Oil and gas are transferred from the well to storage facilities through small diameter (<6 inches) flow lines. Flow lines can be on the surface, buried or elevated. Produced water, gas, or polymerized liquid is transferred from storage facilities to injection wells for secondary recovery.

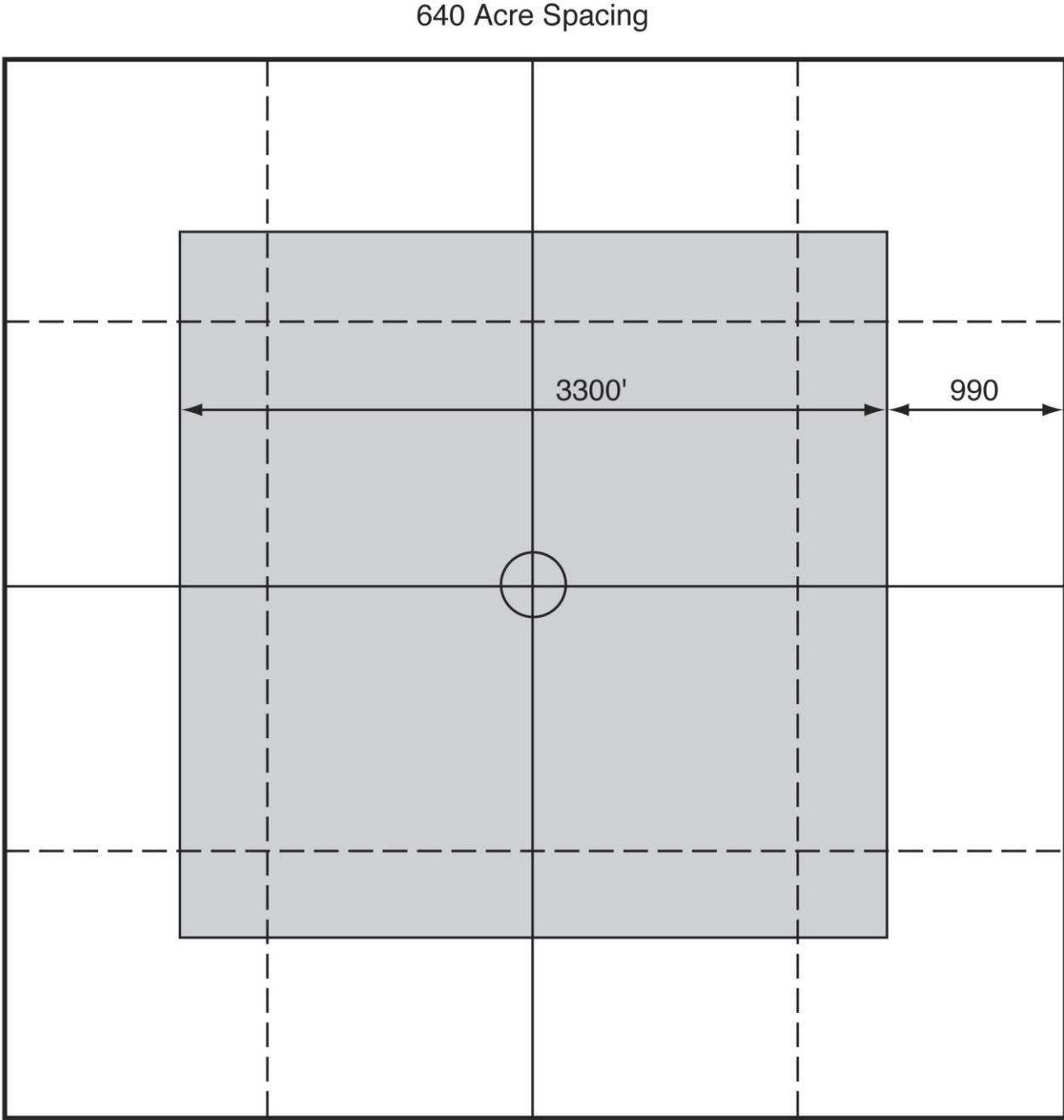
### **Separating, Treating, and Storage**

Any water or gas associated with produced oil is separated from the oil before it is placed in storage tanks. The treating facilities are located at a storage tank battery. Low-pressure petroleum that must be pumped from the well is treated in a single separation. High-pressure, flowing petroleum can require several stages or separation, with a pressure reduction accompanying each stage.

Produced gas is sold when there is sufficient volume, necessary transportation, a market, and it is economical. Generally, if the volume of produced gas is too low for sales, it is used as fuel for well pump engines and heating fuel for the treaters. If the volume of produced gas exceeds fuel requirements on the lease but gas sales are not possible, the gas can be flared or vented into the atmosphere when authorized by permit in accordance with state and federal regulations. When water is produced with the hydrocarbons, it is separated before the gas is removed. In primary operations, where natural pressures or gravity causes the petroleum in the reservoir to flow to the wellbores, the degree of mixing is high enough to require chemical and heat treatment to separate the oil and water. In secondary production, where water injection or other methods are used to force additional petroleum to the wellbore, the oil and water often are not highly emulsified. In this case, the oil and water can be separated by gravity in a tall settling tank. Produced water can be disposed of by injection into the subsurface, surface evaporation or beneficial purposes such as water for livestock or irrigation.

Produced water from oil and gas operations is normally disposed of by subsurface injection or in surface pits. Regardless of the method of disposal, it must be acceptable to the BLM, in accordance with the requirements of Onshore Oil and Gas Order No. 7, titled “Disposal of Produced Water.” Disposal of produced water by injection wells requires permits from the Montana Board of Oil and Gas Conservation. When produced water is disposed underground, it is introduced or injected under pressure into a subsurface horizon containing water of equal or poorer quality. Produced water may be injected into the producing zone from which it originated to stimulate oil production. Dry holes or depleted wells are commonly converted for saltwater disposal and occasionally new wells are drilled for this purpose. The law and regulations require that all injection wells be permitted under the Underground Injection Control program.

Figure A-2. Gas Well Spacing



SOURCE: Montana Oil & Gas Commission

 Area in which well should be drilled

Well  
Depth  
(feet)  

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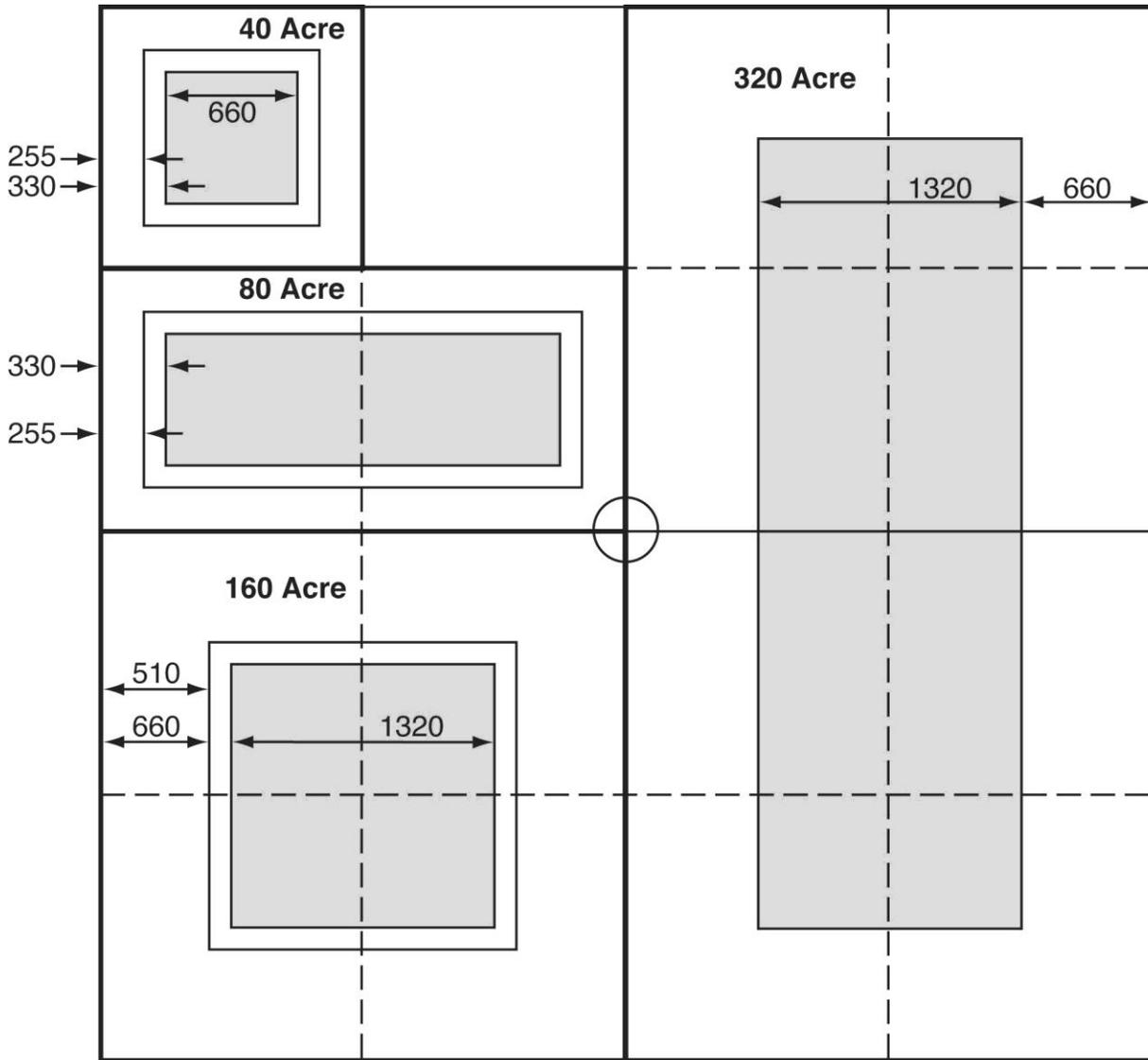
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Minimum Well  
Distance  
(feet)  

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990

Figure A-3. Oil Well Spacing



SOURCE: Montana Oil & Gas Commission

 Area in which well should be drilled

Well Depth (feet)	Spacing (acre)	Nearest Boundary (feet)	Topographic Tolerance (feet)	Minimum Well Distance (feet)
0-6,000	40 & 80	330	75	255
6,000 - 11,000	160	660	150	510
11,001 - >	320	660	none	none

For the 320 acre spacing (1,650 well tolerance) and the 80 acre spacing the drilling unit will be delineated either N-S or E-W

Under the Underground Injection Control approval process, the disposal well must be pressure tested to ensure the integrity of the casing. The disposal zone must also be isolated by use of tubing and mechanical plug called a packer. The packer seals off the inside of the casing and only allows the injected water to enter the disposal zone. The tubing and packer are also pressure tested to ensure their integrity. These pressure tests confirm isolation of the disposal zone from possible usable water zones. The oil is transported to storage tanks through flow lines after separation from any water or gas. Storage tanks are usually located on the lease either at the producing well or at a central production facility. The number and size of tanks are dependent upon the type and amount of production on the lease.

## **ABANDONMENT**

When drilling wells are unsuccessful or production wells are no longer useful, the well is plugged, equipment is removed from the well site or production facility site, and the site is abandoned. The well bore is secured by placing cement plugs to isolate hydrocarbon-producing formations from contaminating other mineral or water bearing formations. The site and roads are then restored as near as possible to original contours. Topsoil is replaced and the recontoured areas are seeded. Reclamation of access roads and well sites on privately owned surface is completed according to the surface owner's requirements.

Rehabilitation requirements generally are made a part of the Application for Permit to Drill. Upon completion of abandonment and rehabilitation operations, the lessee or operator notifies the Great Falls Oil and Gas Field Station that the location is ready for inspection. Final abandonment will not be approved until the required surface reclamation work has been completed to the satisfaction of the BLM or surface owner. The period of bond liability for the well site is terminated after approval of final abandonment. Reclamation of the reserve pit is part of the well site reclamation process. Reserve pit reclamation includes removal of fluids to a disposal well or commercial pit and burial of solids in the pit. Solids should not be buried until dry and then covered with a minimum of 6 feet of native soil. Any pit liner may be buried in place. Methods such as solidification or dewatering may be used to help dry the solids.

## **REGULATIONS, LAWS, AND SPECIAL PROCEDURES**

### **UNIT AND COMMUNITIZATION AGREEMENTS**

Unit and communitization agreements can be formed in the interest of conservation and to allow for the orderly development of oil and gas reserves. A unit agreement provides for the recovery of oil and gas from the lands as

a single consolidated entity without regard to separate lease ownerships. An exploratory unit is used for the discovery and development of the field in an orderly and efficient manner. Paying and nonpaying well determinations are made for each well drilled. If the well is nonpaying as defined by the agreement, the production is allocated on a lease basis. If the well is a paying unit well, a participating area is formed and the production is allocated to all interest owners in the participating area based on surface area. A secondary unit is formed after the field has been defined and enhanced recovery techniques are being utilized. Secondary recovery techniques include water injection, natural gas injection, or carbon dioxide injection. Injection is initiated to maintain the reservoir pressure to maintain oil production. The agreement provides for the allocation of production among all the interest owners.

A communitization agreement combines two or more leases (federal, state, or fee) that otherwise could not be independently developed in conformity with established well spacing patterns. The leases within the spacing unit share in the costs and benefits of the well drilled in the spacing unit. Therefore, unit and communitization agreements can lessen the amount of damage to the environment and save dollars by eliminating unnecessary wells, roads, pipelines, and lease equipment.

### **SPLIT ESTATE**

Part of the area included in the planning area contains lands known as split estate lands. These are lands where the surface ownership is different from the mineral ownership. Management of federal oil and gas resources on these lands is somewhat different from management on lands where both surface and mineral ownership is federal. On split estate lands where the surface ownership is private, the BLM places necessary restrictions and requirements on its leases and permit approvals and works in cooperation with the surface owner. BLM has established policies for the management of federal oil and gas resources in accordance with federal laws and regulations.

The BLM does not have the legal authority to regulate how private surface is managed. BLM does have the statutory authority to require measures by lessees to avoid or minimize adverse impacts that may result from federally authorized mineral lease activities. These measures, in the form of lease stipulations or permit conditions of approval, are intended to protect or preserve the privately owned resources and prevent adverse impacts to adjoining lands, not to dictate management to the surface owner. The term split estate can also refer to lands where the surface ownership is federal and the mineral ownership is private. In this situation, BLM is the surface owner, and works in cooperation with the proponent and the state regulatory agency that approves private mineral applications. BLM

has responsibilities in this situation under the previously mentioned statutes; however, BLM does not have the authority to approve or disapprove the mineral owner's actions. The mineral estate owner usually has the right to enter the land and use the surface that is necessary and reasonable for mineral development through either a reserved or an outstanding right contained in the deed.

## ALTERNATIVE A OIL AND GAS STIPULATIONS

### RESOURCE: GRIZZLY BEAR – RECOVERY ZONE

**Stipulation:** Controlled Surface Use. Activities may be relocated, require special design, or require on and off site mitigation measures to prevent impacts to grizzly bear populations and habitat located in the grizzly bear recovery zone.

**Objective:** 1) To ensure that proposed activities do not adversely affect the viability of grizzly bear, operations will be designed, including limiting noise levels and /or located so as to not adversely affect the viability of grizzly bear. 2) To restrict the timing or type of activities on roads, if needed to control human-animal conflicts or disturbances. 3) To require coordination of timing and timing adjustments of activities within grizzly bear recovery zones to avoid or minimize the potential for adverse effects to grizzly bear because of cumulative impacts from oil and gas activities, plus other activities within the area. This stipulation may limit the extent of field development.

**Exception:** An exemption may be granted if the operator demonstrates in a plan of operations that impacts from the proposed action are acceptable or can be adequately mitigated.

**Modification:** None.

**Waiver:** A waiver may be granted if new habitat studies in coordination with MFWP and the USFWS conclude that the area affected by this stipulation is not in grizzly bear occupied habitat.

### RESOURCE: GRIZZLY BEAR DISTRIBUTION ZONE

**Stipulation:** Controlled Surface Use. Activities may be relocated, require special design, or require on and off site mitigation measures to prevent impacts to grizzly bear populations and habitat located in the grizzly bear distribution zone.

**Objective:** 1) To ensure that proposed activities do not adversely affect the viability of grizzly bear, operations will be designed, including limiting noise levels and /or located so as to not adversely affect the viability of grizzly bear. 2) To restrict the timing or type of activities on roads, if needed to control human-animal conflicts or

disturbances. 3) To require coordination of timing and timing adjustments of activities within grizzly bear distribution zones to avoid or minimize the potential for adverse effects to grizzly bear because of cumulative impacts from oil and gas activities, plus other activities within the area. This stipulation may limit the extent of field development.

**Exception:** An exemption may be granted if the operator demonstrates in a plan of operations that impacts from the proposed action are acceptable or can be adequately mitigated.

**Modification:** None.

**Waiver:** A waiver may be granted if new habitat studies in coordination with MFWP and the USFWS conclude that the area affected by this stipulation is not in grizzly bear occupied habitat.

### RESOURCE: GRAY WOLF – FORMER NORTHWEST MONTANA RECOVERY AREA ENDANGERED POPULATION

**Stipulation:** Controlled Surface Use. Activities may be relocated, require special design, or require on and off site mitigation measures to prevent impacts to gray wolf populations and habitat located in the gray wolf former Northwest Montana Recovery Area.

**Objective:** 1) To ensure that proposed activities do not adversely affect the viability of gray wolf, operations will be designed, including limiting noise levels and /or located so as to not adversely affect the viability of gray wolf. 2) To restrict the timing or type of activities on roads, if needed to control human-animal conflicts or disturbances. 3) To require coordination of timing and timing adjustments of activities within the gray wolf former Northwest Montana Recovery Area to avoid or minimize the potential for adverse effects to gray wolf because of cumulative impacts from oil and gas activities, plus other activities within the area. This stipulation may limit the extent of field development.

**Exception:** An exemption may be granted if the operator demonstrates in a plan of operations that impacts from the proposed action are acceptable or can be adequately mitigated.

**Modification:** None.

**Waiver:** A waiver may be granted if new habitat studies in coordination with MFWP and the USFWS conclude that the area affected by this stipulation is not in gray wolf occupied habitat.

### RESOURCE: PRAIRIE DOG TOWNS

**Stipulation:** No Surface Occupancy. Activity is prohibited within the boundary of any prairie dog town or within ¼ mile of prairie dog towns.

**Objective:** To protect habitat for prairie dog towns.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan which demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting prairie dogs.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with MFWP and USFWS, determines that the entire leasehold no longer contains prairie dogs.

## **RESOURCE: SAGE GROUSE WINTER/SPRING RANGE**

**Stipulation:** Timing Limitation. No activity from December 1 through May 15. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect sage grouse winter range from disturbance during the winter/spring season, and to facilitate long-term maintenance of wildlife populations.

**Exception:** An exception to this stipulation may be granted by the authorized officer in consultation with Montana Fish, Wildlife and Parks (MFWP) and the U.S. Fish and Wildlife Service (USFWS), if the operator submits a plan that demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain sage grouse winter/spring range. The dates for the timing restriction may be modified if new information indicates that the December 1 through May 15 dates are not valid for the leasehold.

**Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains sage grouse winter/spring range, or if in coordination with MFWP and the USFWS, determines that the area is not critical for sage grouse.

## **RESOURCE: SAGE GROUSE STRUTTING GROUNDS (LEKS)**

**Stipulation:** No Surface Occupancy. Activity is prohibited within 500' of sage grouse leks.

**Objective:** To protect sage grouse strutting grounds and leks to maintain regional sage grouse populations.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan which demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting sage grouse leks.

**Waiver:** The stipulation may be waived if the authorized officer, in consultation with MFWP and the USFWS, determines that the entire leasehold can be occupied without adversely affecting sage grouse leks.

## **RESOURCE: SAGE GROUSE BREEDING HABITAT**

**Stipulation:** Timing Limitation. Activity is restricted from March 1 through June 30 in nesting and early brood rearing habitat (defined as within ¼ mile of leks).

This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect sage grouse leks and breeding habitat necessary for long-term maintenance of regional sage grouse populations.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting sage grouse leks.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with MFWP and the USFWS, determines that the entire leasehold can be occupied without adversely affecting sage grouse leks or the surrounding breeding habitat.

## **RESOURCE: WILDLIFE MANAGEMENT AREAS**

**Stipulation:** No Lease within the core area. The core area is considered to be any area approximately one mile or more inside the boundary. No Surface Occupancy is permitted in the perimeter area of the game ranges administered by MFWP. The perimeter area constitutes the area between the boundary of the game range extending approximately one mile into the interior of the game range.

**Objective:** To protect MFWP elk winter range necessary for long-term maintenance of regional elk populations and other wildlife values.

**Exception:** An exception to this stipulation may be granted by the authorized officer if, in coordination with MFWP, it is determined that portions of the game range can be occupied without adversely affecting elk winter range use or other wildlife values.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer, in coordination with MFWP determines that portions of the game range can be occupied without adversely affecting elk winter range use or other wildlife values.

**Waiver:** None.

## **RESOURCE: BIG GAME WINTER/SPRING RANGE**

**Stipulation:** Timing Limitation. No activity from December 1 through May 15 within winter range for wildlife. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect mule deer, elk, antelope, and moose winter/spring range from disturbance during the winter/ spring season, and to facilitate long-term maintenance of wildlife populations.

**Exception:** An exception to this stipulation may be granted by the authorized officer in consultation with MFWP, if the operator submits a plan that demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer, in consultation with MFWP, determines that portions of the area no longer contain wildlife winter/spring range. The dates for the timing restriction may be modified if new wildlife use information indicates that the December 1 through May 15 dates are not valid for the leasehold.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with MFWP, determines that the entire leasehold no longer contains winter/spring range for wildlife.

## **RESOURCE: ELK CALVING/BIG GAME BIRTHING AREAS**

**Stipulation:** Timing Limitation. Activity is prohibited from May 1 through June 30 in big game birthing areas. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect mule deer, elk, antelope, and moose birthing areas from disturbance and facilitate long-term maintenance of wildlife populations.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates that impacts from the proposed action are acceptable or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contains birthing habitat for big game species. The dates for the timing restriction may be modified if new wildlife use information indicates that the dates are not valid for the leasehold.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with MFWP, determines that the entire leasehold no longer contains big game birthing areas.

## **RESOURCE: BIGHORN SHEEP YEARLONG RANGE**

**Stipulation:** Timing Limitation. Activity is prohibited from December 1 through May 15 in bighorn rutting, winter and lambing habitat. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect bighorn rutting, winter and lambing habitat from disturbance and facilitate long-term maintenance of bighorn sheep populations.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain rutting, winter, and lambing habitat for bighorn sheep. The dates for the timing restriction may be modified if new wildlife use information indicates that the dates are not valid for the leasehold.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with MFWP, determines that the entire leasehold no longer contains bighorn sheep rutting, winter or lambing areas.

## **RESOURCE: BIGHORN SHEEP CORE AREAS**

**Stipulation:** Timing Limitation. Activity is prohibited from December 1 through May 15 in bighorn sheep core habitat. This stipulation does not apply to the operation and maintenance of production facilities unless the

findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect bighorn sheep yearlong habitat necessary for long-term maintenance of bighorn sheep populations.

**Exception:** An exception to this stipulation may be granted by the authorized officer, in consultation with MFWP, if the operator submits a plan which demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer, in consultation with MFWP, determines that portions of the bighorn sheep core areas can be occupied without adversely affecting bighorn sheep use.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with MFWP, determines that the entire leasehold can be occupied without adversely affecting bighorn sheep use in the core areas.

## **RESOURCE: BALD EAGLE NEST SITES/BREEDING HABITAT**

**Stipulation:** No Surface Occupancy. Activity is prohibited within 1/2 mile of bald eagle nest sites and within bald eagle nesting habitat in riparian areas.

**Objective:** To protect bald eagle nesting sites and/or breeding habitat in accordance with the Montana Bald Eagle Management Plan.

**Exception:** An exception may be granted by the authorized officer if the operator submits a plan which demonstrates that the proposed action will not affect the bald eagle or its habitat. If the authorized officer determines that the action may have an adverse affect, the operator may submit a plan demonstrating that the impacts can be adequately mitigated. This plan must be approved by BLM in consultation with the USFWS.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer, in consultation with USFWS, determines that the area can be occupied without adversely affecting bald eagle nest sites or nesting habitats.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with USFWS, determines that the entire leasehold can be occupied without adversely affecting bald eagle nest sites or nesting habitat.

## **RESOURCE: BALD EAGLE NEST SITES/BREEDING HABITAT**

**Stipulation:** Timing Limitation. No activity is allowed from February 1 through August 31 in a one mile radius

around bald eagle nest sites. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect bald eagle nesting site and/or breeding habitat in accordance with the Montana Bald Eagle Management Plan.

**Exception:** An exception may be granted by the authorized officer if the operator submits a plan which demonstrates that the proposed action will not affect the bald eagle or its habitat. If the authorized officer determines that the action may have an adverse affect, the operator may submit a plan demonstrating that the impacts can be adequately mitigated. This plan must be approved by BLM in consultation with the USFWS.

**Modification:** A modification may be granted if new habitat studies show that a portion of the area is not used by eagles.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with USFWS, determines that the entire leasehold can be occupied without adversely affecting bald eagle nest sites or nesting habitat.

## **RESOURCE: RAPTOR BREEDING TERRITORIES (GOLDEN EAGLE, PRAIRIE FALCON, SWAINSON'S HAWK)**

**Stipulation:** No Surface Occupancy. Activity is prohibited within ¼ mile of raptor nest sites which have been active within the past five years. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect reproductive potential of breeding habitat for special status raptors.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates the impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer are within 1/2 mile of raptor nest sites. The dates for the timing restriction may be modified if new information indicates that the dates are not valid for the leasehold.

**Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold no longer is within 1/2 mile of nest sites.

## RESOURCE: PEREGRINE FALCON NEST SITES/BREEDING HABITAT

**Stipulation:** No Surface Occupancy. Activity is prohibited within ¼ mile of peregrine falcon nest sites.

**Objective:** To protect peregrine falcon nesting sites and/or breeding habitat.

**Exception:** An exception may be granted by the authorized officer if the operator submits a plan that demonstrates that the proposed action will not affect the peregrine falcon or its habitat. If the authorized officer determines that the action may have an adverse affect, the operator may submit a plan demonstrating that the impacts can be adequately mitigated. This plan must be approved by BLM in consultation with USFWS.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer, in consultation with USFWS, determines that portions of the area can be occupied without adversely affecting peregrine falcon nest sites or breeding habitat.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with USFWS, determines that the entire leasehold can be occupied without adversely affecting peregrine falcon nest sites or breeding habitat.

## RESOURCE: FERRUGINOUS HAWK BREEDING TERRITORIES

**Stipulation:** No Surface Occupancy. Activity is prohibited within ¼ mile of ferruginous hawk nest sites that have been active within the past 5 years. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To maintain the reproductive potential of ferruginous hawk nest sites.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrated that the impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the production potential of ferruginous hawk nest sites.

**Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the production potential of ferruginous hawk nest sites.

## RESOURCE: THREATENED, ENDANGERED, AND SPECIAL STATUS SPECIES

**Stipulation:** Controlled Surface Use. The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation.

**Objective:** Avoid BLM-approved activity that will contribute to a need to list a species or their habitat as threatened or endangered.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

## RESOURCE: WESTSLOPE CUTTHROAT TROUT HABITAT (90-99% PURE)

**Stipulation:** No Surface Occupancy. No activity allowed within 1/4 mile from centerline of stream containing known populations of 90-99% genetically pure westslope cutthroat trout.

**Objective:** To ensure healthy aquatic habitat exists in drainages important to the viability of Upper Missouri River and Columbia River Basins Westslope Cutthroat Trout.

**Exception:** An exception may be granted after a site assessment is conducted and if the operator can demonstrate in a surface use plan of operations that adverse effects can be eliminated and activities would not affect sensitive trout populations. Apply the following mitigation measures:

- a) No net increase in sediment over existing condition.
- b) No adverse effects on water quality and quantity.

**Modification:** None.

**Waiver:** A waiver may be granted if the MFWP determines the stream is no longer considered important to the viability of the species.

## RESOURCE: FLUVIAL AND ADFLUVIAL ARCTIC GRAYLING HABITAT

**Stipulation:** No Surface Occupancy. No activity allowed within 1/4 mile from centerline of streams containing known populations of Arctic grayling.

**Objective:** To ensure healthy aquatic habitat exists along rivers and tributaries important to the viability of fluvial and adfluvial Arctic grayling.

**Exception:** An exception may be granted after a site assessment is conducted and if the operator can demonstrate in a surface use plan of operations that adverse effects can be eliminated and activities would not affect sensitive Arctic grayling populations. The following mitigation measures would apply:

- a) No net increase in sediment over existing condition.
- b) No adverse effects on water quality or quantity.

**Modification:** None.

**Waiver:** A waiver may be granted if the MFWP and the USFWS determines the stream is no longer considered important to the viability of the species.

## RESOURCE: BULL TROUT

**Stipulation:** Controlled Surface Use. Activities may be relocated, require special design, or require on and off site mitigation measures to prevent impacts to bull trout populations.

**Objective:** 1) To ensure that proposed activities do not adversely affect the viability of bull trout, operations will be designed and/or located so as to not adversely affect the viability of bull trout. 2) To restrict the timing or type of activities on roads, if needed to control sediment delivery to streams. 3) To require coordination or adjustments of activities within bull trout habitat to avoid or minimize the potential for adverse effects to bull trout because of cumulative impacts from oil and gas activities, plus other activities within the area. This stipulation may limit the extent of field development.

**Exception:** An exemption may be granted if the operator demonstrates in a plan of operations that impacts from the proposed action are acceptable or can be adequately mitigated.

**Modification:** None.

**Waiver:** A waiver may be granted if new habitat studies in coordination with the USFWS conclude that the area affected by this stipulation is not in bull trout occupied habitat.

## RESOURCE: YELLOWSTONE CUTTHROAT

**Stipulation:** No Surface Occupancy. No activity allowed within 1/4 mile from centerline of streams

containing known populations of genetically pure Yellowstone cutthroat trout.

**Objective:** To ensure healthy aquatic habitat exists in drainages important to the viability of Yellowstone Cutthroat.

**Exception:** An exception may be granted after a site assessment is conducted and if the operator can demonstrate in a surface use plan of operations that adverse effects can be eliminated and activities would not affect sensitive trout populations. The following mitigation measures would apply:

- a) No net increase in sediment over existing condition.
- b) No adverse effects on water quality and quantity.

**Modification:** None

**Waiver:** A waiver may be granted if the MFWP and the USFWS determines the stream is no longer considered important to the viability of the species.

## RESOURCE: CLASS 1 FISHERIES

**Stipulation:** No Surface Occupancy. No activity allowed within 1000' from centerline of Class 1 fishery streams (Blue Ribbon trout streams).

**Objective:** To ensure healthy aquatic habitat are maintained along Class 1 fisheries.

**Exception:** An exception may be granted if MFWP modify the Class 1 fisheries rating. Application of the following mitigation measures apply:

- a) No net increase in sediment over existing condition.
- b) No adverse effects on water quality and quantity.

**Modification:** None.

**Waiver:** None.

## RESOURCE: DEVELOPED RECREATION SITES

**Stipulation:** No Surface Occupancy. Activity is prohibited within 300 feet of developed recreation sites. Currently there are 49 developed recreation sites: Beartooth Landing Rec Site, Bryant Creek Rec Site, Buffalo Hump Rec Site, Carbella Rec Site, Clark's Bay Rec Site, Crimson Bluff Rec Site, Crow Creek Rec Site, Departure Point Rec Site, Devil's Elbow Rec Site, Dickie Bridge Rec Site, Divide Bridge Campground, Divide Bridge Day Use, East Bank Rec Site, Four Corners OHV Trailhead, French Bar Rec Site, Galena Gulch Rec Site, Headlane Trailhead, Holter Lake Dam Rec Site, Holter Lake Rec Site, Jerry Creek Br Fishing Access, John G Mine Trailhead, Log Gulch Rec Site, Lombard Historical, Lower Toston Rec Site, Maiden Rock East, McMaster Hill East Trailhead, McMaster Hill West Trailhead, Moose Creek Trailhead, Ohio Gulch OHV Trailhead, Pintlar Creek Rec Site, Pipestone

OHV Rec Site, Radersburg OHV Trailhead, Ringing Rocks Rec Site, Sawlog Creek Rec Site, Sawmill Gulch Trailhead, Sheep Camp Rec Site, Sheep Mountain Trailhead, Sleeping Giant Trailhead, Spokane Bay Rec Site, Spokane Bay Trailhead, Spokane Hills South, Titan Gulch Rec Site, Toston Dam Rec Site, Tumbleweed Lane Trailhead, Two Camps Vista, Ward Ranch Historical Site, Whiskey Gulch Trailhead, White Sandy Campground, Woodsiding Trailhead

**Objective:** To recognize and protect the public's opportunity for quality recreation experiences at those sites developed for that purpose. A 300-foot buffer would protect capital investment, and to a limited extent, visitors' recreation experiences while at the site.

**Exception:** An exception may be granted by the authorized officer if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be mitigated.

**Modification:** The boundaries of the area may be modified by the authorized officer if the recreation area boundaries are changed.

**Waiver:** This stipulation may be waived by the authorized officer if the entire leasehold no longer contains a developed recreation area.

## **RESOURCE: CULTURAL AND PALEONTOLOGICAL RESOURCES**

**Stipulation:** Controlled Surface Use. An inventory of the leased lands may be required prior to surface disturbance to determine if cultural resources or paleontological localities are present and to identify needed mitigation measures. Prior to undertaking any surface-disturbing activities on the lands covered by this lease, the lessee or operator shall:

- 1) Contact the Surface Management Agency (SMA) to determine if a cultural or paleontological resource inventory is required. If an inventory is required, then;
- 2) The SMA will complete the required inventory; or the lessee or operator, at their option, may engage the services of a cultural resource consultant acceptable to the SMA to conduct an inventory of the area of proposed surface disturbance. The operator may elect to inventory an area larger than the planned disturbance to cover possible site relocation, or for planning purposes.
- 3) Implement mitigation measures required by the SMA. Mitigation may include the relocation of proposed lease-related activities or other protective measures such as data recovery and/or extensive recordation.

The lessee or operator is required to bring to the attention of the field office manager any cultural resources or other objects of scientific interest

discovered as a result of approved operations under the lease, and shall leave all discoveries intact and undisturbed until directed to proceed by the field office manager (16 U.S.C. 470).

**Objective:** Compliance with Section 106 of the National Historic Preservation Act is required for all actions which may affect cultural resources eligible for nomination to the National Register of Historic Places. Section 6 of the Oil and Gas Lease Terms (Form 3100-11) requires that operations be conducted in a manner that minimizes adverse impacts to cultural and other resources.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

## **RESOURCE: VRM CLASS II, III, & IV AREAS**

**Stipulation:** Controlled Surface Use. All surface disturbing activities and construction of semi-permanent and permanent facilities may require special design including location, painting, and camouflage to blend with the natural surroundings and meet the visual quality objectives for each respective class.

**Objective:** To control the visual impacts of activities and facilities within acceptable levels.

**Exception:** None

**Modification:** None

**Waiver:** None

## **RESOURCE: WETLANDS, FLOODPLAINS, RIPARIAN AREAS, AND WATER QUALITY**

**Stipulation:** No Surface Occupancy. Activity is prohibited within 500 feet of reservoirs, lakes, ponds, and intermittent, ephemeral, or small perennial streams, and within 1000 feet of perennial streams and rivers.

**Objective:** To protect biological and hydrological features associated with wetlands, floodplains, and riparian areas.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates that impacts from the proposed action are acceptable or can be adequately mitigated.

**Modification:** The area affected by this stipulation may be modified by the authorized officer if it is determined that portions of the area do not include wetlands, floodplains, or riparian areas.

**Waiver:** This stipulation may be waived by the authorized officer if it is determined that the entire

leasehold does not include wetlands, floodplains, or riparian areas.

### **RESOURCE: SPECIAL STATUS PLANT HABITATS**

**Stipulation:** Controlled Surface Use. A field inspection will be conducted for special status plant species by the lessee prior to any surface disturbance. A list of special status plant species will be provided to the lessee at the time of the lease. Plant Species on the list are subject to change over time as new information becomes available. Plant inventories must be conducted at a time of year when the target species are identifiable. A report must be provided to the BLM documenting the presence or absence of special status plants in the area proposed for surface disturbance. The findings of this report may result in restrictions to the operator's plans or may preclude use and occupancy.

**Objective:** Protect and conserve rare plants, associated plant communities and the habitat that supports them.

**Exception:** An exception may be granted if BLM determines that the portion of the lease identified for surface disturbing activities does not support special status plant species or provide potential habitat for these species.

**Modification:** The boundaries of the area to be inventoried for special status plants may be modified if BLM determines that a large portion of the lease identified for surface disturbing activities doesn't support special status plant species or provide potential habitat for these species.

**Waiver:** The field inspection and plant inventory may be waived by the authorized if he/she determines that the subject lease occurs in an area with no known populations of special status plant species and that the area doesn't provide habitat for those species.

### **RESOURCE: KNOWN OR DISCOVERED SPECIAL STATUS PLANTS OR POPULATIONS**

**Stipulation:** No Surface Occupancy. Surface occupancy and use is prohibited within 1/4 mile of special status plant species

**Objective:** Protect and conserve rare plants, associated plant communities and the habitat that supports them.

**Exception:** None.

**Modification:** The boundaries of the no surface occupancy area may be modified if BLM determines that land within ¼ mile of the special status plant population does not provide potential habitat for these species.

**Waiver:** None.

### **RESOURCE: SLOPES >30% ON NON-BOULDER BATHOLITH SOILS OR SLOPES >20% ON BOULDER BATHOLITH SOILS**

**Stipulation:** Prior to surface disturbance on slopes of greater than 20 percent on Boulder Batholith soils, or 30 percent on non-Boulder Batholith soils, an engineering/reclamation plan must be approved by the authorized officer. Site productivity will be restored.

- Surface runoff will be adequately controlled.
- Off-site areas will be protected from accelerated soil erosion.
- Surface disturbing activities will not be conducted during extended wet periods.

**Objective:** To maintain soil productivity and provide necessary protection to prevent excessive soil erosion on steep slopes.

**Exception:** An exception may be granted if the operator can demonstrate in a plan of operations that adverse effects can be minimized and activities safely conducted.

**Modification:** The area affected by this stipulation may be modified by the authorized officer if it is determined that portions of area do not include slopes over 30 percent on non-Boulder Batholith soils or 20 percent on Boulder Batholith, or the operator can demonstrate in a plan of operations that adverse effects can be minimized.

**Waiver:** This stipulation may be waived by the authorized officer if it is determined that none of the leasehold contains slopes greater than 30 percent on non-Boulder Batholith soils or 20 percent on Boulder Batholith soils.

### **RESOURCE: CONTINENTAL DIVIDE NATIONAL SCENIC TRAIL (MARYSVILLE)**

**Stipulation:** No Surface Occupancy. Activity is prohibited within 300 feet of designated Continental Divide National Scenic Trail.

**Objective:** To preserve and protect the existing scenic character of the landscape along the trail.

**Exception:** No exceptions will be granted.

**Modification:** No modifications will be granted.

**Waiver:** No waivers will be granted.

## ALTERNATIVE B OIL AND GAS STIPULATIONS

### RESOURCE: GRIZZLY BEAR – RECOVERY ZONE

**Stipulation:** No Surface Occupancy. Activity is prohibited within the boundary of the Recovery Zone for Grizzly Bears.

**Objective:** To preclude surface disturbing activities in the Grizzly Bear Recovery Zone.

**Exception:** An exception will not be granted while the area is important to grizzly bear recovery or to its conservation following a change in legal status under the Endangered Species Act. Conditions for Exception require that the area is no longer classified as necessary for the recovery of the species.

**Modification:** This stipulation may be modified if a portion of the area is no longer important to grizzly bear recovery or to its conservation following a change in legal status under the Endangered Species Act. Conditions for Modification require that a portion of the area is no longer classified as necessary for the recovery of the species and is not considered important to its conservation.

**Waiver:** This stipulation will not be waived while the area is important to grizzly bear recovery or to its conservation following a change in legal status under the Endangered Species Act. Conditions for Waiver require that the area is no longer classified as necessary for the recovery or conservation of the species.

### RESOURCE: GRIZZLY BEAR - DISTRIBUTION ZONE

**Stipulation:** Timing Limitation. Activity is prohibited from April 1 to June 30 and from September 15 – October 15 in the Grizzly Bear Distribution Zone.

**Objective:** To preclude surface disturbing activities in grizzly bear denning areas which could cause increased stress and/or displacement of animals during critical time periods (April 1 - June 30 and September 15 – October 15).

**Exception:** An exception may be granted if it is determined that the animals have moved out of and are not using the general area during the particular year.

**Modification:** A modification of the stipulation may be granted if new habitat studies show that a portion of the area is not used by grizzly bear for denning.

**Waiver:** A waiver may be granted if new habitat studies in coordination with the Fish and Wildlife Service conclude that the area affected by this stipulation is not critical for grizzly bear denning.

### RESOURCE: GRAY WOLF – FORMER NORTHWEST MONTANA RECOVERY AREA ENDANGERED POPULATION

**Stipulation:** Timing Limitation. Activity is prohibited within a 1 mile buffer around wolf dens or rendezvous sites from April 15 to June 30 in the Northwest Montana Recovery Area. This stipulation would be applied to the Northwest Montana Recovery Area (94,700 acres) but there are no known den or rendezvous sites currently mapped in this area.

**Objective:** To preclude surface disturbing activities in wolf denning or rendezvous areas in the former Northwest Montana Recovery Area which could cause increased stress and/or displacement of animals during the critical time period (April 15 - June 30).

**Exception:** An exception may be granted if it is determined that the animals have moved out of and are not using the general area during the particular year.

**Modification:** A modification of the stipulation may be granted if new habitat studies show that a portion of the area is not used by wolves for denning or for rendezvous sites.

**Waiver:** A waiver may be granted if new habitat studies in coordination with the Fish and Wildlife Service conclude that the area affected by this stipulation is not critical for wolf denning or for rendezvous sites.

### RESOURCE: PRAIRIE DOG TOWNS

**Stipulation:** No Surface Occupancy. Activity is prohibited within the boundary of any prairie dog town.

**Objective:** To protect habitat for prairie dog towns.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan which demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting prairie dogs.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with MFWP and USFWS, determines that the entire leasehold no longer contains prairie dogs.

### RESOURCE: SAGE GROUSE WINTER/SPRING RANGE

**Stipulation:** Timing Limitation. No activity from December 1 through May 15 within winter and spring range for sage grouse. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued

need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect sage grouse winter range from disturbance during the winter/spring season, and to facilitate long-term maintenance of wildlife populations.

**Exception:** An exception to this stipulation may be granted by the authorized officer in consultation with MFWP and the USFWS, if the operator submits a plan that demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain sage grouse winter/spring range. The dates for the timing restriction may be modified if new information indicates that the December 1 through May 15 dates are not valid for the leasehold.

**Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains sage grouse winter/spring range, or if in coordination with MFWP and the USFWS, determines that the area is not critical for sage grouse.

### **RESOURCE: SAGE GROUSE STRUTTING GROUNDS (LEKS)**

**Stipulation:** No Surface Occupancy. Activity is prohibited within 1/4 mile of sage grouse leks.

**Objective:** To protect sage grouse strutting grounds and leks to maintain regional sage grouse populations.

**Exception:** An exception to this stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting sage grouse leks.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting sage grouse leks.

**Waiver:** The stipulation may be waived if the authorized officer, in consultation with MFWP, determines that the entire leasehold can be occupied without adversely affecting sage grouse leks.

### **RESOURCE: SAGE GROUSE BREEDING HABITAT**

**Stipulation:** Timing Limitation. Activity is restricted from March 1 through June 30 in nesting and early brood rearing habitat (defined as within three miles of leks). This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect sage grouse leks and breeding habitat necessary for long-term maintenance of regional sage grouse populations.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting sage grouse leks.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with MFWP and the USFWS, determines that the entire leasehold can be occupied without adversely affecting sage grouse leks or the surrounding breeding habitat.

### **RESOURCE: WILDLIFE MANAGEMENT AREAS**

**Stipulation:** No Surface Occupancy. Activity is prohibited within the boundary of Wildlife Management Areas administered by Montana Department of Fish, Wildlife, and Parks (MFWP).

**Objective:** To protect MFWP elk winter range necessary for long-term maintenance of regional elk populations and other wildlife values.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

### **RESOURCE: BIG GAME WINTER/SPRING RANGE**

**Stipulation:** Timing Limitation. No activity from December 1 through May 15 within winter range for wildlife. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect mule deer, elk, antelope, and moose winter/spring range from disturbance during the winter/spring season, and to facilitate long-term maintenance of wildlife populations.

**Exception:** An exception to this stipulation may be granted by the authorized officer in consultation with MFWP, if the operator submits a plan that demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer, in consultation with MFWP, determines that portions of the area no longer contain wildlife winter/spring range. The

dates for the timing restriction may be modified if new wildlife use information indicates that the December 1 through May 15 dates are not valid for the leasehold.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with MFWP, determines that the entire leasehold no longer contains winter/spring range for wildlife.

### **RESOURCE: ELK CALVING/BIG GAME BIRTHING AREAS**

**Stipulation:** Timing Limitation. Activity is prohibited from April 1 through June 30 in big game birthing areas. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect mule deer, elk, antelope, and moose birthing areas from disturbance and facilitate long-term maintenance of wildlife populations.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates that impacts from the proposed action are acceptable or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain birthing habitat for big game species. The dates for the timing restriction may be modified if new wildlife use information indicates that the dates are not valid for the leasehold.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with MFWP, determines that the entire leasehold no longer contains big game birthing areas.

### **RESOURCE: BIGHORN SHEEP YEARLONG RANGE**

**Stipulation:** Timing Limitation. Activity is prohibited from November 1 through June 30 in bighorn rutting, winter and lambing habitat. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect bighorn rutting, winter and lambing habitat from disturbance and facilitate long-term maintenance of bighorn sheep populations.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain rutting, winter, and lambing habitat for bighorn sheep. The dates for the timing restriction may be modified if new wildlife use information indicates that the dates are not valid for the leasehold.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with MFWP, determines that the entire leasehold no longer contains bighorn sheep rutting, winter or lambing areas.

### **RESOURCE: BIGHORN SHEEP CORE AREAS**

**Stipulation:** No Surface Occupancy. Activity is prohibited within the bighorn sheep core areas.

**Objective:** To protect bighorn sheep yearlong habitat necessary for long-term maintenance of bighorn sheep populations.

**Exception:** An exception to this stipulation may be granted by the authorized officer, in consultation with MFWP, if the operator submits a plan which demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer, in consultation with MFWP, determines that portions of the bighorn sheep core areas can be occupied without adversely affecting bighorn sheep use.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with MFWP, determines that the entire leasehold can be occupied without adversely affecting bighorn sheep core areas.

### **RESOURCE: BALD EAGLE NEST SITES/BREEDING HABITAT**

**Stipulation:** No Surface Occupancy. Activity is prohibited within 1/2 mile of bald eagle nest sites and within bald eagle nesting habitat in riparian areas.

**Objective:** To protect bald eagle nesting sites and/or breeding habitat in accordance with the Montana Bald Eagle Management Plan.

**Exception:** An exception may be granted by the authorized officer if the operator submits a plan which demonstrates that the proposed action will not affect the bald eagle or its habitat. If the authorized officer determines that the action may have an adverse affect, the operator may submit a plan demonstrating that the impacts can be adequately mitigated. This plan must be approved by BLM in consultation with the USFWS.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer, in consultation with USFWS, determines that the area can

be occupied without adversely affecting bald eagle nest sites or nesting habitats.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with USFWS, determines that the entire leasehold can be occupied without adversely affecting bald eagle nest sites or nesting habitat.

### **RESOURCE: BALD EAGLE NEST SITES/BREEDING HABITAT**

**Stipulation:** Timing Limitation. No activity is allowed from February 1 through August 31 in a one mile radius around bald eagle nest sites. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect bald eagle nesting site and/or breeding habitat in accordance with the Montana Bald Eagle Management Plan.

**Exception:** An exception may be granted by the authorized officer if the operator submits a plan which demonstrates that the proposed action will not affect the bald eagle or its habitat. If the authorized officer determines that the action may have an adverse affect, the operator may submit a plan demonstrating that the impacts can be adequately mitigated. This plan must be approved by BLM in consultation with the USFWS.

**Modification:** A modification may be granted if new habitat studies show that a portion of the area is not used by eagles.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with USFWS, determines that the entire leasehold can be occupied without adversely affecting bald eagle nest sites or nesting habitat.

### **RESOURCE: RAPTOR BREEDING TERRITORIES (GOLDEN EAGLE, PRAIRIE FALCON, SWAINSON'S HAWK)**

**Stipulation:** Timing Limitation. No activity from March 1 through July 31, within 1/2 mile of raptor nest sites which have been active within the past five years. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect reproductive potential of breeding habitat for special status raptors.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits

a plan that demonstrates the impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer are within 1/2 mile of raptor nest sites. The dates for the timing restriction may be modified if new information indicates that the dates are not valid for the leasehold.

**Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold no longer is within 1/2 mile of nest sites.

### **RESOURCE: PEREGRINE FALCON NEST SITES/BREEDING HABITAT**

**Stipulation:** No Surface Occupancy. Activity is prohibited within one mile of peregrine falcon nest sites.

**Objective:** To protect peregrine falcon nesting sites and/or breeding habitat.

**Exception:** An exception may be granted by the authorized officer if the operator submits a plan that demonstrates that the proposed action will not affect the peregrine falcon or its habitat. If the authorized officer determines that the action may have an adverse affect, the operator may submit a plan demonstrating that the impacts can be adequately mitigated. This plan must be approved by BLM in consultation with USFWS.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer, in consultation with USFWS, determines that portions of the area can be occupied without adversely affecting peregrine falcon nest sites or breeding habitat.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with USFWS, determines that the entire leasehold can be occupied without adversely affecting peregrine falcon nest sites or breeding habitat.

### **RESOURCE: FERRUGINOUS HAWK BREEDING TERRITORIES**

**Stipulation:** No Surface Occupancy. Activity is prohibited within 1/2 mile of ferruginous hawk nest sites that have been active within the past 5 years.

**Objective:** To maintain the reproductive potential of ferruginous hawk nest sites.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrated that the impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without

adversely affecting the production potential of ferruginous hawk nest sites.

**Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the production potential of ferruginous hawk nest sites.

### **RESOURCE: THREATENED, ENDANGERED, AND SPECIAL STATUS SPECIES**

**Stipulation:** Controlled Surface Use. The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation.

**Objective:** Avoid BLM-approved activity that will contribute to a need to list a species or their habitat as threatened or endangered.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

### **RESOURCE: WESTSLOPE CUTTHROAT TROUT HABITAT (90-99% PURE)**

**Stipulation:** No Surface Occupancy. No activity allowed within 1/2 mile from centerline of stream containing known populations of 90-99% genetically pure westslope cutthroat trout.

**Objective:** To ensure healthy aquatic habitat exists in drainages important to the viability of Upper Missouri River and Columbia River Basins Westslope Cutthroat Trout.

**Exception:** An exception may be granted after a site assessment is conducted and if the operator can demonstrate in a surface use plan of operations that adverse effects can be eliminated and activities would not affect sensitive trout populations. Apply the following mitigation measures:

- a) No net increase in sediment over existing condition.

- b) No adverse effects on water quality and quantity.

**Modification:** None.

**Waiver:** A waiver may be granted if the MFWP determines the stream is no longer considered important to the viability of the species.

### **RESOURCE: WESTSLOPE CUTTHROAT TROUT HABITAT (99-100% PURE)**

**Stipulation:** No Surface Occupancy. No activity allowed within 1/2 mile from centerline of stream containing known populations of 99-100% genetically pure westslope cutthroat trout.

**Objective:** To prevent sensitive aquatic habitat and trout populations from being impacted.

**Exception:** An exemption may be granted after a site assessment is conducted and if the operator can demonstrate in a surface use plan of operations that adverse effects can be eliminated and activities would not affect sensitive trout populations. Apply the following mitigation measures:

- a) No net increase in sediment over existing condition.
- b) No adverse effects on water quality and quantity.

**Modifications:** None

**Waiver:** A waiver may be granted if the MFWP determines the stream is no longer considered important to the viability of the species.

### **RESOURCE: FLUVIAL AND ADFLUVIAL ARCTIC GRAYLING HABITAT**

**Stipulation:** No Surface Occupancy. No activity allowed within 1/2 mile from centerline of stream containing known populations of Arctic grayling.

**Objective:** To ensure healthy aquatic habitat exists along rivers and tributaries important to the viability of fluvial and adfluvial Arctic grayling.

**Exception:** An exception may be granted after a site assessment is conducted and if the operator can demonstrate in a surface use plan of operations that adverse effects can be eliminated and activities would not affect sensitive Arctic grayling populations. The following mitigation measures would apply:

- a) No net increase in sediment over existing condition.
- b) No adverse effects on water quality or quantity.

**Modification:** None.

**Waiver:** A waiver may be granted if the MFWP and the USFWS determines the stream is no longer considered important to the viability of the species.

## RESOURCE: BULL TROUT

**Stipulation:** No Surface Occupancy. No activity allowed within 1/2 mile from centerline of streams containing known populations of bull trout.

**Objective:** To ensure healthy aquatic habitat exists in drainages important to the viability of bull trout.

**Exception:** An exception may be granted after a site assessment is conducted and if the operator can demonstrate in a surface use plan of operations that adverse effects can be eliminated and activities would not affect sensitive trout populations. Apply the following mitigation measures:

- a) No net increase in sediment over existing condition.
- b) No adverse effects on water quality and quantity.

**Modification:** None.

**Waiver:** A waiver may be granted if the MFWP and the USFWS determines the stream is no longer considered important to the viability of the species.

## RESOURCE: YELLOWSTONE CUTTHROAT (90-100% PURE)

**Stipulation:** No Surface Occupancy. No activity allowed within 1/2 mile from centerline of streams containing known populations of 90-100% genetically pure Yellowstone cutthroat trout.

**Objective:** To ensure healthy aquatic habitat exists in drainages important to the viability of Yellowstone Cutthroat.

**Exception:** An exception may be granted after a site assessment is conducted and if the operator can demonstrate in a surface use plan of operations that adverse effects can be eliminated and activities would not affect sensitive trout populations. The following mitigation measures would apply:

- a) No net increase in sediment over existing condition.
- b) No adverse effects on water quality and quantity.

**Modification:** None

**Waiver:** A waiver may be granted if the MFWP and the USFWS determines the stream is no longer considered important to the viability of the species.

## RESOURCE: STREAMS WITH HIGH RESTORATION POTENTIAL FOR NATIVE FISH

**Stipulation:** No Surface Occupancy. No activity allowed within 1/2 mile from centerline of streams that are identified by the BLM as having high restoration potential for westslope cutthroat trout, Yellowstone cutthroat trout, Arctic grayling and/or bull trout.

**Objective:** To ensure healthy aquatic and riparian habitats are maintained in and along streams with the potential for native fish re-introductions and restoration.

**Exception:** An exception may be granted after a site assessment is conducted and if the operator can demonstrate in a surface use plan of operations that adverse effects can be eliminated and activities would not affect potential habitat for native fish populations or degrade suitable habitat for native fish restoration/re-introduction. The following mitigation measures would apply:

- c) No net increase in sediment over existing condition.
- b) No adverse effects on water quality and quantity.

**Modification:** None.

**Waiver:** None.

## RESOURCE: CLASS 1 FISHERIES

**Stipulation:** No Surface Occupancy. No activity allowed within 1/2 mile from centerline of Class 1 fishery streams (Blue Ribbon trout streams).

**Objective:** To ensure healthy aquatic habitat are maintained along Class 1 fisheries.

**Exception:** An exception may be granted if MFWP modifies the Class 1 fisheries rating. Application of the following mitigation measures apply:

- a) No net increase in sediment over existing condition.
- b) No adverse effects on water quality and quantity.

**Modification:** None.

**Waiver:** None.

## RESOURCE: DEVELOPED RECREATION SITES

**Stipulation:** No Surface Occupancy. Surface occupancy and use is prohibited within 1/4 mile of developed recreation sites, regardless of administering agency. Currently there are 49 developed BLM recreation sites: Beartooth Landing Rec Site, Bryant Creek Rec Site, Buffalo Hump Rec Site, Carbella Rec Site, Clark's Bay Rec Site, Crimson Bluff Rec Site, Crow Creek Rec Site, Departure Point Rec Site, Devil's Elbow Rec Site, Dickie Bridge Rec Site, Divide Bridge Campground, Divide Bridge Day Use, East Bank Rec Site, Four Corners OHV Trailhead, French Bar Rec Site, Galena Gulch Rec Site, Headlane Trailhead, Holter Lake Dam Rec Site, Holter Lake Rec Site, Jerry Creek Br Fishing Access, John G Mine Trailhead, Log Gulch Rec Site, Lombard Historical, Lower Toston Rec Site, Maiden Rock East, McMaster Hill East Trailhead, McMaster Hill West Trailhead, Moose Creek Trailhead, Ohio Gulch OHV Trailhead, Pintlar Creek Rec Site, Pipestone OHV Rec Site, Radersburg OHV Trailhead, Ringing Rocks Rec Site, Sawlog Creek Rec Site,

Sawmill Gulch Trailhead, Sheep Camp Rec Site, Sheep Mountain Trailhead, Sleeping Giant Trailhead, Spokane Bay Rec Site, Spokane Bay Trailhead, Spokane Hills South, Titan Gulch Rec Site, Toston Dam Rec Site, Tumbleweed Lane Trailhead, Two Camps Vista, Ward Ranch Historical Site, Whiskey Gulch Trailhead, White Sandy Campground, Woodsiding Trailhead

**Objective:** To recognize and protect the public's opportunity for quality recreation experiences at those sites developed for that purpose. Since BLM recreation sites are generally developed to support the use of the surrounding lands, the ¼ mile buffer offers some protection for perpetuating those opportunities for which the site was developed, as well as protecting capital investments at the site.

**Exception:** An exception may be granted if a site is moved or eliminated.

**Modification:** The list of developed recreation sites may be modified if development is removed, or if a currently undeveloped site is developed in the future.

**Waiver:** A waiver may be granted if a site is moved or eliminated.

## RESOURCE: SPECIAL RECREATION MANAGEMENT AREAS (SRMAS)

**Stipulation:** Controlled Surface Use. Operations within SRMAS must be conducted within a manner that minimizes encounters and conflicts with recreation users. Proposed activities may not alter or depreciate important recreational values located within the SRMA boundary. This would apply to the following Special Recreation Management Areas for this alternative: Holter Lake/Missouri River, Sleeping Giant, Hauser Lake/Lower Missouri River, Toston Reservoir/Missouri River, Scratchgravel Hills, Sheep Mountain, Pipestone, Upper Big Hole River, and Humbug Spires.

**Objective:** To prevent user conflicts and incompatible uses in areas with high recreational values and significant amounts of recreational activity.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan demonstrating the impacts to recreation values and recreation users are acceptable or can be adequately mitigated.

**Modification:** The area affected by this stipulation may be modified by the authorized officer if the boundaries of the SRMA are changed.

**Waiver:** None.

## RESOURCE: CULTURAL AND PALEONTOLOGICAL RESOURCES

**Stipulation:** Controlled Surface Use. An inventory of the leased lands may be required prior to surface

disturbance to determine if cultural resources or paleontological localities are present and to identify needed mitigation measures. Prior to undertaking any surface-disturbing activities on the lands covered by this lease, the lessee or operator shall:

- 1) Contact the Surface Management Agency (SMA) to determine if a cultural or paleontological resource inventory is required. If an inventory is required, then:
- 2) The SMA will complete the required inventory; or the lessee or operator, at their option, may engage the services of a cultural resource consultant acceptable to the SMA to conduct an inventory of the area of proposed surface disturbance. The operator may elect to inventory an area larger than the planned disturbance to cover possible site relocation, or for planning purposes.
- 3) Implement mitigation measures required by the SMA. Mitigation may include relocation of proposed lease-related activities or other protective measures such as data recovery and/or extensive recordation.
- 4) The SMA will consult with Native American tribes as per IM 2005 – 003.

The lessee or operator is required to bring to the attention of the field office manager any cultural resources or other objects of scientific interest discovered as a result of approved operations under the lease, and shall leave all discoveries intact and undisturbed until directed to proceed by the field office manager (16 U.S.C. 470).

**Objective:** Compliance with Section 106 of the National Historic Preservation Act is required for all actions which may affect cultural resources eligible for nomination to the National Register of Historic Places. Section 6 of the Oil and Gas Lease Terms (Form 3100-11) requires that operations be conducted in a manner that minimizes adverse impacts to cultural and other resources.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

## RESOURCE: NATIONAL REGISTER OF HISTORIC PROPERTIES ELIGIBLE PROPERTIES/DISTRICTS

**Stipulation:** No Surface Occupancy: Activity is prohibited within 300 ft. of site boundaries and/or districts eligible for, or listed on the National Register of Historic Places. There is one known district, the Indian Creek Historic Mining District (134 acres).

**Objective:** To avoid disturbance to and protect, significant properties, districts, and their setting.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the lessee or operator submits a plan which demonstrates that the adverse impacts to cultural properties can be mitigated through data recovery and/or extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the Surface Management Agency, surface occupancy in that area must be prohibited.

**Modification:** No modification will be granted.

**Waiver:** No waiver will be granted.

## **RESOURCE: VRM CLASS II, III & IV AREAS**

**Stipulation:** Controlled Surface Use. All surface disturbing activities and construction of semi-permanent and permanent facilities may require special design including location, painting, and camouflage to blend with the natural surroundings and meet the visual quality objectives for each respective class.

**Objective:** To control the visual impacts of activities and facilities within acceptable levels.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

## **RESOURCE: WETLANDS, FLOODPLAINS, RIPARIAN AREAS, AND WATER QUALITY**

**Stipulation:** No Surface Occupancy. Activity is prohibited within wetlands, floodplains, and riparian areas.

**Objective:** To maintain riparian/wetland functions and water quality.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** None.

**Waiver:** None.

## **RESOURCE: SPECIAL STATUS PLANT HABITATS**

**Stipulation:** Controlled Surface Use. A field inspection will be conducted for special status plant species by the lessee prior to any surface disturbance. A list of special status plant species will be provided to the lessee at the time of the lease. Plant Species on the list are subject to change over time as new information becomes available. Plant inventories must be conducted at a time of year when the target species are identifiable. A report must be provided to the BLM documenting the presence or

absence of special status plants in the area proposed for surface disturbance. The findings of this report may result in restrictions to the operator's plans or may preclude use and occupancy.

**Objective:** Protect and conserve rare plants, associated plant communities and the habitat that supports them.

**Exception:** An exception may be granted if BLM determines that the portion of the lease identified for surface disturbing activities does not support special status plant species or provide potential habitat for these species.

**Modification:** The boundaries of the area to be inventoried for special status plants may be modified if BLM determines that a large portion of the lease identified for surface disturbing activities doesn't support special status plant species or provide potential habitat for these species.

**Waiver:** The field inspection and plant inventory may be waived by the authorized if he/she determines that the subject lease occurs in an area with no known populations of special status plant species and that the area doesn't provide habitat for those species.

## **RESOURCE: KNOWN OR DISCOVERED SPECIAL STATUS PLANTS OR POPULATIONS**

**Stipulation:** No Surface Occupancy. Surface occupancy and use is prohibited within 1/4 mile of special status plant species.

**Objective:** Protect and conserve rare plants, associated plant communities and the habitat that supports them.

**Exception:** None.

**Modification:** The boundaries of the no surface occupancy area may be modified if BLM determines that land within ¼ mile of the special status plant population does not provide potential habitat for these species.

**Waiver:** None.

## **RESOURCE: MUNICIPAL WATERSHEDS**

**Stipulation:** No Surface Occupancy. Surface occupancy would be prohibited in the following municipal watersheds: Missouri River Siphon, Tenmile Creek Drainage, Big Hole River Intake, and Moulton Reservoir.

**Objective:** To protect drinking water for Municipalities within the Butte Field Office.

**Exception:** If the lessee can demonstrate that operations can occur on the lease without causing negative impacts to water quality at the intakes, an exception may be granted, if approved in writing by the authorized officer

in consultation with the Field Office watershed specialist and the communities of Butte and Helena.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied and operations will not cause water quality at intakes to fail to meet drinking water standards established by Montana Department of Environmental Quality (MDEQ).

**Waiver:** None

**RESOURCE: AREAS OR ACTIVE MASS WASTING, UNSTABLE LAND AREAS, SLOPES >30% ON NON-BOULDER BATHOLITH SOILS OR SLOPES >20% ON BOULDER BATHOLITH SOILS**

**Stipulation:** Controlled Surface Use. Prior to surface disturbance on areas of active mass wasting, unstable land areas, or slopes greater than 30 on non-Boulder Batholith soils or 20 percent on Boulder Batholith soils, an engineering/reclamation plan must be approved by the authorized officer. Such plan must demonstrate how the following will be accomplished:

- Site productivity will be restored.
- Surface runoff will be adequately controlled.
- Off-site areas will be protected from accelerated soil erosion.
- Surface disturbing activities will not be conducted during wet periods.

**Objective:** To maintain soil productivity and provide necessary protection to prevent excessive soil erosion on steep slopes.

**Exceptions:** An exception may be granted if the operator can demonstrate in a plan of operations that adverse effects can be minimized and activities safely conducted.

**Modifications:** The area affected by this stipulation may be modified by the authorized officer if it is determined that portions of area do not include slopes over 30 percent on non-Boulder Batholith soils or 20 percent on Boulder Batholith, or the operator can demonstrate in a plan of operations that adverse effects can be minimized.

**Waiver:** This stipulation may be waived by the authorized officer if it is determined that none of the leasehold contains slopes greater than 30 percent on non-Boulder Batholith soils or 20 percent on Boulder Batholith soils.

**RESOURCE: CONTINENTAL DIVIDE NATIONAL SCENIC TRAIL (MARYSVILLE)**

**Stipulation:** No Surface Occupancy. Surface occupancy and use is prohibited within 1/2 mile of the Continental Divide National Scenic Trail.

**Objective:** To preserve and protect the existing scenic character of the landscape along the trail.

**Exception:** May be granted if this portion of the trail is relocated or if operator submits a plan that demonstrates that impacts to the area and the user experiences can be mitigated.

**Modification:** Modification may be granted should the trail be relocated or impacts of the action will not be noticed by users of the trail.

**Waiver:** May be granted if trail is moved from current location.

**RESOURCE: DESIGNATED NATIONAL HISTORIC TRAILS – LEWIS AND CLARK TRAIL**

**Stipulation:** No Surface Occupancy. Surface occupancy and use is prohibited within 1/2 mile of designated National Historic Trail.

**Objective:** To preserve and protect designated National Historic Trails and the natural setting in which they occur.

**Exception:** No exceptions will be granted unless the operator demonstrates through a submitted plan that impacts to the area and its users can be mitigated.

**Modification:** No modifications will be granted unless impacts of the action will not be apparent to user along the trail.

**Waiver:** May be granted if impacts can be mitigated so that area values and user experiences are not negatively affected.

**RESOURCE: RIVERS SUITABLE FOR WILD AND SCENIC RIVER DESIGNATION**

**Stipulation:** No Surface Occupancy. Surface occupancy would be prohibited within 1/2 mile either side of the active river channel. This would apply to the following river segment lengths: 3.1 miles of the upper Missouri River and 2.6 miles of Muskrat Creek.

**Objective:** To protect river corridors and their Outstandingly Remarkable Values considered suitable for inclusion in the National Wild and Scenic Rivers system and the associated outstandingly remarkable values.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

## **RESOURCE: RECREATION AND PUBLIC PURPOSES ACT LEASES AND PATENTS, AND 2920 AUTHORIZATIONS**

**Stipulation:** No Surface Occupancy (NSO). Surface Occupancy and use is prohibited on Recreation & Public Purposes leases and patents and on leases and permits authorized under regulations found at 43 CFR 2920.

**Objective:** To protect developed facilities and commercial, recreational, and public uses and prevent incompatible uses on existing authorized areas.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated in coordination with the holder of the land use authorization.

**Modification:** The area affected by this stipulation may be modified by the authorized officer if land use authorization boundaries are modified.

**Waiver:** This stipulation may be waived by the authorized officer if land use authorization boundaries are modified.

## **ALTERNATIVE C OIL AND GAS STIPULATIONS**

### **RESOURCE: GRIZZLY BEAR – RECOVERY ZONE**

**Stipulation:** No Surface Occupancy. Activity is prohibited within the boundary of the Recovery Zone for grizzly bears.

**Objective:** To preclude surface disturbing activities in the Grizzly Bear Recovery Zone.

**Exception:** An exception will not be granted while the area is important to grizzly bear recovery or to its conservation following a change in legal status under the Endangered Species Act. Conditions for Exception require that the area is no longer classified as necessary for the recovery of the species.

**Modification:** This stipulation may be modified if a portion of the area is no longer important to grizzly bear recovery or to its conservation following a change in legal status under the Endangered Species Act. Conditions for Modification require that a portion of the area is no longer classified as necessary for the recovery of the species and is not considered important to its conservation.

**Waiver:** This stipulation will not be waived while the area is important to grizzly bear recovery or to its conservation following a change in legal status under the Endangered Species Act. Conditions for Waiver require that the area is no longer classified as necessary for the recovery or conservation of the species.

### **RESOURCE: GRIZZLY BEAR - DISTRIBUTION ZONE**

**Stipulation:** No Surface Occupancy. Activity is prohibited in the boundary of the Distribution Zone for grizzly bears.

**Objective:** To preclude surface disturbing activities to denning habitat in the Grizzly Bear Distribution Zone.

**Exception:** An exception may be granted if it is determined that the animals have moved out of and are not using the general area during the particular year.

**Modification:** A modification of the stipulation may be granted if new habitat studies show that a portion of the area is not used by grizzly bear for denning.

**Waiver:** A waiver may be granted if new habitat studies in coordination with the Fish and Wildlife Service conclude that the area affected by this stipulation is not critical for grizzly bear denning.

### **RESOURCE: GRAY WOLF – FORMER NORTHWEST MONTANA RECOVERY AREA ENDANGERED POPULATION**

**Stipulation:** No Surface Occupancy. Activity is prohibited within a 1 mile buffer around wolf dens or rendezvous sites in the former Northwest Montana Recovery Area. This stipulation would be applied to the former Northwest Montana Recovery Area (94,700 acres) but there are no known den or rendezvous sites currently mapped in this area.

**Objective:** To preclude surface disturbing activities in wolf denning or rendezvous areas in the Northwest Montana Recovery Area which could cause increased stress and/or displacement of animals.

**Exception:** An exception may be granted if it is determined that the animals have moved out of and are not using the general area during the particular year.

**Modification:** A modification of the stipulation may be granted if new habitat studies show that a portion of the area is not used by grizzly bear for denning.

**Waiver:** A waiver may be granted if new habitat studies in coordination with the Fish and Wildlife Service conclude that the area affected by this stipulation is not critical for grizzly bear denning.

## **RESOURCE: PRAIRIE DOG TOWNS**

**Stipulation:** No lease within the boundary of any prairie dog town.

**Objective:** To protect habitat for prairie dog towns.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

## **RESOURCE: SAGE GROUSE WINTER/SPRING RANGE**

**Stipulation:** No Lease

**Objective:** To protect sage grouse winter range from disturbance during the winter/spring season, and to facilitate long-term maintenance of wildlife populations.

**Exception:** None

**Modification:** None

**Waiver:** None

## **RESOURCE: SAGE GROUSE STRUTTING GROUNDS (LEKS)**

**Stipulation:** No lease within 1/2 mile of sage grouse leks.

**Objective:** To protect sage grouse strutting grounds and leks to maintain regional sage grouse populations.

**Exception:** None

**Modification:** None

**Waiver:** None

## **RESOURCE: SAGE GROUSE BREEDING HABITAT**

**Stipulation:** No Surface Occupancy. Surface occupancy land use is prohibited in sage grouse nesting and early-brook rearing habitat (defined as within 3 miles of leks).

**Objective:** To protect sage grouse leks and breeding habitat necessary for long-term maintenance of regional sage grouse populations.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting sage grouse leks.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with MFWP and the

USFWS, determines that the entire leasehold can be occupied without adversely affecting sage grouse leks or the surrounding breeding habitat.

## **RESOURCE: WILDLIFE MANAGEMENT AREAS**

**Stipulation:** No Lease

**Objective:** To protect MFWP elk winter range necessary for long-term maintenance of regional elk populations and other wildlife values.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

## **RESOURCE: BIG GAME WINTER/SPRING RANGE**

**Stipulation:** No Lease

**Objective:** To protect mule deer, elk, antelope, and moose winter/spring range from disturbance during the winter/spring season, and to facilitate long-term maintenance of wildlife populations.

**Exception:** None

**Modification:** None

**Waiver:** None

## **RESOURCE: ELK CALVING/BIG GAME BIRTHING AREAS**

**Stipulation:** No Lease

**Objective:** To protect mule deer, elk, antelope, and moose birthing areas from disturbance and facilitate long-term maintenance of wildlife populations.

**Exception:** None

**Modification:** None

**Waiver:** None

## **RESOURCE: BIGHORN SHEEP YEARLONG RANGE (INCLUDING CORE AREAS)**

**Stipulation:** No Lease

**Objective:** To protect bighorn rutting, winter and lambing habitat from disturbance and facilitate long-term maintenance of bighorn sheep populations.

**Exception:** None

**Modification:** None

**Waiver:** None.

## **RESOURCE: BALD EAGLE NEST SITES/BREEDING HABITAT**

**Stipulation:** No Lease. No lease is allowed in a one mile radius around bald eagle nest sites.

**Objective:** To protect bald eagle nesting sites and/or breeding habitat in accordance with the Montana Bald Eagle Management Plan.

**Exception:** None

**Modification:** None.

**Waiver:** None

## **RESOURCE: RAPTOR BREEDING TERRITORIES (GOLDEN EAGLE, PRAIRIE FALCON, SWAINSON'S HAWK)**

**Stipulation:** No Lease within 1/2 mile of raptor nest sites which have been active within the past five years.

**Objective:** To protect reproductive potential of breeding habitat for special status raptors.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

## **RESOURCE: PEREGRINE FALCON NEST SITES/BREEDING HABITAT**

**Stipulation:** No Lease within one mile of peregrine falcon nest sites.

**Objective:** To protect peregrine falcon nesting sites and/or breeding habitat.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

## **RESOURCE: FERRUGINOUS HAWKS**

**Stipulation:** No Lease within 1/2 mile of ferruginous hawk nest sites that have been active in the past 5 years.

**Objective:** To maintain the reproductive potential of ferruginous hawk nest sites.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

## **RESOURCE: FERRUGINOUS HAWK BREEDING TERRITORIES**

**Stipulation:** Timing Limitation. No activity is permitted from March 1 to August 31 within one mile of hawk nest sites that have been active within the past five

years. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect reproductive potential of breeding habitat for special status raptors.

**Exception:** An exception to this stipulation may be granted by the authorized officer of the operator submits a plan that demonstrates the impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer are within one mile of raptor nest sites. The dates for the timing restriction may be modified if new information indicates that the dates are not valid for the leasehold.

**Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold no longer is within one mile of ferruginous nest sites.

## **RESOURCE: THREATENED, ENDANGERED, AND SPECIAL STATUS SPECIES**

**Stipulation:** Controlled Surface Use. The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation.

**Objective:** Avoid BLM-approved activity that will contribute to a need to list a species or their habitat as threatened or endangered.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

## **RESOURCE: WESTSLOPE CUTTHROAT TROUT HABITAT (90-99% PURE)**

**Stipulation:** No Surface Occupancy. No activity allowed within 1/2 mile from centerline of stream

containing known populations of 90-99% genetically pure westslope cutthroat trout.

**Objective:** To ensure healthy aquatic habitat exists in drainages important to the viability of Upper Missouri River and Columbia River Basins Westslope Cutthroat Trout.

**Exception:** An exception may be granted after a site assessment is conducted and if the operator can demonstrate in a surface use plan of operations that adverse effects can be eliminated and activities would not affect sensitive trout populations. Apply the following mitigation measures:

- a) No net increase in sediment over existing condition.
- b) No adverse effects on water quality and quantity.

**Modification:** None.

**Waiver:** A waiver may be granted if the MFWP determines the stream is no longer considered important to the viability of the species.

### **RESOURCE: WESTSLOPE CUTTHROAT TROUT HABITAT (99-100% PURE)**

**Stipulation:** No Lease within ½ mile from centerline of stream containing known populations of 99-100% genetically pure westslope cutthroat trout.

**Objective:** To prevent sensitive aquatic habitat and trout populations from being impacted.

**Exception:** None.

**Modifications:** None.

**Waiver:** None.

### **RESOURCE: FLUVIAL AND ADFLUVIAL ARCTIC GRAYLING HABITAT**

**Stipulation:** No Surface Occupancy. No activity allowed within 1/2 mile from centerline of stream containing known populations of Arctic grayling.

**Objective:** To ensure healthy aquatic habitat exists along rivers and tributaries important to the viability of fluvial and adfluvial Arctic grayling.

**Exception:** An exception may be granted after a site assessment is conducted and if the operator can demonstrate in a surface use plan of operations that adverse effects can be eliminated and activities would not affect sensitive Arctic grayling populations. The following mitigation measures would apply:

- a) No net increase in sediment over existing condition.
- b) No adverse effects on water quality and quantity.

**Modification:** None.

**Waiver:** A waiver may be granted if the MFWP and the USFWS determines the stream is no longer considered important to the viability of the species.

### **RESOURCE: BULL TROUT**

**Stipulation:** No Surface Occupancy. No activity allowed within 1 mile from centerline of streams containing known populations of bull trout.

**Objective:** To ensure healthy aquatic habitat exists in drainages important to the viability of bull trout.

**Exception:** An exception may be granted after a site assessment is conducted and if the operator can demonstrate in a surface use plan of operations that adverse effects can be eliminated and activities would not affect sensitive trout populations. Apply the following mitigation measures:

- a) No net increase in sediment over existing condition.
- b) No adverse effects on water quality and quantity.

**Modification:** None.

**Waiver:** A waiver may be granted if the MFWP and the USFWS determines the stream is no longer considered important to the viability of the species.

### **RESOURCE: YELLOWSTONE CUTTHROAT (90-100% PURE)**

**Stipulation:** No Lease within 1/2 mile from centerline of streams containing known populations of 90-100% genetically pure Yellowstone cutthroat trout.

**Objective:** To ensure healthy aquatic habitat exists in drainages important to the viability of Yellowstone Cutthroat.

**Exception:** None.

**Modification:** None.

**Waiver:** None

### **RESOURCE: CLASS 1 FISHERIES**

**Stipulation:** No Surface Occupancy. No activity allowed within 1 mile from the centerline of Class 1 fishery streams (Blue Ribbon trout streams).

**Objective:** To ensure healthy aquatic habitat are maintained along Class 1 fisheries.

**Exception:** An exception may be granted if MFWP modifies the Class 1 fisheries rating. Application of the following mitigation measures apply:

- a) No net increase in sediment over existing condition.
- b) No adverse effects on water quality and quantity.

**Modification:** None.

**Waiver:** None.

## RESOURCE: DEVELOPED RECREATION SITES

**Stipulation:** No Surface Occupancy. Surface occupancy and use is prohibited within ½ mile of the boundaries of developed recreation sites, regardless of administering agency. There currently 49 developed BLM recreation sites: Beartooth Landing Rec Site, Bryant Creek Rec Site, Buffalo Hump Rec Site, Carbella Rec Site, Clark's Bay Rec Site, Crimson Bluff Rec Site, Crow Creek Rec Site, Departure Point Rec Site, Devil's Elbow Rec Site, Dickie Bridge Rec Site, Divide Bridge Campground, Divide Bridge Day Use, East Bank Rec Site, Four Corners OHV Trailhead, French Bar Rec Site, Galena Gulch Rec Site, Headlane Trailhead, Holter Lake Dam Rec Site, Holter Lake Rec Site, Jerry Creek Br Fishing Access, John G Mine Trailhead, Log Gulch Rec Site, Lombard Historical, Lower Toston Rec Site, Maiden Rock East, McMaster Hill East Trailhead, McMaster Hill West Trailhead, Moose Creek Trailhead, Ohio Gulch OHV Trailhead, Pintlar Creek Rec Site, Pipestone OHV Rec Site, Radersburg OHV Trailhead, Ringing Rocks Rec Site, Sawlog Creek Rec Site, Sawmill Gulch Trailhead, Sheep Camp Rec Site, Sheep Mountain Trailhead, Sleeping Giant Trailhead, Spokane Bay Rec Site, Spokane Bay Trailhead, Spokane Hills South, Titan Gulch Rec Site, Toston Dam Rec Site, Tumbleweed Lane Trailhead, Two Camps Vista, Ward Ranch Historical Site, Whiskey Gulch Trailhead, White Sandy Campground, Woodsiding Trailhead.

**Objective:** To recognize and protect the public's opportunity for quality recreation experiences at those sites developed for that purpose. Since BLM recreation sites are generally developed to support the use of the surrounding lands, the 1/2 mile buffer offers some protection for perpetuating those opportunities for which the site was developed, as well as protecting capital investments at the site.

**Exception:** An exception may be granted if a site is moved or eliminated.

**Modification:** The list of developed recreation sites may be modified if development is removed, or if a currently undeveloped site is developed in the future.

**Waiver:** A waiver may be granted if a site is moved or eliminated.

## RESOURCE: SPECIAL RECREATION MANAGEMENT AREAS (SRMAS)

**Stipulation:** No Surface Occupancy. Activity is prohibited within the boundaries of areas designated as SRMAS. This applies to the following SRMAS in this alternative: Holter Lake/Missouri River, Sleeping Giant, Hauser Lake/Lower Missouri River, Toston Reservoir/Missouri River, Scratchgravel Hills, Sheep Mountain, Pipestone, Upper Big Hole River, and Humbug Spires.

**Objective:** To prevent user conflicts and incompatible uses in areas with high recreational values and significant amounts of recreational activity.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan demonstrating the impacts to recreation values and recreation users are acceptable or can be adequately mitigated.

**Modification:** The area affected by this stipulation may be modified by the authorized officer if the boundaries of the SRMA are changed.

**Waiver:** None.

## RESOURCE: CULTURAL AND PALEONTOLOGICAL RESOURCES

**Stipulation:** Controlled Surface Use. An inventory of the leased lands may be required prior to surface disturbance to determine if cultural resources or paleontological localities are present and to identify needed mitigation measures. Prior to undertaking any surface-disturbing activities on the lands covered by this lease, the lessee or operator shall:

- 1) Contact the Surface Management Agency (SMA) to determine if a cultural or paleontological resource inventory is required. If an inventory is required, then;
- 2) The SMA will complete the required inventory; or the lessee or operator, at their option, may engage the services of a cultural resource consultant acceptable to the SMA to conduct an inventory of the area of proposed surface disturbance. The operator may elect to inventory an area larger than the planned disturbance to cover possible site relocation, or for planning purposes.
- 3) Implement mitigation measures required by the SMA. Mitigation may include the relocation of proposed lease-related activities or other protective measures such as data recovery and/or extensive recordation.
- 4) The SMA will consult with Native American tribes as per IM 2005 – 003.

The lessee or operator is required to bring to the attention of the field office manager any cultural resources or other objects of scientific interest discovered as a result of approved operations under the lease, and shall leave all discoveries intact and undisturbed until directed to proceed by the field office manager (16 U.S.C. 470).

**Objective:** Compliance with Section 106 of the National Historic Preservation Act is required for all actions which may affect cultural resources eligible for nomination to the National Register of Historic Places. Section 6 of the Oil and Gas Lease Terms (Form 3100-

11) requires that operations be conducted in a manner that minimizes adverse impacts to cultural and other resources.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

### **RESOURCE: NATIONAL REGISTER OF HISTORIC PROPERTIES ELIGIBLE PROPERTIES/DISTRICTS**

**Stipulation:** No Surface Occupancy: Activity is prohibited within 300 feet of site boundaries and/or districts eligible for, or listed on the National Register of Historic Places. There is one known district, the Indian Creek Historic Mining District (134 acres).

**Objective:** To avoid disturbance to and protect, significant properties, districts, and their settings.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the lessee or operator submits a plan which demonstrates that the adverse impacts to cultural properties can be mitigated through data recovery and/or extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the SMA, surface occupancy in that area must be prohibited.

**Modification:** No modification will be granted.

**Waiver:** No waiver will be granted.

### **RESOURCE: TRADITIONAL CULTURAL PROPERTIES**

**Stipulation:** No Surface Occupancy: Activity is prohibited within ½ mile, or line-of-site of the identified Traditional Cultural Property (TCP), whichever criterion protects the viewshed of that property.

**Objective:** To avoid disturbance and protect cultural properties determined to be of particular importance to Native American Groups, determined to be Traditional Cultural Properties, and/or designated to be for traditional use.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the Indian community no longer attaches those traditional values to the lease area.

**Modification:** No modification will be granted.

**Waiver:** No waiver will be granted.

### **RESOURCE: VRM CLASS II, III & IV**

**Stipulation:** Controlled Surface Use. All surface disturbing activities and construction of semi-permanent facilities and permanent facilities may require special design including location, painting, and camouflage to

blend with the natural surroundings and meet the visual quality objectives for respective class.

**Objective:** To control the visual impacts of activities and facilities within acceptable levels.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

### **RESOURCE: WETLANDS, FLOODPLAINS, RIPARIAN AREAS, AND WATER QUALITY**

**Stipulation:** No Surface Occupancy. Activity is prohibited within wetlands, floodplains, and riparian areas.

**Objective:** To maintain riparian/wetland functions and water quality.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** None.

**Waiver:** None.

### **RESOURCE: SPECIAL STATUS PLANT HABITATS**

**Stipulation:** Controlled Surface Use. A field inspection will be conducted for special status plant species by the lessee prior to any surface disturbance. A list of special status plant species will be provided to the lessee at the time of the lease. Plant Species on the list are subject to change over time as new information becomes available. Plant inventories must be conducted at a time of year when the target species are identifiable. A report must be provided to the BLM documenting the presence or absence of special status plants in the area proposed for surface disturbance. The findings of this report may result in restrictions to the operator's plans or may preclude use and occupancy.

**Objective:** Protect and conserve rare plants, associated plant communities and the habitat that supports them.

**Exception:** An exception may be granted if BLM determines that the portion of the lease identified for surface disturbing activities does not support special status plant species or provide potential habitat for these species.

**Modification:** The boundaries of the area to be inventoried for special status plants may be modified if BLM determines that a large portion of the lease identified for surface disturbing activities doesn't support special status plant species or provide potential habitat for these species.

**Waiver:** The field inspection and plant inventory may be waived by the authorized if he/she determines that the subject lease occurs in an area with no known populations of special status plant species and that the area doesn't provide habitat for those species.

### **RESOURCE: KNOWN OR DISCOVERED SPECIAL STATUS PLANTS OR POPULATIONS**

**Stipulation:** No Surface Occupancy. Surface occupancy and use is prohibited within ½ mile of special status plant species.

**Objective:** Protect and conserve rare plants, associated plant communities and the habitat that supports them.

**Exception:** None.

**Modification:** The boundaries of the no surface occupancy area may be modified if BLM determines that land within ½ mile of the special status plant population does not provide potential habitat for these species.

**Waiver:** None.

### **RESOURCE: MUNICIPAL WATERSHEDS**

**Stipulation:** No Lease. No leases would be allowed within the following municipal watersheds: Missouri River Siphon, Tenmile Creek Drainage, Big Hole River Intake, and Moulton Reservoir.

**Objective:** To protect drinking water for Municipalities within the Butte Field Office.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

### **RESOURCE: AREAS OF ACTIVE MASS WASTING, UNSTABLE LAND AREAS, SLOPES >30% ON NON-BOULDER BATHOLITH SOILS OR SLOPES >20% ON BOULDER BATHOLITH SOILS**

**Stipulation:** Controlled Surface Use. Prior to surface disturbance on areas of active mass wasting, unstable land areas, slopes greater than 30 on non-Boulder Batholith soils or 20 percent on Boulder Batholith soils, an engineering/reclamation plan must be approved by the authorized officer. Such plan must demonstrate how the following will be accomplished:

- Site productivity will be restored.
- Surface runoff will be adequately controlled.
- Off-site areas will be protected from accelerated soil erosion.

- Surface disturbing activities will not be conducted during extended wet periods.

**Objective:** To maintain soil productivity and provide necessary protection to prevent excessive soil erosion on steep slopes.

**Exceptions:** An exception may be granted if the operator can demonstrate in a plan of operations that adverse effects can be minimized and activities safely conducted.

**Modifications:** The area affected by this stipulation may be modified by the authorized officer if it is determined that portions of area do not include slopes over 30 percent on non-Boulder Batholith soils or 20 percent on Boulder Batholith, or the operator can demonstrate in a plan of operations that adverse effects can be minimized.

**Waiver:** This stipulation may be waived by the authorized officer if it is determined that none of the leasehold contains slopes greater than 30 percent on non-Boulder Batholith soils or 20 percent on Boulder Batholith soils.

### **RESOURCE: DESIGNATED NATIONAL HISTORIC TRAILS – LEWIS AND CLARK TRAIL**

**Stipulation:** No Surface Occupancy. Surface occupancy and use is prohibited within 1 mile of designated National Historic Trail.

**Objective:** To preserve and protect designated National Historic Trails and the natural setting in which they occur.

**Exception:** No exceptions will be granted.

**Modification:** No modifications will be granted.

**Waiver:** No waivers will be granted.

### **RESOURCE: CONTINENTAL DIVIDE NATIONAL SCENIC TRAIL (MARYSVILLE)**

**Stipulation:** No Surface Occupancy. Surface occupancy and use is prohibited within 1/2 mile of the Continental Divide National Scenic Trail.

**Objective:** To preserve and protect the existing scenic character of the landscape along the trail.

**Exception:** May be granted if this portion of the trail is relocated.

**Modification:** Modification may be granted should the trail be relocated.

**Waiver:** May be granted if trail is moved from current location.

## RESOURCE: RIVERS SUITABLE FOR WILD AND SCENIC RIVER DESIGNATION

**Stipulation:** No Surface Occupancy. Activity would be prohibited within 1 mile either side of the active river channel. This stipulation would apply to the following stream/river segment lengths: 2.3 miles of the upper Big Hole River, 3.1 miles of the upper Missouri River, 4.0 miles of Moose Creek, and 2.6 miles of Muskrat Creek.

**Objective:** To protect river corridors considered suitable for inclusion in the National Wild and Scenic Rivers system and the associated outstandingly remarkable values.

**Exception:** None

**Modification:** None

**Waiver:** None

## RESOURCE: RECREATION AND PUBLIC PURPOSES ACT LEASES AND PATENTS, AND 2920 AUTHORIZATIONS

**Stipulation:** No Surface Occupancy (NSO). Surface Occupancy and use is prohibited on Recreation & Public Purposes leases and patents and on leases and permits authorized under regulations found at 43 CFR 2920.

**Objective:** To protect developed facilities and commercial, recreational, and public uses and prevent incompatible uses on existing authorized areas.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated in coordination with the holder of the land use authorization.

**Modification:** The area affected by this stipulation may be modified by the authorized officer if land use authorization boundaries are modified.

**Waiver:** This stipulation may be waived by the authorized officer if land use authorization boundaries are modified.

## ALTERNATIVE D OIL AND GAS STIPULATIONS

### RESOURCE: GRIZZLY BEAR – RECOVERY ZONE

**Stipulation:** Controlled Surface Use. Activities may be relocated, require special design, or require on and off site mitigation measures to prevent impacts to grizzly bear populations and habitat located in the grizzly bear recovery zones.

**Objective:** 1) To ensure that proposed activities do not adversely affect the viability of grizzly bear, operations will be designed, including limiting noise levels and /or located so as to not adversely affect the viability of grizzly bear. 2) To restrict the timing or type of activities on roads, if needed to control human-animal conflicts or disturbances. 3) To require coordination of timing and timing adjustments of activities within grizzly bear recovery zones to avoid or minimize the potential for adverse effects to grizzly bear because of cumulative impacts from oil and gas activities, plus other activities within the area. This stipulation may limit the extent of field development.

**Exception:** An exemption may be granted if the operator demonstrates in a plan of operations that impacts from the proposed action are acceptable or can be adequately mitigated.

**Modification:** None.

**Waiver:** A waiver may be granted if new habitat studies in coordination with MFWP and the USFWS conclude that the area affected by this stipulation is not in grizzly bear occupied habitat.

### RESOURCE: GRIZZLY BEAR - DISTRIBUTION ZONE

**Stipulation:** Controlled Surface Use. Activities may be relocated, require special design, or require on and off site mitigation measures to prevent impacts to grizzly bear populations and habitat located in the grizzly bear distribution zone.

**Objective:** 1) To ensure that proposed activities do not adversely affect the viability of grizzly bear, operations will be designed, including limiting noise levels and /or located so as to not adversely affect the viability of grizzly bear. 2) To restrict the timing or type of activities on roads, if needed to control human-animal conflicts or disturbances. 3) To require coordination of timing and timing adjustments of activities within grizzly bear distribution zones to avoid or minimize the potential for adverse effects to grizzly bear because of cumulative impacts from oil and gas activities, plus other activities within the area. This stipulation may limit the extent of field development.

**Exception:** An exemption may be granted if the operator demonstrates in a plan of operations that impacts from the proposed action are acceptable or can be adequately mitigated.

**Modification:** None.

**Waiver:** A waiver may be granted if new habitat studies in coordination with MFWP and the USFWS conclude that the area affected by this stipulation is not in grizzly bear occupied habitat.

## RESOURCE: GRAY WOLF – FORMER NORTHWEST MONTANA RECOVERY AREA ENDANGERED POPULATION

**Stipulation:** Controlled Surface Use. Activities may be relocated, require special design, or require on and off site mitigation measures to prevent impacts to gray wolf populations and habitat located in the gray wolf former Northwest Montana Recovery Area.

**Objective:** 1) To ensure that proposed activities do not adversely affect the viability of gray wolf, operations will be designed, including limiting noise levels and /or located so as to not adversely affect the viability of gray wolf. 2) To restrict the timing or type of activities on roads, if needed to control human-animal conflicts or disturbances. 3) To require coordination of timing and timing adjustments of activities within the gray wolf former Northwest Montana Recovery Area to avoid or minimize the potential for adverse effects to gray wolf because of cumulative impacts from oil and gas activities, plus other activities within the area. This stipulation may limit the extent of field development.

**Exception:** An exemption may be granted if the operator demonstrates in a plan of operations that impacts from the proposed action are acceptable or can be adequately mitigated.

**Modification:** None.

**Waiver:** A waiver may be granted if new habitat studies in coordination with MFWP and the USFWS conclude that the area affected by this stipulation is not in gray wolf occupied habitat.

## RESOURCE: PRAIRIE DOG TOWNS

**Stipulation:** No Surface Occupancy. Activity is prohibited within the boundary of any prairie dog town.

**Objective:** To protect habitat for prairie dog towns.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan which demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting prairie dogs.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with MFWP and USFWS, determines that the entire leasehold no longer contains prairie dogs.

## RESOURCE: SAGE GROUSE WINTER/SPRING RANGE

**Stipulation:** Timing Limitation. No activity from December 1 through May 15. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect sage grouse winter range from disturbance during the winter/spring season, and to facilitate long-term maintenance of wildlife populations.

**Exception:** An exception to this stipulation may be granted by the authorized officer in consultation with MFWP and the USFWS, if the operator submits a plan that demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain sage grouse winter/spring range. The dates for the timing restriction may be modified if new information indicates that the December 1 through May 15 dates are not valid for the leasehold.

**Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold no longer contains sage grouse winter/spring range, or if in coordination with MFWP and the USFWS, determines that the area is not critical for sage grouse.

## RESOURCE: SAGE GROUSE STRUTTING GROUNDS (LEKS)

**Stipulation:** No Surface Occupancy. Activity is prohibited within 1/4 mile of sage grouse leks.

**Objective:** To protect sage grouse strutting grounds and leks to maintain regional sage grouse populations.

**Exception:** An exception to this stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting sage grouse leks.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting sage grouse leks.

**Waiver:** The stipulation may be waived if the authorized officer, in consultation with MFWP and the USFWS, determines that the entire leasehold can be occupied without adversely affecting sage grouse leks.

## **RESOURCE: SAGE GROUSE BREEDING HABITAT**

**Stipulation:** Timing Limitation. Activity is restricted from March 1 through June 30 in nesting and early brood rearing habitat (defined as within three miles of leks). This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect sage grouse leks and breeding habitat necessary for long-term maintenance of regional sage grouse populations.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting sage grouse leks.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with MFWP, determines that the entire leasehold can be occupied without adversely affecting sage grouse leks or the surrounding breeding habitat.

## **RESOURCE: WILDLIFE MANAGEMENT AREAS**

**Stipulation:** No Surface Occupancy. Activity is prohibited within the boundary of State Game Ranges administered by MFWP.

**Objective:** To protect MFWP elk winter range necessary for long-term maintenance of regional elk populations and other wildlife values.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

## **RESOURCE: BIG GAME WINTER/SPRING RANGE**

**Stipulation:** Timing Limitation. No activity from December 1 through May 15 within winter range for wildlife. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect mule deer, elk, antelope, and moose winter/spring range from disturbance during the

winter/spring season, and to facilitate long-term maintenance of wildlife populations.

**Exception:** An exception to this stipulation may be granted by the authorized officer in consultation with MFWP, if the operator submits a plan that demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer, in consultation with MFWP, determines that portions of the area no longer contain wildlife winter/spring range. The dates for the timing restriction may be modified if new wildlife use information indicates that the December 1 through May 15 dates are not valid for the leasehold.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with MFWP, determines that the entire leasehold no longer contains winter/spring range for wildlife.

## **RESOURCE: BIGHORN SHEEP YEARLONG RANGE**

**Stipulation:** Timing Limitation. Activity is prohibited from November 1 through June 30 in bighorn rutting, winter and lambing habitat. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect bighorn rutting, winter and lambing habitat from disturbance and facilitate long-term maintenance of bighorn sheep populations.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area no longer contain rutting, winter, and lambing habitat for bighorn sheep. The dates for the timing restriction may be modified if new wildlife use information indicates that the dates are not valid for the leasehold.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with MFWP, determines that the entire leasehold no longer contains bighorn sheep rutting, winter or lambing areas.

## **RESOURCE: BALD EAGLE NEST SITES/BREEDING HABITAT**

**Stipulation:** No Surface Occupancy. Activity is prohibited within 1/2 mile of bald eagle nest sites and within bald eagle nesting habitat in riparian areas.

**Objective:** To protect bald eagle nesting sites and/or breeding habitat in accordance with the Montana Bald Eagle Management Plan.

**Exception:** An exception may be granted by the authorized officer if the operator submits a plan which demonstrates that the proposed action will not affect the bald eagle or its habitat. If the authorized officer determines that the action may have an adverse affect, the operator may submit a plan demonstrating that the impacts can be adequately mitigated. This plan must be approved by BLM in consultation with the USFWS.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer, in consultation with USFWS, determines that the area can be occupied without adversely affecting bald eagle nest sites or nesting habitats.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with USFWS, determines that the entire leasehold can be occupied without adversely affecting bald eagle nest sites or nesting habitat.

### **RESOURCE: BALD EAGLE NEST SITES/BREEDING HABITAT**

**Stipulation:** Timing Limitation. No activity is allowed from February 1 through August 31 in a one mile radius around bald eagle nest sites. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To protect bald eagle nesting site and/or breeding habitat in accordance with the Montana Bald Eagle Management Plan.

**Exception:** An exception may be granted by the authorized officer if the operator submits a plan which demonstrates that the proposed action will not affect the bald eagle or its habitat. If the authorized officer determines that the action may have an adverse affect, the operator may submit a plan demonstrating that the impacts can be adequately mitigated. This plan must be approved by BLM in consultation with the USFWS.

**Modification:** A modification may be granted if new habitat studies show that a portion of the area is not used by eagles.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with USFWS, determines that the entire leasehold can be occupied without adversely affecting bald eagle nest sites or nesting habitat.

### **RESOURCE: PEREGRINE FALCON NEST SITES/BREEDING HABITAT**

**Stipulation:** No Surface Occupancy. Activity is prohibited within one mile of peregrine falcon nest sites.

**Objective:** To protect peregrine falcon nesting sites and/or breeding habitat.

**Exception:** An exception may be granted by the authorized officer if the operator submits a plan that demonstrates that the proposed action will not affect the peregrine falcon or its habitat. If the authorized officer determines that the action may have an adverse affect, the operator may submit a plan demonstrating that the impacts can be adequately mitigated. This plan must be approved by BLM in consultation with USFWS.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer, in consultation with USFWS, determines that portions of the area can be occupied without adversely affecting peregrine falcon nest sites or breeding habitat.

**Waiver:** This stipulation may be waived if the authorized officer, in consultation with USFWS, determines that the entire leasehold can be occupied without adversely affecting peregrine falcon nest sites or breeding habitat.

### **RESOURCE: FERRUGINOUS HAWK BREEDING TERRITORIES**

**Stipulation:** Timing Limitation. No activity is allowed from March 1 through July 31 within 1/2 mile of ferruginous hawk nest sites that have been active within the past 5 years. This stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

**Objective:** To maintain the reproductive potential of ferruginous hawk nest sites.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrated that the impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied without adversely affecting the production potential of ferruginous hawk nest sites.

**Waiver:** This stipulation may be waived if the authorized officer determines that the entire leasehold can be occupied without adversely affecting the production potential of ferruginous hawk nest sites.

## **RESOURCE: THREATENED, ENDANGERED, AND SPECIAL STATUS SPECIES**

**Stipulation:** Controlled Surface Use. The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation.

**Objective:** Avoid BLM-approved activity that will contribute to a need to list a species or their habitat as threatened or endangered.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

## **RESOURCE: WESTSLOPE CUTTHROAT TROUT HABITAT (90-99% PURE)**

**Stipulation:** Controlled Surface Use. Activities within 1/2 mile of streams containing populations of westslope cutthroat trout with purity of 90-99% may be relocated, require special design, or require on and off site mitigation measures to prevent impacts to sensitive trout populations.

**Objective:** To ensure healthy aquatic habitat exists in drainages important to the viability of Upper Missouri River and Columbia River Basins Westslope Cutthroat Trout.

**Exception:** An exception may be granted after a site assessment is conducted and if the operator can demonstrate in a surface use plan of operations that adverse effects can be eliminated and activities would not affect sensitive trout populations. Apply the following mitigation measures:

- a) No net increase in sediment over existing condition.
- b) No adverse effects on water quality and quantity.

**Modification:** None.

**Waiver:** A waiver may be granted if the MFWP determines the stream is no longer considered important to the viability of the species.

## **RESOURCE: WESTSLOPE CUTTHROAT TROUT HABITAT (99-100% PURE)**

**Stipulation:** No Surface Occupancy. No activity allowed within 1/2 mile from centerline of stream containing known populations of 99-100% genetically pure westslope cutthroat trout.

**Objective:** To prevent sensitive aquatic habitat and trout populations from being impacted.

**Exception:** An exemption may be granted after a site assessment is conducted and if the operator can demonstrate in a surface use plan of operations that adverse effects can be eliminated and activities would not affect sensitive trout populations. Apply the following mitigation measures:

- a) No net increase in sediment over existing condition.
- b) No adverse effects on water quality and quantity.

**Modifications:** None.

**Waiver:** A waiver may be granted if the MFWP determines the stream is no longer considered important to the viability of the species.

## **RESOURCE: FLUVIAL AND ADFLUVIAL ARCTIC GRAYLING HABITAT**

**Stipulation:** Controlled Surface Use. Activities may be relocated, require special design, or require on and off site mitigation measures to prevent impacts to grayling populations and habitat located in the Big Hole.

**Objective:** To ensure healthy aquatic habitat exists along rivers and tributaries important to the viability of fluvial and adfluvial Arctic grayling.

**Exception:** An exception may be granted after a site assessment is conducted and if the operator can demonstrate in a surface use plan of operations that adverse effects can be eliminated and activities would not affect Arctic grayling populations. The following mitigation measures would apply:

- a) No net increase in sediment over existing condition.
- b) No adverse effects on water quality and quantity.

**Modification:** None.

**Waiver:** A waiver may be granted if the MFWP and the USFWS determines the stream is no longer considered important to the viability of the species.

## **RESOURCE: BULL TROUT**

**Stipulation:** No Surface Occupancy. No activity allowed within 1/2 mile from centerline of streams containing known populations of bull trout.

**Objective:** To ensure healthy aquatic habitat exists in drainages important to the viability of bull trout.

**Exception:** An exception may be granted after a site assessment is conducted and if the operator can demonstrate in a surface use plan of operations that adverse effects can be eliminated and activities would not affect sensitive trout populations. Apply the following mitigation measures:

- a) No net increase in sediment over existing condition.
- b) No adverse effects on water quality and quantity.

**Modification:** None.

**Waiver:** A waiver may be granted if the MFWP and the USFWS determines the stream is no longer considered important to the viability of the species.

### **RESOURCE: YELLOWSTONE CUTTHROAT (90-100% PURE)**

**Stipulation:** Controlled Surface Use. Activities may be relocated, require special design, or require on and off site mitigation measures to prevent impacts to 90-100% genetically pure Yellowstone cutthroat trout populations and habitat located in the Yellowstone Watershed.

**Objective:** To ensure healthy aquatic habitat exists in drainages important to the viability of Yellowstone Cutthroat.

**Exception:** An exception may be granted after a site assessment is conducted and if the operator can demonstrate in a surface use plan of operations that adverse effects can be eliminated and activities would not affect sensitive trout populations. The following mitigation measures would apply:

- a) No net increase in sediment over existing condition.
- b) No adverse effects on water quality and quantity.

**Modification:** None.

**Waiver:** A waiver may be granted if the MFWP and the USFWS determines the stream is no longer considered important to the viability of the species.

### **RESOURCE: CLASS 1 FISHERIES**

**Stipulation:** Controlled Surface Use. Activities may be relocated, require special design, or require on and off site mitigation measures to protect Class 1 fishery streams (Blue Ribbon trout streams).

**Objective:** To ensure healthy aquatic habitat are maintained along Class 1 fisheries.

**Exception:** An exception may be granted if MFWP modifies the Class 1 fisheries rating. Application of the following mitigation measures apply:

- a) No net increase in sediment over existing condition.
- b) No adverse effects on water quality and quantity.

**Modification:** None.

**Waiver:** None.

### **RESOURCE: DEVELOPED RECREATION SITES**

**Stipulation:** Controlled Surface Use. Activities within ¼ mile of developed recreation sites (regardless of administering agency) must be conducted in a manner to minimize surface disturbance, avoid facilities, and minimize impacts with other public land users. There are currently 49 developed BLM recreation sites: Beartooth Landing Rec Site, Bryant Creek Rec Site, Buffalo Hump Rec Site, Carbella Rec Site, Clark's Bay Rec Site, Crimson Bluff Rec Site, Crow Creek Rec Site, Departure Point Rec Site, Devil's Elbow Rec Site, Dickie Bridge Rec Site, Divide Bridge Campground, Divide Bridge Day Use, East Bank Rec Site, Four Corners OHV Trailhead, French Bar Rec Site, Galena Gulch Rec Site, Headlane Trailhead, Holter Lake Dam Rec Site, Holter Lake Rec Site, Jerry Creek Br Fishing Access, John G Mine Trailhead, Log Gulch Rec Site, Lombard Historical, Lower Toston Rec Site, Maiden Rock East, McMaster Hill East Trailhead, McMaster Hill West Trailhead, Moose Creek Trailhead, Ohio Gulch OHV Trailhead, Pintlar Creek Rec Site, Pipestone OHV Rec Site, Radersburg OHV Trailhead, Ringing Rocks Rec Site, Sawlog Creek Rec Site, Sawmill Gulch Trailhead, Sheep Camp Rec Site, Sheep Mountain Trailhead, Sleeping Giant Trailhead, Spokane Bay Rec Site, Spokane Bay Trailhead, Spokane Hills South, Titan Gulch Rec Site, Toston Dam Rec Site, Tumbleweed Lane Trailhead, Two Camps Vista, Ward Ranch Historical Site, Whiskey Gulch Trailhead, White Sandy Campground, Woodsiding Trailhead.

**Objective:** To recognize and protect the public's opportunity for quality recreation experiences at those sites developed for that purpose. A ¼ mile buffer would protect capital investment and, to some extent, visitors' recreation experiences while at the site.

**Exception:** An exception may be granted if a site is moved or eliminated.

**Modification:** The list of developed recreation sites may be modified if development is removed, or if a currently undeveloped site is developed in the future.

**Waiver:** A waiver may be granted if a site is moved or eliminated.

### **RESOURCE: CULTURAL AND PALEONTOLOGICAL RESOURCES**

**Stipulation:** Controlled Surface Use. An inventory of the leased lands may be required prior to surface disturbance to determine if cultural resources or paleontological localities are present and to identify needed mitigation measures. Prior to undertaking any

surface-disturbing activities on the lands covered by this lease, the lessee or operator shall:

- 1) Contact the Surface Management Agency to determine if a cultural or paleontological resource inventory is required. If an inventory is required, then;
- 2) The SMA will complete the required inventory; or the lessee or operator, at their option, may engage the services of a cultural resource consultant acceptable to the SMA to conduct an inventory of the area of proposed surface disturbance. The operator may elect to inventory an area larger than the planned disturbance to cover possible site relocation, or for planning purposes.
- 3) Implement mitigation measures required by the SMA. Mitigation may include the relocation of proposed lease-related activities or other protective measures such as data recovery and/or extensive recordation.
- 4) The SMA will consult with Native American tribes as per IM 2005 – 003.

The lessee or operator is required to bring to the attention of the field office manager any cultural resources or other objects of scientific interest discovered as a result of approved operations under the lease, and shall leave all discoveries intact and undisturbed until directed to proceed by the field office manager (16 U.S.C. 470).

**Objective:** Compliance with Section 106 of the National Historic Preservation Act is required for all actions which may affect cultural resources eligible for nomination to the National Register of Historic Places. Section 6 of the Oil and Gas Lease Terms (Form 3100-11) requires that operations be conducted in a manner that minimizes adverse impacts to cultural and other resources.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

### **RESOURCE: NATIONAL REGISTER OF HISTORIC PROPERTIES ELIGIBLE PROPERTIES/DISTRICTS**

**Stipulation:** No Surface Occupancy: Activity is prohibited within 300 feet of site boundaries and/or districts eligible for, or listed on the National Register of Historic Places. There is one known district, the Indian Creek Historic Mining District (134 acres).

**Objective:** To avoid disturbance to and protect, significant properties, districts, and their settings.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the lessee or operator submits a plan which demonstrates that the adverse

impacts to cultural properties can be mitigated through data recovery and/or extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the Surface Management Agency, surface occupancy in that area must be prohibited.

**Modification:** No modification will be granted.

**Waiver:** No waiver will be granted.

### **RESOURCE: TRADITIONAL CULTURAL PROPERTIES**

**Stipulation:** No Surface Occupancy: Activity is prohibited within ½ mile, or line-of-site of the identified Traditional Cultural Property, whichever criterion protects the viewshed of that property.

**Objective:** To avoid disturbance and protect cultural properties determined to be of particular importance to Native American Groups, determined to be Traditional Cultural Properties, and/or designated to be for traditional use.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the Indian community no longer attaches those traditional values to the lease area.

**Modification:** No modification will be granted.

**Waiver:** No waiver will be granted.

### **RESOURCE: WETLANDS, FLOODPLAINS, RIPARIAN AREAS, AND WATER QUALITY**

**Stipulation:** No Surface Occupancy. Activity is prohibited within wetlands, floodplains, and riparian areas.

**Objective:** To maintain riparian/wetland functions and water quality.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan that demonstrates that impacts from the proposed action are minimal or can be adequately mitigated.

**Modification:** None.

**Waiver:** None.

### **RESOURCE: SPECIAL STATUS PLANT HABITATS**

**Stipulation:** Controlled Surface Use. A field inspection will be conducted for special status plant species by the lessee prior to any surface disturbance. A list of special status plant species will be provided to the lessee at the time of the lease. Plant Species on the list are subject to change over time as new information becomes available. Plant inventories must be conducted at a time of year when the target species are identifiable. A report must be

provided to the BLM documenting the presence or absence of special status plants in the area proposed for surface disturbance. The findings of this report may result in restrictions to the operator's plans or may preclude use and occupancy.

**Objective:** Protect and conserve rare plants, associated plant communities and the habitat that supports them.

**Exception:** An exception may be granted if BLM determines that the portion of the lease identified for surface disturbing activities does not support special status plant species or provide potential habitat for these species.

**Modification:** The boundaries of the area to be inventoried for special status plants may be modified if BLM determines that a large portion of the lease identified for surface disturbing activities doesn't support special status plant species or provide potential habitat for these species.

**Waiver:** The field inspection and plant inventory may be waived by the authorized if he/she determines that the subject lease occurs in an area with no known populations of special status plant species and that the area doesn't provide habitat for those species.

## **RESOURCE: KNOWN OR DISCOVERED SPECIAL STATUS PLANTS OR POPULATIONS**

**Stipulation:** No Surface Occupancy. Surface occupancy and use is prohibited within special status plant population locations.

**Objective:** Protect and conserve rare plants, associated plant communities and the habitat that supports them.

**Exception:** None.

**Modification:** None.

**Waiver:** None.

## **RESOURCE: MUNICIPAL WATERSHEDS**

**Stipulation:** Controlled Surface Use. All lease operations will avoid negative impacts to water at the intakes of the following municipal watersheds that overlap portions of the lease: Missouri River Siphon, Tennile Creek Drainage, Big Hole River Intake, and Moulton Reservoir. Measures may include relocation of proposed roads, drilling sites and other facilities, or application of appropriate mitigating measures mentioned in the list of conditions attached to the APD.

**Objective:** To protect drinking water for Municipalities within the Butte Field Office.

**Exception:** An exception may be granted after a site assessment is conducted and if the operator can demonstrate in a surface use plan of operations that water quality at intakes will meet drinking water standards established by MDEQ.

**Modification:** The boundaries of the stipulated area may be modified if the authorized officer determines that portions of the area can be occupied and water quality at intakes will meet drinking water standards established by MDEQ.

**Waiver:** This stipulation may be waived if the authorized officer determines that operations will not cause water quality at intakes to fail to meet drinking water standards established by MDEQ.

## **RESOURCE: RECREATION AND PUBLIC PURPOSES ACT LEASES AND PATENTS, AND 2920 AUTHORIZATIONS**

**Stipulation:** No Surface Occupancy. Surface Occupancy and use is prohibited on Recreation & Public Purposes leases and patents and on leases and permits authorized under regulations found at 43 CFR 2920.

**Objective:** To protect developed facilities and commercial, recreational, and public uses and prevent incompatible uses on existing authorized areas.

**Exception:** An exception to this stipulation may be granted by the authorized officer if the operator submits a plan demonstrating that impacts from the proposed action are acceptable or can be adequately mitigated in coordination with the holder of the land use authorization.

**Modification:** The area affected by this stipulation may be modified by the authorized officer if land use authorization boundaries are modified.

**Waiver:** This stipulation may be waived by the authorized officer if land use authorization boundaries are modified.

## **ADDITIONAL INFORMATION**

- Form 3100-11: Offer to Lease and Lease for Oil and Gas
- Form 3109-1: Lease Stipulations
- Form GP-135: Special Stipulation Bureau of Reclamation

Form 3100-11  
(July 2006)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

Serial Number

OFFER TO LEASE AND LEASE FOR OIL AND GAS

The undersigned (page 2) offers to lease all or any of the lands in Item 2 that are available for lease pursuant to the Mineral Lands Leasing Act of 1920, as amended and supplemented (30 U.S.C. 181 et seq.), the Mineral Leasing Act for Acquired Lands of 1947, as amended (30 U.S.C. 351-359), or \_\_\_\_\_ (other).

READ INSTRUCTIONS BEFORE COMPLETING

1. Name

Street

City, State, Zip Code

2. This application/offer/lease is for: (Check Only One)  PUBLIC DOMAIN LANDS  ACQUIRED LANDS (percent U.S. interest \_\_\_\_\_)

Surface managing agency if other than Bureau of Land Management (BLM): \_\_\_\_\_ Unit/Project \_\_\_\_\_

Legal description of land requested: \*Parcel No.: \_\_\_\_\_ \*Sale Date (mm/dd/yyyy): \_\_\_\_\_

**\*See Item 2 in Instructions below prior to completing Parcel Number and Sale Date.**

T.                      R.                      Meridian                      State                      County

Amount remitted: Filing fee \$ \_\_\_\_\_ Rental fee \$ \_\_\_\_\_ Total acres applied for \_\_\_\_\_  
Total \$ \_\_\_\_\_

DO NOT WRITE BELOW THIS LINE

3. Land included in lease:

T.                      R.                      Meridian                      State                      County

Total acres in lease \_\_\_\_\_

Rental retained \$ \_\_\_\_\_

This lease is issued granting the exclusive right to drill for, mine, extract, remove and dispose of all the oil and gas (except helium) in the lands described in Item 3 together with the right to build and maintain necessary improvements thereupon for the term indicated below, subject to renewal or extension in accordance with the appropriate leasing authority. Rights granted are subject to applicable laws, the terms, conditions, and attached stipulations of this lease, the Secretary of the Interior's regulations and formal orders in effect as of lease issuance, and to regulations and formal orders hereafter promulgated when not inconsistent with lease rights granted or specific provisions of this lease.

**NOTE: This lease is issued to the high bidder pursuant to his/her duly executed bid or nomination form submitted under 43 CFR 3120 and is subject to the provisions of that bid or nomination and those specified on this form.**

Type and primary term:

THE UNITED STATES OF AMERICA

Noncompetitive lease (ten years)

by \_\_\_\_\_  
(BLM)

Competitive lease (ten years)

\_\_\_\_\_  
(Title)                      (Date)

Other \_\_\_\_\_ EFFECTIVE DATE OF LEASE \_\_\_\_\_

(Continued on page 2)

4. (a) Undersigned certifies that (1) offeror is a citizen of the United States; an association of such citizens; a municipality; or a corporation organized under the laws of the United States or of any State or Territory thereof, (2) all parties holding an interest in the offer are in compliance with 43 CFR 3100 and the leasing authorities; (3) offeror's chargeable interests, direct and indirect, in each public domain and acquired lands separately in the same State, do not exceed 246,080 acres in oil and gas leases (of which up to 200,000 acres may be in oil and gas options or 300,000 acres in leases in each leasing District in Alaska of which up to 200,000 acres may be in options, (4) offeror is not considered a minor under the laws of the State in which the lands covered by this offer are located; (5) offeror is in compliance with qualifications concerning Federal coal lease holdings provided in sec. 2(a)2(A) of the Mineral Leasing Act; (6) offeror is in compliance with reclamation requirements for all Federal oil and gas lease holdings as required by sec. 17(g) of the Mineral Leasing Act; and (7) offeror is not in violation of sec. 41 of the Act. (b) Undersigned agrees that signature to this offer constitutes acceptance of this lease, including all terms conditions, and stipulations of which offeror has been given notice, and any amendment or separate lease that may include any land described in this offer open to leasing at the time this offer was filed but omitted for any reason from this lease. The offeror further agrees that this offer cannot be withdrawn, either in whole or in part unless the withdrawal is received by the proper BLM State Office before this lease, an amendment to this lease, or a separate lease, whichever covers the land described in the withdrawal, has been signed on behalf of the United States.

**This offer will be rejected and will afford offeror no priority if it is not properly completed and executed in accordance with the regulations, or if it is not accompanied by the required payments.**

Duly executed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_  
(Signature of Lessee or Attorney-in-fact)

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Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212 make it a crime for any person knowingly and willfully to make to any department or Agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

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#### LEASE TERMS

Sec. 1. Rentals--Rentals must be paid to proper office of lessor in advance of each lease year. Annual rental rates per acre or fraction thereof are:

- (a) Noncompetitive lease, \$1.50 for the first 5 years; thereafter \$2.00;
- (b) Competitive lease, \$1.50; for the first 5 years; thereafter \$2.00;
- (c) Other, see attachment, or

as specified in regulations at the time this lease is issued.

If this lease or a portion thereof is committed to an approved cooperative or unit plan which includes a well capable of producing leased resources, and the plan contains a provision for allocation of production, royalties must be paid on the production allocated to this lease. However, annual rentals must continue to be due at the rate specified in (a), (b), or (c) rentals for those lands not within a participating area.

Failure to pay annual rental, if due, on or before the anniversary date of this lease (or next official working day if office is closed) must automatically terminate this lease by operation of law. Rentals may be waived, reduced, or suspended by the Secretary upon a sufficient showing by lessee.

Sec. 2. Royalties--Royalties must be paid to proper office of lessor. Royalties must be computed in accordance with regulations on production removed or sold. Royalty rates are:

- (a) Noncompetitive lease, 12 1/2%;
- (b) Competitive lease, 12 1/2 %;
- (c) Other, see attachment; or

as specified in regulations at the time this lease is issued.

Lessor reserves the right to specify whether royalty is to be paid in value or in kind, and the right to establish reasonable minimum values on products after giving lessee notice and an opportunity to be heard. When paid in value, royalties must be due and payable on the last day of the month following the month in which production occurred. When paid in kind, production must be delivered, unless otherwise agreed to by lessor, in merchantable condition on the premises where produced without cost to lessor. Lessee must not be required to hold such production in storage beyond the last day of the month following the month in which production occurred, nor must lessee be held liable for loss or destruction of royalty oil or other products in storage from causes beyond the reasonable control of lessee.

Minimum royalty in lieu of rental of not less than the rental which otherwise would be required for that lease year must be payable at the end of each lease year beginning on or after a discovery in paying quantities. This minimum royalty may be waived, suspended, or reduced, and the above royalty rates may be reduced, for all or portions of this lease if the Secretary determines that such action is necessary to encourage the greatest ultimate recovery of the leased resources, or is otherwise justified.

An interest charge will be assessed on late royalty payments or underpayments in accordance with the Federal Oil and Gas Royalty Management Act of 1982 (FOGRMA) (30 U.S.C. 1701). Lessee must be liable for royalty payments on oil and gas lost or wasted from a lease site when such loss or waste is due to negligence on the part of the operator, or due to the failure to comply with any rule, regulation, order, or citation issued under FOGRMA or the leasing authority.

(Continued on page 3)

(Form 3100-11, page 2)

Sec. 3. Bonds - A bond must be filed and maintained for lease operations as required under regulations.

Sec. 4. Diligence, rate of development, unitization, and drainage - Lessee must exercise reasonable diligence in developing and producing, and must prevent unnecessary damage to, loss of, or waste of leased resources. Lessor reserves right to specify rates of development and production in the public interest and to require lessee to subscribe to a cooperative or unit plan, within 30 days of notice, if deemed necessary for proper development and operation of area, field, or pool embracing these leased lands. Lessee must drill and produce wells necessary to protect leased lands from drainage or pay compensatory royalty for drainage in amount determined by lessor.

Sec. 5. Documents, evidence, and inspection - Lessee must file with proper office of lessor, not later than 30 days after effective date thereof, any contract or evidence of other arrangement for sale or disposal of production. At such times and in such form as lessor may prescribe, lessee must furnish detailed statements showing amounts and quality of all products removed and sold, proceeds therefrom, and amount used for production purposes or unavoidably lost. Lessee may be required to provide plats and schematic diagrams showing development work and improvements, and reports with respect to parties in interest, expenditures, and depreciation costs. In the form prescribed by lessor, lessee must keep a daily drilling record, a log, information on well surveys and tests, and a record of subsurface investigations and furnish copies to lessor when required. Lessee must keep open at all reasonable times for inspection by any representative of lessor, the leased premises and all wells, improvements, machinery, and fixtures thereon, and all books, accounts, maps, and records relative to operations, surveys, or investigations on or in the leased lands. Lessee must maintain copies of all contracts, sales agreements, accounting records, and documentation such as billings, invoices, or similar documentation that supports costs claimed as manufacturing, preparation, and/or transportation costs. All such records must be maintained in lessee's accounting offices for future audit by lessor. Lessee must maintain required records for 6 years after they are generated or, if an audit or investigation is underway, until released of the obligation to maintain such records by lessor.

During existence of this lease, information obtained under this section will be closed to inspection by the public in accordance with the Freedom of Information Act (5 U.S.C. 552).

Sec. 6. Conduct of operations - Lessee must conduct operations in a manner that minimizes adverse impacts to the land, air, and water, to cultural, biological, visual, and other resources, and to other land uses or users. Lessee must take reasonable measures deemed necessary by lessor to accomplish the intent of this section. To the extent consistent with lease rights granted, such measures may include, but are not limited to, modification to siting or design of facilities, timing of operations, and specification of interim and final reclamation measures. Lessor reserves the right to continue existing uses and to authorize future uses upon or in the leased lands, including the approval of easements or rights-of-way. Such uses must be conditioned so as to prevent unnecessary or unreasonable interference with rights of lessee.

Prior to disturbing the surface of the leased lands, lessee must contact lessor to be apprised of procedures to be followed and modifications or reclamation measures that may be necessary. Areas to be disturbed may require inventories or special studies to determine the extent of impacts to other resources. Lessee may be required to complete minor inventories or short term special studies under guidelines provided by lessor. If in the conduct of operations, threatened or endangered species, objects of historic or scientific interest, or substantial unanticipated environmental effects are observed, lessee must immediately contact lessor. Lessee must cease any operations that would result in the destruction of such species or objects.

Sec. 7. Mining operations - To the extent that impacts from mining operations would be substantially different or greater than those associated with normal drilling operations, lessor reserves the right to deny approval of such operations.

Sec. 8. Extraction of helium - Lessor reserves the option of extracting or having extracted helium from gas production in a manner specified and by means provided by lessor at no expense or loss to lessee or owner of the gas. Lessee must include in any contract of sale of gas the provisions of this section.

Sec. 9. Damages to property - Lessee must pay lessor for damage to lessor's improvements, and must save and hold lessor harmless from all claims for damage or harm to persons or property as a result of lease operations.

Sec. 10. Protection of diverse interests and equal opportunity - Lessee must pay, when due, all taxes legally assessed and levied under laws of the State or the United States; accord all employees complete freedom of purchase; pay all wages at least twice each month in lawful money of the United States; maintain a safe working environment in accordance with standard industry practices; and take measures necessary to protect the health and safety of the public.

Lessor reserves the right to ensure that production is sold at reasonable prices and to prevent monopoly. If lessee operates a pipeline, or owns controlling interest in a pipeline or a company operating a pipeline, which may be operated accessible to oil derived from these leased lands, lessee must comply with section 28 of the Mineral Leasing Act of 1920.

Lessee must comply with Executive Order No. 11246 of September 24, 1965, as amended, and regulations and relevant orders of the Secretary of Labor issued pursuant thereto. Neither lessee nor lessee's subcontractors must maintain segregated facilities.

Sec. 11. Transfer of lease interests and relinquishment of lease - As required by regulations, lessee must file with lessor any assignment or other transfer of an interest in this lease. Lessee may relinquish this lease or any legal subdivision by filing in the proper office a written relinquishment, which will be effective as of the date of filing, subject to the continued obligation of the lessee and surety to pay all accrued rentals and royalties.

Sec. 12. Delivery of premises - At such time as all or portions of this lease are returned to lessor, lessee must place affected wells in condition for suspension or abandonment, reclaim the land as specified by lessor and, within a reasonable period of time, remove equipment and improvements not deemed necessary by lessor for preservation of producible wells.

Sec. 13. Proceedings in case of default - If lessee fails to comply with any provisions of this lease, and the noncompliance continues for 30 days after written notice thereof, this lease will be subject to cancellation unless or until the leasehold contains a well capable of production of oil or gas in paying quantities, or the lease is committed to an approved cooperative or unit plan or communitization agreement which contains a well capable of production of unitized substances in paying quantities. This provision will not be construed to prevent the exercise by lessor of any other legal and equitable remedy, including waiver of the default. Any such remedy or waiver will not prevent later cancellation for the same default occurring at any other time. Lessee will be subject to applicable provisions and penalties of FOGRMA (30 U.S.C. 1701).

Sec. 14. Heirs and successors-in-interest - Each obligation of this lease will extend to and be binding upon, and every benefit hereof will inure to the heirs, executors, administrators, successors, beneficiaries, or assignees of the respective parties hereto.

(Continued on page 4)

(Form 3100-11, page 3)

## A. General:

1. Page 1 of this form is to be completed only by parties filing for a noncompetitive lease. The BLM will complete page 1 of the form for all other types of leases.
2. Entries must be typed or printed plainly in ink. Offeror must sign Item 4 in ink.
3. An original and two copies of this offer must be prepared and filed in the proper BLM State Office. See regulations at 43 CFR 1821.2-1 for office locations.
4. If more space is needed, additional sheets must be attached to each copy of the form submitted.

## B. Special:

Item 1 - Enter offeror's name and billing address.

Item 2 - Identify the mineral status and, if acquired lands, percentage of Federal ownership of applied for minerals. Indicate the agency controlling the surface of the land and the name of the unit or project which the land is a part. The same offer may not include both Public

Domain and Acquired lands. Offeror also may provide other information that will assist in establishing title for minerals. The description of land must conform to 43 CFR 3110. A single parcel number and Sale Date will be the only acceptable description during the period from the first day following the end of a competitive process until the end of that same month, using the parcel number on the List of Lands Available for Competitive Nominations or the Notice of Competitive Lease Sale, whichever is appropriate.

Payments: The amount remitted must include the filing fee and the first year's rental at the rate of \$1.50 per acre or fraction thereof. The full rental based on the total acreage applied for must accompany an offer even if the mineral interest of the United States is less than 100 percent. The filing fee will be retained as a service charge even if the offer is completely rejected or withdrawn. To protect priority, it is important that the rental submitted be sufficient to cover all the land requested. If the land requested includes lots or irregular quarter-quarter sections, the exact area of which is not known to the offeror, rental should be submitted on the basis of each such lot or quarter-quarter section containing 40 acres. If the offer is withdrawn or rejected in whole or in part before a lease issues, the rental remitted for the parts withdrawn or rejected will be returned.

Item 3 - This space will be completed by the United States.

## NOTICES

The Privacy Act of 1974 and the regulations in 43 CFR 2.48(d) provide that you be furnished with the following information in connection with information required by this oil and gas lease offer.

AUTHORITY: 30 U.S.C. 181 et seq.; 30 U.S.C 351-359.

PRINCIPAL PURPOSE: The information is to be used to process oil and gas offers and leases.

ROUTINE USES: (1) The adjudication of the lessee's rights to the land or resources. (2) Documentation for public information in support of notations made on land status records for the management, disposal, and use of public lands and resources. (3) Transfer to appropriate Federal agencies when consent or concurrence is required prior to granting a right in public lands or resources. (4)(5) Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions.

EFFECT OF NOT PROVIDING INFORMATION: If all the information is not provided, the offer may be rejected. See regulations at 43 CFR 3100.

The Paperwork Reduction Act of 1995 requires us to inform you that:

This information is being collected pursuant to the law.

This information will be used to create and maintain a record of oil and gas lease activity.

Response to this request is required to obtain a benefit.

BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

**BURDEN HOURS STATEMENT:** Public reporting burden for this form is estimated to average 1 hour per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0185), Bureau Information Collection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop, 401LS, Washington, D.C. 20240.

Form 3109-1  
(December 1972)  
(formerly 3103-1)

**LEASE STIPULATIONS**  
**BUREAU OF RECLAMATION**

The lessee agrees to maintain, if required by the lessor during the period of this lease, including any extension thereof, an additional bond with qualified sureties in such sum as the lessor, if it considers that the bond required under Section 2(a) is insufficient, may at any time require:

(a) to pay for damages sustained by any reclamation homestead entryman to his crops or improvements caused by drilling or other operations of the lessee, such damages to include the reimbursement of the entryman by the lessee, when he uses or occupies the land of any homestead entryman, for all construction and operation and maintenance charges becoming due during such use or occupation upon any portion of the land so used and occupied;

(b) to pay any damage caused to any reclamation project or water supply thereof by the lessee's failure to comply fully with the requirements of this lease; and

(c) to recompense any nonmineral applicant, entryman, purchaser under the Act of May 16, 1930 (46 Stat. 367), or patentee for all damages to crops or to tangible improvements caused by drilling or other prospecting operation, where any of the lands covered by this lease are embraced in any nonmineral application, entry, or patent under rights initiated prior to the date of this lease, with a reservation of the oil deposits, to the United States pursuant to the Act of July 17, 1914 (38 Stat. 509).

As to any lands covered by this lease within the area of any Government reclamation project, or in proximity thereto, the lessee shall take such precautions as required by the irrigation under such project or to the water supply thereof; *provided* that drilling is prohibited on any constructed works or right-of-way of the Bureau of Reclamation, and *provided, further*, that there is reserved to the lessor, its successors and assigns, the superior and prior right at all times to construct, operate, and maintain dams, dikes, reservoirs, canals, wasteways, laterals, ditches, telephone and telegraph lines, electric transmission lines, roadways, appurtenant irrigation structures, and reclamation works, in which construction, operation, and maintenance, the lessor, its successors and assigns, shall have the right to use any or all of the lands herein described without making compensation therefore, and shall not be responsible for any damage from the presence of water thereon or on account of ordinary, extraordinary, unexpected, or unprecedented floods. That nothing shall be done under this lease to increase the cost of, or interfere in any manner with, the construction, operation, and maintenance of such works. It is agreed by the lessee that, if the construction of any or all of said dams, dikes, reservoirs, canals, wasteways, laterals, ditches, telephone or telegraph lines, electric transmission lines, roadways, appurtenant irrigation structures or reclamation works across, over, or upon said lands should be made more expensive by reason of the existence of the improvements and workings of the lessee thereon, said additional expense is to be estimated by the Secretary of the Interior, whose estimate is to be final and binding upon the parties hereto, and that within thirty (30) days after demand

is made upon the lessee for payment of any such sums, the lessee will make payment thereof to the United States, or its successors, constructing such dams, dikes, reservoirs, canals, wasteways, laterals, ditches, telephone and telegraph lines, electric transmission lines, roadways, appurtenant irrigation structures, or reclamation works, across, over, or upon said lands; *provided, however*, that subject to advance written approval by the United States, the location and course of any improvements or works and appurtenances may be changed by the lessee; *provided, further*, that the reservations, agreements, and conditions contained in the within lease shall be and remain applicable notwithstanding any change in the location or course of said improvements or works of lessee. The lessee further agrees that the United States, its officers, agents, and employees, and its successors and assigns shall not be held liable for any damage to the improvements or workings of the lessee resulting from the construction, operation, and maintenance of any of the works hereinabove enumerated. Nothing in this paragraph shall be construed as in any manner limiting other reservations in favor of the United States contained in this lease.

THE LESSEE FURTHER AGREES That there is reserved to the lessor, its successors and assigns, the prior right to use any of the lands herein leased, to construct, operate, and maintain dams, dikes, reservoirs, canals, wasteways, laterals, ditches, telephone and telegraph lines, electric transmission lines, roadways, or appurtenant irrigation structures, and also the right to remove construction materials therefrom, without any payment made by the lessor or its successors for such right, with the agreement on the part of the lessee that if the construction of any or all of such dams, dikes, reservoirs, canals, wasteways, laterals, ditches, telephone and telegraph lines, electric transmission lines, roadways, or appurtenant irrigation structures across, over, or upon said lands or the removal of construction materials therefrom, should be made more expensive by reason of the existence of improvements or workings of the lessee thereon, such additional expense is to be estimated by the Secretary of the Interior, whose estimate is to be final and binding upon the parties hereto, and that within thirty (30) days after demand is made upon the lessee for payment of any such sums, the lessee will make payment thereof to the United States or its successors constructing such dams, dikes, reservoirs, canals, wasteways, laterals, ditches, telephone and telegraph lines, electric transmission lines, roadways, or appurtenant irrigation structures across, over, or upon said lands or removing construction materials therefrom. The lessee further agrees that the lessor, its officers, agents, and employees and its successors and assigns shall not be held liable for any damage to the improvements or workings of the lessee resulting from the construction, operation, and maintenance of any of the works herein above enumerated. Nothing contained in this paragraph shall be construed as in any manner limiting other reservations in favor of the lessor contained in this lease.

To insure against the contamination of the waters of the \_\_\_\_\_ Reservoir,

\_\_\_\_\_ Project, State of \_\_\_\_\_, the lessee agrees that the following further conditions shall apply to all drilling and operations on lands covered by this lease, which lie within the flowage or drainage area of the Reservoir, as such area is defined by the Bureau of Reclamation:

1. The drilling sites for any and all wells shall be approved by the Superintendent, Bureau of Reclamation, \_\_\_\_\_ Project, before drilling begins. Sites for the construction of pipe-line rights-of-way or other authorized facilities shall also be approved by the Superintendent before construction begins.

2. All drilling or operation methods or equipment shall, before their employment, be inspected and approved by the Superintendent of the \_\_\_\_\_ Project, \_\_\_\_\_, and by the supervisor of the U.S. Geological Survey having jurisdiction over the area.

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(02/03)

SPECIAL STIPULATION - BUREAU OF RECLAMATION

To avoid interference with recreation development and/or impacts to fish and wildlife habitat and to assist in preventing damage to any Bureau of Reclamation dams, reservoirs, canals, ditches, laterals, tunnels, and related facilities, and contamination of the water supply therein, the lessee agrees that the following conditions shall apply to all exploration and developmental activities and other operation of the works thereafter on lands covered by this lease:

1. Prior to commencement of any surface-disturbing work including drilling, access road work, and well location construction, a surface use and operations plan will be filed with the appropriate officials. A copy of this plan will be furnished to the Regional Director, Great Plains Region, Bureau of Reclamation, P.O. Box 36900, Billings, MT 59107-6900, for review and consent prior to approval of the plan. Such approval will be conditioned on reasonable requirements needed to prevent soil erosion, water pollution, and unnecessary damages to the surface vegetation and other resources, including cultural resources, of the United States, its lessees, permittees, or licensees, and to provide for the restoration of the land surface and vegetation. The plan shall contain provisions as the Bureau of Reclamation may deem necessary to maintain proper management of the water, recreation, lands structures, and resources, including cultural resources, within the prospecting, drilling, or construction area.

Drilling sites for all wells and associated investigations such as seismograph work shall be included in the above-mentioned surface use and operation plan.

If later explorations require departure from or additions to the approved plan, these revisions or amendments, together with a justification statement for proposed revisions, will be submitted for approval to the Regional Director, Great Plains Region, Bureau of Reclamation, or his authorized representative.

Any operations conducted in advance of approval of an original, revised, or amended prospecting plan, or which are not in accordance with an approved plan constitute a violation of the terms of this lease. The Bureau of Reclamation reserves the right to close down operations until such corrective action, as is deemed necessary, is taken by the lessee.

2. No occupancy of the surface of the following excluded areas is authorized by this lease. It is understood and agreed that the use of these areas for Bureau of Reclamation purposes is superior to any other use. The following restrictions apply only to mineral tracts located within the boundary of a Bureau of Reclamation project where the United States owns 100 percent of the fee mineral interest.

- a. Within 500 feet on either side of the centerline of any and all roads or highways within the leased area.
- b. Within 200 feet on either side of the centerline of any and all trails within the leased area.
- c. Within 500 feet of the normal high-water line of any and all live streams in the leased area.
- d. Within 400 feet of any and all recreation developments within the leased area.
- e. Within 400 feet of any improvements either owned, permitted, leased, or otherwise authorized by the Bureau of Reclamation within the leased area.
- f. Within 200 feet of established crop fields, food plots, and tree/shrub plantings within the leased area.
- g. Within 200 feet of slopes steeper than a 2:1 gradient within the leased area.
- h. Within established rights-of-way of canals, laterals, and drainage ditches within the leased area.
- i. Within a minimum of 500 feet horizontal from the centerline of the facility or 50 feet from the outside toe of the canal, lateral, or drain embankment, whichever distance is greater, for irrigation facilities without clearly marked rights-of-way within the leased area.
- j. Providing that appropriate environmental compliance measures can be ensured, and providing further that Reclamation project works and other public interests can be protected, Reclamation may consider, on a case-by-case basis, waiving the requirement specified in Section 2 hereof. **HOWEVER, LESSEES ARE ADVISED THAT OBTAINING SUCH A WAIVER CAN BE A DIFFICULT, TIME CONSUMING, AND COSTLY PROCESS WITH NO GUARANTEE THAT RECLAMATION WILL GRANT THE REQUESTED WAIVER.**

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3. No occupancy of the surface or surface drilling will be allowed in the following areas. In addition, no directional drilling will be allowed that would intersect the subsurface zones delineated by a vertical plane in these areas. The following restrictions apply only to mineral tracts located within the boundary of a Bureau of Reclamation project, where the United States owns 100 percent of the fee mineral interest in said tract, or tracts.

a. Within 1,000 feet of the maximum water surface, as defined in the Standard Operating Procedures (SOP), of any reservoirs and related facilities located within the leased area.

b. Within 2,000 feet of dam embankments and appurtenance structures such as spillway structures, outlet works, etc.

c. Within one-half (1/2) mile horizontal from the centerline of any tunnel within the leased area.

d. Providing that appropriate environmental compliance measures can be ensured, and providing further that Reclamation project works and other public interests can be protected. Reclamation may consider, on a case-by-case basis, waiving the requirements specifies in Section 3 hereof. **HOWEVER, LESSEES ARE ADVISED THAT OBTAINING SUCH A WAIVER CAN BE A DIFFICULT, TIME CONSUMING, AND COSTLY PROCESS WITH NO GUARANTEE THAT RECLAMATION WILL GRANT THE REQUESTED WAIVER.**

4. The distances stated in items 2 and 3 above are intended to be general indicators only. The Bureau of Reclamation reserves the right to revise these distances as needed to protect Bureau of Reclamation facilities.

5. The use of explosives in any manner shall be so controlled that the works and facilities of the United States, its successors and assigns, will in no way be endangered or damaged. In this connection, an explosives use plan shall be submitted to and approved by the Regional Director, Great Plains Region, Bureau of Reclamation, or his/her authorized representative.

6. The lessee shall be liable for all damage to the property of the United States, its successors or assigns, resulting from the exploration, development, or operation of the works contemplated by this lease, and shall further hold the United States, its successors or assigns, and its officers, agents, and employees, harmless from all claims of third parties for injury or damage sustained or in any way resulting from the exercise of the rights and privileges conferred by the lease.

7. The lessee shall be liable for all damages to crops or improvements of any entryman, nonmineral applicant, or patentee, their successors or assigns, caused by or resulting from the drilling or other operations of the lessee, including reimbursement of any entryman or patentee, their successors or assigns, for all construction, operation, and maintenance charges becoming due on any portion of their said lands damaged as a result of the drilling or other operation of the lessee.

8. In addition to any other bond required under the provisions of this lease, the lessee shall provide such bond as the United States may at any time require for damages which may arise under the liability provisions of Section six (6) and seven (7) above.



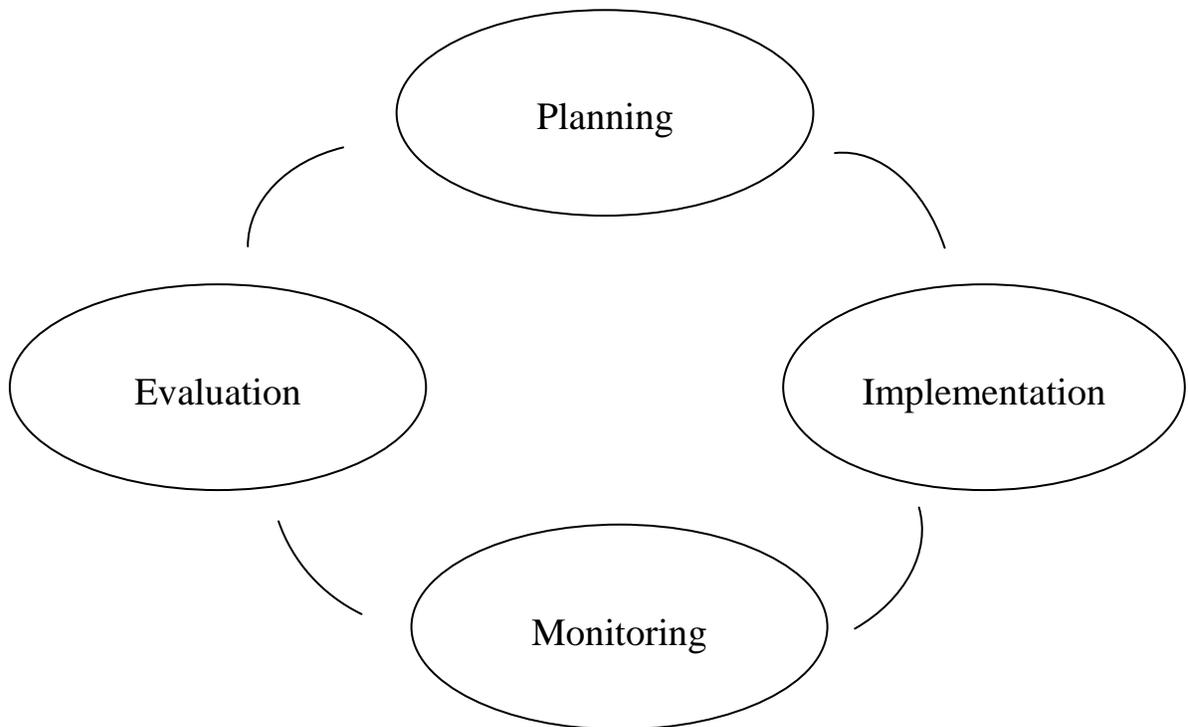
## APPENDIX N – IMPLEMENTATION AND MONITORING

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Plan implementation is a continuous process occurring over the life of the resource management plan that will consider changing circumstances and new information through monitoring. The goal is to maintain a dynamic resource management plan that is evaluated and amended if necessary on an issue-by-issue basis.

The implementation and monitoring process for the Butte Field Office involves five major steps: planning, implementation, monitoring, evaluation, and adjustments, as necessary. Planning involves a great amount of time and resources to identify issues and management opportunities to address those issues.

During the planning process, the scope of the issue is identified and management goals, objectives and actions are defined to address the issues. Once the planning process is completed, decisions are implemented, monitored, and evaluated over a period of time to determine if goals are being met and if management actions are achieving the desired objective or standard. Results of monitoring are documented and communicated to appropriate parties, and management objectives and actions are modified based on results, if necessary.



### Planning

The Proposed RMP/Final EIS is approved once the Record of Decision is signed. An Approved Plan will also be available that will include all the approved decisions from the RMP.

The BLM regulation in 43 CFR 1610.5-4 provides that land use plan decisions and supporting components can be maintained to reflect minor changes in data. Maintenance is limited to further refining, documenting, or clarifying a previously approved decision

incorporated in the plan. Maintenance must not expand the scope of resource uses or restrictions or change the terms, conditions, and decisions of the Approved Plan.

Land use plan decisions are changed through either a plan amendment or a plan revision. The process for conducting plan amendments is basically the same as the land use planning process used in developing RMPs. The primary difference is that circumstances may allow for completing a plan amendment through the environmental assessment (EA) process, rather than through an EIS. Plan amendments (43 CFR 1610.5-5)

change one or more of the terms, conditions, or decisions of an approved land use plan. Plan amendments are most often prompted by the need to consider a proposal or action that does not conform to the plan; implement new or revised policy that changes land use plan decisions; respond to new, intensified, or changed uses on BLM land; and consider significant new information from resource assessments, monitoring, or scientific studies that change land use plan decisions.

## **Implementation**

Implementation of the resource management plan (RMP) begins once the Record of Decision and Approved Plan for the Proposed RMP/Final EIS is signed.

Decisions made through the RMP planning process are implemented over a period of time. Some of the decisions are immediate and go into effect with the Record of Decision. These include decisions such as resource-specific management prescriptions and lands available for disposal through exchange. Some decisions would be implemented after site-specific environmental review or NEPA process is completed. Examples include range improvements, development of recreation sites, vegetation management treatments, or approval of an application for permit to drill a natural gas well.

Any future proposals or management actions will be reviewed against the Approved Plan to determine if the proposal would be in conformance with the RMP. While the Final EIS for the Butte RMP provides the compliance with NEPA for the broad-scale decisions to be made in the Record of Decision, it does not replace the requirement to comply with NEPA for implementation actions. Proposed actions fall into one of five categories: (1) actions that are exempt from NEPA; (2) actions that are categorically excluded; (3) actions that are covered by an existing NEPA environmental document; (4) actions that require preparation of an environmental assessment (EA) to determine if an environmental impact statement (EIS) is needed; or (5) actions that require preparation of an EIS. The NEPA procedural, documentation, and public involvement requirements are different for each category.

Activity level planning will address any proposed new activities and long-term permitted activities that need to be brought into compliance with plan decisions, subject to valid existing rights. Monitoring of these activities will then determine the effectiveness of applying the land use plan direction. Where land use plan actions or best management practices are not effective, modifications could occur without amendment or revision of the plan as long as assumptions and impacts disclosed in the analysis remain valid and broad-scale goals and objectives are not changed. This approach uses

on-the-ground monitoring, review of scientific information, and consideration of practical experience and common sense to adjust management and modify implementation of the plan to reach the desired outcome.

As part of this process, the BLM will review management actions and the plan periodically to determine whether the objectives set forth in this document are being met. Where they are not being met, the BLM will consider adjustments of appropriate scope. Where the BLM considers taking or approving actions which will alter or not conform to overall direction of the plan, the BLM will prepare a plan amendment and environmental analysis of appropriate scope. In addition, during the life of the Approved Plan, the BLM expects that new information gathered from field inventories and assessments, research, other agency studies, and other sources will update baseline data or support new management techniques, best management practices, and scientific principles. To the extent that such new information or actions address issues covered in the plan, the BLM will integrate the data through plan maintenance.

## **Monitoring**

Monitoring is the repeated measurement of activities and conditions over time. Monitoring data gathered over time is examined and used to draw conclusions on whether management actions are meeting stated objectives, and if not, why. Conclusions are then used to make recommendations on whether to continue current management or what changes need to be made in management practices to meet objectives.

Monitoring determines whether planned activities have been implemented in the manner prescribed by the plan. This monitoring documents BLM's progress toward full implementation of the land use plan decision. There are no specific thresholds or indicators required for this type of monitoring.

Monitoring also is used to determine if the implementation of activities has achieved the desired goals and objectives. This requires knowledge of the objectives established in the RMP as well as indicators that can be measured. Indicators are established by technical specialists in order to address specific questions, and thus avoid collection of unnecessary data. Success is measured against the benchmark of achieving desired future conditions established by the plan.

Monitoring is also used to ascertain whether a cause-and-effect relationship exists among management activities or resources being managed. It confirms whether the predicted results occurred and if assumptions and models used to develop the plan are correct. This type of monitoring is often done by contract with another agency, academic institution, or

other entity, and is usually expensive and time consuming since results are not known for many years.

Regulations at 43 CFR 1610.4-9 require that the proposed plan establish intervals and standards, as appropriate, for monitoring and evaluation of the plan, based on the sensitivity of the resource decisions involved. Progress in meeting the plan objectives and adherence to the management framework established by the plan is reviewed periodically. CEQ regulations implementing NEPA state that agencies may provide for monitoring to assure that their decisions are carried out and should do so in important cases (40 CFR 1505.2(c)). To meet these requirements, the BLM will prepare periodic reports on the implementation of the RMP.

### **Evaluation**

Evaluation is a process in which the plan and monitoring data are reviewed to see if management goals and objectives are being met and if management direction is sound.

Land use plan evaluations will be used by the BLM to determine if the decisions in the RMP, supported by the accompanying NEPA analysis, are still valid. Evaluation of the RMP will generally be conducted

every five years, unless unexpected actions, new information, or significant changes in other plans, legislation, or litigation triggers an evaluation. Land use plan evaluations determine if decisions are being implemented, whether mitigation measures are satisfactory, whether there are significant changes in the related plans of other entities, whether there is new data of significance to the plan, and if decisions should be changed through amendment or revision.

Based on a Record of Decision and Approved Plan released in the spring of 2009, the following evaluation schedule would be followed for the Butte RMP/EIS:

- January 2014
- January 2019
- January 2024
- January 2029

Evaluations will follow the protocols established by the BLM Land Use Planning Handbook H-1601-1 in effect at the time the evaluation is initiated.

In addition to this monitoring and evaluation schedule, the Approved Plan will identify monitoring processes by goal and program area.