Federal Energy Regulatory Commission

Office of Energy Projects

March 2010

FERC/DEIS – 0234

Draft Environmental Impact Statement

Swan Falls Hydroelectric Project
Idaho
(FERC Project No. 503-048)

888 First Street N.E., Washington, DC 20426

FEDERAL ENERGY REGULATORY COMMISSION

WASHINGTON, DC 20426

OFFICE OF ENERGY PROJECTS

To the Agency or Individual Addressed:

Reference: Draft Environmental Impact Statement

Attached is the draft environmental impact statement (draft EIS) for the Swan Falls Project (FERC Project No. 503-048), located on the Snake River in Ada and Owyhee counties, Idaho.

This draft EIS documents the view of governmental agencies, non-governmental organizations, affected Indian tribes, the public, the license applicant, and Federal Energy Regulatory Commission (Commission) staff. It contains staff evaluations of Idaho Power Company's proposal and the alternatives for relicensing the Swan Falls Project.

You are invited to file comments on the DEIS. Any comments, conclusions, or recommendations that draw upon studies, reports, or other working papers should be supported by appropriate documentation. Your comments will be considered in the staff's preparation of the final EIS.

Comments should be filed with: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street, NE, Washington, DC 20426. All comments must be filed within 45 days of the notice date in the Federal Register and should reference Project No. 503-048. Comments may be filed electronically via the Internet in lieu of paper. The Commission strongly encourages electronic filings. See 18 CFR 385.2001(a)(1)(iii) and the instructions on the Commission's web site (www.ferc.gov) under the "e-Filing" link.

Before the Commission makes a licensing decision, it will take into account all concerns relevant to the public interest. The draft EIS will be part of the record from which the Commission will make its decision. The draft EIS was sent to the U.S. Environmental Protection Agency and made available to the public in March 2010.

Copies of the draft EIS are available for review in the Commission's Public Reference Branch, Room 2A, located at 888 First Street, N.E., Washington, DC 20426. The draft EIS also may be viewed on the Internet at www.ferc.gov/docs-filing/elibrary.asp. Please call (202) 502-8222 for assistance.

Attachment: Draft Environmental Impact Statement

COVER SHEET

a. Title: Relicensing the Swan Falls Hydroelectric Project, FERC Project No. 503-048

b. Subject: Draft Environmental Impact Statement

c. Lead Agency: Federal Energy Regulatory Commission

d. Abstract: On June 26, 2008, Idaho Power Company filed an application for license with the Federal Energy Regulatory Commission (Commission) for a new license for the 25-megawatt Swan Falls Hydroelectric Project (project), FERC No. 503-048, located on the Snake River in Ada and Owyhee counties, Idaho, about 35 miles southwest of Boise.

The project currently occupies 529 acres of federal lands administered by the Bureau of Land Management.

The staff's recommendation is to relicense the project as proposed, with certain modifications and additional measures recommended by the agencies and the staff to protect and enhance environmental resources.

e. Contact: James Puglisi
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f. Transmittal: This draft environmental impact statement prepared by the Commission staff for the Swan Falls Hydroelectric Project is being made available for public comment in March 2010, as required by the National Environmental Policy Act of 1969[1] and the Commission's Regulations Implementing the National Environmental Policy Act (18 CFR, Part 380).

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[1] National Environmental Policy Act of 1969, amended (Pub. L. 91-190. 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, §4(b), September 13, 1982).

FOREWORD

The Federal Energy Regulatory Commission (Commission), pursuant to the Federal Power Act (FPA)[2] and the U.S. Department of Energy Organization Act[3] is authorized to issue licenses for up to 50 years for the construction and operation of non-federal hydroelectric development subject to its jurisdiction, on the necessary conditions:

That the project…shall be such as in the judgment of the Commission will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water-power development, for the adequate protection, mitigation, and enhancement of fish and wildlife (including related spawning grounds and habitat), and for other beneficial public uses, including irrigation, flood control, water supply, and recreational and other purposes referred to in section 4(e)…[4]

The Commission may require such other conditions not inconsistent with the FPA as may be found necessary to provide for the various public interests to be served by the project.[5] Compliance with such conditions during the licensing period is required. The Commission's Rules of Practice and Procedure allow any person objecting to a licensee's compliance or noncompliance with such conditions to file a complaint noting the basis for such objection for the Commission's consideration.[6]

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[2] 16 U.S.C. §791(a)-825r, as amended by the Electric Consumers Protection Act of 1986, Pub. L. 99-495 (1986), the Energy Policy Act of 1992, Pub. L. 102-486 (1992), and the Energy Policy Act of 2005, Pub. L. 109-58 (2005).

[3] Pub. L. 95-91, 91 Stat. 556 (1977).

[4] 16 U.S.C. § 803(a).

[5] 16 U.S.C. § 803(g).

[6] 18 C.F.R. §385.206 (2009).

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ACRONYMS AND ABBREVIATIONS

Advisory Council	Advisory Council on Historic Preservation
AIR	additional information request
APE	area of potential effects
applicant	Idaho Power Company
Archaeological District	Guffey Butte-Black Butte Archaeological District
BLM	Bureau of Land Management
BP	before present
CFR	code of federal regulations
cfs	cubic feet per second
Commission	Federal Energy Regulatory Commission
DO	dissolved oxygen
EIS	environmental impact statement
ºC	degrees Celsius
FERC	Federal Energy Regulatory Commission
FERC Form 80	Licensed Hydropower Development Recreation Report
Forest Service	U.S. Department of Agriculture, Forest Service
FPA	Federal Power Act
FWS	U.S. Department of the Interior, Fish and Wildlife Service
GIS	Geographic Information Systems
HAER	Historic American Engineering Record
HPMP	Historic Properties Management Plan
Idaho DEQ	Idaho Department of Environmental Quality
Idaho DFG	Idaho Department of Fish and Game
Idaho DPR	Idaho Department of Parks and Recreation
Idaho Power	Idaho Power Company
Idaho SHPO	Idaho State Historic Preservation Officer
Interior	U.S. Department of the Interior
KOP	key observation point
mg/L	milligram per liter
msl	mean sea level
MW	megawatt
MWh	megawatt-hour
National Register	National Register of Historic Places
NCA	National Conservation Area
NERC	North American Electric Reliability Corporation
OHWM	ordinary high water mark
NHPA	National Historic Preservation Act of 1966
PA	programmatic agreement
Program	Columbia River Basin Fish and Wildlife Program
project	Swan Falls Hydroelectric Project
REA	Ready for Environmental Analysis

Reclamation	U.S. Bureau of Reclamation
Refuge	Deer Flat National Wildlife Refuge
RM	river mile
§	section
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SCORTP	Statewide Comprehensive Outdoor Recreation and Tourism Plan
SD1	Scoping Document 1
Shoshone-Bannock Tribes	Shoshone-Bannock Tribes of the Fort Hall Reservation
TCP	traditional cultural property
TDG	total dissolved gas
TMDL	total maximum daily load
USGS	U.S. Geological Survey
VRM	visual resource management
WQC	water quality certification
WSTAC	White Sturgeon Technical Advisory Committee

EXECUTIVE SUMMARY

This draft environmental impact statement (draft EIS) evaluates the potential natural resource benefits, environmental impacts, and economic costs associated with relicensing the existing 25-megawatt Swan Falls Hydroelectric Project (project), located on the Snake River in Ada and Owyhee counties, Idaho, about 35 miles southwest of Boise. The project occupies 529 acres of federal lands administered by the Bureau of Land Management (BLM).

Proposed Action

The existing project is composed of a concrete dam, a concrete spillway having 12 spillway gates, a concrete powerhouse integral with the dam, a switchyard, and two transmission lines; it is described in more detail in section 2.2, *Applicant's Proposal*. Idaho Power Company (Idaho Power) proposes no capacity changes and proposes to continue the ongoing operations of the project with a change in the minimum flow regime to provide instantaneous minimum flows of 3,900 cubic feet per second (cfs) from April 1 to October 31 each year, and 5,600 cfs from November 1 to March 31, and continuation of the existing ramping rate restrictions of no more than 1 foot per hour and 3 feet per day. Other proposals by Idaho Power include: monitoring water temperature and dissolved oxygen (DO) in the project outflow; monitoring the resident fish population; implementing the Wildlife Habitat and Enhancement Plan, Noxious Weed Management Plan, Special Status Management Plan, Recreation Management Plan, Visual Guidelines Plan, and Historic Properties Management Plan (HPMP); and preparing and implementing a transmission line operation and maintenance plan.

Alternatives Considered

This EIS analyzes the effects of continued project operation and recommends conditions for a new license for the project. In addition to Idaho Power's proposal, we consider two alternatives: (1) the staff alternative, and (2) no action—continued operation under the terms and conditions of the existing license, with no new environmental measures implemented.

Under the staff alternative, the project would be operated to include most of the measures proposed by Idaho Power, as well as measures recommended by the Federal Energy Regulatory Commission (Commission) staff. The recommended staff modifications include or are based in part on recommendations made by the federal and state resource agencies that have an interest in the resources that may be affected by continued project operation.

Aquatic Resources

- Develop and implement a plan with provisions to monitor the following water quality parameters as stipulated in Idaho DEQ's WQC: (1) water temperature and DO in the project's outflow throughout the term of any issued license; (2)

water temperature and DO in the project's inflow for at least 5 years after issuance of any license; and (3) TDG and discharge in the project's inflow and outflow for at least 5 years after issuance of any license. Develop a quality assurance control plan; submit annual data reports to Idaho DEQ and the Commission; and prepare and file a report with the Commission with a copy to Idaho DEQ summarizing the results of the first 5 years of monitoring, and describing any proposed changes to the monitoring program.

Terrestrial Resources

- Implement timing restrictions on transmission line maintenance activities, as needed, to protect benchland nesters and cliff-nesting raptors.

Recreation Resources

- Revise and implement the Recreation Management Plan to include: (1) completion of Idaho Power's consultation with the Idaho State Historic Preservation Officer (Idaho SHPO) to ensure that work planned at informal dispersed recreation sites and associated access roads considers the effects on cultural resources known to exist in the area; (2) soil erosion control measures; (3) detailed design drawings of Swan Falls Park, Swan Falls reservoir boat ramp, Swan Falls downstream boat launch, and the canoe portage trail; (4) a description of improvements to the six dispersed recreation sites; (5) a discussion on how the needs of the disabled were considered in the planning and design of the recreation facilities; (6) an implementation schedule; (7) modification of the Litter and Sanitation Plan so that it applies only to lands within the project boundary; and (8) finalization and implementation of the Interpretation and Education Plan as part of the Recreation Management Plan in consultation with BLM, Idaho Department of Parks and Recreation (Idaho DPR), and Idaho SHPO.
- Establish an interagency recreation working group that convenes every 6 years in coordination with preparing the FERC Form 80[7] to assess recreation facilities, dispersed recreation sites, and usage.

Land Use and Aesthetic Resources

- Revise the proposed Visual Guidelines Plan to include a list of neutral paint color schemes, a list of vegetation species for vegetation, a list of construction materials that could be used, and documentation of consultation with BLM and Idaho DPR.

[7] Licensed Hydropower Development Recreation Report—Form 80.

Cultural Resources

- Revise the December 2008 HPMP to include a program for immediate implementation of mitigation measures for sites being affected by shoreline erosion or vandalism, as well as sites proposed for recreation improvements. Include consultation among Idaho Power, Idaho SHPO, BLM, and participating tribes to formulate site-specific mitigation measures. The anticipated programmatic agreement (PA) would incorporate the HPMP.

Public Involvement and Areas of Concern

Before filing its license application, Idaho Power conducted pre-filing consultation under the Commission's traditional licensing process. The Commission's pre-filing process initiates public involvement early in the project planning process and encourages citizens, governmental entities, tribes, and other interested parties to identify and resolve issues before an application is formally filed with the Commission. After the application was filed, we conducted scoping to determine which issues and alternatives should be addressed. Scoping Document 1 (SD1) was distributed to interested parties on January 9, 2009. Scoping meetings were held in Boise, Idaho, on February 10 and 11, 2009, and a site visit of the project area was conducted by Idaho Power, resource agency personnel, interested parties, and Commission staff on February 10, 2009. In SD1, we requested clarification of preliminary issues concerning the Swan Falls Project and identification of any new issues that need to be addressed in the EIS. A revised scoping document addressing these comments was issued on May 5, 2009. On June 16, 2009, we requested conditions and recommendations in response to the Commission's Ready for Environmental Analysis notice.

Important issues we address include the effects of project operation and maintenance on water quality and white sturgeon, as well as the effects of project operation, project maintenance, and recreational use of the area within and near the project boundary on terrestrial and cultural resources.

Project Effects

Geology and Soils

Under Idaho Power's proposal and the staff alternative, Idaho Power would reduce erosion by restoring approximately 79 acres of land and 2.7 miles of riparian shoreline, formalizing recreational access and use areas, and eliminating informal recreational access and use in areas where Idaho Power proposes additional resource protection.

Aquatic Resources

Under Idaho Power's proposal, continued removal of aquatic vegetation and debris that accumulates on the trash racks would remove nutrients from the river, helping to improve water quality, and monitoring of water temperature and DO in the project

tailrace would help to confirm that project operations, including proposed minimum flow release changes, would not adversely affect short- or long-term water quality. Under the staff alternative, monitoring discharge, water temperature, DO and TDG of the project inflow and outflow would help better define any project effects on water quality over a range of hydrologic and meteorological conditions, and would help to determine whether any additional measures are warranted to address project effects on water resources.

Under Idaho Power's proposal, implementation of a resident fish population monitoring program would determine basic population characteristics. However, because the proposed monitoring is not designed to detect for the effects of any specific project-related action, the monitoring program is not included in the staff alternative.

Terrestrial Resources

Implementation of Idaho Power's proposed Wildlife Habitat Protection and Enhancement Plan would improve conditions for numerous wildlife species in the project area that use riparian habitat and would also improve conditions in project area uplands. Idaho Power's proposed Special Status Plant Management Plan would provide an effective means of protecting these species from recreational activity where they occur within the project boundary. Implementation of Idaho Power's Noxious Weed Management Plan would promote native plant communities that provide higher quality habitat for wildlife than those dominated by invasive non-native species.

However, measures to protect soils and botanical resources in both a transmission line operation and maintenance plan and the Noxious Weed Management Plan would be duplicative, and implementation of the Noxious Weed Management Plan alone would ensure the protection of soils and botanical resources on all project lands, including the transmission line right-of-way. Therefore, under the staff alternative a transmission line operation and maintenance plan would not be necessary. Instead, the staff alternative would include timing restrictions on transmission line maintenance activities to minimize the risk of disturbing benchland nesters and cliff-nesting raptors during the breeding season.

Threatened and Endangered Species

Under both Idaho Power's proposal and the staff alternative, effects on the Snake River physa from stranding and desiccation due to changes in water levels would continue to be very low.

Recreation

Under Idaho Power's proposal, recreational opportunities would be improved as a result of finalizing and implementing the draft Recreation Management Plan, which includes continuing operation, maintaining the existing five project recreational facilities, continuing implementation of Idaho Power's public safety program, upgrading existing facilities, improving six dispersed recreation sites, adding to interpretive and

informational displays, and implementing the Litter and Sanitation Plan at areas both inside and outside the project boundary.

Under the staff alternative, staff's recommendation for revising the Recreation Management Plan to include additional staff recommendations and consultation with Idaho DPR, Idaho Department of Fish and Game (Idaho DFG), Idaho SHPO, and BLM would ensure that the potential adverse effects of recreational development and use on cultural and terrestrial resources would be appropriately considered. Additionally, the Litter and Sanitation Plan would apply only to lands within the project boundary.

Land Use and Aesthetics

Under both Idaho Power's proposal and the staff alternative, there would be a reduction of 599 acres within the project boundary. The proposed project boundary modifications would remove 791 acres of project land upstream and downstream of the Swan Falls dam that are not needed for project purposes, and add 192 acres of project land downstream of the dam to incorporate restored lands[8] as part of the Wildlife Habitat and Protection Enhancement Plan, cultural resource sites requiring long-term monitoring, and dispersed recreation sites proposed for improvement.

Idaho Power's proposal would provide some protection to visual resources under the provisions of the Visual Guidelines Plan. The staff alternative includes additional recommendations and coordination with BLM and Idaho DPR.

Cultural Resources

Under Idaho Power's proposal, cultural resources would be protected under provisions specified in the HPMP filed with the Commission in December 2008. However, the December 2008 HPMP does not address mitigating the effects on the 10 archaeological sites subject to severe erosion, archaeological sites that would be affected by proposed recreation improvements to existing dispersed sites and associated access roads (including closure/revegetation of other dispersed sites and roads), and other archaeological sites on Idaho Power lands that are being disturbed by vandalism and looting associated with recreational use.

Under the staff alternative, revision of the HPMP to address these project-related effects would ensure that all existing and potential future adverse effects on historic properties would be adequately addressed over the term of any new license. The revised HPMP would be filed with the Commission prior to license issuance, and upon license issuance the revised HPMP would be implemented through execution of a PA for a new license.

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[8] Restored lands refer to the closure of braided roads and nine dispersed recreation sites that would be located within the project boundary and would be revegetated as part of the Wildlife Habitat and Enhancement Plan.

Socioeconomics

Idaho Power's proposal and the staff alternative would provide essentially the same socioeconomic benefits as under current conditions.

Under the no-action alternative, environmental conditions would remain the same and no enhancement of environmental resources would occur.

Conclusions

Based on our analysis, we recommend relicensing the project as proposed by Idaho Power with some staff modifications and additional measures, as described above under *Alternatives Considered*.

In section 4.1, *Power and Economic Benefits of the Project*, we estimate the likely cost of alternative power for each of the three alternatives identified above. Our analysis shows that during the first year of operation under the no-action alternative, project power would cost $2,121,430, or $13.15/megawatt-hour (MWh), less than the likely alternative cost of power. Under the proposed action alternative, project power would cost $1,571,830, or $9.74/MWh, less than the likely alternative cost of power. Under the staff alternative, project power would cost $1,561,530, or $9.68/MWh, less than the likely alternative cost of power.

We chose the staff alternative as the preferred alternative because under it: (1) the project would provide a dependable source of electrical energy for the region (161,300 MWh annually); (2) the project would save the equivalent amount of fossil fueled generation and capacity; and (3) the recommended environmental measures would protect and enhance environmental and cultural resources affected by the project. The overall benefits of the staff alternative would be worth the additional costs of the recommended environmental measures.

DRAFT ENVIRONMENTAL IMPACT STATEMENT

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Licensing
Washington, DC

Swan Falls Hydroelectric Project
FERC Project No. 503-048—Idaho

1.0 INTRODUCTION

1.1 APPLICATION

On June 26, 2008, Idaho Power Company (Idaho Power or applicant) filed an application for a new license with the Federal Energy Regulatory Commission (Commission or FERC) for the 25-megawatt (MW) Swan Falls Hydroelectric Project (Swan Falls Project or project), FERC No. 503-048. The project is located on the Snake River in Ada and Owyhee counties, Idaho, about 35 miles southwest of Boise (figure 1). The project currently occupies 529 acres[9] of federal lands administered by the Bureau of Land Management (BLM). The project generates an average of about 161,300 megawatt-hours (MWh) of energy annually. Idaho Power proposes no new capacity and no new construction.

1.2 PURPOSE OF ACTION AND NEED FOR POWER

1.2.1 Purpose of Action

The Commission must decide whether to issue a license to Idaho Power for the Swan Falls Project and what conditions should be placed on any license issued. In deciding whether to issue a license for a hydroelectric project, the Commission must determine that the project will be best adapted to a comprehensive plan for improving or developing a waterway. In addition to the power and developmental purposes for which licenses are issued (such as flood control, irrigation, or water supply), the Commission must give equal consideration to the purposes of: (1) energy conservation; (2) the protection of, mitigation of damage to, and enhancement of fish and wildlife resources; (3) the protection of recreational opportunities; and (4) the preservation of other aspects of environmental quality.

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[9] The federal land acreage is based on Idaho Power's Technical Report Appendix E.6-B (Johnson, 2008).

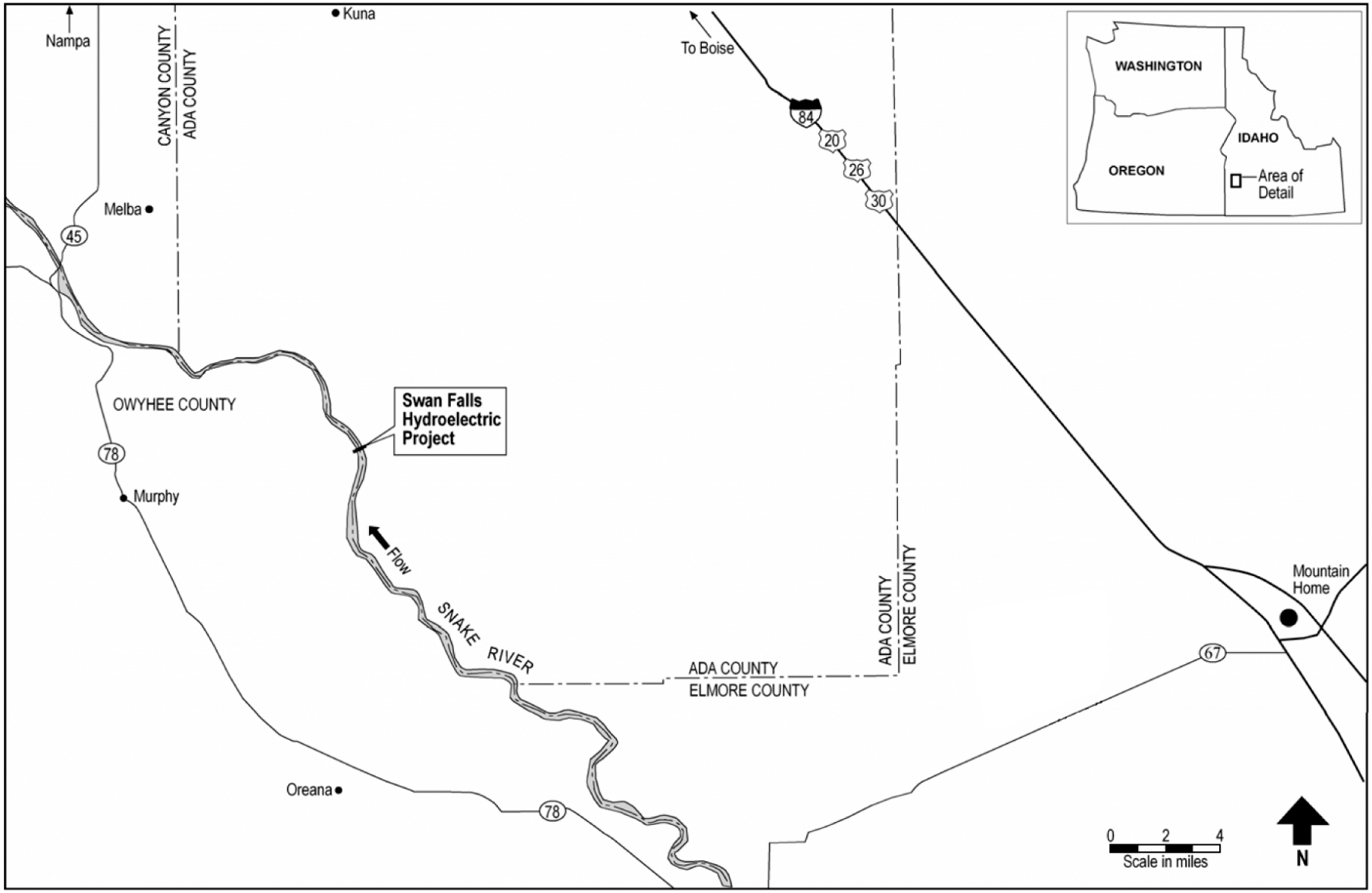

Figure 1. Location of the Swan Falls Hydroelectric Project (Source: Idaho Power, 2008a, as modified by staff).

Issuing a new license for the Swan Falls Project would allow Idaho Power to generate electricity for the term of a new license, making electrical power from a renewable resource available to its customers.

This draft environmental impact statement (draft EIS) assesses the effects associated with continued operation of the project and alternatives to the proposed project. It also includes recommendations to the Commission on whether to issue a new license, and if so, includes the recommended terms and conditions to become a part of any license issued.

In the draft EIS, we assess the environmental and economic effects of continuing to operate the project: (1) as proposed by Idaho Power and (2) with our recommended measures. We also consider the effects of the no-action alternative.

Important issues we address include the effects of project operation and maintenance on water quality and white sturgeon, as well as the effects of project operation, project maintenance, and recreational use of the area within and near the project boundary on terrestrial and cultural resources.

1.2.2 Need for Power

The Swan Falls Project would provide hydroelectric generation to meet part of the state of Idaho's power requirements, as well as its resource diversity and capacity needs. The project would have an installed capacity of 25 MW and generate approximately 161,300 MWh per year.

The North American Electric Reliability Corporation (NERC) annually forecasts electrical supply and demand nationally and regionally for a 10-year period. The Swan Falls Project is located in the Northwest Power Pool area of the Western Electricity Coordinating Council region of the NERC. According to NERC's most recent (2008) forecast, winter peak demands and annual energy requirements for the U.S. portion of the Northwest Power Pool region are projected to grow at annual rates of 1.65 percent and 2.68 percent, respectively, from 2008 through 2017 (NERC, 2008). NERC projects winter resource capacity margins (generating capacity in excess of demand) will drop from 34.7 percent in 2008/2009 to 23.7 percent of firm peak demand by winter 2012/2013.

We conclude that power from the Swan Falls Project would help meet a need for power in the Northwest Power Pool area in both the short and long term. The project provides low-cost power that displaces non-renewable, fossil-fired generation and contributes to a diversified generation mix. Displacing the operation of fossil-fueled facilities may avoid some power plant emissions, which creates an environmental benefit.

1.3 STATUTORY AND REGULATORY REQUIREMENTS

A new license for the Swan Falls Project would be subject to numerous requirements under the Federal Power Act (FPA) and other applicable statutes. We summarize the major regulatory requirements in table 1 and describe them below.

Table 1. Major statutory and regulatory requirements for the Swan Falls Hydroelectric Project.

Requirement	Agency	Status
Section 18 of the Federal Power Act (fishway prescriptions)	Interior	Interior filed a reservation of its authority to prescribe fishways for the project on August 12, 2009.
Section 10(j) of the Federal Power Act	Idaho DFG	Idaho DFG filed section 10(j) recommendations on August 14, 2009.
Clean Water Act—water quality certification	Idaho DEQ	Idaho DEQ issued the final water quality certification on May 4, 2009, and filed the certification on August 13, 2009.
Endangered Species Act Consultation	FWS	In a letter filed on September 1, 2009, FWS indicated that the Snake River physa, an endangered species of snail, occurs in the project area.
National Historic Preservation Act	Idaho SHPO	Idaho Power consulted with the Idaho SHPO, Interior, and the Shoshone-Bannock Tribes regarding studies to identify historic properties and on the draft archaeological survey report. Comments from these entities were received by Idaho Power in letters dated December 20, December 21, and December 28, 2007, that were filed in the application.
Pacific Northwest Power Planning and Conservation Act	FWS, Idaho DFG	Idaho Power has consulted with the fish and wildlife agencies and developed appropriate measures to mitigate effects on fish and wildlife, as required.

Notes: Interior – U.S. Department of the Interior

FWS – U. S. Department of the Interior, Fish and Wildlife Service

Idaho DEQ – Idaho Department of Environmental Quality

Idaho DFG – Idaho Department of Fish and Game

Idaho SHPO – Idaho State Historic Preservation Officer

Shoshone-Bannock Tribes – Shoshone-Bannock Tribes of the Fort Hall Reservation

1.3.1 Federal Power Act

1.3.1.1 Section 18 Fishway Prescriptions

Section 18 of the FPA states that the Commission is to require construction, operation, and maintenance by a licensee of such fishways as may be prescribed by the Secretaries of Commerce or the U.S. Department of the Interior (Interior). Interior, by letter filed August 12, 2009, requested that a reservation of authority to prescribe fishways under section 18 be included in any license issued for the project.

1.3.1.2 Section 10(j) Recommendations

Under section 10(j) of the FPA, each hydroelectric license issued by the Commission must include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, or enhancement of fish and wildlife resources affected by the project. The Commission is required to include these conditions unless it determines that they are inconsistent with the purposes and requirements of the FPA or other applicable law. Before rejecting or modifying an agency recommendation, the Commission is required to attempt to resolve any such inconsistency with the agency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agency.

Idaho Department of Fish and Game (Idaho DFG) timely filed, on August 14, 2009, recommendations under section 10(j), as summarized by table 18 in section 5.4, *Fish and Wildlife Agency Recommendations.* In section 5.4, we discuss how we address the agency recommendations.

1.3.2 Clean Water Act

Under section 401 of the Clean Water Act, a license applicant must obtain certification from the appropriate state pollution control agency verifying compliance with the Clean Water Act. On June 6, 2008, Idaho Power applied to Idaho DEQ for 401 water quality certification (WQC) for the Swan Falls Project. Idaho DEQ timely issued the section 401 WQC on May 4, 2009 (letter from B.N. Burnell, Water Quality Division Administrator, Idaho DEQ, dated May 4, 2009). A copy of the certification was filed with the Commission on August 13, 2009, and appears in appendix A. The conditions of

the certification are also described under section 2.2.4, *Modifications to Applicant's Proposal—Mandatory Conditions*.

1.3.3 Endangered Species Act

Section 7 of the Endangered Species Act requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species. In a letter filed on September 1, 2009, the U.S. Department of the Interior, Fish and Wildlife Service (FWS) indicated that the Snake River physa (*Haitia* [*Physa*] *natricina*), an endangered species of aquatic snail, occurs in the project area. FWS stated that no threatened, endangered, proposed, or candidate terrestrial plants or wildlife species are likely to occur in the Swan Falls Project area, and none were identified during special status plant surveys or a review of the literature regarding plants and wildlife in the project area.

In its August 12, 2009, filing providing recommended terms and conditions, Interior recommends that Idaho Power consult with FWS to design a suitable sampling program to determine the current status and distribution of the Snake River physa near the Swan Falls Project and to assess potential project-related effects on the species. In its reply comments, Idaho Power stated that it has begun preliminary discussions with FWS to develop a sample plan to address concerns related to Snake River physa. Idaho Power states that the study plan will address study methods, sample locations and the number of samples anticipated to complete the project. Idaho Power anticipates completion of the study plan by December 31, 2009, and completion of the study report by June 2010. Both the plan and the report would be filed with the Commission upon completion.

Our analyses of project effects on threatened and endangered species are presented in section 3.3.4, *Threatened and Endangered Species*, and our recommendations in section 5.2, *Comprehensive Development and Recommended Alternative*. We conclude that relicensing the Swan Falls Project, as proposed with staff-recommended measures, is not likely to adversely affect the Snake River physa because the species is unlikely to be located in areas affected by water-level fluctuations related to project operations and because continued removal of aquatic vegetation that accumulates on the project's trash racks would improve water quality. We will request FWS concurrence with our conclusion at or about the time this draft EIS is issued.

1.3.4 National Historic Preservation Act

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires that every federal agency "take into account" how each of its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, traditional cultural properties (TCPs), and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register of Historic Places (National Register).

Idaho Power consulted with the Idaho State Historic Preservation Officer (Idaho SHPO), Interior, and the Shoshone-Bannock Tribes of the Fort Hall Reservation (Shoshone-Bannock Tribes) during study development and provided these entities with draft versions of the archaeological survey report and Historic Properties Management Plan (HPMP) for their review.[10] Idaho SHPO, Interior, and the Shoshone-Bannock Tribes commented on the documents in letters dated December 28, 20, and 21, 2007, respectively. For comments and recommendations with which it agreed, Idaho Power revised the survey report and HPMP in June 2008. Idaho Power did not agree to two of the Idaho SHPO's requests: (1) analyze and discuss the physiography of the project area to identify fishing-related natural features, and (2) complete a final report for prior archaeological work undertaken at site 10AA17. Commission staff also commented on the HPMP in October 2008 (see our letter filed October 7, 2008) and Idaho Power revised the HPMP and filed it with the Commission in December 2008. Additional comments were received from the Shoshone-Bannock Tribes in letters filed August 26, 2008 and March 13, 2009. As discussed in section 5.0, the December 2008 HPMP does not adequately address all project-related effects.

To meet the requirements of section 106, the Commission staff intends to execute a programmatic agreement (PA) for the protection of historic properties from the effects of the Swan Falls Project. The terms of the PA would ensure that Idaho Power addresses and treats all historic properties identified within the project's area of potential effects (APE) through the implementation of a final revised HPMP.

1.3.5 Pacific Northwest Power Planning and Conservation Act

Under section 4(h) of the Pacific Northwest Power Planning and Conservation Act, the Northwest Power and Conservation Council developed the Columbia River Basin Fish and Wildlife Program (Program) to protect, mitigate, and enhance the fish and wildlife resources associated with development and operation of the hydroelectric projects within the Columbia River Basin. Section 4(h) states that responsible federal and state agencies should provide equitable treatment for fish and wildlife resources, in addition to other purposes for which hydropower is developed, and that these agencies should take into account, to the fullest extent practicable, the Program adopted under the Pacific Northwest Power Planning and Conservation Act.

The Program directs agencies to consult with federal and state fish and wildlife agencies, appropriate Indian tribes, and the Northwest Power and Conservation Council during the study, design, construction, and operation of any hydroelectric development in the basin. At the time the application was filed, our regulations required the applicant to consult with the appropriate federal and state fish and wildlife agencies and tribes before

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[10] On February 7, 2008, Idaho Power attempted to contact the Shoshone-Paiute Tribes, the Burns-Paiute Tribe, and the Fort McDermitt Paiute and Shoshone Tribe, but no responses were received from these tribes.

filing, and after filing, to provide these groups with opportunities to review and comment on the application. Idaho Power has followed this consultation process, and the relevant federal and state fish and wildlife agencies and tribes have reviewed and commented on the application.

Although the Swan Falls Project is not located within a protected area designated by this Program, the Program directs that hydroelectric projects include measures to mitigate their effects on fish and wildlife resources (Program sections 12.1A.1 through 12.1A.2). The measures described in the proposed action contribute to this goal; therefore, the project is consistent with the objectives of this Program.

1.4 PUBLIC REVIEW AND CONSULTATION

The Commission's regulations (18 code of federal regulation [CFR], section [§] 16.8) require that applicants consult with appropriate resource agencies, tribes, and other entities before filing an application for a license. This consultation is the first step in complying with the Fish and Wildlife Coordination Act, Endangered Species Act, NHPA, and other federal statutes. Pre-filing consultation must be complete and documented according to the Commission's regulations.

1.4.1 Scoping

Before preparing this EIS, we conducted scoping to determine what issues and alternatives should be addressed. A scoping document (SD1) was distributed to interested agencies and others on January 9, 2009. It was noticed in the Federal Register on January 15, 2009. In SD1, we requested clarification of preliminary issues concerning the Swan Falls Project and identification of any new issues that need to be addressed in the EIS. Two scoping meetings, both advertised in the Idaho Statesman, were held on February 10 and 11, 2009, in Boise, Idaho, to request oral comments on the project. We also had a site visit of the project area on February 10, 2009. A court reporter recorded all comments and statements made at the scoping meetings, and these are part of the Commission's public record for the project. In addition to comments provided at the scoping meetings, the following entities provided written comments on SD1:

Commenting Entity	Date Filed
Patty Terry	February 25, 2009
Idaho DFG	March 11, 2009
Idaho Department of Parks and Recreation (Idaho DPR)	March 12, 2009
Shoshone-Bannock Tribes	March 13, 2009

A revised scoping document addressing these comments was issued on May 5, 2009.

1.4.2 Interventions

On December 5, 2008, the Commission issued a notice that Idaho Power had filed an application to relicense the Swan Falls Project. This notice set February 3, 2009, as the deadline for filing protests and motions to intervene. In response to the notice, the following entities filed motions to intervene:

Intervenor	Date Filed
State of Idaho	December 17, 2008
Shoshone-Bannock Tribes	January 30, 2009

1.4.3 Comments on the License Application

A notice soliciting comments, recommendations, terms and conditions, and prescriptions was issued on June 16, 2009. The following entities responded:

Commenting Agency and Other Entity	Date Filed
Interior	August 12, 2009
State of Idaho	August 14, 2009

The applicant filed reply comments on September 29, 2009.

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2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 NO-ACTION ALTERNATIVE

Under the no-action alternative, the Swan Falls Project would continue to operate under the terms and conditions of the existing license, and no new environmental protection, mitigation, or enhancement measures would be implemented. We use this alternative to establish baseline environmental conditions for comparison with other alternatives.

2.1.1 Existing Project Facilities

The existing Swan Falls Project consists of: (1) a 1,218-foot-long concrete gravity and rock-fill dam composed of an abutment embankment, a spillway section, a center island, the old powerhouse section, the intermediate dam, and the new powerhouse; (2) a 12-mile-long, 1,525-acre reservoir with a normal maximum water surface elevation of 2,314 feet mean sea level (msl); (3) 12 equal-width, concrete spillway sections with radial gates, having a total capacity of 105,112 cubic feet per second (cfs) at reservoir elevation 2,318 feet msl, divided into two sections (western and eastern)—the western section, contiguous with the abutment embankment, is a gated, concrete ogee section with eight radial gates, and the eastern section, which is adjacent to the island, contains four radial gates; (4) two concrete flow channels; (5) two pit-type, horizontal Kaplan turbine generators with a nameplate ratings of 12.5 MW each; (6) a 1,400-foot-long, 120-foot-wide excavated tailrace channel; (7) a 33,600-kilovolt-ampere main power transformer; (8) a 1.2-mile-long, 138-kilovolt transmission line; and (9) appurtenant equipment.

2.1.2 Project Boundary

Under the existing license, the project boundary includes about 2,192 acres, of which 1,255 acres are land and 937 acres are water. The project boundary extends from about 12 miles upstream of the dam to about 2,000 feet downstream of the dam. The project boundary follows linear boundaries that encompass all major project features, including the main project access road, an equipment yard, the dam, a new powerhouse, a barn-like storage structure, an orchard, five Idaho Power-owned project houses, a transmission line, a yard where trash rack debris is dumped, and five existing project recreation sites, including the old powerhouse (which is now a museum).

2.1.3 Project Safety

The project has been operating for more than 27 years under the existing license and during this time, Commission staff has conducted operational inspections focusing on the continued safety of the structures, identification of unauthorized modifications, efficiency and safety of operations, compliance with the terms of the license, and proper maintenance. In addition, the project has been inspected and evaluated every 5 years by an independent consultant and a consultant's safety report has been submitted for

Commission review. As part of the relicensing process, the Commission staff would evaluate the continued adequacy of the project facilities under a new license. Special articles would be included in any license issued, as appropriate. Commission staff would continue to inspect the project during the new license term to assure continued adherence to Commission-approved plans and specifications, special license articles relating to construction (if any), operation and maintenance, and accepted engineering practices and procedures.

2.1.4 Existing Project Operation

The Swan Falls Project is a reregulating reservoir, with limited storage capacity available to provide minimal peaking operations. However, the Swan Falls reservoir is not used to store water on a seasonal basis. The 3 feet of limited available storage between elevation 2,311 feet msl and 2,314 feet msl is used on a daily basis to re-regulate flows from the upstream C.J. Strike Project (FERC Project No. 2055). With its limited storage, the Swan Falls Project can be used to meet short-term, unexpected peak load requirements. However, the Swan Falls Project is required to comply with ramping rate restrictions of no more than 1 foot per hour and 3 feet per day as measured at the ramping monitoring gage located approximately 1 mile downstream of the dam.

The current Swan Falls license, issued in 1982, requires instantaneous minimum flows downstream of the Swan Falls dam of no less than 5,000 cfs during the irrigation season (April 1 to September 30) and no less than 4,000 cfs outside of the irrigation season (October 1 to March 31). If the average daily inflow is less than the specified minimums, the project discharge from the powerhouse and/or spillway must be equal to the average inflow.

Under the Swans Falls Agreement, a contract between Idaho Power and the state of Idaho entered into on October 25, 1984, Idaho Power's water rights for power purposes at the Swan Falls Project and other specified Idaho Power-owned hydroelectric projects on the middle Snake River entitle Idaho Power to an unsubordinated right of 3,900 cfs average daily flow from April 1 to October 30, and 5,600 cfs average daily flow from November 1 to March 31, as measured at the Murphy U.S. Geological Survey (USGS) gage (USGS Gage No. 13172500) located downstream of the Swan Falls Project near Murphy, Idaho, at river mile (RM) 453.5. During low-flow periods, Idaho Power monitors daily average project discharges over a 3-day period to ensure that the average minimum flow is at least 3,900 cfs from April 1 to October 31 and at least 5,600 cfs from November 1 to March 31 for the purpose of satisfying Idaho Power's water rights under the Swan Falls Agreement.

2.1.5 Existing Environmental Measures

The environmental measures that the applicant currently implements are listed below. License article numbers are provided in parenthesis where applicable; voluntary measures are also noted.

Aquatic Resources

- The project is operated to comply with the ramping rate restrictions of no more than 1 foot per hour and 3 feet per day and instantaneous minimum flows downstream of the Swan Falls dam of no less than 5,000 cfs during the irrigation season (April 1 to September 30) and no less than 4,000 cfs outside of the irrigation season (October 1 to March 31). (Article 39)[11]
- The project includes trash racks over the turbine intake, and Idaho Power currently removes aquatic macrophytes and debris that accumulate on the racks, resulting in decreases in nutrients and oxygen-demanding material from the river. (voluntary)

Recreational Resources

- The project includes the following five existing project recreation sites located within the project boundary: Swan Falls Park, Swan Falls reservoir boat ramp, Swan Falls downstream boat launch, the canoe portage trail, and Swan Falls powerhouse museum. (Article 406)[12]
- To minimize risk to the public, the applicant also adheres to measures described in its Public Safety Plan, dated June 2008. (voluntary)

Land Use and Aesthetic Resources

- Idaho Power has a program for administering its current policy regarding the permitting of piers, docks, and other shoreline facilities associated with project lands and waters. (Article 51)[11]

2.2 APPLICANT'S PROPOSAL

2.2.1 Proposed Project Facilities and Boundary Modifications

Idaho Power does not propose any changes to generation facilities or other major project features. Idaho Power proposes to enhance some existing developed recreational areas and harden and formalize some existing informal recreational sites located both within and outside of the current project boundary. Idaho Power proposes to amend the project boundary to remove 791 acres and to add 192 acres to reflect: (1) acres no longer needed for the operation and maintenance of the Swan Falls Project, and (2) areas and facilities needed for project purposes such as recreation. With these modifications, the new project boundary would encompass approximately 1,593 acres of land and water.

Upstream of the dam, the proposed project boundary would follow contour 2,318 feet msl along both sides of the river, extending farther around project features located on

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[11] Order Issuing New License (Major), December 22, 1982, 21 FERC ¶62,519.
[12] Order Amending License (Major), December 8, 1989, 49 FERC ¶62,227.

the northeastern side of the river. The proposed project boundary excludes lands located upslope from the 2,318-foot-msl contour line that are not needed for project purposes. Downstream of the dam, the project boundary would generally include all lands on the northeast side of the river between the ordinary high water mark (OHWM)[13] and the elevation 2,360-foot-msl contour line from the dam downstream to the extent of Idaho Power's proposed recreational enhancements (see figure 4 for the proposed project boundary downstream of the dam).[14] Table 12 lists Idaho Power's proposed project boundary modifications.[15]

2.2.2 Proposed Project Operation

The applicant proposes a change to the minimum flow regime and continuation of the existing ramping rate restrictions. The project would provide instantaneous minimum flows of 3,900 cfs from April 1 to October 31, and 5,600 cfs from November 1 to March 31 each year. The ramping rate restrictions would continue to be no more than 1 foot per hour and 3 feet per day.

2.2.3 Proposed Environmental Measures

Idaho Power proposes the following mitigation, protection, and enhancement measures.

Aquatic Resources

- Provide an instantaneous minimum flow of 3,900 cfs downstream of the dam from April 1 to October 31, and 5,600 cfs from November 1 to March 31.
- Continue the ramping rate restrictions of no more than 1 foot per hour and 3 feet per day.
- Continue to remove and dispose of aquatic macrophytes and debris that accumulate on the project trash racks to remove nutrients and oxygen-demanding material from the river.

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[13] Ordinary high water mark refers to the line that water impresses on the soil by covering it for sufficient periods.

[14] Idaho Power plans to obtain submerged land easement rights (lands below the OHWM) from the Idaho Department of Lands, as well as any other state and federal permits necessary to ensure public access below the OHWM at proposed recreation sites located downstream of the dam.

[15] Idaho Power's exhibit G drawings would need to be modified and re-filed with the Commission if the proposed project boundary modifications would be approved by the Commission. The current exhibit G drawings filed with the license application do not reflect the proposed project boundary.

- Monitor water temperature and dissolved oxygen (DO) in the project outflow.
- Implement resident fish monitoring in Swan Falls reservoir and in the first 15 miles of the river downstream of Swan Falls dam to determine long-term trends in fish populations.

Terrestrial Resources

- Implement the Wildlife Habitat and Enhancement Plan to protect, enhance, and restore upland and riparian habitat on applicant-owned lands within the project boundary, including closing nine dispersed recreation sites.[16]
- Implement the Noxious Weed Management Plan to control noxious and undesirable weed species on applicant-owned lands and cooperatively manage noxious and undesirable species on other lands within the project boundary.
- Implement the Special Status Plant Management Plan to protect and monitor special status plant species on applicant-owned and other lands within the project boundary.
- Develop and implement a transmission line operation and maintenance plan.

Recreation Resources

- Finalize and implement the draft Recreation Management Plan, which includes the following elements:
  - Continue operation and maintenance of five existing project recreation sites: Swan Falls Park, Swan Falls reservoir boat ramp, Swan Falls downstream boat launch, the canoe portage trail, and Swan Falls powerhouse museum.[17]
  - Enhance the Swan Falls reservoir boat ramp by upgrading the boat ramp, adding a vault toilet, and enhancing parking for vehicles and trailers.
  - Improve Swan Falls Park by providing riprap or a retaining wall along the shoreline, and adding a new dock, picnic tables, and a shelter.

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[16] Restoring upland and riparian habitat refers to closing braided roads and nine dispersed recreation sites that are located within the project boundary and revegetating those lands as part of the Wildlife Habitat and Enhancement Plan.

[17] Idaho Power's proposed HPMP includes a provision to improve Swan Falls powerhouse museum's interpretive and education displays and increase days and hours of availability to include every Saturday between April 15 and Labor Day, from 10:00 a.m. to 4:00 p.m.

  - Enhance the Swan Falls downstream boat launch by constructing a two-lane boat ramp, adding a vault toilet, enhancing parking for vehicles and trailers, and removing the air compressor.
  - Improve the canoe portage trail by installing signage.
  - Enhance six existing dispersed recreation sites located either within or near the current project boundary (the sites outside the current project boundary are proposed to be included within the new project boundary) that provide access to the reservoir and river.
  - Implement the Litter and Sanitation Plan, including additional vault toilets and dumpsters, as well as biannual litter pickups and a carry-in/carry-out policy within the project boundary and outside of the project boundary (downstream to RM 453.4).
  - Finalize and implement the Interpretation and Education Plan.
- Continue implementation of the applicant's Public Safety Plan, dated June 2008.

Land Use and Aesthetic Resources

- Implement the Visual Guidelines Plan, which includes the following elements:
  - Modify the colors of the five Idaho Power-owned project houses to blend with soils and vegetation.
  - Paint the wooden elements associated with BLM's key observation point (KOP) 2, which is a parking and restroom area near the powerhouse.
  - Establish screening around the lay-down yard.
  - Ensure that any new construction considers the protection of visual resources from important viewpoints.
- Develop and implement a consistent signage plan for the entire project area and adjoining applicant-owned lands.
- Finalize and implement the Resource Management Plan to guide Idaho Power staff in its hydroelectric operations and maintenance of the Swan Falls Project, including project-related measures to protect cultural and natural resources.
- Continue implementation of policies for permitting piers, boat docks, and other facilities (non-project use of project lands and waters).

Cultural Resources

- Implement the project's December 2008 HPMP.

2.2.4 Modifications to Applicant's Proposal—Mandatory Conditions

The following mandatory conditions have been provided and are evaluated as part of the applicant's proposal.

Section 18 Prescriptions

Interior, by letter filed August 12, 2009, reserved its authority to prescribe fishways under section 18 of the FPA for the Swan Falls Project.

Section 4(e) Land Management Conditions

No agency submitted mandatory conditions pursuant to FPA section 4(e).

Water Quality Certification Conditions

The conditions of the WQC (appendix A) specify the following:

Idaho Power will develop, in consultation with Idaho DEQ, a water quality monitoring plan and submit the plan to Idaho DEQ for approval within 6 months after issuance of a new license. The plan, which will include a quality assurance control project plan, will describe the location and method of monitoring for discharge flows, DO, total dissolved gas (TDG), and water temperature in the reservoir and downstream from the project.

Idaho Power will submit annual reports to Idaho DEQ, summarizing the results of its water quality monitoring as described in the water quality monitoring plan. After 5 years, Idaho Power may request the termination of all or some of its monitoring described in the plan, except for the elements proposed in its license application (i.e., monitor water temperature and DO in the project outflow).

2.3 STAFF ALTERNATIVE

The staff alternative would include Idaho Power's proposed measures, with the exception of implementing the proposed resident fish monitoring program, and developing and implementing a transmission line operation and maintenance plan. The staff alternative would modify and/or add the following measures:

Aquatic Resources

- Develop and implement a plan with provisions to monitor water temperature and DO in the project's outflow seasonally each license year as proposed by Idaho Power and monitor water temperature and DO in the project's inflow and discharge and TDG in the project's inflow and outflow for at least 5 years after license issuance as stipulated in Idaho DEQ's WQC; develop a quality assurance control plan; submit annual data reports to Idaho DEQ and the Commission; and prepare and file a report with the Commission with a copy to Idaho DEQ summarizing the results of the first 5 years of monitoring, and describing any proposed changes to the monitoring program.

Terrestrial Resources

- Implement timing restrictions on transmission line maintenance activities, as needed, to protect benchland nesters and cliff-nesting raptors.

Recreation Resources

- Revise and implement the Recreation Management Plan to include: (1) completion of Idaho Power's consultation with Idaho SHPO to ensure that work planned at the informal dispersed sites and associated access roads consider the effects on cultural resources known to exist in the area; (2) soil erosion control measures; (3) detailed design drawings of Swan Falls Park, Swan Falls reservoir boat ramp, Swan Falls downstream boat launch, and the canoe portage trail; (4) a description of improvements to the six dispersed recreation sites; (5) a discussion on how the needs of the disabled were considered in the planning and design of the recreation facilities; (6) an implementation schedule; (7) modification of the Litter and Sanitation Plan so that it applies only to lands within the project boundary; and (8) finalization and implementation of the Interpretation and Education Plan as part of the Recreation Management Plan in consultation with BLM, Idaho DPR, and Idaho SHPO.
- Establish an interagency recreation working group that convenes every 6 years in coordination with preparing the FERC Form 80[18] to assess recreation facilities, dispersed recreation sites, and usage.

Land Use and Aesthetic Resources

- Revise the proposed Visual Guidelines Plan to include a list of neutral paint color schemes, a list of vegetation species for vegetation, a list of construction materials that could be used, and documentation of consultation with BLM and Idaho DPR.

Cultural Resources

- Revise the December 2008 HPMP to include a program for immediate mitigation measures for sites being affected by shoreline erosion, vandalism, and recreation improvements. The program will include a consultation process between Idaho Power, Idaho SHPO, BLM, and participating tribes to formulate site-specific mitigation measures. The anticipated PA would implement the final revised HPMP.

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[18] Licensed Hydropower Development Recreation Report—Form 80.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

We considered several alternatives to the applicant's proposal, but eliminated them from further analysis because they are not reasonable in the circumstances of this case. They are: (1) issuing a non-power license, (2) federal government takeover of the project, and (3) retiring the project.

2.4.1 Issuing a Non-power License

A non-power license is a temporary license that the Commission will terminate when it determines that another governmental agency will assume regulatory authority and supervision over the lands and facilities covered by the non-power license. At this point, no agency has suggested a willingness or ability to do so. No party has sought a non-power license and we have no basis for concluding that the project should no longer be used to produce power. Thus, we do not consider issuing a non-power license a realistic alternative to relicensing in this circumstance.

2.4.2 Federal Government Takeover of the Project

We do not consider federal takeover to be a reasonable alternative. Federal takeover and operation of the project would require Congressional approval. While that fact alone would not preclude further consideration of this alternative, there is no evidence to indicate that federal takeover should be recommended to Congress. No party has suggested federal takeover would be appropriate, and no federal agency has expressed an interest in operating the project.

2.4.3 Retiring the Project

Project retirement could be accomplished with or without dam removal. Either alterative would involve denial of the relicense application and surrender or termination of the existing license with appropriate conditions. Existing recreation facilities would be operated and maintained by other entities or removed. Project retirement with dam removal would have the following effects:

- The energy generated by the project, estimated to be about 161,300 MWh per year, would be lost. If the energy were no longer available, it would have to be replaced by an alternative source of energy with its associated environmental effects (including emissions of air pollutants).
- Project-generated employment and project-generated tax revenues would be lost.
- The environmental enhancements proposed by Idaho Power (see section 3.1.3), including habitat improvements and recreational enhancements, the protection of historic properties, and any additional enhancement measures required by the Commission, would be foregone.

- Short-term increases in downstream turbidity and sedimentation and temporary increases in noise, dust, exhaust emissions, and traffic in the project vicinity during dam removal activities would result.
- Loss of more than 1,525 acres of flatwater would result and the existing recreational benefits attributed to the project's reservoir (swimming, boating, fishing) would be lost or substantially reduced.
- Use of existing recreational facilities (picnic areas, restrooms, boat ramps, etc.) operated and maintained by Idaho Power would be lost if not taken over and managed by other entities.
- Removal of the dam would increase riverine habitat benefiting fish, wildlife, and riparian resources. In addition, recreational opportunities associated with riverine-type conditions would increase.
- Cessation of operation would eliminate impacts associated with water-level fluctuations in the reservoir and in downstream reaches, which could benefit fish and riparian habitats.
- Visual benefits could result from removal of project structures and transmission lines, thereby changing the landscape.
- Fish passage and survival would improve.

The second project retirement alternative would involve retaining the dam and disabling or removing equipment used to generate power. Project works would remain in place and could be used for historic or other purposes. This would require the Commission to identify another government agency with authority to assume regulatory control and supervision of the remaining facilities. No agency has stepped forward to assume that control, and no participant has advocated this alternative. Nor have we any basis for recommending it. Because the power supplied by the project is needed, a source of replacement power would have to be identified.

Although the Shoshone-Bannock Tribes commented that project decommissioning should be evaluated in the EIS, we conclude that project decommissioning, either with or without dam removal, is not a reasonable alternative in this case.

3.0 ENVIRONMENTAL ANALYSIS

In this section, we present: (1) a general description of the project vicinity, (2) an explanation of the scope of our cumulative effects analysis, and (3) our analysis of the proposed action and other recommended environmental measures. Sections are organized by resource area. Under each resource area, historic and current conditions are first described.[19] The existing condition is the baseline against which the environmental effects of the proposed action and alternatives are compared, including an assessment of the effects of proposed mitigation, protection, and enhancement measures, and any potential cumulative effects of the proposed action and alternatives. Staff conclusions and recommended measures are discussed in section 5.2, *Comprehensive Development and Recommended Alternative*.

3.1 GENERAL DESCRIPTION OF THE RIVER BASIN

The Swan Falls Project lies approximately 35 miles southwest of Boise, Idaho, on the Snake River in Ada and Owyhee counties. The project is located in the southwestern portion of the Snake River Plain. The Snake River Canyon bisects the plain and is the principal physiographic feature in the vicinity of the project. Cliffs and sheer canyon walls range in height from 6 feet to 375 feet, with the river cutting as much as 750 feet below the surrounding terrain (USGS, 1996). The elevation of the canyon near Swan Falls dam, where the canyon is deepest, ranges from elevation 2,100 feet msl to elevation 2,760 feet msl at the rim (see cover photo). North of the river, the terrain is relatively flat or slightly rolling, except for isolated buttes. Areas to the south of the river are characterized by rolling topography and eroded badlands.

The project occupies lands of the United States within the Snake River Birds of Prey National Conservation Area (NCA), which BLM administers.[20] There are no other developments in the immediate vicinity of the project. The closest hydroelectric projects are C.J. Strike, about 36 river miles upstream, and the Brownlee development of the Hells Canyon Project (FERC Project No. 1971), about 173 river miles downstream. Access to the Swan Falls Project is by county road from the town of Kuna, located approximately 19 miles north of the project.

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[19] Unless otherwise indicated, our information is taken from the application for license for this project (Idaho Power, 2008a) and additional information filed by Idaho Power (2008b, 2009a, 2009b, and 2009c).

[20] The Snake River Birds of Prey NCA was established on August 4, 1993, by Public Law 103-64 for the conservation, protection, and enhancement of the environmental resources and values associated with the area, including raptors and habitats.

The Snake River flows generally from southeast to northwest at the Swan Falls Project. There are no major tributaries in the vicinity of the project. The drainage area at USGS Gage No. 13172500 (Snake River near Murphy, Idaho), located on the Snake River a short distance downstream of Swan Falls dam, is approximately 41,000 square miles. The existing project was constructed on the upstream edge of waterfalls caused by a ridge of basalt extending across the river. The average drop across the falls is approximately 15 feet. Swan Falls reservoir is a long and narrow water body confined within the canyon through which the Snake River flows.

Hot, dry summers and mild winters characterize the climate of southwestern Idaho. The climate is strongly influenced by the orographic precipitation shadow of the Oregon Coast Range and the Cascade Mountains to the west and the Owyhee Mountains to the south. Average annual precipitation at Boise Airport is 11.9 inches, declining toward the west and south (Kuna, 10.2 inches; Swan Falls powerhouse, 7.9 inches; and Grand View, 7.1 inches), with most precipitation occurring between November and May. Mean annual temperatures vary between 49.8 degrees Fahrenheit at Kuna to 55.2 degrees Fahrenheit at the Swan Falls powerhouse. Droughts are common in southwestern Idaho, occurring about every 20 years since 1900 (USGS, 1996).

3.2 SCOPE OF CUMULATIVE EFFECTS ANALYSIS

According to the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act of 1969 (40 CFR §1508.7), a cumulative effect is the impact on the environment that results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such actions. Cumulative effects can result from individually minor but collectively significant actions taking place over time, including hydropower and other land and water development activities.

Based on our review of the license application and agency and public comments, we have identified the resources that have the potential to be cumulatively affected by operation of the Swan Falls Project in combination with other past, present, and foreseeable future activities. Those resources are water quality, white sturgeon, and riparian habitat.[21]

Water quality was selected because conditions in the Swan Falls reach are affected by upstream water uses and by nutrient inputs from municipal and agricultural sources throughout the basin upstream of the project. White sturgeon

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[21] Riparian habitat, as classified in Idaho Power's vegetation cover type mapping effort (Krichbaum et al., 2008), includes emergent, scrub-shrub, forested, and shore and bottomland wetlands.

were selected because numerous mainstem dams on the Snake River, including Swan Falls dam, restrict migration of this species and the connectivity of sturgeon populations between reaches, and because sturgeon rearing and reproduction in the Swan Falls reach are affected by cumulative effects on water quality. We selected riparian habitat because it may be affected by water withdrawals for irrigation and by load-following operations associated with other Snake River dams, as well as by operation of the Swan Falls Project.

3.2.1 Geographic Scope

The geographic scope of the analysis for cumulatively affected resources is defined by the physical limits or boundaries of: (1) the proposed action's effects on the resources, and (2) contributing effects from other hydropower and non-hydropower activities within the Snake River Basin. Because the proposed action can affect the resources differently, the geographic scope for each resource may vary.

For water quality, we define the geographic scope as the entire Snake River Basin upstream from Brownlee dam (RM 284.6). For white sturgeon and riparian habitat, we define the geographic scope of the analysis as the Snake River main stem between Brownlee dam and C.J. Strike dam (RM 494.0).

3.2.2 Temporal Scope

The temporal scope of our cumulative effects analysis in the EIS includes past, present, and future actions and their possible cumulative effects on each resource. Based on the potential term of a new license, the temporal scope looks 30 to 50 years into the future, concentrating on the effect on the resources from reasonably foreseeable future actions. The historical discussion, by necessity, is limited to the amount of available information for each resource. The quality and quantity of information, however, diminishes as we analyze resources further away in time from the present.

3.3 PROPOSED ACTION AND ACTION ALTERNATIVES

In this section, we discuss the effect of the project alternatives on environmental resources. For each resource, we first describe the affected environment, which is the existing condition and baseline against which we measure effects. We then discuss and analyze the site-specific and cumulative environmental issues.

Only the resources that would be affected, or about which comments have been received, are addressed in detail in this EIS. We present our recommendations in section 5.2, *Comprehensive Development and Recommended Alternative.*

3.3.1 Geology and Soil Resources

3.3.1.1 Affected Environment

The geology of the western portion of the Snake River Plain is characterized by thick accumulations of geologically recent basalt flows interbedded with sedimentary strata of lake and stream origins.

During approximately the last 10,000 years, erosion has created talus and alluvium along streams and resulted in the accumulation of thin deposits of windblown sand and silt on some flatter areas. Floodplains are currently being formed along the Snake River and a few of the larger tributary streams.

The benchlands north of the Snake River are on a broad basalt plain with several isolated cinder cones and basaltic buttes. The soils are generally light-colored, fine-textured to stony soils that have developed on basalt, sedimentary strata, and wind-modified deposits (loess). The soils along the river and floodplain of the Snake River vary from deep loams in the Chattin Flat area to thin gravelly and cobbly soils on gravel bars and low terraces. Soils that have been mapped along the Snake River channel and alluvial plain include the Bram, Baldock, Vanderhoff, and Feltham series.

Soils in the transition zone between the bottom soils and the upland soils are variable, ranging from deep silty and sandy loams on high terraces and colluvium to terrace escarpments and rubble land.

Bank erosion occurs on project lands upstream and downstream of the dam and on non-project lands. Upstream of the dam, bank erosion is related to highly erodible soils, cattle grazing, irrigation seepage, and impoundment fluctuations and flow variations resulting from the operation of the C.J. Strike and Swan Falls projects. Bank erosion is also associated with informal recreational areas, primarily in the vicinity of the existing boat ramp upstream of the dam and at various locations within the first 2 miles downstream of the dam.

Visitor use of dispersed recreation sites, including off-road vehicle use within and outside of the current project boundary, has created a series of braided roads or multiple access roads and has eliminated vegetation and caused the formation of severe ruts. Such upland erosion and de-vegetation has occurred in many areas along the main access roads upstream and downstream of the dam. Idaho Power has made some efforts in the past to prevent riparian and upland erosion and de-vegetation by establishing the upstream and downstream boat launch areas and placing boulders, fences, and gates in the vicinity of the upstream boat launch to try to prevent access to natural areas.

3.3.1.2 Environmental Effects

Most of the upland erosion associated with the project is from recreational use of natural areas beyond the designated project recreation sites. Numerous informal dispersed recreation sites have developed over time at various locations along the river for access to the river for fishing or other recreational purposes.

The existing downstream project boundary is located approximately 2,000 feet downstream of the dam, although a significant amount of additional recreational use associated with the project occurs as far as 2 miles downstream of the dam. In this area of non-project land downstream of the dam, informal recreational access to the river has developed over time, and vehicles driven off the main access road downstream of the dam have resulted in a myriad of braided loops and trails on either side of the main road. The development of these loops and trails has removed existing vegetation, affected surface runoff patterns, de-stabilized soils resulting in surface erosion, affected botanical resources and habitat for wildlife, and caused damage to known cultural resource sites and potentially to unknown sites. The effects on botanical, wildlife, recreation, land use and cultural resources are discussed in more detail under those resource sections later in this document.

Idaho Power proposes to limit vehicular access by using strategically placed boulders, temporary fences, berms, and signage in some areas to protect existing resources, along with protecting and enhancing 25.1 acres of riparian habitat and 45.3 acres of upland habitat. Idaho Power also proposes to protect, enhance, or restore 2.7 miles of riparian shoreline downstream of the dam and to restore 8.9 acres of channel riparian habitat along the east side of the Swan Falls Island to mitigate the effects of project operation. Additionally, Idaho Power proposes to establish more formal, hardened recreational access locations upstream and downstream of the dam to prevent future soil erosion and protect environmental, recreational, and cultural resources.

In its comments filed on August 14, 2009, the state of Idaho indicated that Idaho DFG, Idaho DPR, Idaho DEQ, the Water Resource Board, and the State Board of Land have endorsed Idaho Power's proposal to restore damaged areas, improve informal dispersed recreation sites, and protect existing resources.

To encompass the informal dispersed recreation sites currently used for recreation and proposed to be improved, Idaho Power proposes to include the sites as project features and to expand the project boundary for approximately 2 miles downstream of the dam. The expanded project boundary would include the land area from the OHWM along the east side of the river to the elevation 2,360-foot msl contour, with a few exceptions.

In addition to recreational activity and other land uses, changes in water surface fluctuations that result from project operation may contribute to shoreline

erosion. The effects of such erosion vary from resource to resource; for example, studies conducted by Wulforst et al. (2000) and Holmstead and Turley (2005) indicate that effects on terrestrial resources are negligible, but erosion surveys conducted to evaluate project effects on cultural resources along the shoreline both upstream and downstream of Swan Falls dam (Root et al., 2008) found substantial impacts on the integrity of 10 sites as a result of water surface fluctuations. These effects and Idaho Power's proposal to address them are discussed in sections 3.3, *Terrestrial Resources*, and 3.7, *Cultural Resources*, respectively.

Our Analysis

The proposed measures would restore, enhance, and protect approximately 79 acres of land and 2.7 miles of riparian shoreline, formalize recreational access and use areas, eliminate informal recreational access and use in areas where Idaho Power is attempting to protect project resources, and include all of these lands within the proposed modified project boundary. These efforts would reduce erosion, thereby benefitting project resources in the area, including botanical, wildlife, and recreational resources, as well as land use. These efforts may also benefit cultural resources as long as they adhere to the requirements of the HPMP and potential adverse effects on cultural resources are considered prior to ground disturbance. Specific effects on terrestrial, recreation, and cultural resources are discussed in more detail in the resource sections presented later in this document.

3.3.2 Aquatic Resources

The following sections describe the affected aquatic environment and the environmental effects of the proposed action and action alternatives on water quantity, water quality, and fishery resources.

3.3.2.1 Affected Environment

Water Quantity

The Snake River drains approximately 41,900 square miles above Swan Falls dam. The mean flow of the Snake River averages 10,970 cfs based on the October 1, 1913, through September 30, 2006, period of record for USGS Gage No. 13172500 (Snake River near Murphy, Idaho), which is located a short distance downstream of Swans Falls dam at RM 453.5.

Swan Falls reservoir is approximately 12 miles long and has a surface area of 1,525 acres at the full-pool elevation of 2,314 feet msl. The gross reservoir storage capacity is approximately 7,425 acre-feet, and the useable storage capacity is 680 acre-feet when drawn down to elevation 2,310 feet msl. Most impoundment fluctuations are within the top 2 feet of the reservoir with infrequent fluctuations close to 4 feet.

Table 2 summarizes the average, maximum, and minimum flows at the project for the 93-year period of record from 1913 to 2006.

Swan Falls reservoir is not used to store water on a seasonal basis. The 3 feet of available storage between elevation 2,311 feet msl and 2,314 feet msl are used on a daily basis to re-regulate flows from the upstream C.J. Strike Project. With its limited storage, the Swan Falls Project can be used to meet short-term, unexpected peak load requirements. However, the project is required to comply with ramping rate restrictions of no more than 1 foot per hour and 3 feet per day as measured at the ramping monitoring gage located approximately 1 mile downstream of the dam.

The current Swan Falls license, issued in 1982, requires instantaneous minimum flows downstream of the Swan Falls dam of no less than 5,000 cfs during the irrigation season (April 1 to September 30) and no less than 4,000 cfs outside of the irrigation season (October 1 to March 31). If the average daily inflow is less than the specified minimums, the project discharge from the powerhouse and/or spillway must be equal to the average inflow.

Under the Swans Falls Agreement, a contract between Idaho Power and the state of Idaho entered into on October 25, 1984, Idaho Power's water rights for power purposes at the Swan Falls Project, and other specified Idaho Power-owned hydroelectric projects on the middle Snake River, entitle Idaho Power to an unsubordinated right of a 3,900-cfs average daily flow from April 1 to October 31, and 5,600-cfs average daily flow from November 1 to March 31, as measured at the Murphy USGS gage (USGS Gage No. 13172500). During low-flow periods, Idaho Power monitors daily average project discharges over a 3-day period to ensure that the average minimum flow is at least 3,900 cfs from April 1 to October 31 and at least 5,600 cfs from November 1 to March 31 for the purpose of satisfying Idaho Power's water right under the Swan Falls Agreement.

Table 2. Estimated inflows for the Swan Falls Project (water years 1913–2006) (Source: USGS, 2009).

Flow (cfs)	**Oct.**	**Nov.**	**Dec.**	**Jan.**	**Feb.**	**Mar.**	**Apr.**	**May**	**Jun.**	**Jul.**	**Aug.**	**Sep.**
Average	10,400	11,100	11,300	11,400	11,700	12,100	13,300	12,800	12,700	7,900	7,350	8,410
Maximum	29,700	23,800	35,000	28,100	33,700	30,600	33,600	37,900	46,100	39,100	14,700	16,100
Minimum	5,840	6,170	5,440	6,070	5,850	5,690	5,170	4,820	4,310	4,160	4,470	4,990

Water Quality

Water quality within the Snake River has been compromised by the cumulative effects of decades of agricultural and industrial activities within the watershed. Upstream of Swan Falls dam, most of the reaches between Shoshone Falls (RM 514.7) and Swan Falls dam (RM 457.7) are listed as being water quality limited for sediment, temperature, DO, or nutrients, and reaches from Swan Falls dam downstream to Brownlee dam (RM 285) are listed for nutrients, DO, pH, bacteria, mercury, sediment, or flow alteration (table 3).

Table 3. Water quality impaired segments of the Snake River between Shoshone Falls and Brownlee dam (Source: Idaho Power Company, 2008a,b).

River Segment	Listed Pollutants	Designated Beneficial Uses
Snake River: RM 614.7 to 606.4 (Shoshone Falls to Rock Creek)	Sediment, temperature	Coldwater biota, salmonid spawning, primary contact recreation
Snake River: RM 606.4 to 599.1 (Rock Creek to Cedar Draw Creek)	Sediment, temperature	Coldwater biota, salmonid spawning, primary contact recreation
Snake River: RM 599.1 to 594.2 (Cedar Draw Creek to Clear Lakes ridge)	Sediment, temperature	Coldwater biota, salmonid spawning, primary contact recreation
Snake River: RM 594.2 to 591.5 (Clear Lakes Bridge to Mud Creek)	Sediment, temperature	Coldwater biota, salmonid spawning, primary contact recreation
Snake River: RM 591.5 to 591.4 (Mud Creek to Deep Creek)	Sediment, temperature	Coldwater biota, salmonid spawning, primary contact recreation
Snake River: RM 586.1 to 581.4 (Upper Salmon Falls reservoir)	DO, flow alteration, sediment	Coldwater biota, salmonid spawning, primary contact recreation
Snake River: RM 579.6 to 573.0 (Lower Salmon Falls reservoir)	DO, flow alteration, sediment	Coldwater biota, salmonid spawning, primary contact recreation
Snake River: RM 565.0 to 560.0 (Bliss reservoir)	Bacteria, DO, flow alteration, ammonia, sediment	Coldwater biota, salmonid spawning, primary contact recreation

River Segment	Listed Pollutants	Designated Beneficial Uses
Snake River: RM 559.9 to 556.6 (Cassia Gulch to Big Pilgrim Gulch)	Nutrients, sediment, temperature	Coldwater biota, salmonid spawning, primary contact recreation
Snake River: RM 556.6 to 544.9 (Big Pilgrim Gulch to King Hill)	Sediment, temperature	Coldwater biota, salmonid spawning, primary contact recreation
Snake River: RM 544.9 to 512.8 (King Hill to C.J. Strike reservoir at Highway 51 Bridge)	Sediment	Coldwater biota, domestic water supply, primary contact recreation, special resource water
Snake River: RM 512.8 to 494.0 (C.J. Strike reservoir)	Nutrients, pesticides	Coldwater biota, primary contact recreation, special resource water
Snake River: RM 494.0 to 471.0 (C.J. Strike reservoir to Castle Creek)	Temperature, sediment	Coldwater biota, domestic water supply, primary contact recreation, special resource water
Snake River: RM 471.0 to 457.7 (Castle Creek to Swan Falls)	Temperature, sediment	Coldwater biota, domestic water supply, primary contact recreation, special resource water
Snake River: RM 457.7 to 396.4 (Swan Falls to Boise River inflow)	Bacteria, temperature, DO, flow alteration, nutrients, pH, sediment	Coldwater biota, domestic water supply, primary contact recreation, special resource water
Snake River: RM 396.4 to 351.6 (Boise River inflow to Weiser River inflow)	Bacteria, nutrients, pH, sediment	Coldwater biota, primary contact recreation, domestic water supply
Snake River: RM 351.6 to 347 (Weiser River inflow to Scott Creek inflow)	Bacteria, nutrients, pH, sediment	Coldwater biota, primary contact recreation, domestic water supply
Snake River: RM 347 to 284.6 (Brownlee reservoir, Scott Creek to Brownlee dam)	DO, mercury, nutrients, pH, sediment	Coldwater biota, primary contact recreation, domestic water supply, special resource water

Note: DO – dissolved oxygen

RM – river mile

For the reaches upstream of C.J. Strike dam (RM 514.7 to RM 494), the river's water quality may decline significantly during low-flow periods, which typically occur in mid- to late summer. During the summer irrigation season when water is in high demand, diversions and irrigation returns reduce stream flows and degrade water quality. Because the Snake River is bordered by cultivated fields, groundwater discharges, fish farms, and municipal wastewater-treatment facilities, return flows display a combination of excessive nitrogen, phosphorus, pesticides, and sediment.

Conditions from mid- to late summer in these upper reaches also drive reductions in downstream water quality. Water quality conditions are further degraded by pollutants from Snake River tributaries, many of which deliver substantial nutrient loads to the Snake River, especially in the reach between Swan Falls dam and Brownlee reservoir (table 4). The location of these tributaries in relationship to Swan Falls dam is shown in figure 2. To address the DO listing in the reach downstream from Swan Falls dam (see table 3), a nutrient total maximum daily load (TMDL) based on a total phosphorus target of 0.07 milligram per liter (mg/L) was established in the *Mid-Snake River/Succor Creek Subbasin Assessment and Total Maximum Daily Load* (Idaho DEQ, 2003).

Table 4. Estimated phosphorus loadings from tributaries and point sources to the Snake River between the C.J. Strike and Brownlee dams (Source: FERC, 2007).

Stream or Discharge Source	**Drainage Area (square miles)**	**Snake River Mile**	**Total Phosphorus Load (kg/day)**
Owyhee River	11,108	396.7	265
Boise River	4,031	396.4	1,114
City of Nyssa	NA	385	11
Amalgamated Sugar	NA	385	50
City of Fruitland	NA	373	5.5
Heinz Frozen Foods	NA	370	412
Malheur River	4,719	368.5	461
Payette River	3,309	365.6	710
City of Weiser, ID	NA	352	32
City of Weiser, ID	NA	352	5.5
Weiser River	1,686	351.6	392
Burnt River	1,100	327.5	52
Powder River	1,705	293	126

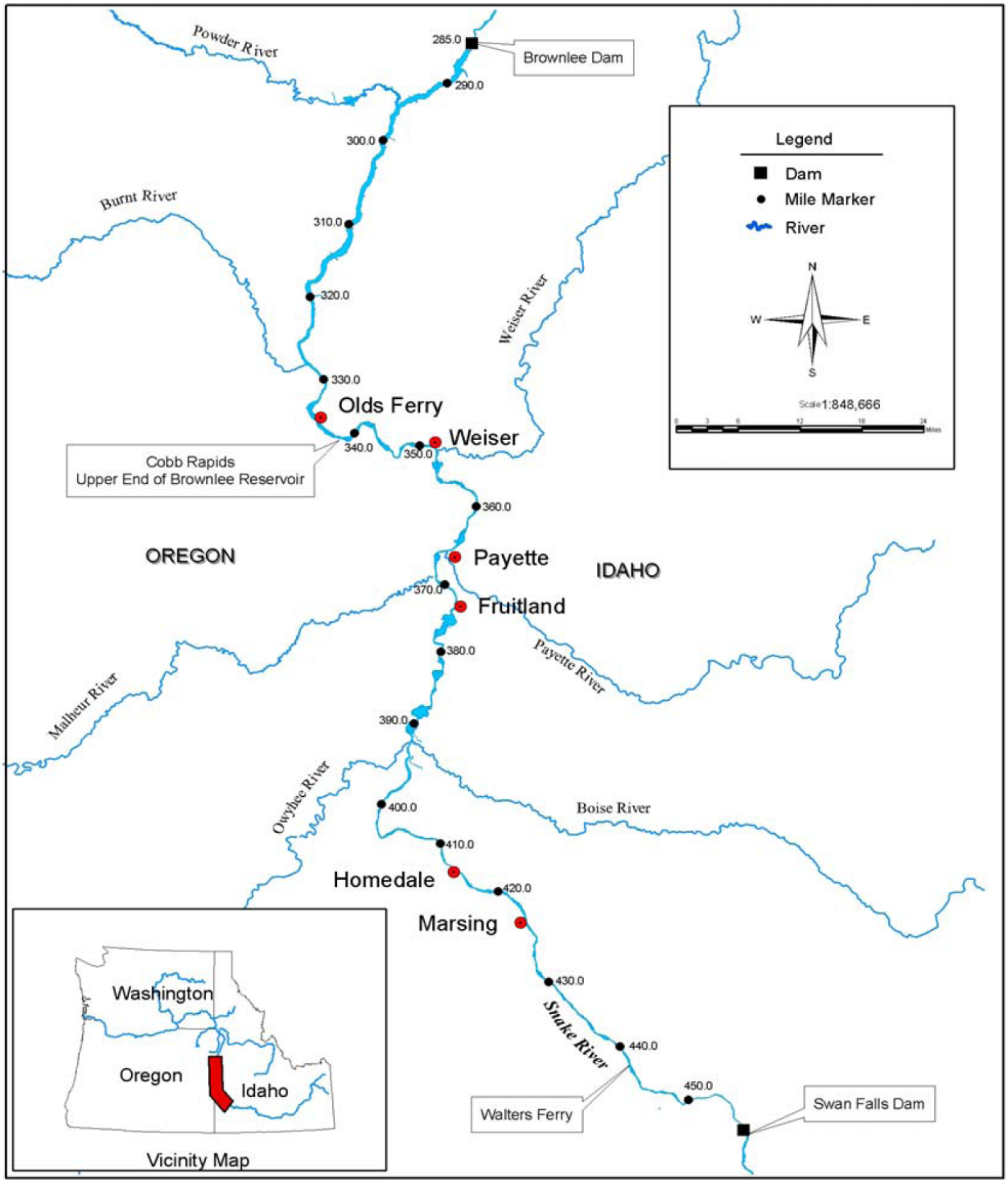

Figure 2. Map of the Swan Falls to Brownlee reach of the Snake River (Source: Idaho Power, 2008b).

Snake River water quality issues are typically exacerbated by low water conditions, when water temperatures and residence time in the river and reservoirs increase. Increases in primary productivity, phytoplankton levels, nutrient concentrations, and drifting clumps and mats of aquatic macrophytes and macroalgae also occur commonly in low water years. These increases in primary productivity can lead to large DO swings in a 24-hour period.

The state of Idaho's coldwater aquatic life DO criterion of a minimum of 6.0 mg/L applies at the inflow of the Swan Falls Project year-round, and at the outflow from October 16 to June 14. The hydroelectric DO criteria apply at the outflow from June 15 to October 15, requiring that DO levels be above 3.5 mg/L as an instantaneous minimum; 4.7 mg/L as a 7-day mean minimum; and 6.0 mg/L as a 30-day mean (Idaho Administrative Code 58.01.02).

Water quality monitoring conducted by Idaho Power upstream and downstream of Swan Falls dam from 1989 through 2006 found that DO conditions were highly variable, ranging from highly supersaturated to below numeric criteria at both inflow and outflow locations. The lowest water year on record (2003) showed the most critical DO conditions. In 2003, inflow and outflow DO were below the coldwater criterion during 6 and 5 percent of the sampled days, respectively. A single, daily minimum outflow value of 3.4 mg/L, measured in July 2003, was below the 3.5-mg/L instantaneous hydroelectric criterion, but the 7-day mean minimum and 30-day mean hydroelectric criteria were not exceeded during the 8 years sampled.

DO profiles measured in Swan Falls reservoir in 2003 and 2004 showed mixed vertical DO conditions and longitudinal DO gradients. The longitudinal DO gradients suggested that settling and decay of inflow-suspended organic matter may cause a reduction of DO in the upper end of the reservoir, followed by increases in DO downstream to Swan Falls dam.

The coldwater temperature criteria of a 22-degrees-Celsius (°C) daily maximum with a daily average of 19°C apply at both the inflow and outflow of the project. In addition, when natural background conditions exceed the numeric criteria, the numeric criteria no longer apply and temperature may not be increased above natural background. Water temperature measured in this reach of the Snake River can get very warm (i.e., >27°C), and temperatures exceeding the numeric criteria were measured at the Swan Falls inflow, outflow, and in-reservoir locations. The majority of exceedances occurred from mid-June through early September, although some exceedances occurred in late May 2003 and 2006. Temperature profiles collected in Swan Falls reservoir during 2003 and 2004 showed nearly isothermal conditions (i.e., the temperature was the same at all depths), and there was no consistent pattern of warming or cooling over the length of the reservoir.

Levels of pH in the project inflow and outflow during the monitoring period were generally similar, and the pH criterion of 6.5 to 9.0 was periodically exceeded at both

locations. Levels above 9.0 were most common, and coincided with periods of high primary productivity and low water conditions.

TDG measurements made in 1999, when high levels of spill occurred, indicated that spill at Swan Falls dam does not generate excessively high TDG. TDG measured in spill flow immediately downstream of the spillway ranged from 104.0 percent to 112.4 percent saturation. In June 1999 when spills greater than 19,000 cfs occurred, TDG was measured at 112.4 percent saturation directly below the spillway, while TDG in the turbine outflow measured 109.7 percent. Flow-weighting of these TDG measurements resulted in an average TDG of 111.2 percent saturation, which was the only occurrence of flow-weighted TDG exceeding the Idaho criterion of 110 percent saturation.

Fishery Resources

Fish Community

Based on fisheries sampling conducted by Idaho Power in the project area (RM 440–477) between 1989 and 2006, 9 native and 14 non-native species of fish occur in the project area (table 5). Fish species in the family centrarchidae (sunfishes) were the most commonly collected, followed by the families catostomidae (suckers) and cyprinidae (minnows). Smallmouth bass were consistently the most abundant centrarchids encountered during electrofishing surveys, and smallmouth bass and largescale suckers were ranked the top two species in abundance over all years sampled. The dominant species sampled within Swan Falls reservoir and between Swan Falls dam and Brownlee reservoir were the same and were collected in similar proportions (Richter and Chandler, 2004). Anadromous fish species including Chinook salmon, steelhead trout, and Pacific lamprey have been blocked from accessing the project area since efforts to provide passage past the Hells Canyon Project (FERC Project No. 1971) were discontinued in 1964.

White Sturgeon

White sturgeon are the largest, longest-lived freshwater or anadromous fish in North America, and are highly adapted to the large river systems in which they evolved. Their large size and opportunistic behavior enabled them to range widely in order to take advantage of scattered and seasonally available resources in these dynamic river habitats and in the ocean. Longevity and high fecundity allowed them to persist through changes in their environment and capitalize on favorable spawning conditions when changes occurred, but their longevity and delayed maturation make them extremely vulnerable to overfishing. Long life span and benthic feeding also make sturgeon susceptible to bioaccumulation of pollutants with potentially detrimental effects on health, growth, maturation, and recruitment.

Table 5. Fish species collected in the project area during fisheries sampling conducted by Idaho Power (Source: Richter and Chandler, 2004, as modified by staff).

Family	Species
Centrarchidae	Black crappie[a]
	Bluegill[a]
	Largemouth bass[a]
	Pumpkinseed[a]
	Smallmouth bass[a]
	White crappie[a]
	Warmouth[a]
Cyprinidae	Chiselmouth
	Common carp[a]
	Peamouth
	Northern pikeminnow
	Redside shiner[a]
Ictaluridae	Brown bullhead[a]
	Black bullhead[a]
	Channel catfish[a]
	Flathead catfish[a]
Salmonidae	Rainbow trout
	Mountain whitefish
Catostomidae	Bridgelip sucker
	Largescale sucker
Acipenseridae	White sturgeon
Cottidae	Mottled sculpin
Percidae	Yellow perch[a]

[a] Non-native species

In addition, critical habitats of white sturgeon have been altered. The construction of dams has blocked movement and restricted white sturgeon to river fragments that may no longer provide the full spectrum of habitats necessary to complete their life cycles. Flow regulation has altered seasonal and annual fluctuations that provide behavioral cues and suitable spawning or rearing conditions.

In the Snake River, the white sturgeon is classified by the state of Idaho as a species of special concern. Altered habitat, pollution, historical exploitation, and population fragmentation by dams have contributed to the current status of white sturgeon in the Snake River. Of the nine isolated subpopulations in the Snake River in Idaho, only the Hells Canyon downstream to Lower Granite and the Bliss downstream to C.J. Strike reaches support viable populations. In these reaches, abundance and population structure appear to be recovering from the effects of catch-and-keep fishing regulations that existed prior to 1972. However, Snake River reaches from Hells Canyon dam upstream to Swans Falls dam and from Bliss dam upstream to Shoshone Falls contain small populations and little or no detectable natural recruitment.

Based on the scarcity of small sturgeon observed during the applicant's surveys downstream of C.J. Strike dam and the recovery of sturgeon marked in the Bliss to C.J. Strike reach during sampling conducted downstream of C.J. Strike dam, it appears that the population of sturgeon downstream of C.J. Strike dam is supported by downstream movement of mid-sized and large white sturgeon from the population upstream of C.J. Strike dam. The most recent population estimates of adult sturgeon greater than 70 centimeters long indicate that the species is present in the reaches upstream and downstream of the Swan Falls Project. Survey data from 2006 to 2007 indicate that there were 566 fish in the reach between C.J. Strike and Swan Falls dam (Lepla, 2008). Survey data from 1996 to 1997 report that there were 155 fish in the reach between Swan Falls dam and Brownlee reservoir (Idaho Power, 2008b).

Comparing the current status of white sturgeon with the results of earlier Idaho DFG studies, white sturgeon abundance in the Swan Falls to Brownlee reach has changed little over the past 30 years. Some recruitment to the population still occurs based on the continuing presence of a few, small white sturgeon and documented spawning in 1997 (Lepla and Chandler, 2001). However, the number of available female spawners in the population is low, and near-future recruitment will probably also remain low, perhaps below the levels necessary to sustain this population. Although the absence of small fish may partly result from the low number of adult fish downstream of Swan Falls, poor water quality has been identified as a possible cause of low recruitment. High nutrient loads have contributed to algae blooms and fish kills, including a substantial kill of at least 28 adult white sturgeon in Brownlee reservoir in 1990 (Idaho Power, 2008b).

Resident Salmonids

Salmonids that may be present in the Swan Falls Project area include wild redband trout,[22] hatchery-stocked rainbow trout, and mountain whitefish. Consistent with reports from the 1970s and later, very few observations of wild redband trout are associated with the Snake River in the Swan Falls area. Although redband trout are often cited as being tolerant of high water temperatures (Behnke, 1992; Zoellick, 1999), these references are generally associated with small stream systems with temperature fluctuations over a 24-hour period that are often large. Because of its size, the Snake River has relatively minor temperature fluctuations, and within the project area, there are very few coldwater sources that offer temperature refuge. During monthly electrofishing surveys conducted by Idaho Power from October 2004 through March 2006, only four rainbow trout were sampled, with only one classified as wild.

The mountain whitefish is a native salmonid that occurs throughout the Snake River and its tributaries. Mountain whitefish catches below Swan Falls dam have been relatively high in past surveys conducted by Idaho Power, and mountain whitefish made up a substantial portion of a large fish kill that occurred below Swan Falls dam in July 2002. The fish kill was primarily the result of high water temperatures that occurred during a prolonged period of high summer air temperatures. A similar mountain whitefish kill occurred in the Swan Falls reach during July 1990. During monthly sampling of the project area from October 2004 to March 2006, Idaho Power collected a total of 49 mountain whitefish.

3.3.2.2 Environmental Effects

Water Quantity

The current Swan Falls license, issued in 1982, requires instantaneous minimum flows downstream of the Swan Falls dam of no less than 5,000 cfs during the irrigation season (April 1 to September 30) and no less than 4,000 cfs outside of the irrigation season (October 1 to March 31). Currently, when the average inflow is less than 5,000 cfs, Idaho Power limits headwater fluctuations to 0.4 foot, which facilitates compliance with minimum flows required by the Swan Falls Agreement, but also limits their ability to reregulate inflows from the C.J. Strike Project. Analysis of flow data from 1994 and 2008, provided in Idaho Power's January 5, 2009, response to the Commission staff's

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[22] The redband trout is a subspecies of rainbow trout native to Columbia River tributaries east of the Cascade Mountains, including the Snake River Basin as far upstream as Shoshone Falls. In the mid-Snake River region, populations of redband trout are thought to be limited currently to tributaries where natural reproduction occurs and where natural or human-made barriers have prevented interbreeding with non-native trout (Behnke, 1992).

additional information request (AIR), concludes that these low flow periods occurred about 3 percent of the time, almost exclusively between mid-June and mid-September.

Idaho Power proposes to operate the project to provide an instantaneous minimum flow of 3,900 cfs downstream of the dam from April 1 to October 31 and 5,600 cfs from November 1 to March 31, consistent with the Swan Falls Agreement. The ramping rate restrictions would continue to be no more than 1 foot per hour and 3 feet per day.

Our Analysis

Idaho Power conducted an instream flow study to assess the effects of project operation on white sturgeon and whitefish habitat in the reach downstream of Swan Falls dam. The results of the study (Brink, 2008) indicate that flow fluctuations caused by current project operations have minor to moderate effects on habitat for these species. The analysis was conducted using hydrology from representative low, medium, and high flow years, and assessed the amount of daily variation in habitat for six lifestages of sturgeon and four lifestages of mountain whitefish, expressed as weighted usable area.

Study results indicate that under current operations, the daily variation in the amount of habitat available for white sturgeon spawning is 0.41 to 8.1 percent in a low flow year, 0.36 to 9.5 percent in a medium flow year, and 0.0 to 18.8 percent in a high flow year. Daily variation in habitat available to juvenile white sturgeon is 0.0 to 0.69 percent in low and medium flow years and in high flow years averages about 14 percent until flows exceeded 20,000 cfs, when the amount of suitable habitat drops to zero. For the incubation, larvae, young-of-year and adult lifestages of white sturgeon, daily fluctuations in habitat availability are less than 5 percent in all year types. Daily variations in habitat availability for all four lifestages of whitefish (spawning, fry, juveniles and adults) are less than 6 percent in all water year types.

The proposed change in minimum flows would ensure compliance with the minimum flows specified in the Swan Falls Agreement, and also improve Idaho Power's ability to re-regulate inflows from the C.J. Strike Project. This would reduce the extent of daily variations in streamflows discharged from the project during those times when inflows range between 3,900 cfs and 5,000 cfs, and thereby reduce the daily variations in habitat for all lifestages compared to current operations. As discussed earlier, under the current license, Idaho Power must limit reservoir fluctuations to no more than 0.4 foot when daily average inflow falls below 5,000 cfs. This effectively eliminates Idaho Power's ability to reregulate variable inflows to the project when inflows are less than 5,000 cfs. By lowering the minimum flow requirement to 3,900 cfs, Idaho Power could reregulate inflows to the project, and thereby reduce daily discharge variations, during those times when inflows are as low as 3,900 cfs.

For white sturgeon spawning and early lifestages, larvae and young-of-year are the only lifestages that occur during the mid-June to mid-September time period when flows may be reduced compared to current operations. The results of Idaho Power's instream flow study indicate that the amount of habitat for sturgeon incubation and young-of-year

would be reduced by 41.6 percent and 11.4 percent, respectively, at a flow of 3,900 cfs compared to the current minimum flow of 5,000 cfs. However, Idaho Power's studies of white sturgeon populations in the Snake River indicate that successful spawning and recruitment of sturgeon occurs primarily in high water years (Idaho Power, 2008b), when flows lower than 5,000 cfs are not likely to occur. As a result, any effects of the reduced minimum flow on sturgeon recruitment are unlikely. Habitat for juvenile and adult sturgeon would increase by 2.2 percent and habitat for adult sturgeon would decrease by 1.9 percent.

The mountain whitefish spawning and the fry lifestages do not occur during the mid-June to mid-September time period when outflows may be reduced under proposed minimum flows. Habitat available for juvenile and adult whitefish may be reduced by up to 12.3 and 4.1 percent, respectively, at the proposed minimum flow of 3,900 cfs. Given the low frequency of occurrence of flows below 5,000 cfs (less than 3 percent of the time), and the reduced expected level of flow fluctuations, we any effects on mountain whitefish would likely be minor.

During the non-irrigation season (October 1 to March 31), the higher minimum flow proposed by Idaho Power (5,600 cfs compared to the current minimum flow of 4,000 cfs) would increase the amount of habitat available to most lifestages of white sturgeon and whitefish that occur in this time period. Habitat for white sturgeon young-of-year and adult lifestages would increase by 15.9 and 2.5 percent, respectively, while habitat for juvenile sturgeon would decrease by 1.7 percent. For mountain whitefish, habitat available for spawning, fry, juvenile and adult lifestages would increase by 25.4, 129.5, 31.1, and 10.8 percent, respectively.

Continuing to operate the project to re-regulate outflows from the C.J. Strike Project would continue to protect downstream habitat from the effects of large flow fluctuations associated with peaking operations at C.J. Strike. Based on the habitat modeling results discussed above and the low incidence of flows in the range that would be affected by the proposed change in minimum flows, we find that any adverse effects of proposed project operations on white sturgeon and whitefish would likely be very minor.

Water Quality

Idaho Power proposes two water quality measures: (1) continue operation of the trash rake over the turbine intakes to remove aquatic macrophytes and debris from the river; and (2) monitor temperature and DO in the outflow from Swan Falls dam. The purpose of monitoring would be to document and report the temperature and DO conditions of the Swan Falls outflow to Idaho DEQ. An automated system would be installed and operated to electronically store measurements every 10 minutes. Temperature and DO would be monitored from June 15 through October 5, and data would be summarized for reporting on a monthly basis. The specific location of the

system would be determined through the section 401 WQC process with Idaho DEQ. Idaho DFG recommends implementing these measures.

In its WQC, Idaho DEQ specifies that Idaho Power develop a monitoring plan in consultation with and approved by Idaho DEQ, to determine the effect, if any, of the project on water quality both within the reservoir and downstream of Swan Falls dam. The plan would describe the location and method of monitoring discharge, water temperature, DO, and TDG in the project inflow and outflow.[23] The plan would incorporate a quality assurance control plan with appropriate protocols for measuring these parameters, including continuous flow monitoring. The WQC also specifies that Idaho Power submit annual data reports to Idaho DEQ. After 5 years, Idaho Power could request termination of some or all of the monitoring components, except those that are proposed in its license application.

Our Analysis

Large amounts of macrophytes and macroalgae are routinely removed from the trash racks in front of the turbine intakes by using a trash rake and filling a dump truck (310 and 207 truck loads in 2005 and 2006, respectively). Coarse particulate organic matter sampling data indicate that inflowing nutrients associated with drifting coarse particulate organic matter, such as macrophytes and macroalgae, comprised 5 percent of the total inflow total phosphorus load and 12 percent of the total inflow particulate phosphorus (particulate P) load passing Swan Falls dam in 2004 (Naymik and Hoovestal, 2008). Continuing the practice of removing vegetation from the trash racks would continue to reduce the amount of floating or submerged matter, excess nutrients, and oxygen-demanding material that would otherwise pass downstream and contribute to the low DO concentration. Macrophyte and macroalgae removal in conjunction with implementation of the phosphorus TMDL (see *Affected Environment* for more information) would continue to help reduce adverse water quality conditions in Swan Falls reach and in Brownlee reservoir downstream.

Currently, project operations can result in minor exceedances of the state of Idaho's 110-percent saturation standard when spills occur at the project. As discussed above, proposed minimum flow changes would improve coordination of operations and reregulation of outflows from the C.J. Strike Project; therefore, there would likely be a reduction in the incidence of spill flows and exceedances of the TDG standard.

Monitoring water temperature and DO at the outflow from the project, as proposed by Idaho Power, would assist with monitoring progress toward improving water quality conditions in the Snake River at and downstream of the Swan Falls Project, which has experienced adverse DO and temperature conditions that were associated with fish kills observed in 1990 and 2002, and documenting the expected beneficial effect of proposed

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[23] Idaho DEQ states that TDG monitoring is needed to help determine the effects, if any, of the project on water quality within and downstream of the project.

changes in operation on TDG exceedances. Monitoring discharge, water temperature, DO, and TDG at the project inflow and outflow for a minimum of 5 years after license issuance, as specified in the WQC, would help determine the effectiveness of the macrophyte and macroalgae removal in conjunction with other measures that are implemented to reduce phosphorus loads through the TMDL, and confirm that changes in project operations associated with proposed minimum flow changes would not cause adverse effects on water quality, including water temperature, DO, and TDG. Inclusion of information on project inflow and outflow amounts in monitoring reports as specified in the WQC should not require the installation of any new gages, because Idaho Power already monitors outflows from the Swan Falls and C.J. Strike projects, and no substantial inflows occur between the two projects.

Sturgeon Entrainment and Impingement

Between 1996 and 2008, approximately 59 dead adult sturgeon were sighted or recovered from the reach between C.J. Strike dam and Swan Falls dam, including 35 sturgeon that were recovered from the trash rack at the Swan Falls intake. Idaho Power has undertaken several measures to reduce the potential for sturgeon being injured or killed during start-up of the turbines at the C.J. Strike powerhouse, and has undertaken monitoring activities designed to determine the source of these sturgeon mortalities. Idaho Power does not propose any measures to address the potential for entrainment or impingement of white sturgeon at the project. Idaho DFG indicates that it supports the efforts that are being undertaken to reduce injury or mortality of adult sturgeon associated with turbine start-up at the C.J. Strike Project, and did not recommend any fish entrainment or impingement-related measures at the Swan Falls Project.

Our Analysis

In its January 5, 2009, additional information response, Idaho Power provided a detailed summary of turbine injuries and mortalities that have been observed in the reach between the C.J. Strike and Swan Falls projects. Many of the injuries have been documented to occur during start-up of the turbines at the C.J. Strike powerhouse, and many of the dead sturgeon have exhibited evidence of being struck by turbine blades. In 2000, Idaho Power began using compressed air blasts prior to unit start-ups in an effort to "clear" white sturgeon out of the C.J. Strike Project draft tubes and away from the turbine blades.

Although this measure initially appeared to be effective in eliminating sturgeon injuries during turbine start-up, between April 27 and May 17, 2004, a total of 13 white sturgeon carcasses were recovered from the forebay of Swan Falls dam. Seven of the white sturgeon had various external physical injuries, ranging from minor cuts and abrasions along the body to damaged pectoral/caudal fin-body joints and one head fracture. Although the causes and events surrounding these mortalities remain unclear, Idaho Power has concluded that environmental conditions such as low DO levels, temperature, or chemical toxins are unlikely to have been factors. Given the uncertainty

of the causes of sturgeon mortalities that occurred in 2004, Idaho Power installed a large capacity air blower in the C.J. Strike Project draft tubes between 2004 and 2005; the air blower is used to push the water level in the draft tubes to a level below the turbine blades prior to turbine start-up to eliminate the potential for sturgeon to come into contact with the turbines during start-up.

Despite implementing this additional measure, another large mortality event occurred between April 13 and May 20, 2006, when 11 adult white sturgeon carcasses were recovered at the Swan Falls trash rack. No cause of death for any of the 11 fish was apparent. Although the timing, number, and lifestages of the 11 fish were similar to the 2004 mortality event, project operations at C.J. Strike dam and the river's hydrograph were very different. During 2004, there were no spill events at C.J. Strike dam, and project units were cycled daily to meet power demands. In contrast, C.J. Strike dam was spilling water in 2006 and all project units were on-line continuously for upwards of one month, yet 5 out of the 11 sturgeon mortalities that occurred during 2006 were recovered at the Swan Falls trash rack during this period. This indicated that these mortalities were not caused by unit starts but by some other, unknown source(s). Even so, as an additional measure of safety, Idaho Power installed a sensor to prevent the C.J Strike Project turbines from starting if a unit had not been fully compressed with air.

To gain more information on the potential causes of sturgeon mortality, Idaho Power has been attaching transmitters on large, reproductive adult sturgeon since 2006 to monitor their locations during the spawning season. In addition, operators at C.J. Strike dam inspect the tailrace during unit starts during the spawning season to see if any deaths are caused by the project. Idaho Power also conducted a diver inspection of the outer draft tubes and turbine spillway to inspect for sharp objects or surfaces that may injure sturgeon as they exit the draft tubes or pass over the spillway. Following these inspections, Idaho Power removed steel ladders that were attached to the draft tube walls, along with several pieces of pipe that were protruding from the spillway.

In its additional information response, Idaho Power states that it believes that the measures it has implemented will ensure that restarting project units at C.J. Strike dam will not kill white sturgeon. Idaho Power also states that it will continue to coordinate its work with the regional Idaho DFG office and the White Sturgeon Technical Advisory Committee (WSTAC) to assess the causes of turbine mortality events and determine whether additional measures are needed.

The results of monitoring efforts to date do not indicate that any of the sturgeon injuries and mortalities that have been observed are associated with operation of the Swan Falls Project, and it appears that most if not all of the sturgeon that have been recovered from the trash rack at Swan Falls dam were dead at the time that they became impinged on the rack. Although it is possible that some smaller sturgeon are entrained into the intake at Swan Falls dam and may be subject to possible injury or mortality during passage through the project turbines, the number of sturgeon that may be subject

to injury from entrainment is limited by the scarcity of smaller sturgeon in the reach between the C.J. Strike and Swan Falls projects.

White Sturgeon Conservation Plan

Idaho Power developed the White Sturgeon Conservation Plan (Idaho Power, 2008b) as a means of developing and implementing protection, mitigation, and enhancement measures directed at white sturgeon populations to address the effects of its mainstem Snake River hydroelectric projects. Additionally, the WSTAC was established in 1991 to provide technical guidance for white sturgeon research activities undertaken by Idaho Power during relicensing efforts. Since its formation, representatives from state, federal, and tribal entities have participated in WSTAC meetings to review study results and resource issues affecting Snake River white sturgeon.

The White Sturgeon Conservation Plan describes Snake River white sturgeon measures and strategies that Idaho Power would implement once the plan was approved and new project licenses were issued by FERC. Several measures are designed to assess factors that may be limiting the population of white sturgeon in the reach between Swan Falls dam and Brownlee dam, the latter of which is the most upstream of the three dams in the Hells Canyon Project. Idaho Power proposes to implement these measures under a new license for the Hells Canyon Project.[24]

Although none of the measures included in the White Sturgeon Conservation Plan are proposed for inclusion in any license for the Swan Falls Project, the water quality measures discussed in the preceding section, *Water Quality*, would benefit white sturgeon. These include: (1) continue to remove and dispose of aquatic macrophytes and debris that accumulate on the project trash racks to remove nutrients and oxygen-demanding material from the river; and (2) implement a water temperature and DO monitoring program to document and report the temperature and DO conditions of the Swan Falls outflow.

In the State of Idaho's letter filed August 14, 2009, Idaho DFG stated that it supports the vegetation removal and water quality monitoring measures proposed by Idaho Power. The agency also provided recommendations on several measures in the White Sturgeon Conservation Plan pertaining to the reach between Swan Falls and Brownlee dams. Idaho DFG stated its support for implementing the proposed study of water quality impacts and the White Sturgeon Conservation Plan's provision for the translocation of sturgeon into the Swan Falls to Brownlee reach, and stated that it does not object to investigating the development of a conservation hatchery program under the conservation plan, but recommended that additional details on the proposals be

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[24] See Idaho Power's license application for the Hells Canyon Hydroelectric Project, FERC No. 1971, filed on July 21, 2003. The Commission staff's final EIS was issued on August 31, 2007. The Commission has not yet issued its decision on Idaho Power's Hells Canyon license application.

developed, including: (1) providing additional detail on where the on-site and laboratory facilities used to assess water quality impacts on early sturgeon lifestages would be located, how they would be operated, and who would operate them; (2) indicating how many fish would be translocated during each phase of the translocation program; and (3) if the hatchery option is pursued, preparing a broodstock and genetic management plan and marking or tagging any hatchery fish for identification.

Our Analysis

Historically, white sturgeon were abundant in the Snake River. Mainstem dams on the Snake River block the upstream movement of white sturgeon, which historically were able to migrate throughout much of the Snake and Columbia rivers and their major tributaries to access suitable spawning habitats and to take advantage of seasonally abundant food resources. Sturgeon populations have also been adversely affected by alteration of the hydrograph, flow diversions for irrigation, and reduced water quality associated with flow diversion and nutrient inputs from agricultural and municipal sources. Currently, federal and state agencies, Tribes, and non-government organizations have been taking actions to increase sturgeon populations in the project area.

Idaho Power's proposal to continue removing vegetation that accumulates on the trash racks at the Swan Falls Project and to monitor the DO and temperature of the outflow of the Swan Falls Project would contribute to improving water quality in the Snake River downstream of the project, which would benefit sturgeon populations by improving conditions for white sturgeon rearing and reproduction. These proposed measures would complement other measures included in the White Sturgeon Conservation Plan for determining whether white sturgeon reproduction is limited by water quality conditions and helping determine appropriate methods for rebuilding white sturgeon populations in the reach between Swan Falls and Brownlee dams. As noted above, Idaho Power proposes to implement these additional measures of the conservation plan under a new license for the Hells Canyon Hydroelectric Project as opposed to any new license for the Swan Falls Project.

Resident Fish Monitoring

Idaho Power proposes to monitor the population of resident fish species in Swan Falls reservoir and the 15-mile reach downstream of Swan Falls dam every 5 years in the spring and fall using boat-mounted electrofishing gear. Basic population characteristics, such as species enumeration, relative abundance, condition, and proportional stock density would be assessed. Idaho DFG recommends implementation of this measure.

Our Analysis

The proposed monitoring program would enable identification of long-term trends in fish populations in the project area. Although this information could be used in the decision-making process of federal and state resource agencies charged with fisheries management in the project area, the proposed monitoring is not designed to detect the effects of any specific project-related action, such as operations or maintenance activities,

and therefore, would be too broad to be of any benefit as it relates to the project.[25] Moreover, resident fish monitoring, even if tied to project actions, would be of little benefit because proposed project operations, as discussed above, would improve the project area fishery by reducing daily variations in habitat for all lifestages of fish species in the project area. We base this finding on already existing site-specific information on the relationships between project operations and fish habitat, negating the need for any additional study.

3.3.2.3 Cumulative Effects

Construction of the Swan Falls Project likely contributed to cumulative effects on water quality by increasing water transit time and primary production during low-flow periods. Idaho Power's proposal to continue to remove aquatic vegetation and other debris that accumulate on the project's trash racks would continue to help improve water quality in the Snake River downstream of the project.

Construction of Swan Falls dam contributed to cumulative effects on white sturgeon by precluding upstream passage, which prevents white sturgeon from moving freely throughout the river to make use of suitable spawning and rearing habitats. Continuing to remove aquatic vegetation and other debris that accumulate on the projects trash racks would continue to improve water quality conditions for the white sturgeon.

3.3.3 Terrestrial Resources

3.3.3.1 Affected Environment

Vegetation

Historical land use patterns—primarily livestock grazing and irrigation for agriculture—have substantially altered the sagebrush-steppe plant communities that once dominated the Snake River Plain and canyon. Invasive weeds were introduced in the late 1800s, and by the 1930s, cheatgrass had become widespread. A nearly continuous carpet of this exotic winter annual grass has increased the frequency and intensity of wildfires, which in turn have reduced shrub cover and created the disturbed conditions that foster the spread of additional non-native species. Wind, river flows, and animal transport have continued to contribute to weed dispersion over time, and human activities have also played an important role.

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[25] Designing a site-specific study to detect the specific effects of project operations on fish populations would be extremely difficult, if not impossible, due to many confounding factors, such as the adverse effects of upstream hydropower and water storage operations, irrigation withdrawals and returns, and variable drought and flood events.

Vegetation Cover Types

Idaho Power evaluated current vegetation patterns by analyzing aerial photographs, conducting vegetation surveys, and developing cover type maps of a 12,045-acre study area that covered land and water below the canyon rim within 0.5 mile of the reservoir or river centerline from RM 471 downstream to Guffey Bridge at RM 447.2 (Krichbaum et al., 2008). The existing Swan Falls Project boundary encompasses almost 2,192 acres, including 1,255 acres of land and 937 acres of water. Based on Idaho Power's cover type mapping, shrub-dominated uplands account for about 765 acres, and herbaceous cover types (those dominated either by grasses or forbs) account for about 165 acres. Riparian vegetation comprises approximately 208.6 acres of land within the project boundary, including 109.6 acres of emergent wetland, 6.3 acres of shore and bottomland wetland, 63.6 acres of scrub-shrub wetland, and 29.1 acres of forested wetland. Other cover types in the project area include cliffs and talus slopes, pasture and agriculture, parks and recreation, developed lands, and barren lands.

Idaho Power found that the most common plants within the shrub cover types are big sagebrush, yellow rabbitbrush, greasewood, and various saltbush species, with a grass layer dominated by cheatgrass. Cheatgrass is a dominant species in the herbaceous cover types as well, but patches of native grasses also are present in significant amounts in some areas.

Shrub cover types dominate the transmission line right-of-way. Where the right-of-way crosses benchland above the cliffs, the most common species are big sagebrush, winterfat, cheatgrass, and tall tumblemustard. Below the cliff, cheatgrass and prickly Russian thistle are common, with scattered saltbush species. One wet, mossy slope supports native bunchgrasses, but otherwise, there is no riparian or wetland habitat along the transmission line right-of-way.

Riparian cover types are associated primarily with reservoir and river shorelines. In the emergent wetlands, the most common species are reed canarygrass, knotgrass, hardstem bulrush, broadleaf cattail, and saltgrass. In the scrub-shrub wetlands, the dominant species are coyote willow and Russian olive. The forested wetland cover type supports a mix of trees, including Pacific willow, netleaf hackberry, silver maple, boxelder, black locust, and Russian olive. Most of the shore and bottomland wetlands are dominated by hardstem bulrush and knotgrass, but patches of this cover type support a mix of shrubs, such as coyote and other willow species, Woods' rose, and Russian olive, and only scattered forbs and grasses.

Noxious Weeds and Invasive Plant Species

Idaho Power conducted noxious weed surveys within the 12,045-acre study area described above. To cover this large acreage, Idaho Power used a sub-sampling to investigate the occurrence, distribution, and abundance of weeds along shorelines, on islands, and in areas where roads, campsites, and trails could affect the introduction and

spread of weeds. Along the shorelines, surveyors recorded the elevation of occurrences in relationship to the OHWM in 6-inch increments, or height-classes.

The surveys documented 14 invasive species in 983 separate populations (table 6). At least three weed species were observed in every survey unit. Most populations (707) were observed along the shoreline, while 213 were observed in disturbed areas, and 63 were recorded on islands. Surveyors found the most abundant weed species to be Russian olive, whitetop and broadleaved pepperweed, with purple loosestrife, reed canarygrass, saltcedar, common thistle, and puncturevine also common. Rush skeletonweed, field bindweed, Scotch cottonthistle, jointed goat grass, and spotted knapweed were observed, but only in scattered locations.

Idaho Power conducted noxious weed surveys along the entire transmission line and associated service road right-of-way, rather than using the sub-sampling method that was applied to the larger study area. Surveyors documented whitetop and puncturevine. Surveyors considered whitetop to be locally abundant in the road corridor, but puncturevine was less prevalent.

Table 6 summarizes weed abundance and distribution, but it is important to note that the surveys relied on a sub-sampling approach to cover a large area, and because weeds are very widespread in the Swan Falls Project vicinity, not all existing weed occurrences were documented during the surveys.

Table 6. Noxious and invasive non-native weed species documented in the Swan Falls study area and within or adjacent to the project boundary (Source: Krichbaum, 2008a, as modified by staff; Vistine-Amdor et al., 2009, as modified by staff).

Weed Species	**Populations Documented in the Upstream Study Area**	**Populations Documented in the Downstream Study Area**	**Populations Within or Immediately Adjacent to the Project Boundary**
Russian olive (*Elaeagnus angustifolia*)	95	90	Not mapped [a]
Whitetop (*Cardaria draba*)	81	85	104
Broad-leaved pepperweed (*Lepidium latifolium*)	94	48	44
Purple loosestrife (*Lythrum salicaria*)	65	73	69
Reed canarygrass (*Phalaris arundinacea*)	65	52	Not mapped[a]

Weed Species	Populations Documented in the Upstream Study Area	Populations Documented in the Downstream Study Area	Populations Within or Immediately Adjacent to the Project Boundary
Saltcedar (*Tamarix pentandra*)	31	53	51
Canada thistle (*Cirsium arvense*)	43	28	28
Puncturevine (*Tribulus terrestris*)	27	19	17
Skeleton-weed (*Chondrilla juncea*)	4	5	3
Field morning glory (*Convolvulus arvensis*)	5	3	6
Scotch thistle (*Onopordum acanthium*)	3	4	0
Russian knapweed (*Centaurea repens*)	5	2	2
Goat grass (*Aegilops cylindrica*)	2	0	2
Spotted knapweed (*Centaurea maculosa*)	0	1	1
Total	520	463	327

[a] Invasive non-native species that are not designated as noxious weeds were not mapped as part of Idaho Power's development of the Noxious Weed Management Plan (Vistine-Amdor et al., 2009).

Special Status Plants

The study area for special status plants (i.e., species listed as threatened, endangered, proposed, or candidates for listing at the federal level; designated as sensitive by the BLM; or considered to be of conservation concern in the state of Idaho) mirrored the noxious weed survey area, and Idaho Power used the same sampling design to investigate occurrence, distribution, and abundance. Surveyors documented 90 populations of nine different species within the study area (table 7). Five special status plants (Snake River milkvetch, desert pincushion, white eatonella, giant helleborine, and western germander) were documented within the project boundary.

In addition to surveying the shorelines, islands, and disturbed areas, Idaho Power conducted rare plant surveys along the transmission line and associated service road

right-of-way. Surveyors did not observe any rare plants during these surveys. The nearest documented rare plant occurrence is a population of Shockley's buckwheat (*Eriogonum shockleyi* S. Wats. var. *shockleyi*) that grows on the canyon rim approximately 500 feet from Tower 4.

Table 7. Special status plant species documented in the Swan Falls study area and within the project boundary (Source: Krichbaum, 2008b; Carpenter et al., 2008, as modified by staff).

Special Status Plant Species	**Populations Documented in the Upstream Study Area**	**Populations Documented in the Downstream Study Area**	**Total Number of Populations**	**Populations within the Project Boundary**
Mulford's milkvetch (*Astragalus mulfordiae*)	0	4	4	0
Snake River milkvetch (*Astragalus purshii* var. *ophiogenes*)	11	15	26	13
Desert pincushion (*Chaenactis stevioides*)	13	0	13	2
White eatonella (*Eatonella nivea*)	1	1	2	1
Giant helleborine (*Epipactis gigantea*)	2	0	2	1
White-margined wax plant (*Glyptopleura marginata*)	4	0	4	0
Rigid threadbush (*Nemacladus rigidus*)	0	1	1	0
Turtleback (*Psathyrotes annua*)	2	0	2	0
Western germander (*Teucrium canadense* var. *occidentale*)	30	6	36	27
Total	63	27	90	44

Two of the nine special status plants documented in the study area occur within riparian habitat. These species—western germander and giant helleborine—grow in

moist, saturated, or inundated soils, where changes in project operation would have the potential to affect hydrology that supports these plants.

Surveyors observed 30 populations of western germander along the reservoir shoreline, and 6 populations growing along the Snake River shoreline downstream of the dam. Most of the reservoir populations (77 percent) were found along the lower end of the reservoir, where they are exposed to minimal water surface fluctuations that result from operation of the C.J. Strike Project. Reservoir populations were also the largest of those documented, and three times as many individual plants were found on the northeast side of the river as were found on the southwest side.

The six western germander populations documented along the river shoreline, flats, and side channels occurred at various elevations. These ranged from the OHWM or a little below to 11 height classes above the OHWM and up to 9 feet laterally from the shoreline, but most were closely associated with the shoreline.

One population of giant helleborine was noted along the reservoir shoreline, between three and seven height classes above the OHWM and from 1.5 to 3 feet laterally from the shoreline. The other population was associated with a hillside seep, well above the shoreline.

Wildlife

In describing existing conditions for wildlife, Idaho Power considered the same study area as defined for botanical resources (i.e., lands below the canyon rim within 0.5 mile of the reservoir or river centerline, from RM 471 to RM 447.2). The entire study area is located within the Snake River Birds of Prey NCA.

Birds

The Snake River Birds of Prey NCA supports one of the highest densities of non-colonial nesting raptors in the world. Numerous studies have been conducted within the NCA since the 1960s. Twenty-five raptor species use the NCA during some portion of their life cycles, and all can be found within the Swan Falls study area. Sixteen species nest in the canyon, and nine occur as migrants or winter residents. The most common diurnal raptors are prairie falcon, golden eagle, red-tailed hawk, American kestrel, and northern harrier. During migration and in the winter, common species include osprey, bald eagle, rough-legged hawk, sharp-shinned hawk, and Cooper's hawk. Seven species of owls may also be present.

No studies within the NCA have focused on upland game birds, but the same species are likely to be present in the Swan Falls Project area as those observed during studies associated with relicensing of the C.J. Strike Project, located about 36 miles upstream of the Swan Falls dam. Based on habitat similarities between the two areas, it is likely that California quail, mourning dove, ring-necked pheasant, and gray partridge

are most common (Sunderman et al., 1997a). Idaho Power staff also observed chukars in the Swan Falls vicinity.

Two studies conducted within the NCA during the 1990s focused on the habitat relationships of shrubland bird species. Based on these studies, nine of the most common shrubland and grassland species include long-billed curlew, horned lark, grasshopper sparrow, lark sparrow, western meadowlark, Brewer's sparrow, sage sparrow, white-crowned sparrow, and sage thrasher.

No studies have specifically focused on riparian bird communities within the NCA, but species are likely similar to those described for the C.J. Strike Project, where habitats are similar. Idaho Power found that seven bird species were common in the C.J. Strike Project area, including mallard, red-winged blackbird, black-billed magpie, yellow-rumped warbler, white-crowned sparrow, northern flicker, and song sparrow (Holthuijzen, 1997a). Species diversity was highest in the spring and declined through the fall and winter, but bird densities were highest in the winter.

No waterfowl surveys have been conducted in the study area downstream of Swan Falls dam, but a total of 26 waterfowl species were documented as using the Snake River between Swan Falls dam and C.J. Strike dam (Holthuijzen, 1997b). American coots were most common, followed by mallard, common goldeneye, American wigeon, Canada goose, common merganser, bufflehead, and teal. Birds numbers increased from 11 birds per river mile in September to 110 birds per river mile in January, and then dropped through March to 57 birds per river mile. Riverine conditions in the narrow canyon below Swan Falls dam would likely be most conducive to diving ducks (e.g., common goldeneye and common merganser), while conditions would favor dabbling ducks (e.g., mallards and American wigeon) and surface dippers (e.g., American coot) where the river widens and passes through agricultural areas below Walters Ferry.

The Deer Flat National Wildlife Refuge (Refuge) provides important habitat for numerous species of waterbirds along the Snake River downstream of the Swan Falls Project. Established in 1909, the Refuge includes the 10,588-acre Lake Lowell sector, and about 800 acres on 101 islands. The islands are distributed along 113 miles of the Snake River from approximately the Guffey Bridge downstream to Farewell Bend. The two refuge islands located closest to the Swan Falls Project, Rail and Sign islands, are located about 10 miles downstream of the dam, outside of the existing and proposed project boundaries.

The American Bird Conservancy has identified the Refuge as a Globally Important Bird Area, based on the large concentrations of waterfowl that use the Refuge for breeding, overwintering, and resting during migration.

Mammals

Small and medium-sized mammals in the Swan Falls Project area include Piute ground squirrels and black-tailed jackrabbits, both of which are the primary prey of many raptor species. Piute ground squirrels are found on the benchlands on the north side of

the Snake River in the NCA. Black-tailed jackrabbits occur throughout the NCA. Mountain cottontail and yellow-bellied marmot are also present within the canyon. A variety of mice, chipmunks, and woodrats are also present, and 10 bat species have been reported.

Furbearers and predators that use the benchlands and canyon include the coyote, badger, eastern spotted skunk, striped skunk, raccoon, mink, bobcat, long-tailed weasel, river otter, mountain lion, beaver, and muskrat. Coyotes, bobcats, and mountain lions would be likely to use all habitats that are available. Badgers are strongly associated with uplands, and studies in the NCA in the mid-1970s estimated the density of badgers at 2 to 6 per square kilometer. Skunks, raccoons, river otter, beaver, and muskrat are typically associated with riparian habitats.

Mule deer and pronghorn are the most common big game species in the NCA (BLM, 2006). BLM estimates that more than 100 resident mule deer and approximately 50 resident pronghorn occupy the area along the Snake River in the NCA.

Reptiles and Amphibians

Seventeen reptile species are found in the NCA. The most abundant snake species are night snakes and western rattlesnakes, but Great Basin gopher snakes are also frequently observed. The most commonly-encountered lizards are the side-blotched lizard and the western fence lizard.

Despite the dry conditions, the NCA supports at least seven amphibian species. These include the Great Basin spadefoot, western toad, Woodhouse's toad, western and Pacific chorus frogs, northern leopard frog, and the invasive bullfrog.

Special Status Wildlife

Idaho Power developed a list of 52 special status wildlife species that are known to occur or may be present in the Swan Falls Project area, including species that FWS or Idaho DFG has identified as threatened, endangered, proposed or candidates for listing, and those that BLM or Idaho DFG has designated as sensitive, rare, or in need of special management.

As a means of focusing its evaluation of the effects of project-related activities (including maintenance, road traffic, and recreation) on special status species, Idaho Power selected 26 species to represent various habitats. Table 8 shows how the species were grouped and their occurrence in the Swan Falls study area.

Table 8. Species groups used to evaluate the effects of project-related activities in the Swan Falls study area (Source: Carpenter et al., 2008, as modified by staff).

Species Group	Focus Habitat	Species	Season Present
Shrubland birds	Shrubland	Brewer's sparrow, sage sparrow, sage thrasher, black-throated sparrow	Spring, summer
Shrubland herptiles	Shrubland	Night snake, Woodhouse's toad, longnose snake	Year-round
Grassland herptiles	Grassland	Woodhouse's toad, longnose snake	Year-round
Riparian dwellers	Riparian	Brewer's blackbird, common garter snake, western toad, northern leopard frog, Woodhouse's toad, longnose snake	Spring, summer
Shorebirds	Shoreline	Wilson's phalarope, great egret	Spring, summer
Winter raptors	Riparian	Northern goshawk, bald eagle	Winter
Winter waterbirds	River and reservoir	Bald eagle, Barrow's goldeneye, trumpeter swan	Winter
Cliff dwellers	Cliff	Ferruginous hawk, prairie falcon, Yuma myotis, western pipistrelle, Townsend's big-eared bat, small-footed myotis, spotted bat	Year-round
Talus reptiles	Cliff base	Great Basin collared lizard, western ground snake, night snake	Year-round

Idaho Power evaluated the risk of recreational disturbance (including activity associated with roads and parks, as well as dispersed recreation) on these groups of special status species through the use of Geographic Information System (GIS) modeling (Carpenter et al., 2008). In this study, biologists mapped the proximity of human use areas to vegetation cover-type polygons that support these wildlife groups, and rated the risk of wildlife disturbance at sites where potential interactions were likely to occur at times of the year when each wildlife group would likely be most sensitive. The risk ratings ranged from low to very high, based on the type of activity, proximity, and level of sensitivity. The study does not account for all recreational use or all wildlife species, but serves to highlight the types of disturbances that are most likely to affect various wildlife groups, and where these effects are most likely to occur.

In general, the study indicated that recreational activity is most likely to affect shrubland birds, shrubland herptiles, grassland herptiles, and riparian dwellers. Vehicle traffic, particularly off-road traffic, damages habitat for these species groups, and off-road vehicle noise and activity during the breeding season can impair reproductive success for many birds. Road-related mortality can be significant for reptiles and amphibians generally, and for snakes in particular, because they frequently use roads to thermoregulate. Snakes are also at risk from intentional harassment or killing, or unintentional harm as a result of recreators chasing, capturing, or handling them.

Illegal shooting was also identified as a risk to cliff dwellers. The Snake River Canyon is closed to all firearms between February 15 and August 31, but Idaho Power reports that recreational shooting continues to occur, despite informational signs informing visitors that it is not permitted.

Idaho Power also identified special status species that could be affected by project operation (primarily flow fluctuations in the Swan Falls reservoir and along the Snake River downstream of the project), as well as by human activity. These wildlife species (table 9) are strongly associated with wetland cover types that occur within the fluctuation zone.

Table 9. Special status species that could be affected by project operations (Source: Moser and Holthuijzen, 2008, as modified by staff).

Species	**Primary Cover Type Association**
Trumpeter swan	LS, LM, EHW
Great egret	LS, EHW, SSW, FW
Wilson's phalarope	LS, EHW
Brewer's blackbird	EHW, SSW, FW
Spotted bat	CTS, EHW, SSW, FW, SBW
Yuma myotis	CTS, EHW, SSW, FW, SBW
Western pipistrelle	CTS, EHW, SSW, FW, SBW
Northern leopard frog	EHW, SSW, LS
Woodhouse's toad	EHW, SSW, LS
Western toad	EHW, SSW, FW, LS
Common garter snake	EHW, SSW, SBW, LS

Notes: CTS – cliff/talus slope

EHW – emergent herbaceous wetland

FW – forested wetland

LM – lotic (moving) water

LS – lentic (standing) water

SBW – shore and bottomland wetland

SSW – scrub-shrub wetland

3.3.3.2 Environmental Effects

Wildlife Habitat Protection and Enhancement Plan

Idaho Power has identified several ways in which project operation and maintenance affect wildlife habitat in the project area. Idaho Power states that water level fluctuations both in the reservoir and downstream of the dam are minimal because the project is not operated as a load-following facility. It states that current and proposed operations are estimated to affect 2.0 acres of riparian habitat downstream of Swan Falls dam.

Idaho Power notes that project operations and maintenance affect riparian habitat at Swan Falls Island, where construction of the new powerhouse in 1994 may have led to siltation and blockage of the culvert that once provided water to the channel around the island, reducing hydrologic support for 8.9 acres of scrub-shrub and emergent wetland that have developed there. Idaho Power states that at the lay-down yard adjacent to Swan Falls Island, where disposal of plant materials that are removed from the trash racks has spilled over into the riparian zone, the encroachment is smothering existing riparian vegetation and interfering with the processes of germination and growth.

Additionally, Idaho Power notes that recreational activities at nine dispersed sites within the Swan Falls Project boundary have altered an estimated 3.72 acres of riparian habitat and 45.3 acres of upland habitat by removing and trampling vegetation, compacting soils, increasing erosion, and introducing litter. Idaho Power states that recreational activities serve as a vector for the spread of weeds and increase the risk of wildfire, and that in addition, traffic and noise associated with recreational activities cause disturbance to wildlife. Idaho Power also notes that illegal shooting in the area may also cause disturbance. For further discussion, see section 3.3.5, *Recreation*.

To mitigate the effects of project operation on riparian and upland habitat, Idaho Power consulted with FWS, BLM, and Idaho DFG to develop a Wildlife Habitat Protection and Enhancement Plan. The plan includes: (1) protection and enhancement of 2.7 miles of shoreline habitat to mitigate the effects of project operation on riparian habitat; (2) improvement of flows at Swan Falls Island to support 8.9 acres of riparian vegetation; (3) protection of riparian vegetation adjacent to the lay-down yard; and (4) protection and enhancement of 25.1 acres of riparian habitat and 45.3 acres of upland habitat to mitigate the effects of project-related recreation, including adverse effects on

wildlife. In the state of Idaho's comments filed August 14, 2009, Idaho DFG stated its support for this proposal.

With implementation of this plan, Idaho Power would establish desirable woody species (e.g., peachleaf willow, coyote willow, netleaf hackberry, skunkbush, and golden currant) in riparian areas along 2.7 miles of the Snake River shoreline that currently support little perennial vegetation or are dominated by invasive species. Planting would coincide with treatment of noxious exotic woody species, such as saltcedar. The areas targeted for riparian habitat enhancement are located within the project boundary along the eastern shoreline of the Swan Falls reservoir and along the eastern shoreline of the Snake River below the dam, including the slough at Swan Falls Island.

To ensure the success of plantings at Swan Falls Island, hydrologic support would need to be restored. To this end, the Wildlife Habitat Protection and Enhancement Plan calls for excavation of about 1,000 cubic yards of material to create a connecting channel and replacement of the existing culverts to allow flow into the slough. Idaho Power would periodically monitor the effectiveness of this measure to ensure proper functioning, which is defined as the unimpeded flow of water to the side channel when flows in the Snake River exceed 6,220 cfs in July.

To address the effects of lay-down yard encroachment on the riparian area, Idaho Power would remove existing desiccated plant materials from the embankment at the lay-down yard, restore existing riparian vegetation, and install a barrier to prevent plant material from spilling over into riparian habitat in the future.

To address effects on uplands affected by recreational use of the area, the Wildlife Habitat Protection and Enhancement Plan includes blocking and revegetating a total of 8.4 acres of roadbeds and restoring 36.9 acres of other disturbed sites by planting native containerized shrub stock and seeding with native grasses. The plan specifies seed quality, planting rates, and the time of planting, and provides for weed control as well. The plan also includes an effectiveness monitoring protocol that Idaho Power would follow to evaluate planting success with provisions for consulting with the agencies 10 years after implementation to determine whether any remedial actions are needed.

Idaho Power would restrict motorized traffic to protect restored sites by strategically placing boulders, berms, fencing, and signage. Idaho Power would coordinate with state and federal law enforcement agencies to impose travel restrictions.

The plan calls for establishing permanent reference photo locations to show representative views of restored areas and periodically re-photograph the sites to evaluate the success of enhancement efforts, in addition to measuring plant survival. The plan provides for regular reports to be filed with the Commission and provided to the resource agencies.

Our Analysis

Our review of the C.J. Strike final EIS (FERC, 2002) indicates that C.J. Strike operations are the primary operational influence on riparian habitat along the shoreline upstream of the Swan Falls dam. Based on studies conducted in association with relicensing of the C.J. Strike Project, load following at C.J. Strike adversely affects 170 acres of riparian habitat downstream of C.J. Strike dam, an area which includes the Swan Falls reservoir shoreline. Idaho Power is currently implementing a plan to protect and manage habitat for wildlife in the Bruneau Valley, which extends south from the Snake River just upstream of C.J. Strike dam, to mitigate these impacts.

The Swan Falls Project is operated to reregulate flows from C.J. Strike. Daily river fluctuations below the dam comply with ramping rate restrictions of no more than 1 foot per hour and 3 feet per day, with actual fluctuations being much smaller. In 2006, a high water year, the maximum water level fluctuation measured during a 1-day or 2-day period was less than 1.3 feet 90 percent of the time. During June through September, the maximum fluctuation was less than 1.1 feet 90 percent of the time. The following year, 2007, was a low water year. The maximum water level fluctuation for the year during a 1-day or 2-day period was less than 1.0 foot 90 percent of the time, and during the June through September period, was less than 0.68 foot 90 percent of the time. We anticipate that downstream water level fluctuations would be about the same under Idaho Power's proposal as they are under current conditions.

As discussed in section 3.3.3.1, *Terrestrial Resources, Affected Environment,* there are 2.89 acres of land within this fluctuation zone downstream of the dam, including 2.0 acres mapped as riparian cover types. Emergent herbaceous wetland accounts for about 0.76 acre, shore and bottomland wetland accounts for about 0.6 acre, and scrub-shrub wetland accounts for about 0.69 acre. Protection and enhancement of 2.7 miles of shoreline habitat, combined with improving flows at Swan Falls Island and controlling adverse effects on riparian habitat at the lay-down yard, would benefit riparian habitat in the project area.

By improving existing riparian habitat conditions, implementation of the Wildlife Habitat Protection and Enhancement Plan would also improve conditions for numerous wildlife species in the project area that use riparian habitat. In the arid and semi-arid west, more wildlife species use riparian habitats than any other vegetation type (Kauffman et al., 2001; Knopf et al., 1988). Benefits of implementing the plan would include enhancement of wetter, cooler microclimates that support higher levels of primary productivity than surrounding, drier shrub and grassland types. Revegetation using native and other desirable shrubs and trees would increase species and structural diversity, which would in turn provide unique food resources, nesting opportunities, and hiding and thermal cover for wildlife. Revegetation would also improve the function of riparian areas as travel corridors that allow for daily movement, seasonal migration, and juvenile dispersal.

Several special status wildlife species that are strongly associated with emergent herbaceous wetland, shore and bottomland wetland, and scrub-shrub wetland would benefit from implementation of the plan; these species include trumpeter swan, great egret, Wilson's phalarope, Brewer's blackbird, northern leopard frog, Woodhouse's toad, and common garter snake. The plan would also help to improve foraging opportunities for three special status bat species (spotted bat, Yuma myotis, and western pipestrelle).

Implementation of other elements of the Wildlife Habitat Protection and Enhancement Plan, including blocking and revegetating 8.4 acres of roadbeds and restoring 36.9 acres of other disturbed sites by planting native containerized shrub stock and seeding with native grasses, as well as restricting motorized traffic to protect restored sites by strategically placing boulders, berms, fencing, and signage, would improve habitat conditions in project area uplands. In the intermountain west, shrub-steppe habitat supports at least 61 species of birds and small mammals that are entirely or almost entirely dependent on this increasingly fragmented ecosystem (Dobkin and Sauder, 2004). Several of these are special status species that have been documented in the project area, including sage sparrow, Brewer's sparrow, black-throated sparrow, sage thrasher, night snake, and longnose snake, as well as Woodhouse's toad, which also uses riparian habitats.

Provisions for monitoring as part of the Wildlife Habitat Protection and Enhancement Plan would ensure that Idaho Power would collect data needed to evaluate the success of the plan and to identify any modifications that may be needed to improve outcomes of the revegetation and traffic restriction measures. Provisions for reporting would allow stakeholders to participate in identifying such modifications, and may also identify opportunities for cooperative efforts.

Several elements of Idaho Power's other proposed protection, mitigation, and enhancement measures would also benefit riparian and upland habitat and the wildlife species that use them. We discuss these measures in the following section, *Effects of the Recreation Management Plan.*

Effects of the Recreation Management Plan

As noted above, recreational activities in the Swan Falls Project area have altered an estimated 3.72 acres of riparian habitat and 45.3 acres of upland habitat. Because of the interrelationship between Idaho Power's proposed Wildlife Habitat and Enhancement Plan and its Recreation Management Plan in terms of effects on habitat and wildlife, we address the habitat-related components of the Recreation Management Plan here.

As part of the draft Recreation Management Plan (see section 3.3.5, *Recreation Resources*), Idaho Power would maintain and improve the project's five existing developed recreation sites. Under the draft Recreation Management Plan, Idaho Power would expand and improve two boat access sites: (1) at the Swan Falls reservoir boat

ramp, Idaho Power proposes to install a vault toilet, enlarge the parking area, designate a boat staging area, and widen and steepen the boat ramp; and (2) at Swan Falls downstream boat ramp, improvements would be similar but would also involve construction of a two-lane boat ramp. At Swan Falls Park, Idaho Power would repair the shoreline, add a new dock, and provide new picnic tables.

Idaho Power also proposes to define and enhance six dispersed recreation sites, of which four sites are outside the current project boundary. Idaho Power proposes to modify the project boundary and include all six sites as project features. To help keep recreational usage contained to these sites, Idaho Power proposes to close the various braided roads to the sites, restrict additional recreation use by installing buffers, and designate a single maintained road for the sites. The Recreation Management Plan also contains Idaho Power's proposed Interpretation and Education Plan, with provisions for educating the public on the Snake River Birds of Prey NCA and on native and non-native fish, including conservation of the white sturgeon.

Our Analysis

Expansion and improvement of the two boat ramp sites would not adversely affect riparian or upland habitat because work would occur in areas that have already been affected by recreational use of unauthorized roads, trails, and parking areas. Enhancement measures at Swan Falls Park would occur in areas that are already disturbed and would not convert any existing wildlife habitat.

Project-related construction at the three above-mentioned recreation sites would have the potential to cause noise disturbance. Some activities associated with implementation of the Wildlife Habitat Protection and Enhancement Plan (e.g., use of heavy equipment to excavate a new connecting channel, replacement of existing culverts at Swan Falls Island, and construction of a barrier at the lay-down yard) would also increase noise levels. We anticipate that most wildlife species would avoid these areas during construction, and that effects would be localized, minor, and temporary.

Based on Idaho Power's wildlife risk analysis, four wildlife groups (shrubland birds, shrubland herptiles, grassland herptiles, and riparian dwellers) are most vulnerable to habitat damage and disturbance caused by dispersed recreational activities.

For shrubland birds, the highest risk of disturbance occurs from April to July, when birds are nesting and raising young and recreation use is at a peak. While disturbance at this time of the year can impair breeding success, disturbance throughout the spring, summer, and fall appears to also contribute to the loss and fragmentation of shrubland habitat that supports shrublands birds, such as Brewer's sparrow, sage sparrow, sage thrasher, and black-throated sparrow.

For shrubland and grassland herptiles (e.g., night snake, Woodhouse's toad, and longnose snake), risks are highest from March through October, coinciding with the time of year amphibians and reptiles are most active and recreational use of roads is high. Road-related mortality of herptiles can be significant, and for snakes, in particular, because they frequently use roads to thermoregulate.

The months of highest risk for all riparian dwellers (a group that includes bird, snake, and amphibian species) are May, June, and July. The Snake River Canyon is hot and dry during the summer; riparian areas attract people to water, shade, and the cooler microclimate when wildlife use of these areas is also high. Habitat damage and noise are the primary influences on breeding birds, while recreation traffic can cause mortality to amphibians moving across roads to access shoreline wetlands and riverine shallows.

These four wildlife groups would benefit substantially from protection of existing habitat, restoration of habitat, closure of unauthorized and unnecessary roads and trails, and control of dispersed recreation. Public education about wildlife protection would also be beneficial, especially with regard to snakes. These measures could include signage explaining the importance of avoiding interactions with rattlesnakes, keeping pets on leashes, and not handling reptiles and amphibians. Idaho Power's proposal, which includes finalization and implementation of the Interpretation and Education Plan as part of the Recreation Management Plan, would address these concerns.

Noxious Weed Management Plan

Although the fluctuation zone below Swan Falls dam is narrow, measuring about 0.26 vertical foot in elevation and 1.3 feet laterally during the growing season, even small changes alter soil conditions along the shoreline and contribute to conditions that promote the establishment and spread of noxious weeds and invasive exotic plants. Project maintenance and management and project-related recreation also cause soil disturbance, and act as vectors for the spread of weeds. Noxious weed surveys conducted in the project area documented the occurrence of 12 noxious weed species within the project boundary.

State law requires that Idaho landowners control noxious weeds on their property. To comply with this requirement and mitigate project effects on weed occurrence, Idaho Power consulted with FWS, BLM, and Idaho DFG to develop a Noxious Weed Management Plan (Vistine-Amdor et al., 2009). The plan is intended to control the introduction and spread of designated noxious weeds and monitor high priority areas for new infestations of noxious weeds. The plan would apply to all lands within the project boundary, including the transmission line. In the State of Idaho's comments filed August 14, 2009, Idaho DFG stated that it supports the plan.

Idaho Power's proposed Noxious Weed Management Plan would target the 12 species known to occur within the project boundary that are designated as noxious weeds.

The weed control strategy would focus on creating and managing habitats to be resistant to invasive plants, while incorporating the use of mechanical, chemical, cultural, and bio-control methods, as appropriate, to control weeds. The plan outlines a schedule for weed control activities and monitoring; identifies specific control methods to be considered; calls for regular updating of the target species list and new treatment measures that may become available; and provides for regular reports to FERC. Implementation of the Noxious Weed Management Plan would be coordinated with the Wildlife Habitat Protection and Enhancement Plan, the Special Status Plant Management Plan, and transmission line management. Idaho Power would also coordinate weed management efforts with private landowners and BLM.[26] Idaho Power would work with county weed supervisors, resource management agencies, and other interested individuals or organizations to identify opportunities for cooperative projects, prioritize treatments, and organize efforts on all lands within the project boundary.

Our Analysis

As discussed in section 3.3.3.1, surveyors documented 983 populations of 14 invasive species within the Swan Falls study area (Krichbaum, 2008a), including 12 that are designated as noxious weeds by the Idaho State Department of Agriculture (Krichbaum, 2008a). The surveys showed a very high diversity and abundance of weeds in survey units located along the shoreline and on islands. Krichbaum (2008a) suggests that weeds may be concentrated along the river/reservoir corridor because these areas include both upland and riparian habitats, with a range of soil moisture regimes and high exposure to a variety of disturbance factors, including recreation, flooding, grazing (where permitted on BLM or private lands), sediment deposition, and road construction. Based on these survey findings, we conclude that noxious weed control efforts would be most beneficial where they target recreational activities on project lands, but that several types of disturbance that are not project-related (e.g., grazing) would also need to be addressed, because they also occur on project lands.

Implementation of Idaho Power's proposed Noxious Weed Management Plan would provide an effective means of managing noxious weeds on project lands because it includes regular monitoring, a wide range of treatment options, follow-up surveys, and periodic updates to the list of target species. Although non-project-related activities would likely continue to influence weed distribution in the project area, implementation of cooperative efforts with other landowners would reduce the spread of weeds across ownership boundaries. Implementation of the plan would also augment measures included in the Wildlife Habitat Protection and Enhancement Plan by promoting native plant communities that provide higher quality habitat for wildlife than those dominated by invasive non-native species.

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[26] In particular, Idaho Power must comply with the conditions of the BLM right-of-way grant (No. IDI-29012) regarding pesticide use.

As discussed above, altered soil conditions can contribute to the establishment and spread of weed populations. Idaho Power has restricted vehicle access to lands upstream of the reservoir boat ramp since 2007, and as part of the Recreation Management Plan, now proposes to restrict vehicle traffic to one maintained road downstream of the dam, as well as recontour and revegetate braided roads. Road closures and habitat restoration would help support native plant communities, and in combination with weed treatment, follow-up monitoring, and annual surveys outlined in the Noxious Weed Management Plan, would assist Idaho Power in controlling existing weed occurrences and minimizing the risk that new populations will establish in the project area.

Special Status Plant Management Plan

Special status plant surveys documented the occurrence of western germander and giant helleborine, two species that are strongly associated with riparian habitats, growing where they would be affected by flow fluctuations along the river downstream of Swan Falls dam, as well as ground disturbance resulting from dispersed recreation. Project-related recreation could also adversely affect three special status plants (Snake River milkvetch, desert pincushion, and white eatonella) that were documented in uplands within the proposed project boundary (see table 7).

To mitigate project impacts on special status plants, Idaho Power consulted with FWS, BLM and Idaho DFG to develop a Special Status Plant Management Plan (Tyrer et al., 2009). In the state of Idaho's comments filed August 14, 2009, Idaho DFG stated that it supports the plan.

The Special Status Plant Management Plan includes measures to protect, monitor and manage rare plants within the project boundary. The primary elements of the plan include constructing fences or placing boulders to prevent access to special status plant populations; controlling noxious and undesirable plant species; planting native grasses and shrubs to rehabilitate disturbed uplands; protecting special status plants from grazing, where possible,[27] adopting best management practices for road construction and maintenance that would minimize erosion, habitat loss and noxious weed spread; excluding the use of herbicides near special status plant populations; monitoring known populations to ensure habitat degradation does not occur; and clearance surveys before any ground-disturbing activities are implemented in areas that were not covered during previous survey efforts. The plan also addresses regular updates to the target species list and reports to be filed with the Commission, coordination with the Wildlife Habitat Protection and Enhancement Plan and the Noxious Weed Management Plan, and cooperative measures with state and federal agencies.

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[27] The plan would cover all lands within the project boundary, including land that is administered by BLM, where grazing may be permitted.

Our Analysis

Proposed operations would not substantially alter the existing pattern of reservoir fluctuations that results primarily from operation of the C.J. Strike Project, and would therefore not affect the 30 western germander populations or the one giant helleborine population growing in the study area upstream of the Swan Falls dam. As mentioned above, water surface fluctuations are estimated to affect 2.0 acres of riparian habitat downstream of the Swan Falls dam, and would have the potential to affect western germander populations growing within one or two height classes and within 1 or 2 feet of the river shoreline. The giant helleborine occurrence downstream of the dam is located farther above the OHWM (i.e., three height classes at its nearest point), but within about 1.5 feet laterally, and could also be affected by current or proposed operations.

The Special Status Plant Management Plan would not address any flow-related effects on western germander or giant helleborine. The abundance of western germander along the reservoir shoreline (30 populations) compared to the relatively small number of occurrences downstream of the dam (six populations) indicates that this species may prefer more stable hydrologic conditions than would occur along the Snake River shoreline under any operational scenario. For this reason, maintaining the current ramping rate restrictions would be important in providing continued support for these occurrences.

In addition to evaluating the effects of project operation on special status plants, Idaho Power used GIS mapping and the results of the special status plant surveys to analyze the interactions between human activities and special status plant locations in the study area (Carpenter et al., 2008). Based on this analysis, there may be conflicts for 44 populations of the 5 special status species (Snake River milkvetch, desert pincushion, white eatonella, giant helleborine, and western germander) that occur within the project boundary. In most cases (39), the risk of disturbance was rated as very low or low (Carpenter et al., 2008). Risks were rated as high for three populations of Snake River milkvetch and one population of western germander. Four Snake River milkvetch populations and two western germander populations could be affected by construction of proposed recreation enhancements.

Idaho Power's proposed Special Status Plant Management Plan would provide an effective means of protecting these species from recreational activity where they occur within the project boundary. Fencing or boulders would prevent impacts from off-road vehicles, pedestrian trampling, or grazing. Invasive plant control without the use of herbicides, together with upland habitat restoration using native plants, would discourage the establishment or spread of weed species that could outcompete special status plant populations. The results of clearance and monitoring surveys would provide the information that Idaho Power would need for planning and siting new recreation facilities, and for modifying the plan, as needed. Coordination with other management plans (e.g., for wildlife and noxious weeds) would ensure that rare plant occurrences are

protected to the extent possible during implementation of ground-disturbing activities; coordination with the Recreation Management Plan would provide additional protection.

Idaho Power's proposal to implement cooperative protection measures would offer a comprehensive approach to special status plant protection on land within the project boundary. Such an approach recognizes that different land owners within the project boundary may have different management responsibilities and priorities, but may share common goals for rare plant protection.

Transmission Line Management

The project transmission line, the Swan Falls Tap, extends approximately 1 mile from the Swan Falls powerhouse, up the canyon wall and across the benchlands to the Strike Junction-Caldwell transmission line, encompassing 6.07 acres within the 50-foot-wide right-of-way. It includes eight wooden H-frame power poles. Three are located below the canyon rim, one is at the canyon rim, and four are located on benchlands east of the Swan Falls Road.

Maintenance activities include annual inspections, pole treatments on a 10-year cycle, and repair and replacement of structures and hardware as needed. Inspections and line patrols typically are conducted by one person in a truck or on an all-terrain vehicle, and take less than 1 day. Pole inspections and groundline treatments at 10-year intervals require climbing the poles to evaluate conditions; these activities are also completed within 1 day, with separate follow-up if equipment needs to be repaired or replaced. For this type of work, Idaho Power would typically use a line crew of four to six people. The types of trucks and cranes used would depend on the type of work that needs to be done; work could last from a day to a week.

The Swan Falls Tap was designed to meet protective guidelines developed by the Avian Power Line Interactions Committee (APLIC, 1996) under the requirements of existing License Article 38, and no concerns about raptor electrocution or collision were identified during scoping. However, comments indicated a concern that ongoing maintenance activities could adversely affect four special status birds that nest in the benchlands (long-billed curlew, short-eared owl, Brewer's sparrow, and sage sparrow), certain cliff-nesting raptors (e.g. prairie falcon), and tow wintering raptors (northern goshawk and bald eagle). By letter filed September 1, 2009, FWS commented that, although the bald eagle is no longer listed as threatened under the Endangered Species Act, the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act continue to provide protection for this species, and that National Bald Eagle Management Guidelines (FWS, 2007) have been developed to assist project proponents in avoiding violations of these laws.

In its final license application, Idaho Power proposes to develop and implement a transmission line operation and maintenance plan to eliminate or minimize potential

impacts on botanical and wildlife resources as a result of major ground-disturbing activities along the Swan Falls Tap, in compliance with BLM right-of-way grant stipulations. Idaho Power indicated that it did not anticipate any need (absent catastrophic failure) to perform major repairs because the Swan Falls Tap is relatively new. In response to our AIR dated October 7, 2008, Idaho Power described specific management measures for the transmission line right-of-way that would be included in the Noxious Weed Management Plan, such as weed monitoring and treatment, erosion control, and special status plant protection, but did not address any measures that might be needed to protect wildlife during major repairs or routine maintenance activities.

Our Analysis

Idaho Power did not conduct field surveys to evaluate wildlife use of the Swan Falls Tap right-of-way, but the wildlife community would include most of the same species found elsewhere in project area uplands. Based on BLM and USGS surveys, the nearest known raptor nests are located 230 feet (prairie falcon pair), 1,312 feet (prairie falcon pair), and 1,640 feet (red-tailed hawk nest) from the right-of-way (Baczkowski and Carpenter, 2008). There is typically one raven nest located about 328 feet from the right-of-way each year.

Four special-status bird species (long-billed curlew, short-eared owl, Brewer's sparrow, and sage sparrow) nest on benchlands. We refer to these birds collectively as benchland nesters. Nesting surveys for these species have not been conducted, but it is likely that few nests would have the potential to be affected by transmission line maintenance activities because there are only four poles on the benchlands above the canyon rim. However, if nests were located near the poles, disturbance between April and July could impair reproductive success by keeping adults from the nest, exposing eggs or young to weather and predation. Disturbance could be avoided by scheduling major (i.e., lasting more than a day) non-emergency work to occur between August and March.

Idaho Power anticipates that transmission line maintenance activities would have the potential to affect only one cliff-nesting raptor species—the prairie falcon (Baczkowski and Carpenter, 2008). One or two nesting pairs would be disturbed by any work at the pole located on the canyon rim if such work occurred between March and June. Idaho Power notes that birds in this part of the canyon are fairly tolerant of disturbance, even tolerating noise associated with blasting (Holthuijzen et al., 1990). The risk of disturbance could be minimized by scheduling major non-emergency work between July and February.

Two raptor species—bald eagles and goshawks—may use trees in Swan Falls Park during the winter for night roosting or day perching. Two poles are situated upslope of these trees, which would increase the potential for disturbance to these species between November and March. However, it is unlikely that work would occur at night, and work

lasting a few hours during one day each year (or several days if either or both poles require replacement) would have negligible impacts because perching birds would move to other suitable perch trees in the vicinity.

Under current conditions, there are no timing restrictions on transmission line maintenance activities. Idaho Power's proposed Noxious Weed Management Plan provides for timing restrictions on herbicide applications within the right-of-way in the future, if needed. However, we conclude that timing restrictions on maintenance activities would also be needed to minimize the risk of disturbing benchland nesters and cliff-nesting raptors.

As described above, the Noxious Weed Management Plan provides for weed monitoring and treatment, erosion control, and special status plant protection throughout the project area, including the Swan Falls Tap. Development of a separate transmission line operation and maintenance plan, as Idaho Power proposes, would not be necessary to protect soil or botanical resources that occur within the transmission line right-of-way. However, the Noxious Weed Management Plan does not address potential effects of transmission line operation and maintenance on wildlife. A separate measure could be implemented, however, to address potential noise disturbance without duplicating previous planning efforts or other management programs. Such a measure would provide a mechanism for Idaho Power to consider the effects of various maintenance activities on benchland nesters and cliff-nesting raptors, and implement timing restrictions, as needed, for major repairs, routine maintenance, or both.

Raptors within the National Conservation Area

As mentioned in section 3.3.3.1, *Terrestrial Resources, Affected Environment*, the Snake River Birds of Prey NCA supports one of the highest densities of non-colonial nesting raptors in the world. Comments received during scoping indicated a concern that project operations and project-related activities could affect raptor populations within the NCA. In reviewing the licensing record for the Swan Falls Project, it does not appear that this concern was specifically identified during the consultation process, and Idaho Power does not propose any protection, mitigation, and enhancement measures addressing raptor populations within the NCA.

Our Analysis

For raptors, the importance of the NCA is due primarily to an abundance of cliff nesting sites in proximity to an abundance of prey. The principal prey species are black-tailed jackrabbits and Piute ground squirrels. Black-tailed jackrabbits, which occur in shrublands throughout the NCA, rarely use grasslands without a shrub component, owing to their reliance on shrubs for food and cover. Piute ground squirrels do use annual grasslands, but non-native annual grasses are less drought tolerant than native species, and therefore may not provide a stable food resource. Piute ground squirrels are found in

highest numbers on the benchlands north of the Snake River in the NCA; they are rarely found in the canyon, and do not occur southwest of the river in the vicinity of the NCA.

Idaho Power used unpublished data from BLM and USGS surveys conducted between 1990 and 1994 to calculate nesting densities for golden eagles, red-tailed hawks, ferruginous hawks, and prairie falcons, and additional data on prairie falcons that was collected during surveys in 2002. The survey units used in the analysis covered habitat (including benchlands) within 1.2 miles of the Snake River from RM 442, near Walters Ferry, to RM 478, about 20 miles upstream of Swan Falls dam. Idaho Power's analysis showed that territory densities were highest in the 6.2-mile survey segment that includes Swan Falls dam, with an average of 50.4 territories. The second highest densities (an average of 41.6 territories) occur in the 6.2-mile segment just upstream of the dam, along the Swan Falls reservoir. Results were similar for ravens, which share nesting and prey preferences with many raptor species.

Data presented in the NCA Resource Management Plan (BLM, 2008) include the results of prairie falcon surveys over a wider span of years (1976 through 2002) and a longer stretch of the river (from Walters Ferry upstream to RM 530, near Hammett); these data also show the highest densities of prairie falcons centering on the survey units that encompass the Swan Falls Project area. These survey units contain the highest cliffs, and provide optimal habitat. They are almost fully saturated every year, while the number of pairs in less suitable survey units to the west and east fluctuates from year to year as the prairie falcon population decreases and increases (Kochert and Steenhof, 2004, as cited in BLM, 2008).

Based on these evaluations, we find that continued project operations are not adversely affecting raptor populations in the NCA. Project operations do not affect cliff nesting or benchland foraging habitat. However, as discussed above, project operations do influence a narrow band of riparian and upland habitat along the Snake River. To address effects on these cover types, Idaho Power's proposed Wildlife Habitat Protection and Enhancement Plan calls for restoration of 2.7 miles of riparian habitat along the Snake River shoreline that is currently poorly vegetated or dominated by weeds. Because the plan includes planting of native and other desirable perennial species that may eventually provide perch and roost sites for raptors and hiding cover and forage for small mammals, reptiles, amphibians, and songbirds that contribute to their prey base, implementation of the plan could provide a long-term benefit to raptors.

Project-related maintenance activities would have the potential to cause noise disturbance in the vicinity of the dam and powerhouse. Bald eagles and goshawks are thought to perch near the dam in the winter, but no raptors are known to nest in the immediate area. Effects of noise would likely be minor and temporary.

As discussed above, maintenance of the Swan Falls Tap would have the potential to cause noise disturbance to one or two pairs of prairie falcons, if conducted during the breeding season. Foraging raptors would likely avoid the transmission line route for as much as a day at a time during annual and 10-year inspections, and for longer periods (i.e., up to a week) during major maintenance projects. However, the transmission line covers a relatively small portion (i.e., less than 6 acres) of the benchland habitat available for foraging, and any effects of maintenance activities on raptors are expected to be short-term and minor.

Project-related recreation activities would have a higher potential than transmission line maintenance to affect raptors, primarily through the activities' effects on wildlife species that comprise the raptor prey base. Project-related recreation is estimated to affect approximately 3.72 acres of riparian habitat and 45.3 acres of uplands of project lands within the Snake River Canyon. The effects of dispersed recreation include erosion of upland soils, compaction of soils, trampling of vegetation, loss of trees to firewood collection or other camp uses, littering, introduction and spread of noxious weeds, and an increased risk of fire. Habitat along the river may be less important for raptors than cliffs (which support most nesting) and benchlands (which support the highest abundance of key prey species), but Idaho Power reports that the project area does support raptor nests, and the mix of cover types along the river supports a variety of birds, small mammals, reptiles and amphibians that would add to the diet of many raptors.

Implementation of Idaho Power's proposed Wildlife Habitat Protection and Enhancement Plan would help minimize the effects of dispersed recreation use on raptors by addressing impacts on habitat for their prey. With the plan in place, Idaho Power would limit and define some recreation sites, close unnecessary roads, control noxious weeds, and protect and enhance native plant communities on 25.1 acres of riparian habitat and 45.3 acres of uplands.

The Wildlife Habitat Protection and Enhancement Plan does not address noise disturbance to raptors and other wildlife. As discussed above, the results of several years of surveys within the NCA show that nesting raptor densities are higher in the vicinity of the project than anywhere else in the NCA, suggesting that noise disturbance is not adversely affecting raptors, and noise disturbance is not identified as a key issue in the NCA Resource Management Plan (BLM, 2008). However, illegal shooting results in reverberation of loud and unpredictable noises, which have the potential to impair raptor productivity. The NCA Resource Management Plan (BLM, 2008) provides for a year-round target practice closure for shooting rifles and pistols within 0.5 mile of the Snake River downstream from Grand View (RM 487), and a closure of the same area to all firearms from mid-February through August. Idaho Power has installed "no shooting" signs at the boat dock and near the restrooms adjacent to the main access road. Inclusion of Idaho Power's proposed interpretive signage (described in section 3.3.5, *Recreation*)

focusing on the importance of birds of prey would further educate visitors and could help to reduce illegal shooting.

Deer Flat National Wildlife Refuge Islands

During scoping, FWS indicated a concern that operation of the Swan Falls Project adversely affects terrestrial resources associated with the Refuge. As mentioned in section 3.3.3.1, the Refuge includes 101 islands distributed along 113 miles of the Snake River from approximately the Guffey Bridge downstream to Farewell Bend. Two of the Refuge islands (Rail and Sign islands) are located within the terrestrial resource study area, but none are located within the existing or proposed Swan Falls Project boundary. Rail and Sign islands are located approximately 10 river miles downstream of Swan Falls dam.

In its June 4, 2009, filing in response to our AIR, Idaho Power filed copies of three studies that were conducted along the Snake River downstream of Swan Falls dam in the 1990s, as authorized by Public Law 100-216. These studies (Johnson et al., 1992; Johnson et al., 1995; Dixon and Johnson, 1999) describe changes in riparian vegetation over time and evaluate the effects of potential flow reductions on riparian vegetation. In comments filed September 29, 2008, Idaho Power stated that low flows in the Snake River are primarily the result of U.S. Bureau of Reclamation (Reclamation) irrigation storage reservoirs upstream of Swan Falls dam. Idaho Power also indicated that the recent drought has played a role in flows that would affect Refuge islands.

In its August 12, 2009, filing responding to the Commission's Ready for Environmental Analysis (REA) notice, FWS recommends that the Commission require Idaho Power to mitigate effects on Refuge islands that are affected by low flows in the Snake River, and provided copies of three additional studies in support of the recommendation. The Swan Falls Instream Flow Study (Anglin et al., 1992) focused on resident fish habitat, while two peer-reviewed papers (Zoellick et al., 2004 and Zoellick et al., 2005) addressed the effects of flows on island-nesting birds in general and waterfowl in particular. The documents describe how the Snake River island portion of the Refuge is affected by low flows, which FWS believes are partially caused by Swan Falls Project operation.

Our Analysis

Riverine islands are important elements of the landscape for many bird species, primarily because they offer security from terrestrial predators. Geese, ducks, terns, and other ground-nesting waterbirds may reach their highest densities on islands (Lokemoen and Woodward, 1992). Tree-nesting waterbirds also reach high densities on islands, where nests can be located within clear view of foraging areas in the water.

Review of aerial photographs covering four periods (1938–1939, 1957, 1969, and 1987) show that coverage of riparian woodland, island riparian, and total riparian vegetation, as well as the area of islands in the Snake River between Swan Falls dam and the Idaho-Oregon border, has increased over time, and that the greatest changes occurred between 1969 and 1987 (Johnson et al., 1992; Johnson et al., 1995; Dixon and Johnson, 1999).

Johnson et al. (1992) integrated the results of the time-series comparison with field surveys, geomorphological assessment, and mapping and modeling efforts to predict changes in riparian vegetation that would be likely to occur as a result of further flow reductions (i.e., those to be implemented as a result of the Swan Falls Agreement). The authors found that shallow areas near islands would be most sensitive to changes in flow. At these points, the expansion of riparian vegetation into the existing wetted channel could greatly reduce the channel width, or span the distance between the shoreline and the islands.

These findings suggest that with low flows, riparian encroachment over time could strongly affect the degree of isolation of riverine islands from adjacent shorelines. Flow volumes and flow velocities have the potential to directly affect the degree of isolation as well. As flow volumes and velocities decrease, swimming becomes easier for mammalian predators, and predation rates on nesting birds may increase.

Zoellick et al. (2004) studied island isolation and nest predation on 30 Snake River islands from 1990 to 1992, including several that are part of the Refuge. The study reach began at the Swan Falls dam and extended almost 40 miles downstream. The authors calculated island isolation at flows ranging from 3,900 cfs (the current minimum instream flow requirement for this reach of the Snake River during the October 1 to March 31 irrigation season) to about 12,000 cfs. Based on these calculations, the authors concluded that flows of 3,900 cfs or less during the breeding season would result in very little isolation. Isolation would be expected to increase rapidly at flows of about 8,900 cfs or more, and flows of about 12,000 cfs or more would discourage most predators.

In a related study, Zoellick et al. (2005) focused on the distribution and composition of mammalian predators identified as visitors to the 30 Snake River islands. The authors concluded that at flows of approximately 6,500 cfs, visitation rates of predators were 2 to 4 times higher at mainland sites adjacent to the islands, and that flows below 6,500 cfs could substantially increase the risk of predation by four of the most common predators—coyote, raccoon, red fox, and striped skunk. Both studies (Zoellick, et al., 2004 and Zoellick, et al., 2005) confirm the benefits of island isolation to ground-nesting birds.

We find that higher flows, if they were to be made available from hydropower or water storage reservoirs upstream of Swan Fall Project, would benefit ground-nesting

birds on Refuge islands by reducing the risk of mammalian predation. However, it is unlikely the Swan Falls Project could be operated to either positively or negatively affect Refuge islands, without modification of the operation of Reclamation storage reservoirs in the upper Snake River Basin. The total storage capacity of the Swan Falls reservoir is 7,425 acre-feet, and the useable storage capacity is 680 acre-feet. By comparison, Reclamation reservoirs in the upper Snake River Basin have a total storage capacity of 4,045,695 acre-feet (Reclamation, 2009). The capacity of the C.J. Strike reservoir is 220,000 acre-feet. Swan Falls is operated to reregulate flows released from C.J. Strike, and outflow essentially reflects inflow. With limited ability to store water, there is little opportunity for Swan Falls Project operation to modify baseflows, given the current availability of water, or to modify the magnitude, frequency, or duration of peak flows.

3.3.3.3 Cumulative Effects

During scoping, our review of the license application, technical appendices, and agency comments, as well as our observations during the site visit, indicated that Swan Falls Project operation and recreation near the project could contribute to cumulative adverse effects on riparian habitat that result from operation of other hydropower projects between Shoshone Falls and Brownlee reservoir. Grazing and water withdrawals for irrigation have also dramatically affected riparian habitat along the Snake River since the 1800s, when homesteaders began to settle the region. Together, these factors have reduced the extent and quality of riparian habitat in a region where climate and soils already limit the distribution of this important natural resource. While riparian vegetation accounts for 9.6 percent of the area within the Swan Falls Project boundary, it occupies only 1.1 percent of the mid-Snake subbasin (Ecovista and Idaho DFG, 2004).

In the future, population growth is likely to increase the competition for water resources and bring more visitors to recreation sites within the Swan Falls Project area. BLM reports that Ada and Canyon county populations grew about 46 percent between 1990 and 2000, and that southwest Ada County is projected to grow by another 15 to 21 percent by 2025 (BLM, 2008).

Analysis of Swan Falls Project operations indicates that because of limited storage capacity and typically narrow stage fluctuations downstream of the dam, the project's contribution to cumulative adverse effects is relatively small; river fluctuations downstream of the dam affect about 2.0 acres of riparian vegetation. Dispersed recreational activities have damaged an additional 3.72 acres of riparian habitat. With implementation of its proposed Wildlife Habitat Protection and Enhancement plan, Idaho Power would protect, enhance, or restore 2.7 miles of riparian vegetation along the Snake River shoreline, improve hydrologic support for side channel flows at Swan Falls Island, protect riparian vegetation adjacent to the lay-down yard, and protect and enhance a total of 25.1 acres of riparian habitat affected by recreational use. Idaho Power's proposed Noxious Weed Management Plan would also enhance riparian habitat quality, and implementation of the draft Recreation Management Plan would provide for improved management of dispersed recreation along the river. These measures would complement

the positive effects of several actions that are outlined in the NCA Resource Management Plan (BLM, 2008). These actions include completion of motorized vehicle route designations for recreation, aggressive weed suppression, and elimination of public land grazing except for fuel and weed management purposes. Overall, Idaho Power's proposals would contribute to cumulative benefits to riparian habitat within the mid-Snake River Basin, and especially within the NCA.

3.3.4 Threatened and Endangered Species

3.3.4.1 Affected Environment

Aquatic Species

In a letter filed with the Commission on September 1, 2009, FWS indicated that the Snake River physa (*Haitia* [*Physa*] *natricina*), a federally listed endangered species of snail, occurs in the project area.

The Snake River physa snail is a freshwater mollusk found in the middle Snake River of southern Idaho. The physa is classified under the family Physidae and can reach a maximum length of about 6.5 millimeters. While much information exists on the family Physidae, very little is known about the biology or ecology of this species. It is believed to be confined to the mainstem Snake River, inhabiting areas with rocky or boulder substrates in relatively deep, fast-moving water, with good water quality (FWS, 2005). It is not known to occur in slow-water or reservoir habitats (Taylor, 1988, 1982 and Frest et al., 1991, as cited by FWS, 2005). The recovery area for the species extends from RM 553 to RM 675 (FWS, 1995).

The Snake River physa is rare, with fewer than 50 total individuals having been collected (FWS, 2005). Taylor and Bowler (Taylor, 1988, as cited by FWS, 2005) collected the most recently confirmed live specimens of this snail between 1959 and 1987 in the area between the Malad River's confluence with the Snake River (RM 571) and Grand View (RM 487). However, more recent surveys conducted in 2003 at several of the same sites failed to locate either living specimens or empty shells (Frest and Johannes, 2004, as cited from FWS, 2005). The more recent collection of fresh shells from the reach between Minidoka dam (RM 673.5) and Milner pool (RM 666) (approximately 215 miles upstream of the Swan Falls Project dam) between 1987 and 1997, as well as the lack of specimens from other formerly inhabited reaches, suggest that the Minidoka reach may contain one of the few remaining colonies of the species (FWS, 2005).

Terrestrial Species

Information filed by FWS on September 1, 2009, lists no threatened, endangered, proposed, or candidate terrestrial plant or wildlife species in the Swan Falls Project area. No additional species or critical habitat were identified during special status plant surveys or a review of scientific literature regarding plants and wildlife in the project area. One

wildlife species that winters in the project area—the bald eagle—was removed from the threatened and endangered species list effective August 8, 2007, but receives continued protection under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

3.3.4.2 Environmental Effects

Aquatic Species

Snake River Physa Snail

Idaho Power did not propose any specific measures in its license application to protect listed aquatic species.

Our Analysis

Operation of the Swan Falls Project has the potential to affect Snake River physa by causing water level fluctuations in Swan Falls reservoir and in the free-flowing reach downstream of the project. The available storage in Swan Falls reservoir is used to reregulate inflows resulting from operation of the upstream C.J. Strike Project, but can also be used to meet short-term, unexpected peak load requirements. The Swan Falls Project is operated to comply with ramping rate restrictions of no more than 1 foot per hour and 3 feet per day, measured at the gage approximately 1 mile downstream of the project. Normal maximum operating headwater is 2,314 feet msl, and minimum operating headwater is 2,310 feet msl.

Under the current license, the project is required to maintain instantaneous minimum flows downstream of Swan Falls dam of no less than 5,000 cfs during the irrigation season (April 1 to September 30) and no less than 4,000 cfs outside the irrigation season (October 1 to March 31). If the average daily inflow is less than the specified minimums, the license provides that the plant discharge must be equal to the average inflow.

Idaho Power proposes to operate the project to provide an instantaneous minimum flow of 3,900 cfs downstream of the dam from April 1 to October 31 each year, and 5,600 cfs from November 1 to March 31, to be consistent with flows specified under the Swan Falls Agreement and to improve reregulation of peaking outflows from the upstream C.J. Strike Project. Idaho Power reports that the proposed minimum flows may result in slightly greater fluctuation of water levels in Swan Falls reservoir, but would reduce daily fluctuation of water levels downstream of the project, compared to current conditions. Because the Snake River physa is not known to occur in reservoir environments, the increased fluctuation in reservoir levels would likely not have any effect on the species. The tailwater reach provides habitat that is more suitable for the Snake River physa; however, the risk of stranding and dessication from changes in water levels would continue to be very low due to the species' preference for areas of deep water and high water velocity outside of the fluctuation zone.

Idaho Power's proposal to continue to remove aquatic vegetation that accumulates on the project's trash racks would benefit habitat conditions for Snake River physa by removing nutrients and improving water quality. For these reasons, we conclude that the proposed project would not be likely to adversely affect the Snake River physa.

Terrestrial Species

As mentioned above, no federally listed or proposed terrestrial plant or wildlife species are known to occur in the project area. Idaho Power's proposed Special Status Plant Management Plan includes regular updates to the list of target species, so that any plants that may be proposed or listed in the future would be protected under the plan.

3.3.5 Recreation Resources

3.3.5.1 Affected Environment

The existing project boundary includes about 12 miles of the Snake River. The upstream project boundary extends upstream from the dam to the point where the reservoir transitions to a free-flowing river at RM 469.4; the downstream boundary extends 2,000 feet downstream of the dam to encompass a short reach of the tailwater (RM 457.3).

Regional Recreation Opportunities

The Swan Falls Project is located about 35 miles southwest of Boise, Idaho, on the Snake River in Ada and Owyhee counties. The Snake River is the border between the two counties, with Ada County located northeast of the river and Owyhee County located southwest of the river. Canyon County borders Ada County about 10 miles downstream of Swan Falls dam.

There are two federally managed recreational resources that provide recreational opportunities along the Snake River in the area of the Swan Falls Project: the Deer Flat National Wildlife Refuge and the Snake River Birds of Prey NCA. FWS manages the Deer Flat National Wildlife Refuge, one of the oldest refuges in the National Wildlife Refuge System, located downstream and north of the project near Nampa, Idaho. Its recreational opportunities include a visitor center, wildlife watching and photography, hunting, fishing, environmental education, and self-guided river and lake tours. As noted in section 3.3.3.1, *Terrestrial Resources*, the Snake River Islands sector of the refuge contains about 800 acres on 101 islands; the two refuge islands located closest to the Swan Falls Project, Rail and Sign islands, are located about 10 miles downstream of the dam, outside of the existing and proposed project boundaries.

The BLM's Lower Snake River District manages the Snake River Birds of Prey NCA, which is located within and around the existing and proposed Swan Falls Project boundaries. The NCA extends along 81 river miles and encompasses 485,000 acres of public land, of which 529 acres are located within the current project boundary. Of the 485,000 acres, 420,000 are considered prey habitat and 65,000 are considered habitat for

nesting birds. BLM manages a developed recreation site (Dedication Point) on the canyon rim about 2 miles north of the dam, offering visitors interpretive displays, graveled trails, benches, garbage cans, a covered small group kiosk, two vault toilets, and a parking area. The parking area is approximately 0.5 mile from the rim overlook where visitors can view the Snake River Canyon corridor and see birds of prey.

The project's only access road ends about 2 to 3 miles downstream of the dam at the NCA boundary. The site has a vault toilet and is the BLM trailhead for the Halverson Bar and Lake Trail leading to Halverson Lake and Canyon County's Celebration Park. Trail users, including hikers, horseback riders, and mountain bikers, can cross Guffey Bridge and return to the dam on the opposite side of the river. Celebration Park is located on the Snake River at the western boundary of the NCA about 10 miles downstream of Swan Falls dam. Visitors are able to enjoy the high desert flora, scenic land features, and unique tribal art dating to 12,000 years ago. Celebration Park was established as Idaho's only archaeological park in 1989. Since then, the park has been the recipient of several awards, including a 1997 Orchid Award from the Idaho Historic Preservation Council in Recognition of Superlative Achievement in Preserving Idaho's Heritage, and Idaho Governor Dirk Kempthorne's 2002 Take Pride in Idaho Award. Recreational activities offered at the park include hiking, fishing, boating, picnicking, camping, horseback riding trails, bird watching, ongoing interpretive park programs, and student field trips. Reservations are available for large group gatherings and tours. Facilities include a visitor center, restrooms, water, boat ramp, car and boat parking, and picnic tables (Canyon County, Idaho, 2009).

Another activity available nearby are birding tours offered by Birds of Prey Expeditions, run by a private outfitter. From February through November, the outfitter conducts reservation-only boat tours of the Snake River upstream of Swan Falls dam, during which nesting areas are identified and the history of the area is described.

In terms of regional recreational management goals, *Recreation Next, Idaho's 2006–2010 Statewide Comprehensive Outdoor Recreation Plan* (SCORP)[28] (Idaho DPR, 2006) identified seven goals and objectives for local, state, and federal outdoor recreation providers in Idaho. The seven goals and objectives are as follows:

1. Provide enhanced outdoor recreation facilities and opportunities through funding that aligns with demand.
2. Assure that the public has the best possible access to public lands for outdoor recreation.
3. Recognize that water is an increasingly precious resource.

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[28] This SCORP also goes by the title Statewide Comprehensive Outdoor Recreation and Tourism Plan (SCORTP). For consistency through this document, we will use SCORP to refer to this plan.

4. Develop a unified strategy for delivering outdoor recreation education to the public.
5. Minimize the impact of invasive species.
6. Encourage healthy living through outdoor recreation.
7. Recognize the importance of transportation in planning projects.

The SCORP provides an integrated assessment of recreation and tourism for the state and, at the policy level, a plan outlining goals and strategies to guide the coordination of efforts to provide and market sustainable, high-quality recreation and tourism opportunities in Idaho. The agency partners[29] that developed the plan state that the plan was based on the best available scientific data and the ongoing experiences of the partners (Idaho DPR, 2006).

Developed Project Recreational Opportunities

Idaho Power owns and maintains all of the developed recreational facilities within the project boundary. Opportunities include boating access, impromptu or dispersed camping, picnicking, day use, visiting the museum, and viewing interpretive signs describing natural and historical features (see figure 3). Idaho Power does not charge user fees at any of its project facilities. Details of each existing facility and its respective opportunities are discussed below.

- Swan Falls Park—Located along the northeast bank of the reservoir just upstream of the dam, this day-use park offers amenities such as full restrooms, benches, picnic tables, an interpretive display, and day-use parking. The park grass is maintained and large trees provide shade cover. The day-use park offers barrier-free access at most sites within the park.
- Swan Falls reservoir boat ramp—Located on the northeast bank of the reservoir about 0.25 mile upstream of the dam, this one-lane boat launch with mooring docks offers amenities such as a portable toilet located in the parking area. In 2003, Idaho Power installed a second mooring dock upstream of this boat launch to accommodate increased demand and provide daily moorage of outfitters' boats from April through June each year.

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[29] Task Force partners include BLM, Reclamation, U.S. Forest Service, National Park Service, Idaho Association of Counties, Association of Idaho Cities, Idaho RV/Campground Owners Association, Idaho Department of Commerce and Labor, Idaho DFG, Idaho DPR, Idaho Department of Transportation, Idaho Department of Water Resources, Idaho Department of Health and Welfare, Idaho State Historical Society, Idaho Foundation for Parks & Lands, Idaho Outfitters and Guides Association, Idaho Recreation and Park Association, Idaho Recreation and Tourism Initiative, and Idaho Commission on the Arts.

- Swan Falls downstream boat launch—Located on the northeast bank of the tailwater area just downstream of Swan Falls dam is a gravel boat launch that provides access to a free-flowing segment of the Snake River. Amenities include parking, a portable toilet, and an air compressor, which was installed to assist rafters at this location.
- Canoe portage trail—Located on the southwest bank adjacent to the dam, the portage trail includes a sign upstream of the dam to notify boaters of the trail's location. The effective length of the portage varies with flows. When there is no spill, people portaging around the dam walk approximately 1,100 feet downstream to a safe launch point. When there is spill, portagers could walk up to about 2,500 feet downstream to launch.
- Swan Falls powerhouse museum—Located within the converted old powerhouse, the museum contains a turbine/generator display and offers interpretive displays on the history of Idaho Power and the Swan Falls Project. Because of national security concerns, current visiting days and hours are restricted to Tuesday and Wednesday from 10:00 a.m. to 1:00 p.m. Tour groups must provide a list of the names and addresses of all adults on the tour at least 48 hours in advance.

Undeveloped Dispersed Recreation Sites

Public use of undeveloped dispersed recreation sites consists primarily of individuals who access the shoreline for fishing, dog walking, lounging, and bird watching. Idaho Power identified 26 undeveloped dispersed recreation sites within or outside the Swan Falls Project boundary, all of which are accessed via the project's access road. Most of the dispersed recreation sites are impromptu and made by the public without management guidance. These existing sites typically incorporate almost all available flat areas along the northeast shoreline of the reservoir for about 0.25 mile upstream of the dam and the northeast shoreline of the river for about 2 to 3 miles downstream of the dam, and provide vehicle access to the shorelines as well. The typical dispersed site also has reasonably clear site boundaries and can be accessed by a vehicle from more than one primary or secondary road, which contributes greatly to site size and impact on environmental resources. Most sites have a fire ring, or fire scar, and trash present. Vehicle and human impact within the Swan Falls Project boundary is damaging other natural and cultural resources and the affected areas are expanding.

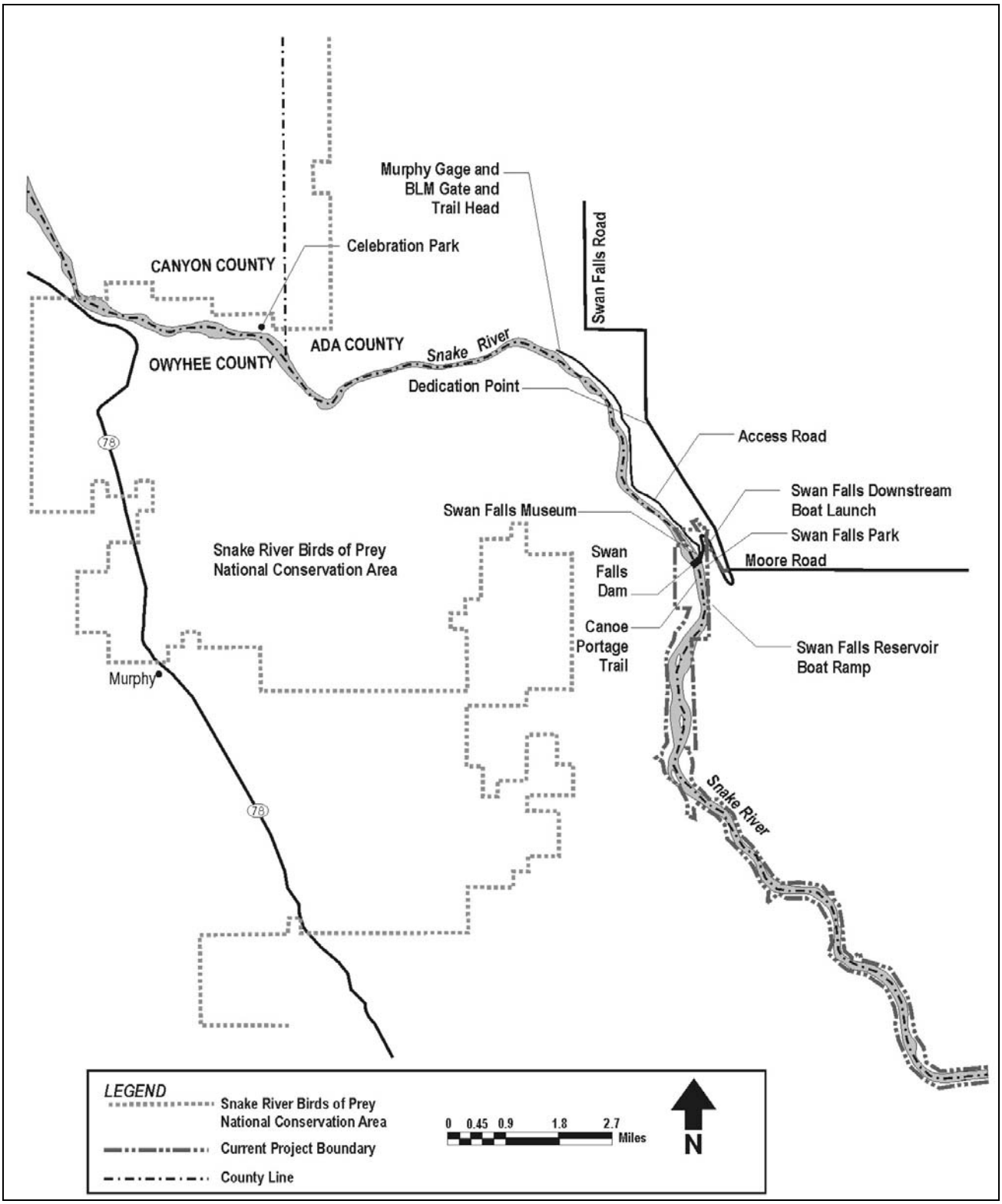

Figure 3. Recreational opportunities in the area of the Swan Falls Project (Source: Idaho Power, 2008a).

Recreation Use within the Swan Falls Project Area

Based on the latest FERC Form 80 filed with the Commission on August 1, 2003, the Swan Falls Project had a total of about 21,534 visitors during the 2001 calendar year.[30] Table 10 summarizes important information from the Form 80 report.

Table 10. Summary of the Form 80 report for the Swan Falls Project in 2001 (Source: Idaho Power, 2003).

Type of Recreation Resource	Number	Total Acres	Level of Use[a]
Access areas	2	--	Low
Boat ramps	1	--	Low
Boat launching lanes	1	--	Low
White water boating	1	--	Low
Canoe portage	1	0.1	Low
Parks	1	0.5	Low
Picnic areas	1	0.5	Low
Interpretive displays	3	--	Low

[a] The level of use is the annual average percentage of actual use of a particular facility compared to its use at full capacity. Low use of the facility is equal to or less than 40 percent of its full capacity, medium use is between 40 and 60 percent of its full capacity, and high use is 60 percent or more of its full capacity.

Idaho Power has conducted four recreational-use studies from 1996 to 2005, all of which involved survey clerks recording the numbers of people recreating by location within the project area.[31] On-site interviews were conducted with 4,830 visitors to obtain information about demographics, recreational-use patterns, attitudes, and opinions. The four studies, which are described in license application Appendix E.5-A, *Recreational Use at the Swan Falls Hydroelectric Project*, included the following sampling patterns:

[30] To evaluate recreational resources at the project, the Commission requires the licensee to prepare and submit a FERC Form 80 (Licensed Hydropower Development Recreation Report) every 6 years (see 18 CFR 8.11). Each Form 80 must describe a project's recreation facilities and the level of public use of these facilities.

[31] Idaho Power based its surveys on methods suggested by Malvestuto et al. (1978), Malvestuto (1983), and Hoenig et al. (1993).

- During 1996, the entire area within the project boundary was sampled. A total of 470 interviews were conducted to meet the FERC Form 80 filing requirements.
- During 2001, the river corridor along 14 miles of the Snake River was sampled. The study area extended downstream from the dam about 2 miles to the end of Idaho Power's property at RM 455.5. The remaining 12 miles extended upstream of the dam to where the reservoir transitions to a free-flowing river (RM 469.5). A total of 970 interviews were conducted to meet the FERC Form 80 filing requirements.
- During 2003 and 2005, the 2001 sampling area and the area downstream from the end of Idaho Power's property to a barrier installed by BLM (RM 453.5) were sampled. Interviewers conducted 1,737 interviews in 2003 and 1,653 interviews in 2005.

Survey results indicate that the majority of recreational users visiting the Swan Falls Project were residents of Idaho from the local area on day trips to fish in the Snake River. More than 95 percent of the visitors were from Ada or Canyon counties, which had an estimated combined population of 564,859 people in 2008 (U.S. Bureau of the Census, 2009a, 2009b). Owyhee County, which had an estimated 2008 population of 10,877 (U.S. Bureau of the Census, 2009c), contributed less than 1 percent of recreational use. The location of recreational use in the project area is, to a large extent, defined by road access. Use is very low on the western (downstream) end of the project area in Owyhee County, where the only road access is provided by a long, mostly unimproved, dirt and gravel road from Murphy, Idaho. A small percentage of the visitors were tourists who were in the area visiting the Snake River Birds of Prey NCA.

The majority of the visitors stayed on average between 2.74 hours (recorded in 1996) and as long as 4.29 hours (recorded in 2003); stays between 3 and 6 hours were the most common during all four surveys. The mean group size in the reservoir section reported by Idaho Power in 2003 was 3.23 visitors while the tailwater section tended to attract smaller groups, with the mean group size of 2.71 recorded by Idaho Power in 2005. Idaho Power's data concerning visitors using the Swan Falls Project area show a decline in the mean age of visitors, from 36.82 in 2001 to 30.47 in 2005. The age group between 18 and 35 consistently contained the highest proportion of visitors. The percentage of male visitors was consistently higher than the percentage of females, and the percentage of males in the tailwater section was slightly higher than the percentage of males in the reservoir section.

Some major findings from the four studies are listed below.

- Recreation use is in the neighborhood of 20,000 recreation days annually, with survey data reporting 17,699 recreation days in 1996, 24,130 recreation days in 2003, and 22,596 recreation days in 2005. [32]
- The months with the most use included May, June, July, and August, while January consistently had the lowest amount of use.
- Angling was the most popular activity observed, followed by lounging, hiking/walking, hunting, jet skiing, motorcycling/driving off-road vehicles, float boating, picnicking, swimming, water skiing, rock climbing, and bicycling.
- The most common activity observed at the dispersed sites was bank angling followed by lounging. Idaho Power estimates the hours of overall use at individual dispersed sites varied from zero to 7,458 hours annually in 2005. In the same year, dispersed-site use in the reservoir area accounted for only 753 hours of overall dispersed-site use, indicating that the sites downstream of the dam receive significantly more use than the reservoir sites.

Most of the recreational use is concentrated within 1.5 miles of the dam, both upstream and down, and is associated with Idaho Power's only access road paralleling the Snake River in Ada County. When Idaho Power conducted its 2001, 2003, and 2005 recreational-use studies, survey clerks asked the visitors if they had any additional comments they would like to share concerning their visit. Of the 902 visitors who provided general comments, 132 (14 percent) provided negative comments related primarily to litter (e.g., too much litter, need for garbage cans, litter laws need to be enforced).

3.3.5.2 Environmental Effects

Recreation Management Plan

To address recreational issues associated with the project, Idaho Power proposes to finalize and implement its draft Recreation Management Plan, which would update the revised Recreation Plan currently in place.[33] This new Recreation Management Plan was developed in coordination with other land managers in the project area. Implementation of the new plan would provide for continued operation and maintenance of existing recreational facilities and Idaho Power's public safety program, upgrading existing

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[32] A recreation day is a visit to an area for recreation purposes for any portion of a 24-hour period.

[33] A revised Recreation Plan was required under an amendment to the license. See Order Amending License (Major), Idaho Power Company, December 8, 1989, 49 FERC ¶62,227.

facilities, improving some dispersed recreation sites, adding to interpretive and informational displays, and modifying the Litter and Sanitation Plan. The various elements of the plan are discussed in the sections that follow.

Developed Sites

Idaho Power proposes to continue to operate and maintain the five existing project recreational facilities (Swan Falls Park, Swan Falls reservoir boat ramp, Swan Falls downstream boat launch, the canoe portage trail, and Swan Falls powerhouse museum[34] for the term of a new license. Idaho Power proposes the following improvements:

- Enhance the Swan Falls reservoir boat ramp and install a new vault toilet, enlarge and define the parking area for vehicles and trailers, provide parking space designated for one average-sized school bus, designate a staging area for boats, and widen and steepen the concrete boat ramp;
- Improve Swan Falls Park and install additional rip rap or a retaining wall, add a new dock system with gangway, build one group picnic shelter, add day use parking, enhance landscaping with new trees, and provide four additional picnic tables near the waterfront;
- Enhance the Swan Falls downstream boat launch and install a new vault toilet, enlarge and define the parking area for vehicles and trailers, designate a staging area for boats, build a pre-launch boarding platform, construct a two-lane concrete boat ramp, and remove an air compressor; and
- Improve the canoe portage trail by installing signage.

In the state of Idaho's comments filed August 14, 2009, Idaho DPR and Idaho DFG endorsed these measures. In a comment letter dated December 20, 2007, and filed with Idaho Power's license application, BLM disclosed information concerning the existing air compressor at the downstream boat launch, stating that it did not have the appropriate nozzle required to inflate rafts or inflatable kayaks. BLM suggested several possible solutions: (1) remove the air pump completely; (2) replace the nozzle with an appropriate fitting for raft valves; or (3) provide standard AC outlet plugs for air pumps or inflators. On February 24, 2009, Patricia Terry filed comments that her family and friends frequent the Snake River near the Swan Falls Project several times a year. She requested that Idaho Power leave the air compressor on site, stating that the air compressor is helpful for people who like to take inflatable kayaks on the river.

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[34] Idaho Power's proposed HPMP includes a provision to improve Swan Falls powerhouse museum's interpretive and education displays and increase days and hours of availability to include every Saturday between April 15 and Labor Day, from 10:00 a.m. to 4:00 p.m.

Our Analysis

The proposed improvements to the existing recreational facilities were developed in consultation with the stakeholders. The enhancements would be developed in the areas where recreational use is concentrated, within 1.5 miles of the dam. The proposed level of recreational development for this project would be appropriate for the level of use demonstrated by Idaho Power's recreational survey data and documented in its recent FERC Form 80. Most of the proposed improvements would have a direct beneficial effect on recreation users by providing enhanced areas for parking and the effective launching and retrieving of boats, and new vault toilets that would improve the appearance of the areas and their convenience, and increased public access to the Swan Falls powerhouse museum. The improvements would also help reduce the current adverse effects on other resources that result from the current lack of defined parking spaces and staging areas at the boat ramps.

Implementation of the draft Recreation Management Plan would also further the State of Idaho's SCORP goals of encouraging healthy living through outdoor recreation and recognizing the importance of transportation in planning projects.

Idaho Power proposes to remove the air compressor at the downstream boat launch and use the area to enhance the parking and improve access to and from the boat ramp. Idaho Power states that portable 12-volt air compressors and hand pumps are common, and it does not believe that continuing to provide an on-site air compressor would benefit boaters.

Removal of the air compressor would provide more open area at the upper right edge of the launch. This area would be used for widening the ramp, which would ultimately help reduce the traffic congestion associated with the site and improve efficiency with boat launching and retrieval activities. The Swan Falls downstream boat launch is narrow, which causes congestion and has caused many vehicles to become stuck on the slope of the ramp due to lack of traction on the gravel surface. Historically, this launch was intended to accommodate canoes, kayaks, and rafts. More recently, however, larger motorized boats have been using the ramp, primarily for fishing downstream of the dam. Use of the added available space for the proposed enhancements would benefit more visitors using this facility than the air compressor, given that information on the record shows only two or three families use the equipment perhaps two or three times a year.

Dispersed Sites

The 26 identified dispersed sites, located both within and outside of the current project boundary, present visitors an opportunity to gain access to the reservoir upstream of the dam and the river downstream of the dam. Visitor use at these sites, including off-road vehicle use, has created a series of braided roads or multiple access roads to some sites and caused severe ruts to form, adversely affecting some upland and riparian habitats located within and near the sites. During site surveys in 2002, evidence of

human waste was present at 11 of the 26 sites, and animal (likely dog) waste was present at 4 of the sites. During our February 10, 2008, environmental site review, accumulated litter was observed at several of these sites

Pursuant to the Recreation Management Plan, Idaho Power proposes to define and improve 6 of the 26 dispersed sites [35] to contain usage and protect the natural and cultural resources of the area and also to enhance visitor experiences. In consultation with the stakeholders, Idaho Power selected for improvement two sites upstream of the dam and four sites downstream of the dam by taking into account the physical layout of the sites and the amount and regularity of recreational use demonstrated in Idaho Power's Recreation Use Study results (Brown, 2002). Physical layout considerations included proximity to an improved road and topographical considerations such as ease of access and adequate flat land to incorporate enhancement measures. Idaho Power proposes improvements for the following dispersed sites: Above the Boat Ramp Site (ABRP), Below the Boat Ramp Site (BLOR), Swan Tailwater Fishing Pullout Site (STFP), Swan Tailwater Site #13 (ST13), Swan Tailwater Camp (STCM), and Swan Tailwater Site #12 (ST12) (figure 4). Of these six dispersed recreational sites, only two of the sites (ABRP and BLOR) are located within the current project boundary; however, they are not currently considered project features.

Generally, Idaho Power proposes to prevent motorized access to areas adjacent to the six selected sites by placing appropriate materials such as fences, boulders, and/or berms around the sites. All secondary roads, tertiary roads, and impromptu trails that do not directly service the enhanced recreation sites would be closed to motorized vehicular traffic.

Idaho Power's proposal for the six dispersed recreational sites includes barrier-free campsites with a fire ring and compacted gravel surfaces for camping. Two of the campsites (located at BLOR) would have tables. Proposed improvements by individual dispersed sites would be as follows:

- ABRP—Define two campsites and restrict additional site growth by installing buffer materials. Additionally, improve the road into this area with gravel.
- BLOR—Define and improve two primary loop roads and provide four campsites with pads and fire rings; two sites also would have picnic tables. Restrict additional growth of the sites by installing buffer materials.
- STFP—Designate three campsites. Restrict additional growth of the site by installing buffer materials.
- ST13—Designate one road that accesses the area and add two campsites. Restrict additional growth of the site by installing buffer materials.

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[35] The sites outside of the current project boundary are proposed to be enclosed within the new project boundary (see figure 4).

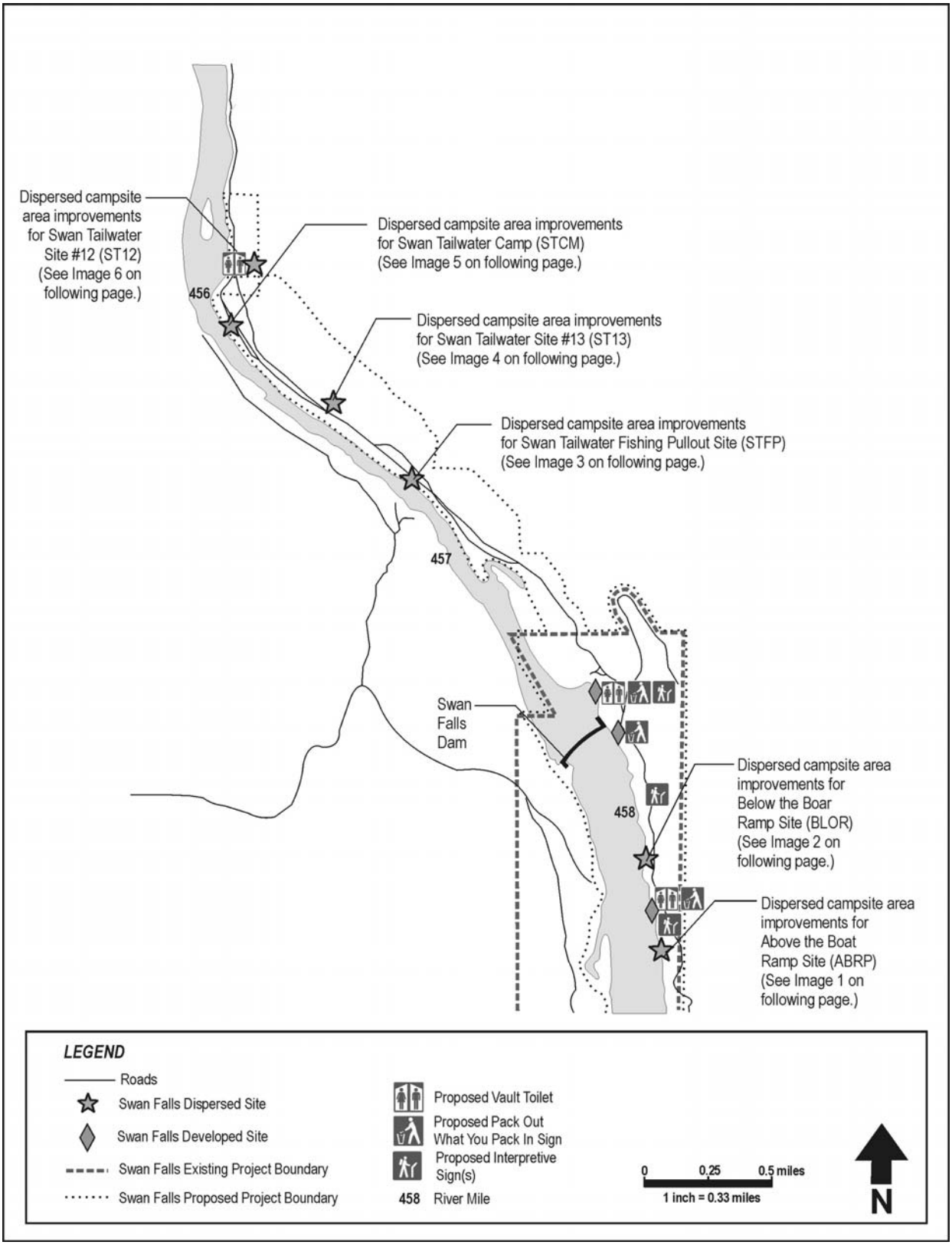

Figure 4. Location of dispersed recreational sites proposed for improvements (Source: Idaho Power, 2009b).

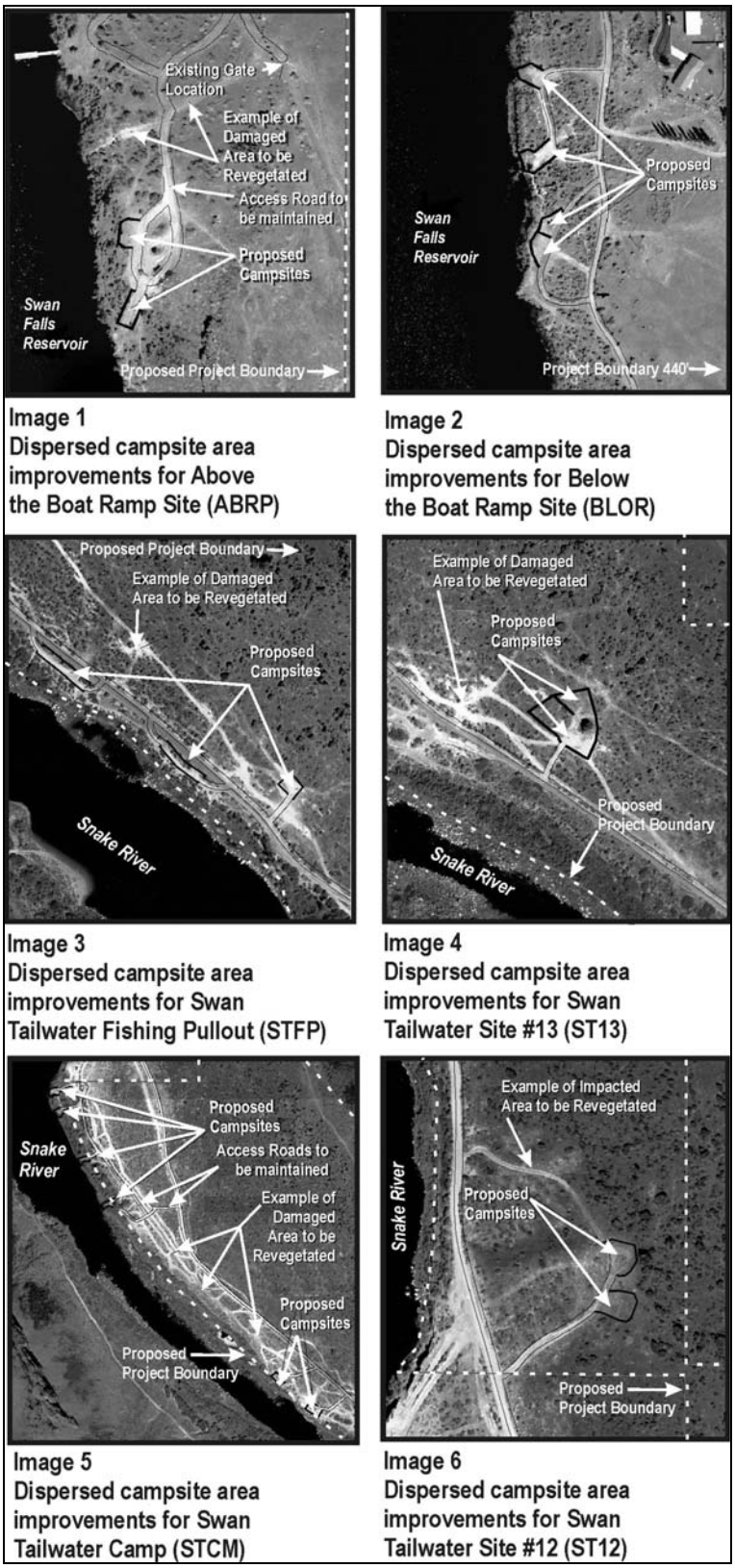

Figure 4. Location of dispersed recreational sites proposed for improvements (cont.).

- STCM—Designate a single, two-lane road through the area with a turn-around lasso and spur roads to four campsites. Restrict additional growth of the site by installing buffer materials.
- ST12—Improve one road to the site and provide two campsites. Restrict additional growth of the site by installing buffer materials.

Of the 20 remaining dispersed sites, nine are located inside the project boundary on Idaho Power lands. To mitigate the effects of visitor use at these nine dispersed recreation sites, Idaho Power consulted with FWS, BLM and Idaho DFG to develop a Wildlife Habitat Protection and Enhancement Plan (see section 3.3.3., *Terrestrial Resources*). Generally, Idaho Power proposes to recontour and revegetate braided roads and riparian and upland areas within these nine sites, and to place boulders or construct berms to deter motorized use. Implementation of the Wildlife Habitat Protection and Enhancement Plan would include blocking and revegetating roadbeds and restoring other disturbed sites by planting native containerized shrub stock and seeding with native grasses.

There are 11 other identified dispersed recreation sites downstream of the dam that are located on BLM lands outside of the proposed project boundary. Idaho Power does not propose any environmental measures at these 11 sites.

Idaho Power proposes construction and implementation during years 2 and 3 of any new license issued for the project and maintenance of all dispersed recreation sites associated with the plan over the life of a new license. Idaho DPR and Idaho DFG both recommend implementation of these measures.

Idaho Power proposes to include within the project boundary the four dispersed recreation sites downstream of the dam that are not currently within the project boundary. The applicant plans to obtain submerged lands easement rights from the state of Idaho for state-owned lands below the OHWM to ensure public access to the shoreline. Lands above the OHWM and up to contour 2,360 msl are owned by the applicant. The two remaining dispersed sites upstream of the dam are already within the project boundary.

Our Analysis

Idaho Power's proposal for the development of the six dispersed recreation sites for public use would improve access for individuals who use the shoreline for fishing, dog walking, lounging, and bird watching and would provide barrier-free facilities for the disabled. Motorized traffic to newly seeded areas would be restricted year round, which would greatly reduce the continued vehicular and human impact on natural and cultural resources in areas abutting the sites. Construction activities associated with the development of these six sites would occur primarily in the fall and early winter months, thereby minimizing conflicts with the majority of the recreational users. Idaho Power states that specific construction plans for the dispersed sites would be subject to alteration based on the outcome of cultural and rare plant surveys and the associated consultation.

Idaho Power's proposal to include within the project boundary all six dispersed recreation sites and the access road for 1.7 miles downstream of the dam would ensure continued public access and maintenance for all improved dispersed sites during the entire term of a new project license. In this instance, the only project access road is an existing roadway constructed by Idaho Power (or its predecessors) on Idaho Power land. The road terminates at the Murphy gage about 4 river miles downstream from the dam at a trailhead owned and managed by BLM. Because this road is the only access to this part of the Snake River Canyon and is used by recreationists, including the access road and the improved dispersed sites within the project boundary could fulfill a project purpose.

Terrestrial and cultural resources would also benefit from inclusion of the access road[36] downstream of the dam to RM 455.4 as a project feature within the project boundary (see sections 3.3.3, *Terrestrial Resources*, and section 3.3.7, *Cultural Resources*). Revision of the Recreation Management Plan to address the HPMP findings, along with consultation with the Idaho SHPO, would help to protect cultural resources that might be affected by the recreation improvements.

Litter and Sanitation Plan

Idaho Power proposes to provide additional vault toilets and dumpsters and to implement the Litter and Sanitation Plan within the project boundary and downstream to RM 453.4. Dumpsters would be placed at three locations: Swan Falls reservoir boat ramp, Swan Falls Park, and the Swan Falls downstream boat launch. Vault toilets would also be placed at three sites: Swan Falls reservoir boat ramp, Swan Falls downstream boat launch, and dispersed site ST12. Two signs, one upstream of the dam and one downstream, would encourage visitors to pack out what they pack in (carry-in/carry-out). In the State of Idaho's comments filed August 14, 2009, Idaho DPR and Idaho DFG both recommended implementation of this plan.

Our Analysis

The Litter and Sanitation Plan would address the litter and sanitation concerns expressed by the visitors in response to Idaho Power's recreational surveys. The plan would have a direct beneficial effect on the recreational experiences of visitors by providing for dumpsters, regularly scheduled litter pickups, signage to encourage users to carry-in/carry-out, and additional public toilets at designated locations within the project boundary. However, Idaho Power proposes to implement the plan downstream of the Swan Falls dam to RM 453.4, which is 2 miles beyond the proposed project boundary at RM 455.4. Although there would be a benefit to BLM and recreationists to extending the Litter and Sanitation Plan that far, recreational activities in that area would not be related to the use of project lands; therefore, implementation of the plan in the area beyond RM 455.4 would not fulfill a project purpose.

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[36] The access road from the main road to the powerhouse is within the current project boundary.

Interpretation and Education

Idaho Power proposes a framework to guide interpretation and education enhancements at specific recreation sites within the project boundary, including coordination with the proposed HPMP (section 3.3.7, *Cultural Resources*) to blend project information and provide project-wide consistency. Idaho Power proposes to place interpretation and education panels at four specific areas within the project boundary, which would include the following information and themes:

- Swan Falls reservoir boat ramp
  - Detailed area location map in coordination with FERC Part 8 Sign[37]
  - Boating safety
  - Game fish and their habitat
- Swan Falls Park
  - Detailed area location map in coordination with FERC Part 8 Sign
  - Snake River Birds of Prey NCA
  - Swan Falls Hydroelectric Project History
  - History of the Bonneville Flood
- Canoe portage trail
  - Portage sign containing information on direction and safety
  - Whitewater boating safety
- Swan Falls downstream boat launch
  - Detailed area location map in coordination with FERC Part 8 Sign
  - Whitewater boating safety
  - Sturgeon history.

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[37] Pursuant to 18 CFR, section 8.2, a licensee is required to post and maintain a conspicuous sign at all points of public access as required by the license. Each sign, referred to as a FERC Part 8 sign, must contain the name and number of the project, the owner of the project, a statement that it is licensed by the Commission, directions to the areas of the project that are available for public recreation use, permissible times of access and activities, and other regulations regarding such use. The Part 8 sign must also advise that further information may be obtained at local offices of the licensee in the vicinity of the project. In addition, the licensee is required to post at such locations conspicuous notice that the recreation facilities are open to all members of the public without discrimination.

The overall design package would consider colors and design elements that tie one exhibit to another with uniform typeface and sizes. The final design package would be subject to Idaho Power and appropriate agency approval. In the State of Idaho's comment letter filed August 14, 2009, Idaho DPR and Idaho DFG both recommended implementation of this plan.

Our Analysis

Finalizing and implementing the Interpretation and Education Plan in consultation with stakeholders as part of the draft Recreation Management Plan would establish a consistent method to provide visitors with project information and important safety messages. In its draft Recreation Management Plan, Idaho Power identified likely locations, themes, stories, objectives, and options for structures and sign displays within the Swan Falls Hydroelectric Project area. Particularly, Idaho Power's proposed panel with the theme of Snake River Birds of Prey NCA would focus on the importance of birds of prey and would further educate visitors, which could help reduce illegal activities such as shooting in the area (see section 3.3.2, *Terrestrial Resources*). Because Idaho Power states that specific displays would be subject to alteration based on the outcome of consultation, a final Recreation Management Plan filed with the Commission for approval would ensure that the proper consultation has occurred and that the final site-specific information could be assessed properly. Development of such a plan would have a direct beneficial effect on the safe recreational experiences of visitors. Idaho Power's proposal to finalize and implement the Interpretation and Education Plan as part of its Recreation Management Plan would directly address the stated goal and objectives in Idaho's SCORP to develop a unified strategy for delivering outdoor recreation education to the public.

Interagency Recreation Working Group

Idaho DPR recommends the establishment of an interagency recreation working group that convenes every 6 years to review FERC Form 80 information and make recommendations concerning future management. Idaho DPR also recommends that it be designated a member of the recreation working group.

Our Analysis

Idaho Power's draft Recreation Management Plan does not provide a framework for the continued monitoring of recreation facilities, dispersed recreation sites, and usage. Recreational use monitoring and assessment of recreation-related effects on lands within the project boundary as a component of gathering data for FERC Form 80 and as part of the Recreation Management Plan would allow Idaho Power and stakeholders to consider measures to address recreational use, including dispersed use, over the term of the new license.

In addition, it would be beneficial if the Idaho SHPO were to become a member of this Recreation Working Group, and if Idaho Power's historic properties management coordinator participated as well. In its application and proposed HPMP, Idaho Power

includes measures for ongoing monitoring through the term of any license issued and as necessary, further treatment of sites potentially subject to adverse effects as a result of recreational use. Coordination with the Idaho SHPO on this issue would be helpful in ensuring that cultural resources are appropriately considered.

Stakeholders designated as members of this Recreation Working Group could include Idaho DPR, Idaho DFG, Idaho SHPO, and BLM. It could be beneficial for Idaho Power to file every 6 years, in coordination with its filing of the FERC Form 80, a Recreation Monitoring Report that would summarize the Recreation Working Group's monitoring activities and data and relaying to the Commission any recommendations for future recreation management.

Effects of Fish, Wildlife, and Water Quality Measures on Recreation

Idaho Power proposes to implement various plans to address the project's effects on natural and cultural resources due to the proposed operation and maintenance of the project over the term of a new license. Among other measures, Idaho Power proposes to provide an instantaneous minimum flow of 3,900 cfs downstream of the dam from April 1 to October 31 and 5,600 cfs from November 1 to March 31, and to continue to remove and dispose of aquatic macrophytes and debris that accumulate on the project trash racks (section 3.3.2, *Aquatic Resources*). Idaho Power also proposes to implement its Noxious Weed Management Plan (section 3.3.3, *Terrestrial Resources*).

Our Analysis

Idaho Power's proposal to remove nutrients and oxygen-demanding material from the river would directly address the state of Idaho's goal in its SCORP to recognize that "water is an increasingly precious resource." Implementation of the Noxious Weed Management Plan would directly address the goal in Idaho's SCORP to minimize the impact of invasive species. These measures would have an indirect beneficial effect on recreation by furthering these SCORP goals and objectives and would have a direct beneficial effect on recreational users by improving water quality.

Idaho Power's proposal to improve the six dispersed recreation sites would help concentrate recreation use and thereby protect environmental measures.

Swan Falls Powerhouse Museum

Early in the relicensing process, Idaho Power consulted with BLM to develop, conduct, and review recreational studies related to the project. During this consultation, BLM suggested that the Swan Falls powerhouse museum should be open to the general public, at a minimum, during the spring and summer months on Fridays, Saturdays, and Sundays. Idaho Power does not propose to open the facility on Fridays and Sundays, however, stating that the current level of visitor interest and use does not merit the costs associated with opening the museum more than one day per week.

Idaho Power proposes to open the historic powerhouse to the visiting public every Saturday between April 15 and Labor Day from 10:00 a.m. to 4:00 p.m. Idaho Power proposes to provide a uniformed security guard to be present to ensure visitor safety and the security of company property during these public hours. Measures specific to enhancing interpretive resources are contained in the Swan Falls HPMP.

Our Analysis

Results of four recreational surveys, which are described in license application Appendix E.5-A, *Recreational Use at the Swan Falls Hydroelectric Project*, indicate that the months with the most visitor use in the area of the project include May, June, July, and August. Implementation of Idaho Power's proposal to open the Swan Falls powerhouse museum between April 15 and Labor Day would directly benefit visitors' experiences during the heaviest visitation period. Based on the latest FERC Form 80 data, the Swan Falls Project had a total of about 21,534 visitors during the 2001 calendar year and visitation to interpretive displays was low, equal to or less than 40 percent of full capacity. Idaho Power proposes to monitor and assess visitor use and interest in the historic powerhouse and would consider expanding visitation hours in the future if demand and use support the need to do so.

The proposed level of recreational development for this project would be consistent with the level of use shown by the recreational survey data and documented in the latest FERC Form 80. Establishment of the Interagency Recreation Working Group discussed above would help provide a framework for future recreational use monitoring and assessment of recreation-related effects on lands within the project boundary as a component of gathering data for the FERC Form 80 and as part of the Recreation Management Plan. This would allow Idaho Power and stakeholders to consider measures to address recreational use of the Swan Falls powerhouse museum over the term of a new license.

Public Safety Plan

Idaho Power proposes to continue implementation of its June 2008 Public Safety Plan, which is included as Technical Report Appendix H.13-A in Idaho Power's license application (Idaho Power, 2008c). The Public Safety Plan includes the following measures:

- fencing at the historic display and spillway;
- public warning siren and strobe light at the spillway that activates 1 minute prior to any spillgate operation;
- buoy line with 21 buoys and 8 danger signs located approximately 325 feet upstream from the powerhouse and aerial buoys located downstream of the spillgates;

- signage to include 15 caution, warning, danger, and directional signs to inform the public on how to safely conduct themselves while enjoying the resources at the project;
- photo cell lighting to include 6 white lights located on the spillway deck, 4 white lights located on the downstream side of the generator deck, and 15 white lights located on the upstream face of the powerhouse; and
- an inspection schedule that includes regular damage and operational inspections.

In the State of Idaho's comments filed August 14, 2009, Idaho DPR and Idaho DFG both recommended implementation of this plan.

Our Analysis

Idaho Power has a responsibility for public safety and to ensure public access under parts 12 and 2.7 of the Commission's regulations. Idaho Power proposes to continue implementation of its plan to install, operate, and maintain signs, lights, sirens, barriers, or other safety devices reasonably necessary to warn the public of fluctuations in flow from the project or otherwise to protect the public in the use of project lands and waters. The proposed measures include monitoring of the signs, lights, sirens, barriers, and other safety devices throughout the term of the license and appropriate maintenance of the devices.

One particular sign worth noting is the proposed warning sign titled "NO SHOOTING", which would be 18 inches by 24 inches in blue lettering with a white background. Idaho Power proposes to place one such sign near the reservoir boat dock and one sign east of the restrooms off the main access road. These signs would both improve personal safety and benefit birds of prey, which are subject to illegal shooting in the area (see section 3.3.2, *Terrestrial Resources*).

The proposed measures listed above and outlined in the Public Safety Plan appear to be reasonable and appropriate to ensure public safety at the project.

3.3.6 Land Use and Aesthetic Resources

3.3.6.1 Affected Environment

Land Use

The existing project boundary surrounding the Swan Falls Project encompasses 2,192 acres. Idaho Power owns 584 acres, primarily on the northeast side of the river at the tailrace, dam, and reservoir upstream of Swan Falls dam. Idaho Power also owns some land on the southwest side of the river from the dam upstream for approximately 1 mile. These lands are used by Idaho Power primarily for the operation and maintenance of the Swan Falls Project under the terms of its current license. In addition, Idaho Power

has a program for administering its current policy regarding the permitting of piers, docks, and other shoreline facilities associated with project lands and waters. This permitting policy allows permits for private boat docks and similar structures only for applicants who own or lease land adjacent to a project reservoir or adjacent to Idaho Power-owned freeboard land (that is, land above the OHWM).

Long-term land management direction of federal lands within the NCA is provided by BLM's approved Record of Decision and Resource Management Plan dated September 2008 (BLM, 2008). Several special management areas have been established by BLM in and adjacent to the existing project boundary, including the following:

- The western end of the Snake River Canyon within the NCA, which includes the Swan Falls Project area, is designated as a Special Recreation Management Area, which provides for a variety of river- and land-based recreational opportunities.
- Most of the NCA is declared a Designated Vehicle Management Area, requiring that vehicles remain on designated roads or trails (except for administrative purposes).
- On the southwest side of the river, the project area is included within a designated avoidance, or exclusion, area for major realty actions because of recreational controls, sensitive plant issues, and paleontological concerns. The Guffey Butte–Black Butte Archaeological District (Archaeological District) Area of Critical Environmental Concern includes all land in the project area southwest of the river.
- BLM's management plan relevant to the Swan Falls Project area includes a year-round closure to shooting rifles and pistols within 0.5 mile of the Snake River downstream from Grand View, Idaho (located about 16 river miles upstream of the Swan Falls Project boundary) and a closure of the same area to all firearms from February 15 through August 31 each year.
- The project area lies within three grazing allotments: the Sunnyside Winter Allotment on the northeast side of the river and the Sinker Butte and Montini Fenced Federal Range[38] allotments on the southwest side of the river. An area on the southwest side of the river downstream of the project area has been withdrawn from grazing. Other uses allowed in the area include recreation and mineral extraction, as long as these activities are consistent with the protection of raptors and their prey.

The state of Idaho owns and manages 58 acres of land within the current project boundary; the land uses on these parcels are similar to those listed above. The remaining

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[38] Fenced Federal Range is generally defined as a small amount of public land fenced within a large amount of private land.

84 acres of land within the project boundary are private lands used primarily for cultivated agriculture. No private residences occur in or near the project area other than the six residences inhabited by employees or lessees of Idaho Power. Table 11 depicts the current land use within the project boundary.

Table 11. Current land use within the Swan Falls Project boundary (Source: Idaho Power Company, 2008a, as modified by staff).

Land Use	**Project Acres**
Urban or Developed	20
Agriculture	47
Rangeland	1,188
Total Land	1,255
Water	937
Total Acres	2,192

The Snake River in the location of the Swan Falls Project forms the boundary between Ada County, the most populous county in the state, and Owyhee County, a very rural area with extremely low population density. For further discussion of population characteristics, see section 3.3.8, *Socioeconomics*.

Aesthetic Resources

Project Setting

Swan Falls Road, which is located on the plateau above the Snake River Canyon, has been designated part of the Western Heritage Historic Byway by the Idaho Transportation Department. The Byway extends a total of 40 miles beginning on Idaho State Highway 69 near the southern boundary of the city of Meridian, near Kuna, and ending at Swan Falls dam. The Byway offers views of high desert features with historic, scenic, and geologic elements.

Initiated by the Western Heritage Foundation, the Western Heritage Historic Byway Corridor Management Plan, dated September 2004, [39] is targeted at enhancing the economy by encouraging activities related to the area's historic character, including adding interpretive signs, picnic areas, trails, and parking; upgrading the boat docks, ramps and trails; and establishing a geologic trail (Planmakers and J-U-B Engineers, 2004). The efforts of the Western Heritage Foundation and its partners have resulted in the erection of several interpretive signs at points of interest between the community of Kuna and the Swan Falls Project. One such sign is located at the pull-off area where Swan Falls Road ends and the project access road begins. This pull-off area provides limited parking space and a sweeping view of the canyon below. The Snake River Canyon is an abrupt drop of approximately 3,000 feet from the flat, open plains above. Black basalt walls form sheer cliffs down to the river. At the dam, the canyon width is approximately 1,000 feet and the river takes up somewhat less than one-quarter of that width, with narrow bands of land on either side. Aside from the Swan Falls Project itself, very few human-made structures exist either above or below the canyon rim.

The project road is the only improved access into the Snake River Canyon in Ada County, which includes Boise and other population centers. The canyon is accessible from several other locations, both upstream and downstream of the project, but the Swan Falls Project access provides a close-to-home glimpse of magnificent resources seen by relatively few people.

Visual Resource Management

BLM manages its lands in accordance with its Visual Resource Management (VRM) System. The system designates landscape units in four classes that indicate the overall significance of the visual environment and establishes objectives for the management of each class in order to define the level of change from a proposed project that is acceptable in that class. By comparing the effects from a project to the established visual objective for that area, the visual acceptability of that project and mitigation measures needed to decrease the visual contrast are determined. The four visual management classes and their objectives are described below:

- 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

[39] The Western Heritage Foundation invited representatives from various local interests and agencies to help develop the corridor management plan. Partners involved in the plan's development include Western Heritage Foundation, Kuna Chamber of Commerce, Ada County Parks and Recreation, Canyon County Parks and Recreation, Ada County Sheriff's Department, Mountain Post–Digital Imaging, City of Meridian, Ada County Highway District, City of Kuna, several private citizens, City of Melba, Echo Films, City of Kuna, Ada County Historic Preservation Council, BLM, Kuna School District, Idaho Power, and Idaho Department of Transportation.

not preclude very limited management activity. The level of change to the characteristic (background) 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 that require major modification 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.

BLM designates the area on both sides of the river at the developed area just upstream of Swan Falls dam and the area downstream of the dam as VRM Class III, Partial Retention. Upstream from the developed area near the dam, the VRM designation is Class II, Retention (BLM, 2008).

Idaho Power, in consultation with resource agencies and stakeholders, conducted an aesthetic conditions and project impact assessment to evaluate the visual compatibility of project features with the surrounding landscapes. The aesthetic character and visual effects were evaluated using BLM's VRM System. Four KOPs in the project area were identified for this assessment: (1) the pull-off at the top of the cliff above the dam and powerhouse; (2) the parking and restroom area near the powerhouse; (3) the boat launch just upstream of the dam and powerhouse; and (4) the boat launch area just downstream of the dam and powerhouse.

From KOP 1, the observer can view essentially all project features and several miles up and down the river. A single, relatively small transmission line ascends the hill from the powerhouse. The dam forms a light-colored line perpendicular to the dark water of the river, with vertical features extending from the dam. Both old and new sections of

the powerhouse are also light in color, in contrast to the dark water. The old powerhouse appears as a large form sitting above the middle of the river. The clubhouse[40] and a newer house close by are readily apparent due to their reflective, light color, and the grass and ornamental shrubs surrounding them. The line of a road leads to the south where first a small red building and then five newer, very light-colored houses appear against the dark tan of soils and vegetation. An open area near the river with several boat docks lies near the end of the road. From this vantage, the viewer sees unexpected, yet intriguing, views of the old powerhouse's architecture, resembling a grand residence or castle in the middle of the river (see cover photo). Considerable contrast with the natural landscape occurs from project facilities, but the development also creates a great deal of interest for the viewer upon finding human occupation in what seems to be the middle of nowhere. This KOP may be the most sensitive of the four since, for some visitors, it will factor into their decision of whether or not to descend the steep, winding road into the canyon.

Views from KOP 2 are panoramic, and primarily in the foreground. The old powerhouse and visitors' center, with its interesting architecture, is an object of attention. The new portion of the powerhouse and adjoining shop are more industrial in appearance and of less interest. The transmission line going up the cliff from the powerhouse is notable in its steep ascent. The gray, wrought iron fencing is substantial in appearance. A kiosk contains interpretive signs of interest, but its architecture is quite different from the other structures. Beyond the kiosk is the restroom, which is made of primarily gray to tan cinder block and a lighter color metal roof. The wood on this building needs paint. The slatted chain link fence, keeping visitors away from equipment next to the restroom, is also in need of maintenance.

Farther away, the old clubhouse and a somewhat more modern house draw the curious visitor into a shaded, grassy area that is extremely welcoming on hot summer days. Several old stone walls and mature landscaping suggest that this area was probably developed as part of the original project. Several picnic tables are located on these grounds, interspersed with large cottonwood trees. Poplar and pine trees are located nearer the houses. Small areas of riparian vegetation can be seen upstream, along with the buoy line and yellow buoys just upstream of the dam. The low profile, linear dam extending out from the powerhouse has numerous vertical elements.

Past the picnic area and clubhouse and heading toward KOP 3, visitors can see an old orchard and a pasture, along with a small, red, barn-like building with pens. Poles and trestles are piled nearby. Five newer residences of a light color are situated above the road and are visible along with associated vehicles and travel trailers. As one continues

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[40] The building referred to in company documents and by employees as the clubhouse is also referred to as the Swan Falls boardinghouse because of its historical use in that capacity. It is located just upstream from the dam and powerhouse. For information on this structure see section 3.3.7, *Cultural Resources*.

upstream from KOP 2 and passes through the area, the signage that appears is inconsistent and irregular, and appears in need of maintenance.

KOP 3 includes the boat launch area located upstream of the dam, which consists of an open, partially graveled area; two docks (one wood and one metal); and a port-a-potty. The area is visually unattractive because it is poorly defined. The orange port-a-potty contrasts strongly with the surrounding landscape, and trash is often left by users. From the boat docks, however, one can see areas of riparian vegetation along the banks and the project reservoir, which appears as a slow-moving river rather than a lake. Perhaps a mile or so upstream, on the opposite bank, a white pump house is visible. Downstream, the old powerhouse is the most noticeable element, standing above the river. The dam, because of its low profile, is not especially noticeable, except for the numerous vertical elements rising from it. The project housing can be seen in the distance.

KOP 4, which includes a second boat launch area, is located just downstream of the dam. The powerhouses and dam are in the foreground view here. A large crane and the newer, more industrial-looking powerhouse present a more operational appearance than the view from the upstream side. The architecture of the old powerhouse, however, remains of great interest from this viewpoint, and is even more pronounced because the water level is lower and more of the building is visible. During frequent releases, water can be seen rushing through the gates and spreading across the width of the spillway. On the road where one turns into this area, there is a port-a-potty and a compressor that is available for inflating rafts. Looking back toward the cliffs, one can see the relatively small transmission line traversing the hillside and into the cliffs.

Northwest (downstream) of the dam, fences are visible on either side of the road for a short distance. Vegetation is natural. Approximately 0.25 mile downstream of the dam is an area of ongoing habitat restoration. Approximately 0.50 mile downstream of the dam on the river side of the road is a cleared area called the lay-down yard, where material taken off the trash racks is deposited. From the road, the view is somewhat screened by trees and shrubs that are in relatively poor condition. Further down the road (on the side away from the river), BLM has made efforts to use rocks and boulders to block trails created by off-road vehicles. Campsites have been designated with rock-formed fire pits on the river side of the road. Farther downstream, soil and vegetation damage by off-road vehicles is also occurring on Idaho Power-owned land outside of the project boundary. Some visual contrast in texture, line, and color occurs as a result of the destruction of vegetation and the ridges and swales left in the soil, although this is not seen from the KOPs.

3.3.6.2 Environmental Effects

Project Boundary Revisions

Idaho Power proposes to include within the project boundary land that it owns downstream of the dam on the northeast side of the Snake River in Ada County. Idaho

Power proposes the addition of this land because it is needed for project purposes; that is, it is needed to incorporate into the project boundary dispersed recreation sites proposed for enhancement in its Recreation Management Plan. The lands added within the project boundary would also include 8.4 acres of roadbeds and 36.9 acres of other disturbed sites to be revegetated by planting native, containerized shrub stock and seeding with native grasses, as proposed in the Wildlife Habitat Protection and Enhancement Plan. In addition, implementation of the proposed HPMP would include measures for monitoring and, as necessary, further treatment of sites potentially subject to adverse effects as a result of recreational use.

To maintain and manage the four dispersed recreation sites that are currently outside the project boundary and are proposed for enhancement, Idaho Power proposes to include the sites as project features and expand the project boundary for approximately 2 miles downstream of the dam. This expanded project boundary would include all land on the northeast side of the river between the OHWM up to the 2,360-foot elevation contour starting at the northern (existing) project boundary and merging with the Idaho Power property boundary, which is approximately 1.7 miles downstream of Swan Falls dam.[41] A private parcel located approximately 1.5 miles downstream of Swan Falls dam is specifically excluded from the proposed FERC project boundary. In addition, Idaho Power proposes to enclose within the project boundary land located on the immediate west side of the dam to include the canoe/kayak portage trail.

Idaho Power proposes to remove 791 acres from the current project boundary, most of which are located upstream of the dam, and add 192 acres to the current project boundary downstream of the dam. This would result in a net reduction of 599 acres within the project boundary.

Idaho Power generally used the 2,318-foot elevation contour to delineate the proposed project boundary for the upstream (reservoir) reach. The 2,318-foot elevation contour is the reservoir level during the maximum spillway design event (105,112 cfs) at Swan Falls dam. Under these conditions, the area within the reservoir below this contour would be completely flooded; therefore, it would be needed for project purposes. There are two additional areas needed for project purposes that lie outside the 2,318-foot elevation contour. First, on the northeast side of the reservoir, Idaho Power proposes to keep the current project boundary to encompass two dispersed recreation sites where improvements are proposed. Second, on the southwest (Owyhee County) side of the reservoir at the dam, the project boundary would be modified to encompass the canoe/kayak portage trail. It would then resume at the 2,318-foot elevation contour.

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[41] Idaho Power also plans to obtain submerged land easements (lands below the OHWM) from the Idaho Department of Lands, as well as any other state and federal permits necessary to ensure public access below the OHWM at the proposed recreation sites located downstream of the dam.

Idaho Power proposes to pursue flood easements for 3 parcels of private lands that are situated below the proposed 2,318-foot contour. Idaho Power states in its proposal that all of its proposed recreational and terrestrial protection, mitigation, and enhancement measures would be included within the new project boundary. Table 12 summarizes the ownership of lands located within both the current and proposed project boundaries.

Table 12. Ownership of lands located within the current and proposed project boundary.

Ownership of Project Lands	**Current Project Boundary Acreage[a]**	**Proposed Project Boundary Acreage[b]**	**Difference in Acreage Between the Current and Proposed Project Boundary**
Idaho Power	584	438	–146
Private	84	16	–68
Bureau of Land Management	529	186	–343
State of Idaho	58	25	–33
Total Land Area	1,255	665	-590
Water	937	928	–9
Total Acres within Project Boundary	2,192	1,593	–599

[a] Source: Idaho Power (2008a).

[b] Source: Idaho Power (2009c).

Our Analysis

According to 18 CFR 4.51(h), land included within a project's boundary must enclose those lands necessary for operation and maintenance of the project and for other project purposes, such as recreation, shoreline control, or protection of environmental resources. Idaho Power's proposal to include as project features within the project boundary the canoe portage trail and the dispersed recreation sites proposed for improvements would serve project purposes. As stated in section 3.3.5.2, *Recreation Resources, Environmental Effects*, the only project access road is an existing roadway constructed by Idaho Power (or its predecessors) on Idaho Power land. The road terminates at the Murphy gage (approximately 4 river miles downriver from the dam) at a trailhead owned and managed by BLM. Because this project access road is the only access to this part of the canyon and is used by recreationists, incorporating and maintaining this access road within the project boundary would be a project benefit.

Idaho Power's proposal to include the dispersed recreation sites and the canoe/kayak portage trail within the project boundary would ensure that public access is maintained during the term of a project license, which would have a direct beneficial effect on recreational access. This proposal would also protect cultural and natural resources in the area by focusing recreational activity within formal and managed public access points.

Idaho Power's proposal to include within the project boundary the lands that would be revegetated and maintained under the Wildlife Habitat Protection and Enhancement Plan would be beneficial because it would allow for Commission oversight of the long-term management of these lands, which would include an effectiveness monitoring protocol that Idaho Power would follow to evaluate planting success, with provisions for consulting with the agencies 10 years after implementation to determine whether any remedial actions are needed. Lands managed under the HPMP would likewise allow for Commission oversight of provisions for monitoring and, as necessary, further treatment of sites potentially subject to adverse effects as a result of recreational use.

With regard to Idaho Power's proposal to remove from the project boundary most of the lands located above the 2,318-foot elevation contour, we note that lands above the contour are not affected by project operation or uses, and therefore are not needed for project purposes.

Permitting Policies for Non-Project Use of Project Lands and Waters

Idaho Power proposes to continue implementing its policies for permitting piers, boat docks, and other facilities (non-project use of project lands and waters). Idaho DPR recommends the establishment of an interagency land use working group that would convene every 6 years to review FERC Form 80 information and make recommendations concerning future management. Idaho DPR also recommends that it be designated a member of the land use working group.

Our Analysis

Idaho Power is responsible for reviewing permit applications for certain types of use and occupancy of project lands and waters. Because Idaho Power and the federal and state governments own a majority of the land within the project boundary and on adjacent land, land uses and requests for development are very limited. Although there are 84 acres of private land within the existing project boundary, the proposed project boundary includes only 16 acres of private land in non-contiguous parcels. It is unclear how the recommendation for a land use working group would benefit future management decisions on only 16 acres of land and land use within the project boundary. Establishment of separate land use working group in addition to the recreation working group would be unnecessary and would duplicate Idaho Power's efforts.

Resource Management Plan

Idaho Power proposes to finalize and implement the Resource Management Plan that would guide staff working with hydroelectric operations and maintenance of the Swan Falls Project. The framework provided in the proposed plan includes references to project plans, BLM management plans, and potential consultation requirements with the Idaho SHPO through the Idaho Power historic properties management coordinator. Idaho Power proposes to use the plan as a resource for Idaho Power staff to ensure decisions are made in coordination with project wildlife, botanical, aquatic, recreational, visual, cultural, and geological/soil resource plans; consistent with the purpose of the Snake River Birds of Prey NCA; and consistent with all applicable state agency issued certificates and rules and regulations. In the State of Idaho's comments filed August 14, 2009, Idaho DPR and Idaho DFG both recommended implementation of this measure.

Our Analysis

Idaho Power's proposal to finalize and implement the proposed Resource Management Plan would serve as the guiding management strategy for the Swan Falls Project. It would provide a framework for proactive and coordinated decision-making that would ensure continued operations and public use in a manner that conserves and protects its cultural and natural resources. The Resource Management Plan would provide an on-site resource that would help operators to help guide decisions that could affect the cultural and natural resources within the project boundary during the day-to-day operation and maintenance of the project. Resource Management Plan's references to project plans, BLM management plans, and Idaho SHPO consultation requirements could guide decision makers through the project, federal, and state plans that apply to the project and that need to be considered during project operation and maintenance activities. The Resource Management Plan would have a direct beneficial effect on the management of the lands within the project boundary over the term of the license.

Visual Guidelines Plan

Idaho Power proposes to implement its Visual Guidelines Plan to ensure that any new project construction considers the protection of visual resources from important viewpoints. Idaho Power proposes applying the BLM's VRM standards at intervals of routine, ongoing and needed maintenance on the buildings in the employee housing area. In general, Idaho DPR supports the BLM standard; however, Idaho DPR states that specific approaches are not addressed concerning material colors for structures or plant species used for vegetative planting. Idaho DPR recommends the development of aesthetic guidelines for building structures and vegetative planting at the recreation facilities and in the employee housing area.

Idaho Power also proposes to modify the colors of its project houses to blend with soils and vegetation, paint the wooden elements associated with KOP 2 (the parking and restroom at Swan Falls Park near the powerhouse), and establish screening around the

lay-down yard to reduce visual effects on the aesthetic resources at the project. Both Idaho DPR and Idaho DFG recommend implementation of these measures.

Our Analysis

The BLM VRM rating for the project area is Class III, Partial Retention, in the developed area near the dam and downstream of the dam. The BLM VRM rating is Class II, Retention, upstream of the developed area. Idaho Power's proposal to modify the colors of its project houses to blend with soils and vegetation, paint the wooden elements associated with KOP 2, establish screening around the lay-down yard, and implement its Visual Guidelines Plan would reduce current adverse visual effects at the project. Idaho DPR's recommendation that Idaho Power include specific approaches concerning material colors for structures and plant species used for vegetative planting, along with consultation with Idaho DPR, would help ensure that project changes would have minimal effects on visual resources in the project area. In addition, because of the proximity of BLM lands, it would be beneficial if BLM were added to this consultation process. Useful revisions to the Visual Guidelines Plan could include the following information:

- A list of neutral paint color schemes identified in consultation with BLM and Idaho DPR.
- A list of species of vegetation identified in consultation with BLM and Idaho DPR for vegetative planting and/or aesthetic screening purposes.
- A list of the construction materials that could be used for maintaining existing buildings or for new building construction identified in consultation with BLM and Idaho DPR.

Revising the Visual Guidelines Plan to contain these elements could have a direct beneficial effect on aesthetic resources at the project.

Interagency Aesthetic Working Group

The Idaho DPR recommends the establishment of an interagency aesthetic working group that convenes every 6 years to review FERC Form 80 information and make recommendations concerning future management. The Idaho DPR also recommends that it be designated a member of the aesthetic working group.

Our Analysis

Idaho Power does not propose any large or ongoing construction activities over the term of a new license. As noted above, there are 84 acres of private land within the existing project boundary but only 16 acres of land in non-contiguous private parcels within the proposed project boundary. Given that Idaho Power proposes implementation of its Visual Guidelines Plan, which would include provisions for consultation with stakeholders on decisions being made in regard to aesthetic resources, it is unclear how the recommendation for an aesthetics working group would benefit future management decisions on aesthetic resources within the project boundary. Establishment of a separate

aesthetics working group in addition to the recreation working group would be unnecessary and would duplicate Idaho Power's efforts.

Signage Plan

The current signage at the project is inconsistent in design, and many signs are in need of maintenance. Idaho Power proposes to develop and implement a signage plan for the entire project area and on adjoining lands that it owns.

Our Analysis

Development and implementation of a signage plan would provide the means for coordinated and systematic development of signage associated with the project. The proposed plan could have a direct beneficial effect on recreational experiences and aesthetic resources at the project by improving the means of providing public information, as well as its availability to the public.

3.3.7 Cultural Resources

3.3.7.1 Affected Environment

Section 106 of the National Historic Preservation Act

Section 106 of the NHPA as amended requires the Commission to take into account the effects of licensing a hydropower project on any historic properties and allow the Advisory Council on Historic Preservation (Advisory Council) a reasonable opportunity to comment if any adverse effects to historic properties are identified within the hydropower project's APE.

Historic properties are defined as any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register. In this document, we also use the term "cultural resources" to include properties that have not been evaluated for eligibility for listing in the National Register. In most cases, cultural resources less than 50 years old are not considered eligible for the National Register. Cultural resources need enough internal contextual integrity to be considered historic properties. For example, dilapidated structures or heavily disturbed archaeological sites may not have enough contextual integrity to be considered eligible. TCPs are a type of historic property that are eligible for the National Register because of their association with cultural practices or beliefs of a living community that: (1) are rooted in that community's history; or (2) are important in maintaining the continuing cultural identity of the community (Parker and King, 1998).

Section 106 also requires that the Commission seek concurrence with the SHPO on any finding involving effects or no effects on historic properties and allow the Advisory Council an opportunity to comment. If Native American properties have been identified, section 106 also requires that the Commission consult with interested Native American tribes that might attach religious or cultural significance to such properties.

If there were an adverse effect on historic properties, the applicant must develop a HPMP to seek to avoid, reduce, or mitigate the effects. Potential effects that may be associated with a hydroelectric project include any project-related effects associated with the day-to-day operation and maintenance of the project after issuance of a new license. During development of the HPMP, the applicant should consult with the Commission, Advisory Council, Idaho SHPO, Indian tribes, and BLM. In most cases, the HPMP would be implemented by execution of a PA that would be signed by the Commission, Advisory Council (if it chooses to participate), Idaho SHPO, and other consulting parties. Idaho Power proposes to implement its HPMP, dated December 2008. We discuss the elements of the proposed HPMP in section 3.3.7.2, *Environmental Effects, Management of Historic Properties*.

Area of Potential Effects

Pursuant to section 106, the Commission must take into account whether any historic property could be affected by the issuance of a proposed new license within a project's APE. The APE is determined in consultation with the Idaho SHPO and is defined as the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. In this case, the APE for the Swan Falls Project includes lands within the project boundary, as delineated in the current FERC license, plus lands outside the project boundary where project operations may affect the character or use of historic properties and/or TCPs.

As delineated by Idaho Power, the APE encompasses the likely extent of project operations and project-related environmental measures that could be undertaken during the term of the new license. In its application and associated HPMP, Idaho Power described the APE as encompassing a 23.8-mile-long section of the Snake River between the Guffey Railroad Bridge in Owyhee County, Idaho, and the vicinity of Castle Butte in Ada County, Idaho. The APE includes the Swan Falls dam and powerhouse and all of the Swan Falls reservoir. The upstream boundary of the APE begins on both sides of the river near Big Foot Bar (RM 471). From there, the APE encompasses a linear zone extending 160.9 meters (528 feet) inland from the high water line of the reservoir. In the vicinity of the dam, the APE is expanded to include the entire project boundary, extending as much as 500 meters (1,640 feet) inland on either side of the river. Downstream of the dam, a BLM access road runs above the right bank of the river. In this area, the APE reverts back to 160.9 meters (528 feet) on either side of the river for the length of this road to RM 453.4. Downstream of this point, the APE narrows to a width of 30.5 meters (100 feet) from the OHWM on either side of the river. The APE extends downstream to just past the Guffey Railroad Bridge at RM 447.

In its response to Idaho Power's invitation to a pre-consultation meeting, the Idaho SHPO did not specifically comment on the APE (letter from S. Pengilly Neitzel, Deputy SHPO, Idaho State Historical Society, Boise, ID, to C. Jones, Idaho Power, Boise, ID,

June 1, 2004, filed in the license application). However, the Idaho SHPO recommended that Idaho Power complete its proposed survey of the APE and recommended that areas that would be used for off-site mitigation for other resources, including fish and wildlife mitigation areas, also be included in the survey. In its application, Idaho Power does not propose any off-site mitigation areas in conjunction with the new license, and no areas outside of the APE as defined were surveyed.

Cultural History Overview

Extensive summaries of the Snake River Plain prehistory have been developed. Three primary cultural periods have been proposed for the region encompassing the Swan Falls Project area. These are the Paleo-Indian Tradition or Period (11,500–8,000 before present [BP]), the Archaic Tradition or Period (8,000–250 BP), and the Protohistoric Period (250–100 BP). The first two periods reflect changes in resource procurement strategies and technology from a focus on big game hunting to a more diversified subsistence economy. They also demonstrate adaptation from the use of large spear and atlatl dart points to the use of bow and arrow and pottery for storage. The Protohistoric Period began with the introduction of the horse and the resulting change in mobility and use of European material goods. The presence of worked glass, arrow points manufactured out of iron and brass, trade beads, and other items are testament to this significant cultural change. All references in this section are as cited by Corn and Baker (2008).

The Paleo-Indian Tradition includes the Clovis, Folsom, and Plano subperiods. The Paleo-Indian tradition is generally regarded as focused on big game hunting, including mammoth, bison, mountain sheep, and deer, but with contributions of plant foods and small game as well (Butler, 1986). Radiocarbon dates suggest that the earliest Clovis occupations date to ca. 11,500 BP. Most Clovis components on the western Snake River Plain are marked by only surface finds (Reid et al., 2006). However, one site located north of Swan Falls contained at least three large Clovis points, two smaller Clovis points, and 28 bifacial blanks or cores (Titmus and Woods, 1985). This site has been characterized as a cache, although its actual status is not clear.

The Folsom subperiod dates from 10,000 to 9,600 radiocarbon years BP. Only a single Folsom site has been excavated in the Snake River Plain. Located within a cave, this site contained the remains of several extinct mammals, including mammoth, bison, camel, and dire wolf, although only the mammoth bone has been modified as a result of human activity. Mammoth bone and Folsom points were both recovered from the same stratigraphic level, although there is no clear association between them. The Plano subperiod dates from 10,600 to 7,800 BP. This period is characterized by lanceolate points and a focus on bison hunting. Mountain sheep remains have also been found at higher elevation sites above the Snake River Plain.

The Archaic Tradition includes the Early, Middle, and Late Archaic Periods. This period of time is characterized by a change to a wider subsistence economy and the

beginning of warmer or drier, middle Holocene climate conditions. The Early Archaic period dates from 8,000 to 5,000 BP and is marked by the introduction of side-notched dart points (Northern or Bitterroot side-notched points) and the use of lanceolate Cascade points. This change in technology to the use of atlatl weaponry occurs at this same time throughout the Great Plains, Great Basin, and Plateau. Like the Paleo-Indian Period, subsistence during the Early Archaic also focused on big game; however, smaller game such as deer, elk, rabbits, fish, birds, and reptiles were also taken. Three sites in the immediate vicinity of the Swan Falls Project have been dated to this period.

The Middle Archaic Period dates from 5,000 to 2,000 BP. This period is marked by large, side- and corner-notched atlatl dart points. However, the presence of ground stone tools indicates even more diversity in subsistence. Sites dating to the Middle Archaic include three sites located in the western Snake River Plan.

The Late Archaic Period dates from 2,000 to 250 BP. Adaptation to the use of bow and arrow and pottery, as well as increasing exploitation of resources, occurred at this time. The latter part of this period is marked by Rosegate and Desert side-Notched arrow points, and pottery has been classified as Shoshone Ware, a flat-bottomed, undecorated vessel. During the Late Archaic, pictographs and petroglyphs may have served as markers for important locations. Many Late Archaic sites have been documented on the Snake River Plain in the vicinity of the Swan Falls Project.

The Protohistoric Period began with the introduction of the horse and the resulting change in mobility and use of European material goods. The presence of worked glass, brass and iron arrow points, trade beads, and other items are testament to this significant cultural change.

Ethnographically, the Swan Falls area was inhabited by the Northern Shoshone and the Bannock peoples. Northern Shoshone traditional territory includes the Snake River Plain in Idaho and most of the southern half of the state. The Bannock immigrated to the Swan Falls area from Oregon, but lived peacefully with the Northern Shoshone. These two groups did not have defined territorial boundaries; loose social organization permitted movement between their ranges (Murphy and Murphy, 1986; Steward, 1938).

Villages, or hamlets, were located on either side of the river. Each village was economically independent, with individual families undertaking their own subsistence pursuits. Most people spent the winters on the Snake River living on dried and stored fish, insects, and plant foods. Others traveled to the Camas Prairie about 250 miles north of the river, returning in the spring. Winter camps were kept small and generally consisted of approximately three families.

While salmon were the primary focus of fishing along the Snake River, people also took sturgeon and trout. Following the spring salmon runs, camas, yampa root, and other plants were collected from the Camas Prairie. Processed camas was transported back to the Snake River where it was stored with other plant resources including edible

roots, serviceberries, chenopod seeds, chokecherries, and sunflowers. Inhabitants of the Snake River also hunted deer, bison, and a variety of small mammals.

Beginning in 1867, the Boise and Bruneau Shoshone and some Bannock peoples lived on the Fort Hall Reservation near Pocatello, Idaho, about 200 miles east of the Swan Falls Project area. In 1868, other Shoshone and Bannock tribes entered into the Treaty of Fort Bridger with the United States government. This treaty extinguished some tribal land claims and provided a reservation at Wind River for the Eastern Band of Shoshones. In 1869, the Fort Hall Reservation was designated as a Bannock reservation, and the Bannocks joined the Boise and Bruneau Shoshone at this location. Later, the Lemhi Shoshone also relocated to the Fort Hall Reservation. The Fort Hall Reservation is now known as the Shoshone-Bannock Tribes of the Fort Hall Reservation. The Swan Falls area is identified by Indian Claims Commission as a "common use" area used by the Shoshone-Bannock, Shoshone-Paiute, and other groups.[42]

The earliest Euro-Americans to visit the vicinity of the project area were American and British fur traders in the early nineteenth century. Between 1807 and 1810, and following the Lewis and Clark Expedition, the North West Company constructed several trading posts in Washington, Montana, British Columbia, and Idaho. To compete with the North West Company, John Jacob Astor's Pacific Fur Company organized two expeditions to the area; one of these expeditions explored the area around Swan Falls in November 1811 (Rollins, 1935).

The first trading post in southern Idaho was established by John Reed in 1813 approximately 44 miles northwest of the western end of the Swan Falls Project area. This post was destroyed by local tribes within several months. That same year, the North West Company acquired all of the Pacific Fur Company's assets in the Northwest. A supply depot, called Fort Nez Percés, was established by Donald McKenzie in 1818 near the confluence of the Walla Walla and Columbia rivers in southeast Washington (Ross, 1956). This post was the base for McKenzie's three "Snake Country Expeditions." McKenzie attempted to establish another post at the location of Reed's earlier post, but was not successful.

In 1821, the British Hudson's Bay Company merged with the North West Company and acquired its western posts and the "Snake Country Expeditions." A permanent trading post, Fort Boise, was established in 1834 near the mouth of the Boise River. This post was an important stop on the Oregon Trail until it was abandoned in the middle 1850s (Robertson, 1999). The Snake River Plain became the primary route between the supply posts in the Columbia River Basin and the hunting grounds of Idaho and Wyoming.

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[42] Shoshone Tribes of Indians v. United States, 11 Ind. Cl. Comm. 387, 414-415, 434-435[1962].

By the 1840s, the fur trade had declined and intensive settlement in the area began. The establishment of the Oregon Trail resulted in several hundred thousand immigrants traveling through southern Idaho. A southern branch of the trail passed by the vicinity of the project, but did not cross through the project area.

As settlement occurred in southwestern Idaho, tension between the settlers and Native Americans increased. The Hudson's Bay Company was forced to abandon its trading post at the mouth of the Boise River, and in 1863 a military garrison was established in this vicinity (Frazer, 1965 and Idaho State Historical Society, 1965). This new post, known as Fort Boise, was the base of operations for the Army during the Bannock War of 1878 and the Sheepeater campaign of 1879. Troops remained there until 1913 (Hart, 1963).

In 1862, gold was discovered in the Boise Basin near Idaho City, about 60 miles northeast of the project area. Within 2 years, more than 16,000 people rushed to the Boise Basin (Battien, 1989). The Owyhee Mountains southwest of the project area began to see gold mining in 1863. This enterprise led to the establishment of several settlements in the area. This settlement activity ultimately contributed to the federal effort to relocate Native American groups in the vicinity of the project area and the beginning of the Shoshone-Bannock Tribes of the Fort Hall Reservation and the Shoshone-Paiute Tribes of the Duck Valley Reservation, as described above. After 1870, placer mining in the area declined, although some prospectors, particularly Chinese, remained to work along the banks of the Snake River. Small-scale mining continued throughout the nineteenth century and into the twentieth century.

In the 1860s and 1870s ranching became an important industry in the area. Cattle and sheep were imported from California as early as 1865. In 1878, the Owyhee Cattle and Horse Growers' Association (later the Owyhee Cattlemen's Association) was established to protect livestock herds from thieves; by 1888 there were an estimated 100,000 head of cattle in Owyhee County and by the turn of the century there were more than 150,000 head of sheep (Adams, 1979). By the 1920s, Mountain Home (about 40 miles southeast of the project area) became one of the nation's leading shipping depots for wool (Groefsema, 1949). In addition to cattle and sheep, hundreds of wild burros and horses also roamed the banks of the Snake River. The wild horses competed for grazing land, and many were captured and sold for chicken feed (Nettleton, 2006). Evidence of early ranching can be seen throughout the project area.

In 1897, construction of the Boise, Nampa, and Owyhee Railroad (BN&O) began and the town of Guffey was established near the project area. In 1899, the town of Murphy was established southwest of Guffey at the terminus of the BN&O line. Murphy became a major freight distribution point and one of the largest livestock shipping points in the Pacific Northwest (Adams, 1979).

The need for electricity at the mines around Silver City in the Owyhee Mountains approximately 54 miles west of the project area resulted in the construction of a hydroelectric plant at Swan Falls. Dam construction began in the spring of 1900 and by

December, most of the plant and the concrete portion of the dam were completed. The power lines connecting Dewey and Silver City and providing power to nearby towns were operational by 1903. Additional transmission lines were constructed in 1906.

In 1916, Idaho Power assumed control of the dam's operation, and major reconstruction of the dam occurred in 1920 and 1936. Swan Falls dam and power plant were listed on the National Register in 1976.

The Swan Falls village (IHSI #010-17866) was constructed to house employees of the Swan Falls dam. When the village was recorded, the earliest standing structure was noted as being built in 1918; a cottage foundation dated prior to 1910. Most of the early residents of the village were single men who lived in a boarding house. The supervisor and chief operator lived in cottages. When it became difficult to retain a work force, additional cottages were constructed for workers and their families. One of the cottages was converted to a school.

Following completion of Swan Falls dam, the power company constructed a small ferry upstream. A wagon road along the slope of the canyon led to the ferry. The ferry was used to deliver mail to the communities of Melba, Guffey, and Murphy but was only in operation for a few years. Although several other ferries operated within the project area during the late nineteenth and early twentieth centuries (e.g., Priest Ranch, three ferries at Castle Creek), this may have been the only powered ferry on the Snake River (Huntley, 1979). By the 1930s automobiles replaced horse-drawn stages and bridges were constructed to accommodate the growing number of motor vehicles. Many sections of the old roads alongside the river are not closed to vehicle traffic, although no motor vehicle bridges cross the river within the project APE.

Previous Cultural Resources Investigations

Idaho Power identified a regional study area extending beyond the APE and completed a record search of this area at the Idaho State Historical Society. The record search found that at least 27 different archaeological studies have been undertaken in the vicinity of the Swan Falls Project. These studies are discussed in terms of four general time periods: the 1920s to the 1970s, the 1980s, the 1990s, and the "New Millennium."

The first archaeological investigations near the Swan Falls Project were undertaken in 1929, with the work undertaken on behalf of Idaho State College (Tuohy, 1959; Tuohy and Swanson, 1960; Swanson, 1965), Idaho State University (Keeler and Koko, 1971), and the Boise State College Archaeology Club (Statham, 1971). Additionally, in 1976, BLM surveyed a 75.2-mile stretch of the Snake River along the Swan Falls to Guffey reach (Murphey, 1977, 1981). These investigations led to the establishment of the Guffey Butte-Black Butte Archaeological District in 1978. The Archaeological District encompasses the entire project area and extends from near Grand View, Idaho, to a point approximately 30 miles downstream near Walters Ferry, Idaho. The Archaeological District includes 118 archaeological sites, most of which are associated with Native American use.

In the 1980s, additional studies were undertaken in the project vicinity by Idaho Archaeological Consultants (Plew, 1980), Boise State University (Ames,1982a, 1982b, 1983), the BLM (Wyatt, 1985; Willig, 1988, 1989), and Idaho State University (Sammons and Myler, 1994). These studies included some of the first intensive archaeological studies in the area as well as the excavation of several important sites.

In 1991, Idaho Power surveyed the area containing the historic Swan Falls village, where new buildings associated with the project were to be constructed (Druss, 1991). One site, 10AA204, was a refuse dump located in the construction zone; this dump was subsequently determined to be ineligible for the National Register, but an associated foundation and other remains were not evaluated. Deterioration of many of the historic structures in the Swan Falls village complex and ongoing maintenance problems led Idaho Power to remove many of the buildings during renovation of the housing area. Because the village was considered to be a historic property eligible for listing on the National Register, mitigation measures were developed in consultation with Idaho SHPO and the Commission. A cultural resources management plan was developed and then implemented through a memorandum of agreement. Under the memorandum of agreement, Idaho Power completed Historic American Building Survey documentation at the village. Most of the buildings were documented and reviewed in 1992 after the Historic American Building Survey documentation was completed (Stacy, 1992, 1996).

Also in the early 1990s, a concentration of 83 boulders containing petroglyphs in the project vicinity were systematically recorded (Nance and Young, 1993). In 1995, Boise State University conducted an archaeological field school downstream from Swan Falls dam. Throughout 1996 and in 1998 (Plew, 1996; Palmgren, 1998), BLM conducted several surveys in the project area. This included a survey of 80 acres of land just downstream from Swan Falls dam and 40 acres within the Guffey-Black Butte Archaeological District.

In the late 1980s, an increased demand for additional generating capacity and the age of the existing Swan Falls powerhouse led to a decision by Idaho Power to construct a new powerhouse between the historic powerhouse complex and the left bank of the Snake River. Once the new structure was completed, modifications were made to the historic powerhouse, including removal of the turbine and other historic equipment. Prior to decommissioning, Idaho Power sponsored Historic American Engineering Record (HAER) documentation of the historic powerhouse (HAER No. ID-20), which served as mitigation for the "adverse effect" to historic properties resulting from removal of historic equipment (Stacy, 1991). The HAER documentation was accepted by the NPS and filed with the Library of Congress with a copy sent to the Idaho SHPO.

Since 2000, BLM has conducted additional surveys in the vicinity of the project (Palmgren, 2000; Shaw, 2000; 2002; 2003; Wallace, 2003). Additionally, FWS surveyed the mid-channel islands in the project area (Raymond, 2002). Finally, in 2005, Science Applications International Corporation conducted a small survey near Swan Falls dam (Corn and Gross, 2005).

The record search resulted in the identification of 310 previously recorded archaeological resources within the regional study area. Most of these resources are located outside of the APE. As mentioned above, one historic district (the Guffey Butte-Black Butte Archaeological District) is documented within the APE. A total of 74 of the historic properties listed in the district are located within the project APE. An additional 74 sites previously recorded within the APE are not contained within the district boundaries.

Identified Resources

Prehistoric and Historic Archaeological Resources

During summer 2006, Idaho Power conducted an intensive archaeological survey of all of the 3,472 acres within the APE to relocate and re-record all 148 of the previously recorded sites in the project APE and locate and record any resources that had not been previously documented. Additionally, surveyors sought to correct errors in site locations found on previous records. Five of the previously recorded sites that are currently listed in the Archaeological District could not be located during relicensing studies. An additional 12 previously recorded sites not listed in the Archaeological District were either (1) located but in poor condition, (2) not relocated, (3) not relocated and assumed destroyed, or (4) not accessible due to landowner constraints.

A final report titled *Archaeological Survey of the Swan Falls Project Area* was prepared that presented the results of the fieldwork (Root et al., 2008). The survey resulted in the identification and recordation of 57 new sites. Including the number of previously recorded sites, 205 sites have been documented within the APE (Root et al., 2008; Corn and Baker, 2008).

A total of 148 of the 205 resources identified within the APE are prehistoric in nature or strictly associated with Native American use. Native American sites include rockshelters, open campsites, boulder shelters, housepits, lithic scatters, and rock art. These sites appear to span a considerable range in chronological age. Dated components of the sites in the Swan Falls region suggest occupation of the Snake River Plain from at least the Archaic Period through the Protohistoric Periods (Corn and Baker, 2008).

Of the 57 new sites that were recorded, 28 sites contain only historic components (Euroamerican or Chinese). These sites include historic archaeological sites and structures, a bridge, ferry crossings, cabin remains, and a small town site. Another 28 sites contain both Native American and historic components. Finally, one site was subsequently determined to be modern and is therefore not considered to be a site (10AA456).

Table 13 provides a summary of all 205 archaeological sites and architectural properties identified within the project APE.

Table 13. Archaeological and historic resources within the Swan Falls Project APE (Source: Corn and Baker, 2008, as modified by staff).

Evaluation or Recommendation	Number	Comments
Listed in district or individually	75	Of the 75 sites, five previously recorded sites were *not relocated* during the relicensing survey (10AA19, 10AA50, 10OE25, 10OE247, and 10OE250)
Eligible	105	--
Total number of listed or eligible sites	180	--
Insufficient information (relocated and in poor condition, not relocated, denied access to, not relocated and assumed destroyed)	12	Of 12 sites, one was located and is in poor condition (10AA210); access to two sites was denied (10OE2014, 10OE2015); six sites were not relocated (10AA22, 10AA199, 10AA2100, 10SAA201, 10AA208, 10OE31); the remaining three sites were not relocated and are assumed to be destroyed due to heavy disturbance in the reported location (10AA193, 10AA194, 10AA195).
Not eligible, as determined by the Idaho SHPO	1	10AA204
Not eligible	11	Of the 11 sites, two previously recorded sites were *not relocated* during the relicensing survey (10AA186 and 10AA445) and one site was determined to be modern (10AA456).
Unevaluated	1	Not relocated (IHSI 01-15199)
Total Sites in APE	205	--

The Idaho SHPO concurred with the National Register evaluations contained within a draft of the archaeological report (letter from K.C. Reid, State Archaeologist and Deputy SHPO, Idaho State Historic Preservation Office, Boise, ID, to S. Baker, Senior Archaeologist, Idaho Power, Boise, ID, December 28, 2007, filed in the license application).

In its application, Idaho Power states that all 105 of the sites that are eligible for the National Register but are not currently listed in the Archaeological District could also contribute to the Archaeological District's eligibility.

Historic Structures

Three historic period structures were documented within the project APE: the Swan Falls dam and its associated original powerhouse (10AA211, IHSI 01-759, IHSI 73-759); the boardinghouse, which is the last remaining building from the operator's Swan Falls Village (IHSI 01-17866); and the Guffey Railroad Bridge (10OE1994, 10CN44, IHSI 73-1706, IHSI 73-4908).

As mentioned above, the Swan Falls dam and powerhouse were built between 1900 and 1901 to supply power to the Silver City area of the Owyhee Mountains. The dam and its associated features are listed on the National Register as components of the first hydroelectric project on the Snake River.

Swan Falls Village (IHSI #010-17866) was constructed to house employees working at Swan Falls dam. The boardinghouse (also known as the clubhouse) was constructed in 1901 and was the first residence built at the dam site. The boardinghouse is maintained and remains in good condition. While not currently listed on the National Register, the structure has been recommended as eligible for inclusion.

The Guffey Railroad Bridge is not associated with the Swan Falls Project facilities. It was constructed between 1896 and 1897 to support mining operations in Silver City. The bridge is listed on the National Register as part of the Archaeological District.

Traditional Cultural Properties and Sacred Sites

No ethnographic studies have been undertaken in the project area. The Shoshone-Bannock Tribes have commented several times that an ethnographic study should be implemented (letter from A.A. Colby, Chairman, Fort Hall Business Council, Shoshone-Bannock Tribes, to C. Jones, Idaho Power, Boise, ID, December 21, 2007; letters from A.A. Colby, Chairman, Fort Hall Business Council, Shoshone-Bannock Tribes, to the Commission, Washington, D.C., August 26, 2008, and March 13, 2009). In their most recent letter, the Shoshone-Bannock Tribes comment that they remain interested in working with Idaho Power and the Commission to implement an ethnographic study. In its application, Idaho Power states that the Shoshone-Bannock, Shoshone-Paiute Tribes, Burns Paiute Tribe, and Fort McDermit Paiute and Shoshone Tribes have not responded to requests for assistance in identifying any TCPs that may be located within the project APE.

3.3.7.2 Environmental Effects

Effects of Project Operations on Cultural Resources

We describe Idaho Power's proposed operations in section 2.2.2, *Proposed Project Operations*. In this section, we evaluate the effects of Idaho Power's proposed operations on the following resources: (1) prehistoric and historic-period archaeological resources; (2) historic buildings and structures; and (3) TCPs and sacred sites.

Prehistoric and Historic Archaeological Resources

Archaeological sites can be disturbed by any action (natural, animal, or human) that disturbs soils or ground surfaces on which they occur. Archaeological sites are susceptible to disturbance from grazing, pedestrian and vehicular traffic, construction, vandalism, and wind erosion. Fluctuating water levels can result in eroding shorelines and adverse effects on archaeological sites that may be located along those shorelines. Exposure of archaeological sediments as a result of erosion can lead to displacement or loss of cultural materials, and also to exposure of artifacts that may become vulnerable to unauthorized collecting or inadvertent damage.

Archaeological surveys conducted by Idaho Power (Root et al., 2008) included assessment of site conditions and descriptions of observed disturbances at cultural resources sites in the Swan Falls APE. Identified disturbances varied, and included damage as a result of recreational activity, erosion, roads and vehicle traffic, construction, cattle grazing, and other activities. In its application, Idaho Power stated that adverse effects as a result of project operations could include shoreline erosion that is attributable to reservoir fluctuation and damage as a result of project road construction and maintenance. Idaho Power concluded that 65 of the 205 sites in the APE had signs of disturbance that could be attributed to project operations, with the primary agent being river erosion. At these sites, disturbances were evaluated as minor (33 sites), moderate (19 sites), moderate to severe (1 site), and severe (11 sites). One additional site was documented as having completely lost integrity (10OE3083). Surveyors were either denied access to 10 additional sites or were unable to relocate them; effects to these sites are therefore unknown. While many of the 130 remaining archaeological sites also exhibited deteriorating conditions, Idaho Power concluded that most of these disturbances were not related to the project.

Of the 11 sites with severe effects, 10 were identified as being affected by a variety of agents (10AA54, 10AA176, 10AA177, 10AA189, 10AA448, 10AA457, 10OE24, 10OE583, 10OE9863, and 10EL2036) with erosion being the major disturbance. One severely affected site (10AA41) was damaged by vandalism. Idaho Power recognized that at least some of the erosion observed at the archaeological sites within the APE may be a result of project operations. However, in its application, Idaho Power stated that operational conditions and restrictions ensure that the river elevation changes, both upsteam and downstream of the dam, are relatively gradual and of comparatively low magnitude. Idaho Power concludes that these gradual elevation

changes limit the degree to which project operations are responsible for erosion of cultural sites in river and shoreline locations.

Only three instances were noted of road damage to sites on lands owned by Idaho Power or on other lands where road damage is a result of project activities (10AA41, 10AA43, 10OE3083). Both table E.4-10 of the application and Idaho Power's archaeological survey report state that road construction associated with project operation affects site 10AA43. This site also has been heavily vandalized. Idaho Power states that it does not believe it is responsible for adverse effects on sites resulting from vandalism (Root et al., 2008).

Although dispersed recreation affects more than half of the sites within the project APE, Idaho Power stated that most of these sites are accessible because of an existing road; therefore, disturbances associated with recreational activities are not project related. However, a report titled *Influences of Human Activities on Terrestrial Resources Associated with the Swan Falls Hydroelectric Project* (human use study; Carpenter, 2008) used a GIS predictive model to conclude that 13 sites within the APE are potentially at Very High, High, or Moderate risk for damage as a result of human use (primarily recreation) associated with the project.

In section 3.3.1.6 of the HPMP, Idaho Power acknowledges that improvements to the existing six dispersed recreation sites could also affect historic properties. Additionally, as part of the recreation improvements and implementation of the Wildlife Habitat Protection and Enhancement Plan, many of the braided roads that currently traverse the project area would be closed and revegetated. Single access roads to the existing and proposed recreation improvements would encourage visitors to remain on designated access roads. In section E.4.1.3.3 of the application, Idaho Power explains that no archaeological sites or TCPs have been identified within the specific footprint of these planned improvements. No known archaeological sites would be affected by the proposed measures.

Our Analysis

Fluctuating water levels, even gradual changes, can destabilize soils and lead to seepage failure that affects not only shorelines but also archaeological materials present in those soils. Erosion of soils containing archaeological materials can result in displacement or loss of artifacts, as well as exposure of artifacts, making them vulnerable to unauthorized collecting or inadvertent damage.

Continued operation of the Swan Falls Project would cause adverse effects on some of the identified archaeological sites within the project's APE that are subject to fluctuating water levels.[43] Such erosion effects caused by fluctuating water levels result

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[43] The 3-foot fluctuation zone within the project's reservoir and the shoreline downstream from the project's dam include erosion-related effects caused by the project.

in deflation of archaeological materials through the underlying sediments, lateral displacement of archaeological materials, and destruction and removal of archaeological materials through incising, cutting, and undercutting of the bank. The primary erosion effects occurring at the Swan Falls Project are cutting and undercutting of soft sediments along the bank. Fluctuations in water levels stemming from project operations can cause slumping and collapsing of archaeological deposits along the shoreline where these cut banks occur.

In our October 7, 2008, AIR, we requested that Idaho Power provide site-specific treatment measures for the sites that are severely affected by erosion. We also requested that Idaho Power include a statement in its response that the measures would be implemented upon license issuance, or that it specify how mitigation for such effects would be accomplished under the original license. Idaho Power responded that sites experiencing severe erosional effects would be monitored over 3 years to determine if that erosion is project related (Idaho Power, 2009a). We analyze and address erosion of historic properties present within the APE in *Management of Historic Properties* below.

The surface visibility of many archaeological sites leaves them vulnerable to damage or destruction by recreational and other users. Idaho Power proposes improvements to the Swan Falls downstream boat ramp, Swan Falls Park, and Swan Falls reservoir boat ramp and improvement of six dispersed recreation sites both upstream and downstream of Swan Falls dam (see section 3.3.5, *Recreation*), which could affect archaeological sites.

In its application and HPMP, Idaho Power proposes measures for monitoring and treating, as necessary, sites potentially subject to adverse effects from recreational use. We analyze and address Idaho Power's proposed measures for the treatment of archaeological sites affected by recreational activity and improvement proposals in *Management of Historic Properties* below.

Historic Buildings and Structures

Continued maintenance, repair, and upgrades to historic buildings and structures associated with the Swan Falls Project are necessary to meet safety and operational needs and also to retain their historic character. These activities could potentially adversely affect these resources by altering the characteristics of the structures that may qualify them for inclusion in the National Register.

The remaining historic structures associated with the project are the original powerhouse, Swan Falls dam, and Swan Falls Village boardinghouse. These structures are currently maintained by Idaho Power. One additional historic structure within the project APE, the Guffey Railroad Bridge, is not a project structure and it is not maintained by Idaho Power. In its application, Idaho Power states that any adverse effects to the bridge are therefore not project-related.

In its application and HPMP, Idaho Power states that it would continue to maintain and use Swan Falls dam, the original powerhouse, and the Swan Falls boardinghouse.[44] The HPMP contains a protocol for review of maintenance, repair, alteration, renovation, and restoration activities that may be necessary in the future to ensure that the historic character of these structures is preserved.

Our Analysis

Project operations could beneficially affect Swan Falls dam and the original powerhouse through continued use and maintenance. However, repairs and upgrades could also affect the characteristics of these properties that make them eligible for listing on the National Register. Because it is integral to the functioning of the hydroelectric project, the dam would remain in active use and good condition. However, the original powerhouse and boardinghouse are not necessary for the operation of the project and could become obsolete or unnecessary, potentially leaving these structures susceptible to deterioration or neglect. Continued use and maintenance of the dam, original powerhouse, and boardinghouse would increase the likelihood that these structures would be repaired and maintained. Idaho Power's proposal to assess the potential for adverse effects associated with structure maintenance and repair and to consult the Secretary of the Interior's Standards for the Treatment of Historic Properties to identify preservation options if adverse effects cannot be avoided would ensure that such adverse effects are resolved in a manner consistent with the requirements of section 106 of the NHPA.

Traditional Cultural Properties

In its application, Idaho Power recognized that project effects on potential TCPs are unknown because such resources have not yet been documented within the APE. In its HPMP, Idaho Power proposes to conduct a TCP study within the first 3 years after new license issuance.

Our Analysis

We analyze and address Idaho Power's proposed measure for the future identification and management of TCPs below under the heading *Management of Historic Properties*.

Management of Historic Properties

In 2007, in consultation with BLM, the Idaho SHPO, and Shoshone-Bannock Tribes, Idaho Power prepared a draft HPMP to address project effects on historic properties. The draft HPMP and an archaeological survey report were provided to the Idaho SHPO for comment, and the Idaho SHPO responded in December 2007 (letter from K.C. Reid, State Archaeologist and Deputy SHPO, Idaho State Historic

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[44] Although this building is currently referred to as the clubhouse, its historical use was as a boardinghouse.

Preservation Office, Boise, ID, to S. Baker, Senior Archaeologist, Idaho Power, Boise, ID, December 28, 2007, filed in the license application). Most of the Idaho SHPO's comments were addressed in a revised HPMP that was provided to the Commission in June 2008 as part of the final license application. Commission staff commented on the June 2008 HPMP and the resulting response. Idaho Power filed a second revised HPMP with the Commission in December 2008.

Measures contained within HPMPs typically include regular monitoring of historic properties and the identification of specific mitigation measures to address project-related effects. Regular monitoring of cultural resources is a meaningful way to assess the existing condition of archaeological sites and to determine if a given site's condition has changed over time and why. Monitoring may indicate whether or not a project's operation and/or maintenance activities are resulting in those changes and if those changes may adversely affect site characteristics that might make it eligible for inclusion on the National Register. In these cases, appropriate mitigation measures would be developed to eliminate or lessen the disturbance and to prevent further deterioration or loss of resource integrity. For archaeological resources, mitigation measures may include installing protective barriers or fencing, closing roads and/or redirecting activities that are disturbing a site, or stabilizing a site through the planting of native vegetation or installation of mechanical stabilization materials. For historic buildings and structures, repairs (when undertaken in keeping with the historic nature of the structure) or prevention of conditions that cause adverse effects would be appropriate.

Monitoring

Idaho Power proposes to implement a monitoring program that would assess site conditions over time, determine the cause of identified disturbances, and allow for the development of appropriate mitigation measures. The program identifies three monitoring protocols: (1) general site monitoring; (2) assessing project impacts on historic properties; and (3) assessing impacts on historic properties from human-use. According to the program, all sites within the APE would be monitored according to one of the protocols, except for those resources that were ineligible for the National Register, not related to the project (of which some are assumed destroyed through inundation or erosion), or not accessible because access was denied by private landowners.

Under Idaho Power's proposal, most of the sites within the project APE would be monitored according to the general site monitoring protocol. This protocol would begin with an initial data collection period of 4 years. During this period, Idaho Power would visit the sites every other year so that all sites would be visited twice over the course of 4 years. Following this assessment period, the need for future monitoring would be evaluated.

The 10 sites severely affected by erosion (10AA54, 10AA176, 10AA177, 10AA189, 10AA448, 10AA457, 10OE24, 10OE583, 10OE9863, and 10EL2036) would be monitored according to the second protocol—assessment of project impacts. This

protocol would call for annual monitoring of these sites for a 3-year period. During monitoring, disturbances at these sites would be precisely mapped and photographed. After 3 years of monitoring, data would be evaluated to determine if observed damage is project related. Monitoring frequency would then be re-evaluated. Sites experiencing severe project-related adverse effects would continue to be monitored annually under this protocol; sites experiencing moderate project-related adverse effects would continue to be monitored every 3 years. All sites experiencing severe or moderate project-related adverse effects would also be assessed for the need to implement mitigation measures. Idaho Power states that this assessment could occur prior to the end of the 3-year monitoring period. Sites with no project-related adverse effects would be reassigned to the general monitoring protocol.

The third monitoring protocol—assessing impacts from human use—would be applied to effects at the 13 sites identified in the human use study as potentially at Very High, High, or Moderate risk for damage. These sites would be monitored to test the human use study GIS model and to assess effects of human use. This protocol would call for annual monitoring of these sites for a 3-year period. During monitoring, disturbances at these sites would be photographed each year from the same vantage point and then mapped on the most recent site sketch map. After 3 years of monitoring, data would be evaluated to determine the interval of future monitoring or the possibility of reassigning specific sites to the general monitoring protocol. The data would also be used to make management recommendations to other appropriate landowners. However, Idaho Power states that it does not assume responsibility for observed effects on lands owned by others or costs related to the mitigation effects on those lands. Recommendations of protective or mitigation measures may be made prior to the end of the three-year monitoring period.

After implementation of these three monitoring protocols, Idaho Power estimates (for budgeting purposes only) that monitoring could find that six sites could require some sort of mitigation.

Our Analysis

Idaho Power's proposal to implement a general monitoring program at sites where the cause of site disturbance is unknown would help determine if damage is project related. This would in turn enable Idaho Power to assess the need for and frequency of future monitoring. It would also assist in the development of appropriate treatment measures if disturbances are identified as being related to project operations.

In its application and HPMP, Idaho Power proposes to implement the monitoring protocol for assessing project impacts at the 10 sites that are experiencing severe erosional impacts. However, while a protocol for mapping and photographing the erosion at these sites over a 3-year period is identified in the HPMP, Idaho Power does not indicate how such monitoring would determine if the erosion that is occurring is project related or describe the criteria that would be used to make these determinations. Additionally, spending 3 years to monitor sites that are currently eroding could delay

implementing corrective measures, resulting in the continued loss of archaeological site integrity of significant historic properties.

As mentioned above, Idaho Power states that no archaeological sites or TCPs have been identified in the specific footprint of the proposed recreational improvements. However, site location maps and records provided in Idaho Power's archaeological report (Root et al., 2008) indicate that significant historic properties are located in the immediate vicinity of the improvements and/or along the access roads to these improved areas. These sites include, but are not limited to, the following: 10AA20, 10AA21, 10AA41, 10AA43, 10AA45, 10AA197, 10AA205, and 10AA210. All of these sites are either listed or eligible for listing on the National Register, and proposed recreation improvements could directly affect them. In its HPMP, Idaho Power does not discuss the potential adverse effects associated with the proposed recreation improvements on these or other historic properties. Instead, Idaho Power proposes to implement the general monitoring program at seven out of eight of these sites, monitoring them every other year for 4 years. At the eighth site (10AA205), the monitoring protocol for assessing impacts from human-use would be implemented, and the site would be monitored annually.

Although the closure of braided roads in the project area would provide some protection to historic properties currently affected by vehicle access and recreational use, monitoring alone would not ensure that the eight historic properties identified above are protected from potential adverse effects associated with proposed recreation improvements. Consideration of the potential direct and/or indirect effects of the improvements (including access roads) on historic properties in the vicinity of the facilities and compliance with section 106 in accordance with the protocol provided in section 4.8.1 of the HPMP, *Review Process Prior to Ground-Disturbing Activities*, would ensure that these properties are protected from potential adverse effects of recreational improvements and that appropriate treatment or mitigation is undertaken if necessary. Further, the timely installation of protective measures, such as road closures, barricades to block vehicular access to sensitive areas, and the posting of restrictive signage, would ensure that damage to these sites and other affected sites is lessened. In addition to the proposed monitoring, consultation with the Idaho SHPO to develop and implement specific measures addressing the direct and indirect effects on historic properties from proposed recreation improvements and project-related dispersed recreational activities would ensure compliance with section 106 of the NHPA.

The human use study identified 13 sites that could be at risk from human use (Carpenter, 2008). In its response to BLM's comments on the draft license application, Idaho Power stated that the human use study would "not be used as a tool or mechanism for monitoring, and was expected only to provide a process for identifying sites susceptible to a specific type of risk so that they could be monitored with that factor in mind." However, in its HPMP, Idaho Power provides a specific protocol to monitor these 13 sites (assessment of impacts from human-use) that is not afforded to the other sites within the APE. Although data obtained from monitoring the 13 sites would serve to test the ability of the GIS model to predict potential project effects, we question the

adequacy of the study because it did not cover the entire APE and identified only one of the sites (10AA205) that would be potentially affected by the proposed recreation improvements.

Mitigation

In its application and HPMP, Idaho Power proposes a measure that would implement or recommend implementation of mitigation measures for historic properties that are currently adversely affected by project operations. Historic properties would be assigned to one of two possible mitigation categories depending on the outcome of the various site monitoring protocols: (1) for sites with non-project adverse effects located on non-Idaho Power lands, Idaho Power would recommend possible mitigation measures but would not be responsible for mitigation; and (2) for sites on Idaho Power lands or determined to be experiencing project-related adverse effects, Idaho Power would assume responsibility for mitigation. Idaho Power assumed that most sites that fall into the first category would be those subject to damage as a result of vandalism, looting, grazing, recreation, shoreline erosion along the river, or general erosion. Sites that fall into the second category would be those adversely affected by shoreline erosion along the reservoir as a result of water level fluctuation.

Although it proposes no immediate mitigation measures for specific sites within the APE, Idaho Power identified potential mitigation measures such as restricting access, installing cautionary signs, conducting security patrols, data recovery excavations, and stabilizing shorelines. Idaho Power states that in all cases, it would strive to leave the existing historic properties in place. In its discussion of mitigation measures in the HPMP, Idaho Power reiterates that the 10 historic properties experiencing severe erosion potentially related to project operations would be monitored to determine if the observed erosion is indeed project-related. Idaho Power stated that it assumed that 6 of these 10 sites may require some level of mitigation.

Idaho Power's archaeological survey report (Root et al., 2008) states that a road maintained by Idaho Power provides access to site 10AA43. This site has been greatly disturbed by vandalism and looting. The survey report therefore recommended that the site be tested for intact deposits (Root et al., 2008). Immediate treatment of site 10AA41 was also recommended. However, in response to Idaho SHPO's comments on the draft license application, Idaho Power states that any recommendations made by its consultants in the archaeological report are the opinions of the report authors and do not represent agreement by Idaho Power. It its application and HPMP, Idaho Power instead calls for general monitoring of sites 10AA41 and 10AA43 and possibly the installation of educational signage at a proposed new recreation facility. No other mitigation for vandalism is proposed.

Our Analysis

While natural erosion as a result of water runoff cannot be attributed to the project, erosion associated with the project can result in a loss of archaeological site integrity.

Kept unchecked, erosion has the potential to adversely affect significant cultural resources. Idaho Power does not propose to conduct any mitigation for erosional adverse effects until after its monitoring program has been implemented. However, according to the site records prepared during the archaeological survey, artifacts are eroding from cutbacks at all 10 of the sites experiencing severe erosion. At one site, a large hopper mortar was reported as "teetering" on the edge of a cutbank, and would "fall into the river soon" (Root et al., 2008). Because the site record for this resource is dated September 2006, it is very possible that this artifact has been lost to the river. Additionally, cultural features, including a possible house floor, were reported as eroding from at least three of the sites, and the site record for site 10AA54 states that the site "will require immediate stabilization." Idaho Power's archaeological survey report recommends limited testing of nine of the sites in order to determine if intact subsurface deposits are present near eroding cutbanks.

Three of the 10 sites severely affected by erosion are located on the banks of Swan Falls reservoir and 7 are located downstream of Swan Falls dam. While studies of erosion associated with operation of the C.J. Strike and Swan Falls Hydroelectric projects (Wulforst et. al., 2000; Holmstead and Turley, 2005) concluded that water level fluctuations attributable to operation of the Swan Falls Project are unlikely to cause significant shoreline erosion. We note, however, that these studies were essentially conducted in terms of how such erosion affects terrestrial resources or riparian habitat overall, but were not undertaken from an archaeological perspective. Archaeological perspectives on shoreline erosion deal with the destruction and dislocation of archaeological cultural deposits, features, or artifacts. *In situ* cultural deposits, features, and artifacts are critical in the preservation of archaeological sites and movements or alterations of such materials through shoreline erosion can effectively destroy the integrity of an archaeological site over time. As discussed previously, shoreline erosion of archaeological materials caused by project-generated fluctuating water levels, both upstream and downstream from Swan Falls dam, can cause such displacement and destruction of archaeological materials. Appropriate treatment of the 10 sites to reduce the effects caused by shoreline erosion would ensure that these historic properties are protected from further damage. If Idaho Power, in consultation with BLM and the Idaho SHPO, developed site-specific treatment measures for all 10 sites, which could include testing and/or installation of stabilization measures, it would ensure that these archaeological deposits are adequately protected from further erosion. This work could be accomplished now under the existing license or could be implemented under a revised HPMP upon issuance of a new license.

Similarly, if Idaho Power, in consultation with the Idaho SHPO and other agencies as appropriate, developed and implemented specific testing and/or mitigation measures for sites 10AA41, 10AA43, and all other sites that are experiencing vandalism on Idaho Power lands, it would ensure that these sites are protected. This work could be undertaken under the conditions of the existing license to ensure that the sites are

protected as soon as possible, or addressed through a revised HPMP that would be implemented upon license issuance.

Identification of Traditional Cultural Properties

Idaho Power's HPMP provides a plan to identify TCPs through consultation with the Shoshone-Bannock Tribes, the Shoshone-Paiute Tribes of the Duck Valley Reservation, the Burns Paiute Tribe of the Burns Colony, and the Fort McDermitt Paiute and Shoshone Tribes. Any TCPs that are identified and are eligible for the National Register would merit the same treatment measures as those identified in the HPMP for other known historic properties. Appropriate measures to address project-related adverse effects to areas of traditional use that are eligible for the National Register would be developed in consultation with the Idaho SHPO, agencies, and tribes.

In March, 2009, the Shoshone-Bannock Tribes provided comments in response to project scoping documents (letter from N. Small, Vice-Chairman, Fort Hall Business Council, Shoshone-Bannock Tribes, to the Commission, Washington, DC, filed with the Commission March 13, 2009). In their letter, the Tribes requested the Commission to require a broader National Environmental Policy Act analysis of the APE that would result in an analysis that would encompass the Tribal perspective of project effects. The Shoshone-Bannock Tribes also commented that they consider the Snake River to be eligible for the National Register as a TCP and recommended the Commission analyze mitigation measures to promote the recovery of native species within the project area. Further, the Shoshone-Bannock Tribes expressed concern regarding potential adverse effects to the environment as a result of proposed flow changes, and requested increased monitoring and development of site protection measures for National Register eligible resources. Finally, the Shoshone-Bannock Tribes commented that they are interested in working with the Commission and Idaho Power to implement an ethnographic study for the project. They noted that while a complete copy of study results would be provided to Commission (subject to confidentiality restrictions), only summary reports of the resulting data would be provided to Idaho Power.

Our Analysis

The Swan Falls Project has the potential to adversely affect TCPs that may be present within the APE. Idaho Power's proposal to implement a TCP study and to continue consultation with the participating tribes would ensure that such properties are documented and potential project-related adverse effects are addressed The Shoshone-Bannock Tribes suggest that mitigation measures should be analyzed that would promote the recovery of native species within the project area. The completion of a TCP study would assist in the identification of areas that are currently being used to gather plants for traditional purposes. Such areas might be TCPs, and appropriate mitigation for project effects to these areas could include revegetation of native plant species.

Other Management of Historic Properties

Idaho Power's HPMP includes a variety of other measures for management of cultural resources and implementation of the HPMP:

- Appointment of an historic properties management coordinator responsible for overseeing implementation of the HPMP.
- Annual reporting to agencies and tribes on activities associated with the HPMP that were undertaken during the preceding year.
- As-needed training sessions for Idaho Power staff (beginning in the first year of HPMP implementation) to ensure that employees are familiar with cultural resource laws and regulations, instruction on HPMP protocols and requirements, and other information necessary regarding historic properties. Idaho Power states that the Idaho SHPO, BLM, and affected tribes can be invited to periodically attend the training sessions and assist in instruction if they desire.
- Pre-action review by the HPMP coordinator of planned actions involving ground disturbance in consultation with the Idaho SHPO, appropriate tribes, and appropriate land management agencies as specified in the HPMP.
- Development of a public interpretation program that provides information concerning the cultural history of the project area. This program includes (1) improving interpretive and education displays at the Swan Falls powerhouse museum and increasing days and hours of public access; and (2) developing interpretive and educational displays at the Swan Falls dam and boardinghouse.
- Implementation of specific protocols specified in the HPMP in the event of emergency situations or the inadvertent discovery of a previously unknown cultural resource or human remains.
- A plan to conduct additional analysis of archaeological materials previously recovered from the project area.
- A requirement that persons undertaking any archaeological excavations that may be necessary for the project meet the Secretary of the Interior's Standards for Professional Archaeologists and hold necessary state and federal permits, including curation agreements for recovered materials.

No additional historic properties management measures were recommended by agencies and tribes in response to the Commission's REA notice and request for comments.

Our Analysis

Idaho Power's proposal to appoint a historic properties management coordinator with local knowledge of the project's cultural resources, familiarity with applicable state

and federal laws and regulations, and professional experience in cultural resources management would ensure that the requirements of the HPMP are followed. Annual reporting to agencies and affected tribes on the status of overall cultural resources management over the course of the year would provide a regularly scheduled forum for parties to discuss the HPMP and provide recommendations about management of cultural resources. While the HPMP does not call for a formal review and/or revision of the HPMP, such a review process undertaken every 5 years would provide a sound basis for implementation of the HPMP over the license term. Affording the BLM the opportunity to comment, along with the Idaho SHPO and tribes, on proposed revisions to the HPMP would ensure that federal agencies with interest in the management of cultural resources on or adjacent to their lands would be able to contribute their views.

Idaho Power's proposal to conduct training sessions as needed for staff involved with the public or involved in planning and implementation of actions potentially affecting significant cultural resources would ensure that new employees are educated in a timely manner. These sessions would also ensure that all employees are regularly informed about issues, procedures and protocols regarding cultural resource management in the project. Inviting the participation of a tribal representative at each training session would contribute toward staff understanding of Native American perspectives on cultural resources.

Idaho Power's implementation of review procedures during the planning of potential ground-disturbing activities, as well as protocols for inadvertent discovery of previously unknown cultural resources and human remains as specified in its HPMP, would ensure that significant cultural resources are not inadvertently harmed by project-related actions, and that resources and human remains would be appropriately treated.

Idaho Power's proposals to install interpretive signage regarding cultural resources and their significance, and to increase days and hours of public access at Swan Falls powerhouse museum, would enable the public to become aware of the cultural importance of the project area. This could lead to an enhanced visitor experience and encourage protection of resources. The inclusion on the signs of information pertaining to site protection and applicable laws would provide an effective vehicle for educating the public about vandalism, its effects, and its potential legal consequences.

Idaho Power's proposal to develop and implement guidelines for curation of archaeological materials recovered at the project that are in accordance with federal and state requirements would ensure that such materials are properly conserved and also accessible, under properly controlled conditions, to those with appropriate research or cultural interests.

As discussed above, development and implementation of site-specific management measures for the 10 archaeological sites subject to severe adverse effects as a result of erosion would protect these sites from further damage. Additionally, development of measures to address potential adverse effects on archaeological sites that may be affected by proposed recreation improvements and road closure/revegetation

activities associated with the Recreation Plan and the Wildlife Habitat Protection and Enhancement Plan would ensure that these resources are appropriately preserved. Finally, identification and implementation of measures to address severe adverse effects occurring on archaeological sites caused by looting and vandalism would ensure that these sites are protected from these damaging activities.

Revision of Idaho Power's December 2008 HPMP to include these measures, following consultation with the involved parties, would ensure protection of historic properties within the project APE in accordance with section 106.

3.3.8 Socioeconomics

3.3.8.1 Affected Environment

The Swan Falls Project is located in Ada and Owyhee counties, Idaho. The city of Boise is the most populated city within Ada County, with an estimated population of 198,638 in 2006 (U.S. Bureau of the Census, 2009d). Table 14 presents population and other demographic data for the Ada and Owyhee counties and for Idaho from the U.S. Bureau of the Census.

Table 14. Population characteristics of Ada County, Owyhee County, and Idaho (Source: U.S. Bureau of the Census, 2009a,c).

	Population, 2000	Population Estimate, 2008	Private Nonfarm Employment, 2006	Median Household Income, 2007	Persons Below Poverty Level, 2007 (percent)
Ada County	300,904	380,920	187,342	$55,121	7.9
Owyhee County	10,644	10,877	1,630	$35,683	17.5
Idaho	1,293,955	1,523,816	546,251	$46,136	12.1

The U.S. Census Bureau reports that in 2000 there were approximately 285.2 persons per square mile in Ada County, 1.4 persons per square mile in Owyhee County, and 15.6 persons per square mile in Idaho as a whole. Population increases between 2000 and 2008 have followed the same pattern, with Ada County showing the highest growth at 26.6 percent, Owyhee County the lowest growth at 2.2 percent, and Idaho an intermediate growth at 17.8 percent (U.S. Bureau of the Census, 2009a, 2009c). The growth of the Ada County population is due to the presence of Boise, the state capital, and other fast growing cities such as Meridian, while the very slow growth in Owyhee County can be accounted for by the remoteness of most of the county from population centers. According to the data shown in table 14, the same pattern also prevails in

median household incomes, with Ada County highest at $55,121, Owyhee County lowest at $35,683, and Idaho at an intermediate point ($46,136).

The U.S. Bureau of the Census (2000) reports that the top three industries in the state in terms of employment were educational, health, and human services (19.2 percent); manufacturing (13.1 percent); and retail trade (12.6 percent). Ada County, which includes the metropolitan area of Boise, followed the same pattern with the top three industries being educational, health, and human services (17.4 percent); manufacturing (14.3 percent); and retail trade (12.7 percent). Rural Owyhee County had a very different pattern of employment, with the top three sectors being agriculture, forestry, fishing and hunting, and mining (25.5 percent); educational, health, and human services (13.7 percent); and manufacturing (14.8 percent). In Owyhee County, retail trade accounted for 7.3 percent of employment in 2000.

3.3.8.2 Environmental Effects

The Swan Falls Project benefits the local economy by providing a reliable source of power and by providing recreational opportunities that would not otherwise be available nearby. Idaho Power has not proposed any measures specifically associated with socioeconomic resources.

Our Analysis

Continued operation of the project as proposed by Idaho Power would continue to provide an economical source of power to the region, helping to support future economic growth. The additional spending associated with implementing various resource measures, such as the rehabilitation of degraded vegetation and the improvement of developed and dispersed recreational areas, would provide for some additional employment during the period of construction and monitoring.

3.4 NO-ACTION ALTERNATIVE

Under the no-action alternative, the project would continue to operate as it has in the past. None of Idaho Power's proposed measures or the resource agencies' recommendations and mandatory conditions would be required. Water quality and other aquatic conditions would remain essentially the same, with the minimum flow remaining the same as under current conditions. Riparian and upland habitats would not be rehabilitated, but would continue to be adversely affected by dispersed recreation use. Cultural resources would continue to be subjected to erosion, vandalism, and recreational use that cause site deterioration. Proposed upgrades to recreational sites would not occur.

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4.0 DEVELOPMENTAL ANALYSIS

In this section, we look at the Swan Falls Project's use of the Snake River for hydropower purposes to see what effect various environmental measures would have on the project's costs and power benefits. Consistent with the Commission's approach to economic analysis, the power benefit of the project is determined by estimating the cost of obtaining the same amount of energy and capacity using the likely alternative generating resources available in the region. In keeping with Commission policy as described in Mead, our economic analysis is based on current electric power cost conditions and does not consider future escalation of fuel prices in valuing the hydropower project's power benefits.[45]

Our analysis includes: (1) an estimate of the cost of individual measures considered for the protection, mitigation and enhancement of environmental resources affected by the project, and (2) an estimate of the project power benefits for each of the licensing alternatives. To determine the net annual power benefit for each of the licensing alternatives, we compare project costs to the value of the power output as represented by the cost of a likely alternative source of power in the region. For any alternative, a positive net annual power benefit indicates that the project power costs less than the current cost of alternative generation resources and a negative net annual power benefit indicates that project power costs more than the current cost of alternative generation resources. This estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license. However, project economics is only one of many public interest factors the Commission considers in determining whether, and under what conditions, to issue a license.

4.1 POWER AND ECONOMIC BENEFITS OF THE PROJECT

Table 15 summarizes the economic assumptions and economic information we use in our analysis. This information was provided by Idaho Power in its license application. We find that the values provided by Idaho Power are reasonable for the purposes of our analysis. Cost items common to all alternatives include taxes and insurance costs; net investment (the total investment in power plant facilities remaining to be depreciated); estimated future capital investment required to maintain and extend the life of plant equipment and facilities; relicensing costs; normal operation and maintenance cost; and Commission fees.

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[45] See *Mead Corporation, Publishing Paper Division*, 72 FERC ¶ 61,027 (July 13, 1995). In most cases, electricity from hydropower would displace some form of fossil-fueled generation, in which fuel cost is the largest component of the cost of electricity production.

Table 15. Parameters for the economic analysis of the Swan Falls Project.

Assumption	Value		Source
Period of economic analysis (years)	30		Staff
Current net investment (2010 dollars)[a]	$44,400,000		Idaho Power (2008a)
Current annual costs including operation and maintenance, FERC fees, and taxes (2010 dollars)[b]	$657,000		Idaho Power (2008a)
Relicense Application Costs[c]	$10,700,000		Idaho Power (2008a)
Term of financing (years)	20		Staff
Cost of capital (percent)[d]	8.18		Ida-Corp 10-K report
Discount rate (percent)[e]	7.16		Idaho Power (2008a)
Energy rate ($/MWh)[f]	On-Peak (Heavy Load)	Off-Peak (Light Load)	Idaho Power (2009a)
January	62.50	52.98	
February	59.33	48.94	
March	53.68	44.90	
April	46.07	33.23	
May	40.26	26.04	
June	38.18	26.94	
July	63.92	42.21	
August	70.72	51.64	
September	69.36	50.29	
October	62.40	50.74	
November	55.00	45.00	
December	65.00	55.50	
Composite rate (annual)[g]	50.12		Staff
Capacity rate ($/kilowatt-year)[h]	154		Energy Information Administration

Note: MWh – megawatt-hour

[a] Net investment provided in Exhibit D.2.2 of the license application.

[b] Annual costs were derived from Exhibit D, table D-2 of the license application.

[c] Cost to develop the license application is included in the current net investment total of $44,400,000.

[d] The cost of capital was based on the weighted average cost of capital as provided on page 22 of Ida-Corp's Form 10-K filing to the Securities and Exchange Commission for fiscal year ending December 31, 2008.

[e] The discount rate was provided in Exhibit D.4 of the license application.

[f] The energy rates were provided by Idaho Power in its January 5, 2009, AIR response 4 (Idaho Power, 2009a). The rates refer to Mid-Columbia Forward Values for November 2008 through October 2009.

[g] The composite energy rate is estimated based on a ratio of an on-peak energy time of 7:00 a.m. to 11:00 p.m. Monday thru Friday, and an off-peak energy time of 11:00 p.m. to 7:00 a.m. Monday thru Friday, and all day Saturdays, Sundays, and holidays.

[h] The capacity rate is based on the Energy Information Administration's Annual Outlook for 2009 at *http://www.eis.doe.gov/oiaf/aeo/index.html*.

4.2 COMPARISON OF ALTERNATIVES

Table 16 compares the annual costs and annual power benefits for the three alternatives considered in this draft EIS: no action, Idaho Power's proposal, and the staff alternative.

4.2.1 No-action Alternative

Under the no-action alternative, the project would continue to operate as it does now. The project generates an average of 161,300 MWh of electricity annually. The annual power value of the project under the no-action alternative would be $9,239,350 (about $57.28/MWh). The average annual cost of producing this power would be about $7,117,920 (about $44.13/MWh), resulting in an average annual power benefit of $2,121,430 (about $13.15/MWh). In other words, the project produces energy at a cost that is less expensive than that of currently available alternative generation by $13.15/MWh.

4.2.2 Idaho Power's Proposal

Under Idaho Power proposal, the project would continue to generate an average of 161,300 MWh of electricity annually. The annual power value of the project under Idaho Power's proposal would be $9,239,350 (about $57.28/MWh). The average annual cost of producing this power would be about $7,667,520 (about $47.54/MWh), resulting in an average annual cost of $1,571,830 (about $9.74/MWh) less expensive than the likely alternative cost of power.

Table 16. Summary of annual costs and annual power benefits for the alternatives for the Swan Falls Hydroelectric Project (Source: staff).

	No Action	Idaho Power's Proposal	Staff Alternative
Installed capacity (MW)	25	25	25
Dependable Capacity (MW)	7.5	7.5	7.5
Annual generation (MWh)	161,300	161,300	161,300
Annual power value[a] ($/MWh)	$9,239,350 57.28	$9,239,350 57.28	$9,239,350 57.28
Annual costs ($/MWh)	$7,117,920 44.13	$7,667,520 47.54	$7,678,220 47.60
Power benefit (i.e., power value minus costs) ($/MWh)	$2,121,430 13.15	$1,571,830 9.74	$1,561,130 9.68

Note: MW – megawatt
MWh – megawatt-hour

[a] The power value of $57.28/MWh includes the energy rate of $50.12/MWh and the dependable capacity rate of $154/kilowatt-year.

4.2.3 Staff Alternative

The staff alternative includes Idaho Power's proposal and has the same capacity and energy attributes. Table 17 shows the staff recommended additions, deletions, and modifications to Idaho Power's proposed environmental protection and enhancement measures and the estimated cost of each. The project would continue to generate an average of 161,300 MWh of electricity annually. The annual power value of the project under the staff alternative would be $9,239,350 (about $57.28/MWh). The average annual cost of producing this power would be about $7,678,220 (about $47.60/MWh), resulting in an average annual cost of $1,561,130 (about $9.68/MWh) less expensive than the likely alternative cost of power. The staff alternative would reduce the power benefit by about $10,700 (about $0.06/MWh) compared to the project as proposed by Idaho Power.

4.3 COST OF ENVIRONMENTAL MEASURES

Table 17 shows the costs for each of the environmental mitigation and enhancement measures considered in the analysis. We convert all costs to equal annual (levelized) values over a 30-year period of analysis to give a uniform basis for comparing the benefits of a measure to its cost.

Table 17. Cost of environmental mitigation and enhancement measures considered in assessing the environmental effects of continuing to operate the Swan Falls Hydroelectric Project (Source: Staff).

Enhancement/Mitigation Measures	Entities	Capital Cost (2010$)[a]	Annual Cost (2010$)[a]	Levelized Annual Cost (2010$)
Aquatic Resource Measures				
1. Provide an instantaneous minimum flow of 3,900 cfs downstream of the dam from April 1 to October 31 and 5,600 cfs from November 1 to March 31	Idaho Power, Staff	$0	$0[b]	$0
2. Continue ramping rate restrictions of no more than 1 foot per hour and 3 feet per day	Idaho Power, Staff	$0	$0[c]	$0
3. Continue to remove and dispose of aquatic macrophytes and debris that accumulate on the project trash racks to remove nutrients and oxygen-demanding material from the river	Idaho Power, Staff	$0	$0[c]	$0
4. Monitor water temperature and DO in the project outflow	Idaho Power, Idaho DEQ, Staff	$25,760	$5,150	$8,900
5. Develop and implement a plan to monitor water temperature and DO at the project inflow, and monitor flow and TDG at both the project inflow and outflow, for the first 5 years after license issuance as stipulated in the 401 WQC	Idaho DEQ, Staff	$30,000	$3,340[d]	$7,710

Enhancement/Mitigation Measures	Entities	Capital Cost (2010$)[a]	Annual Cost (2010$)[a]	Levelized Annual Cost (2010$)
6. Implement resident fish population monitoring	Idaho Power	$0	$1,250	$1,250
Terrestrial Resource Measures				
1. Implement the proposed Wildlife Habitat and Enhancement Plan				
a. Protect, enhance, and restore 25.1 acres of riparian habitat	Idaho Power, Idaho DFG, Staff	$18,810	$63,170	$65,910
b. Protect, enhance, and restore 45.3 acres of upland habitat	Idaho Power, Idaho DFG, Staff	$0	$31,140	$31,140
2. Implement the proposed Noxious Weed Management Plan to control noxious and undesirable weed species	Idaho Power, Staff	$0	$13,220	$13,220
3. Implement Special Status Plant Management Plan to protect and monitor special-status plant species	Idaho Power, Staff	$0	$9,820	$9,820
4. Develop and implement a transmission line operation and maintenance plan	Idaho Power	$0	$0	$0
5. Implement timing restrictions on transmission line maintenance activities, as needed, to protect benchland nesters and cliff-nesting raptors	Staff	$0	$0	$0

Enhancement/Mitigation Measures	Entities	Capital Cost (2010$)[a]	Annual Cost (2010$)[a]	Levelized Annual Cost (2010$)
6. Consider and mitigate impacts on Deer Flat National Wildlife Refuge islands located downstream of the current Swan Falls Project boundary	FWS	$0	$0[e]	$0
Recreation Resource Measures				
1. Finalize and implement the draft Recreation Management Plan				
a. Continue operation and maintenance of Swan Falls Park, Swan Falls reservoir boat ramp, Swan Falls downstream boat launch, the canoe portage trail and Swan Falls powerhouse museum	Idaho Power, Idaho DPR, Idaho DFG, Staff	$0	$0[c]	$0
b. Enhance the Swan Falls reservoir boat ramp	Idaho Power, Idaho DPR, Idaho DFG, Staff	$111,510	$8,090	$24,320
c. Improve Swan Falls Park	Idaho Power, Idaho DPR, Idaho DFG, Staff	$125,450	$71,240	$89,500
d. Enhance the Swan Falls downstream boat launch	Idaho Power, Idaho DPR, Idaho DFG, Staff	$139,400	$8,090	$28,380
e. Improve the canoe portage trail	Idaho Power, Idaho DPR, Idaho DFG, Staff	$0	$4,120	$4,120
f. Enhance six dispersed recreation sites[f]	Idaho Power, Idaho DPR, Idaho DFG, Staff	$385,160	$24,290	$80,340

Enhancement/Mitigation Measures	Entities	Capital Cost (2010$)[a]	Annual Cost (2010$)[a]	Levelized Annual Cost (2010$)
g. Implement the Litter and Sanitation Plan	Idaho Power, Idaho DPR, Idaho DFG	$99,580	$39,510	$54,000
h. Implement the Litter and Sanitation Plan on project lands only	Staff	$0	$0	$0[g]
i. Finalize and implement the Interpretation and Education Plan	Idaho Power, Idaho DPR, Idaho DFG, Staff	$85,690	$2,030	$14,500
2. Continue implementation of the Public Safety Plan	Idaho Power, Idaho DPR, Idaho DFG, Staff	$0	$0[c]	$0
3. Establish interagency recreation resource working group that convenes every 6 years	Idaho DPR, Staff	$0	$0[h]	$0
Land Use and Aesthetic Resource Measures				
1. Implement the Visual Guidelines Plan	Idaho Power, Idaho DPR, Idaho DFG, Staff	$0	$3,090	$3,090
a. Modify colors of the five Idaho Power-owned project houses	Idaho Power, Idaho DPR, Idaho DFG, Staff	$0	$720	$720
b. Paint the wooden elements at KOP 2	Idaho Power, Idaho DPR, Idaho DFG, Staff	$0	$220	$220
c. Establish screening around the lay-down yard	Idaho Power, Idaho DPR, Idaho DFG, Staff	$28,840	$640	$4,840

Enhancement/Mitigation Measures	Entities	Capital Cost (2010$)[a]	Annual Cost (2010$)[a]	Levelized Annual Cost (2010$)
d. Ensure that any new construction considers the protection of visual resources from important viewpoints.	Idaho Power, Idaho DPR, Idaho DFG, Staff	$0	$0	$0
2. Revise the Visual Guidelines Plan to include more specific details on color schemes, screenings, and materials	Idaho DPR, Staff	$0	$0	$0
3. Develop and implement a consistent signage plan	Idaho Power, Staff	$26,110	$0	$3,800
4. Finalize and implement a Resource Management Plan	Idaho Power, Idaho DPR, Idaho DFG, Staff	$69,240	$10,300	$20,380
5. Continue implementation policies for permitting piers, boat docks, and other facilities	Idaho Power, Staff	$0	$0[c]	$0
6. Establish interagency land use and aesthetic working groups that convene every 6 years	Idaho DPR	$0	$0[h]	$0

Enhancement/Mitigation Measures	Entities	Capital Cost (2010$)[a]	Annual Cost (2010$)[a]	Levelized Annual Cost (2010$)
Cultural Resource Measures				
1. Implement the Final HPMP				
a. Conduct general site monitoring of historic properties under the December 2008 HPMP	Idaho Power, Staff	$0	$25,800	$25,800
b. Conduct site monitoring to assess impacts from human use to historic properties under the December 2008 HPMP	Idaho Power, Staff	$0	$6,290	$6,290
c. Conduct site monitoring to assess project impacts on historic properties under the December 2008 HPMP	Idaho Power	$0	$16,360	$16,360
d. Mitigate adverse impacts on six historic properties under the December 2008 HPMP	Idaho Power	$0	$15,170	$15,170
e. Consult with BLM, participating tribes, and Idaho SHPO and revise the HPMP to address mitigation of adverse impacts on at least 10 historic properties	Staff	$500,000[i]	$0	$35,780
f. Identify and protect TCPs under the December 2008 HPMP	Idaho Power, Staff	$0	$3,000	$3,000

Enhancement/Mitigation Measures	Entities	Capital Cost (2010$)[a]	Annual Cost (2010$)[a]	Levelized Annual Cost (2010$)
g. Preserve the historic boardinghouse under the December 2008 HPMP	Idaho Power, Staff	$0	$4,610	$4,610
h. Conduct photo documentation and site relocation under the December 2008 HPMP	Idaho Power, Staff	$0	$1,680	$1,680
i. Conduct comprehensive recording of Site 10AA684 under the December 2008 HPMP	Idaho Power, Staff	$0	$890	$890
j. Analyze and publish previously collected materials under the December 2008 HPMP	Idaho Power, Staff	$0	$1,490	$1,490
k. Provide a Native American interpretative display under the December 2008 HPMP	Idaho Power, Staff	$8,240	$950	$2,150
l. Provide Swan Falls dam and boarding house interpretation and education panels under the December 2008 HPMP	Idaho Power, Staff	$14,900	$720	$2,890
m. Improve powerhouse interpretive displays under the December 2008 HPMP[j]	Idaho Power, Staff	$17,390	$70	$2,600
n. Open the old powerhouse to seasonal public visitation under the December 2008 HPMP[j]	Idaho Power, Staff	$0	$8,240	$8,240

[a] Unless otherwise indicated, costs are based on values provided by Idaho Power, and were escalated to 2010 dollars as necessary. Capital costs were adjusted in some cases depending on the year in which the cost would be incurred.

[b] Idaho Power estimated that implementing these proposed minimum flows would have essentially no impact on project generation. Based on our independent judgment of their supporting information, we concur that there were would be no effect on generation.

[c] No additional cost. The costs associated with the measures are either included in an ongoing program or are already included in the annual operation and maintenance cost of the project.

[d] Cost estimated by staff. The annual cost of $3,340 is estimated based on a cost of $10,000 per year for 5 years.

[e] Because this recommendation was not specific as to what would be required, we did not estimate a potential cost for its implementation.

[f] Idaho Power and Idaho DFG agree on the proposal to enhance the six dispersed recreation sites. The staff alternative would include consultation with Idaho SHPO to alleviate conflicts with cultural resources. We anticipate that the cost would be similar to what Idaho Power proposes.

[g] No additional costs to implement the plan only within the project boundary.

[h] We did not estimate a potential cost for implementation of this measure.

[i] The $500,000 capital cost is based on mitigation of the 10 sites subject to severe erosion and site 10AA41 (and other sites being affected by vandalism), as well as mitigation associated with proposed recreation development. Idaho Power estimates a cost of $50,000 per site. We assume that mitigation would be completed within 3 years.

[j] Cultural resource measures “m” and “n” are also identified in the draft Recreation Management Plan. However, the costs are included here, and not in the Recreation Management Plan.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 COMPARISON OF ALTERNATIVES

In this section, we compare the developmental and non-developmental effects of Idaho Power's proposal, the staff alternative, and the no-action alternative. Our analysis shows that annual generation would be 106,300 MWh under each of the three alternatives.

We summarize the environmental effects of the different alternatives below.

Geology and Soils

Under Idaho Power's proposal and the staff alternative, Idaho Power would reduce erosion by restoring approximately 79 acres of land and 2.7 miles of riparian shoreline, formalizing recreational access and use areas, and eliminating informal recreational access and use in areas where Idaho Power proposes additional resource protection.

Aquatic Resources

Under Idaho Power's proposal, continued removal of aquatic vegetation and debris that accumulates on the trash racks would remove nutrients from the river, helping to improve water quality, and monitoring of water temperature and DO in the project tailrace would help to confirm that project operations, including proposed minimum flow release changes, would not adversely affect short- or long-term water quality.

Under the staff alternative, monitoring discharge, water temperature, DO and TDG of the project inflow and outflow would have the benefits of Idaho Power's proposal but would also help better define any project effects on water quality over a range of hydrologic and meteorological conditions, and would help to determine whether any additional measures are warranted to address project effects on water resources.

Under Idaho Power's proposal, implementation of a resident fish population monitoring program would determine basic population characteristics. However, because the proposed monitoring is not designed to detect for the effects of any specific project-related action, the monitoring program is not included in the staff alternative.

Terrestrial Resources

Implementation of Idaho Power's proposed Wildlife Habitat Protection and Enhancement Plan would improve conditions for numerous wildlife species in the project area that use riparian habitat and would also improve conditions in project area uplands. Idaho Power's proposed Special Status Plant Management Plan would provide an effective means of protecting these species from recreational activity where they occur within the project boundary. Implementation of Idaho Power's Noxious Weed

Management Plan would promote native plant communities that provide higher quality habitat for wildlife than those dominated by invasive non-native species.

However, measures to protect soils and botanical resources in both a transmission line operation and maintenance plan and the Noxious Weed Management Plan would be duplicative, and implementation of the Noxious Weed Management Plan alone would ensure the protection of soils and botanical resources on all project lands, including the transmission line right-of-way. Therefore, under the staff alternative a transmission line operation and maintenance plan would not be necessary. Instead, the staff alternative would include timing restrictions on transmission line maintenance activities to minimize the risk of disturbing benchland nesters and cliff-nesting raptors during the breeding season.

Threatened and Endangered Species

Under both Idaho Power's proposal and the staff alternative, effects on the federally listed endangered Snake River physa from stranding and desiccation due to changes in water levels would continue to be very low.

Recreation

Under Idaho Power's proposal, recreational opportunities would be improved as a result of finalizing and implementing the draft Recreation Management Plan, which includes continuing operations, maintaining and upgrading the existing five project recreational facilities, continuing implementation of Idaho Power's public safety program, improving six dispersed recreation sites, adding to interpretive and informational displays, and implementing the Litter and Sanitation Plan at areas both inside and outside the project boundary.

Under the staff alternative, staff's recommendation for the revision of the Recreation Management Plan to include additional staff recommendations and consultation with the Idaho DPR, Idaho DFG, Idaho SHPO, and BLM would ensure that the potential adverse effects of recreational development and use on cultural and terrestrial resources would be appropriately considered. Additionally, implementation of the Litter and Sanitation Plan would apply only to lands within the project boundary.

Land Use and Aesthetics

Under both Idaho Power's proposal and the staff alternative, there would be a reduction of 599 acres within the project boundary. The proposed project boundary modifications would remove 791 acres of project land upstream of the Swan Falls dam that are not needed for project purposes, and add 192 acres of land downstream of the dam to incorporate restored lands as part of the Wildlife Habitat Protection and Enhancement Plan, cultural resource sites requiring long-term monitoring, and dispersed recreation sites proposed for improvement.

Idaho Power's proposal would provide some protection to visual resources under the provisions of the Visual Guidelines Plan. The staff alternative includes additional recommendations and coordination with BLM and Idaho DPR.

Cultural Resources

Under Idaho Power's proposal, cultural resources would be protected under provisions specified in the HPMP filed with the Commission in December 2008. However, the December 2008 HPMP does not address mitigating the effects on the 10 archaeological sites subject to severe erosion, archaeological sites that would be affected by proposed recreation improvements to existing dispersed recreation sites and associated access roads (including closure/revegetation of other dispersed sites and roads), and other archaeological sites on Idaho Power lands that are being disturbed by vandalism and looting associated with recreational use.

Under the staff alternative, revision of the HPMP to address these project-related effects would ensure that all existing and potential future adverse effects on historic properties would be adequately addressed over the term of any new license. The revised HPMP would be filed with the Commission prior to license issuance, and upon license issuance the revised HPMP would be implemented through execution of a PA for a new license.

Socioeconomics

Idaho Power's proposal and the staff alternative would provide essentially the same socioeconomic benefits as under current conditions.

Under the no-action alternative, environmental conditions would remain the same and no enhancement of environmental resources would occur.

5.2 COMPREHENSIVE DEVELOPMENT AND RECOMMENDED ALTERNATIVE

Sections 4(e) and 10(a)(1) of the FPA require the Commission to give equal consideration to the power development purposes and to the purposes of energy conservation; the protection, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. This section contains the basis for, and a summary of, our recommendations for relicensing the Swan Falls Project. We weigh the costs and benefits of our recommended alternative against other proposed measures.

Based on our independent review of agency and public comments filed on this project and our review of the environmental and economic effects of the proposed

project and its alternatives, we selected the staff alternative as the preferred option. We recommend this option because: (1) issuance of a new hydropower license by the Commission would allow Idaho Power to operate the project as an economically beneficial and dependable source of electrical energy for its customers; (2) the 25 MW of electric energy generated from a renewable resource may offset the use of fossil-fueled, steam-electric generating plants, thereby conserving nonrenewable resources and reducing atmospheric pollution; (3) the public benefits of this alternative would exceed those of the no-action alternative; and (4) the recommended measures would protect and enhance fish, wildlife, land use and aesthetic, and cultural resources, and would provide improved recreation opportunities at the project.

In the following section, we make recommendations as to which environmental measures proposed by Idaho Power or recommended by agencies and other entities should be included in any license issued for the project. Additionally, we discuss staff-developed measures that we recommend be included in any license issued for the project. We also discuss those measures that we do not recommend be included as conditions of any new license.

Measures Proposed by Idaho Power

Based on our environmental analysis of Idaho Power's proposal discussed in section 3 and the costs discussed in section 4, we recommend including the following environmental measures proposed by Idaho Power in any license issued for the project. Our recommended modifications to Idaho Power's proposed measures are shown in *italics*.

Aquatic Resources

- Provide an instantaneous minimum flow of 3,900 cfs downstream of the dam from April 1 to October 31, and 5,600 cfs from November 1 to March 31.
- Monitor water temperature and DO in the project's outflow between June 15 and October 5 of each license year. *This measure is modified to comply with the requirements of the WQC.*
- Continue the ramping rate restrictions of no more than 1 foot per hour and 3 feet per day.
- Continue to remove and dispose of aquatic macrophytes and debris that accumulate on the project trash racks to remove nutrients and oxygen-demanding material from the river.

Terrestrial Resources

- Implement the Wildlife Habitat and Enhancement Plan to protect, enhance, and restore upland and riparian habitat on applicant-owned lands within the project boundary, including closing nine dispersed recreation sites.

- Implement the Noxious Weed Management Plan to control noxious and undesirable weed species on applicant-owned lands and cooperatively[46] manage noxious and undesirable species on other lands within the project boundary.
- Implement the Special Status Plant Management Plan to protect and monitor special status plant species on applicant-owned and other lands within the project boundary.

Recreation Resources

- Finalize and implement the draft Recreation Management Plan. *This measure is modified to include additional staff measures as discussed in the next subsection*.
  - Continue operation and maintenance of five existing project recreation sites: Swan Falls Park, Swan Falls reservoir boat ramp, Swan Falls downstream boat launch, the canoe portage trail, and Swan Falls powerhouse museum.
  - Enhance the Swan Falls reservoir boat ramp by upgrading the boat ramp, adding a vault toilet, and enhancing parking for vehicles and trailers.
  - Improve Swan Falls Park by providing riprap or a retaining wall along the shoreline, and adding a new dock, picnic tables, and a shelter.
  - Enhance the Swan Falls downstream boat launch by constructing a two-lane boat ramp, adding a vault toilet, enhancing parking for vehicles and trailers, and removing the air compressor.
  - Improve the canoe portage trail by installing signage.
  - Enhance six existing dispersed recreation sites located either within or near the project boundary (the sites outside the current project boundary are proposed to be brought within the new project boundary) that provide access to the reservoir and river.
  - Implement the Litter and Sanitation Plan, including additional vault toilets and dumpsters, as well as biannual litter pickups and a carry-in/carry-out policy within the project boundary and outside of the project boundary (downstream to RM 453.4

[46] We interpret "cooperatively" to mean in consultation with the other landowners.

- Finalize and implement the Interpretation and Education Plan to coordinate with the HPMP and provide consistency for project-related information.
- Continue implementation of the applicant's Public Safety Plan, dated June 2008.

Land Use and Aesthetic Resources

- Implement the proposed Visual Guidelines Plan. *This measure is modified to include more specific details as discussed in the next subsection*.
  - Modify the colors of the five Idaho Power-owned project houses to blend with soils and vegetation.
  - Paint the wooden elements associated with BLM's KOP 2, which is the parking and restroom area near the powerhouse.
  - Establish screening around the lay-down yard.
  - Ensure that any new construction considers the protection of visual resources from important viewpoints.
- Develop and implement a consistent signage plan for the entire project area and adjoining applicant-owned lands.
- Finalize and implement the Resource Management Plan to guide Idaho Power staff in its hydroelectric operations and maintenance of the Swan Falls Project, including project-related measures to protect cultural and natural resources.
- Continue implementation of policies for permitting piers, boat docks, and other facilities (non-project use of project lands and waters).

Cultural Resources

- Implement the project's December 2008 HPMP. *This measure is modified to implement a revised HPMP that includes more specific details as discussed in the next subsection.*

Additional Measures Recommended by Staff

In addition to Idaho Power's proposed measures listed above, we recommend including the following staff-recommended measures in any license issued for the Swan Falls Project:

Aquatic Resources

- Develop and implement a plan with provisions to monitor the following water quality parameters as stipulated in Idaho DEQ's WQC: (1) water temperature

and DO in the project's outflow throughout the term of any issued license; (2) water temperature and DO in the project's inflow for at least 5 years after issuance of any license; and (3) TDG and discharge in the project's inflow and outflow for at least 5 years after issuance of any license. Develop a quality assurance control plan; submit annual data reports to Idaho DEQ and the Commission; and prepare and file a report with the Commission with a copy to Idaho DEQ summarizing the results of the first 5 years of monitoring, and describing any proposed changes to the monitoring program.

Terrestrial Resources

- Implement timing restrictions on transmission line maintenance activities, as needed, to protect benchland nesters and cliff-nesting raptors.

Recreation Resources

- Revise and implement the Recreation Management Plan to include: (1) completion of Idaho Power's consultation with Idaho SHPO to ensure that work planned at the informal dispersed sites and associated access roads consider the effects on cultural resources known to exist in the area; (2) soil erosion control measures; (3) detailed design drawings of Swan Falls Park, Swan Falls reservoir boat ramp, Swan Falls downstream boat launch, and the canoe portage trail; (4) a description of improvements to the six dispersed recreation sites; (5) a discussion on how the needs of the disabled were considered in the planning and design of the recreation facilities; (6) an implementation schedule; (7) modification of the Litter and Sanitation Plan so that it applies only to lands within the project boundary; and (8) finalization and implementation of the Interpretation and Education Plan as part of the Recreation Management Plan in consultation with BLM, Idaho DPR, and Idaho SHPO.
- Establish an interagency recreation working group that convenes every 6 years in coordination with preparation of the FERC Form 80 to assess recreation facilities, dispersed recreation sites, and usage.

Land Use and Aesthetic Resources

- Revise the proposed Visual Guidelines Plan to include a list of neutral paint color schemes, a list of vegetation species planned for use, a list of construction materials that could be used, and documentation of consultation with BLM and Idaho DPR.

Cultural Resources

- Revise the December 2008 HPMP to include a program for immediate implementation of mitigation measures for sites being affected by shoreline

erosion or vandalism, as well as sites proposed for recreation improvements. Include consultation among Idaho Power, Idaho SHPO, BLM, and participating tribes to formulate site-specific mitigation measures. The anticipated PA would incorporate the HPMP.

Following is a discussion of the basis for the additional staff-recommended measures.

Water Quality Monitoring

Idaho Power proposes to monitor water temperature and DO in the outflow from Swan Falls dam from June 15 through October 5, with data summarized for reporting on a monthly basis. In its WQC, Idaho DEQ specifies that Idaho Power develop a monitoring plan approved by Idaho DEQ, including quality control provisions, to monitor discharge, DO, TDG, and water temperature in the inflow and outflow from the project. Idaho Power would be required to submit annual data reports to Idaho DEQ, and after 5 years of monitoring could request the termination of some or all of the monitoring components, except for the monitoring of water temperature and DO in the outflow, and associated reporting of the results.

As discussed in section 3.3.2, Idaho Power's monitoring studies indicate that numeric standards for temperature, DO, and TDG were exceeded at times. Monitoring flow, water temperature, DO, and TDG in the project's inflow and outflow over a 5-year period as specified in the WQC, and seasonal monitoring of water temperature and DO in the project's outflow from June 15 through October 5 of each license year thereafter, would provide information that would help determine the effectiveness of and macroalgae removal in conjunction with other measures being implemented in the Snake River Basin to improve water quality conditions; this also would confirm that proposed changes in project operations would not cause adverse effects on water quality, including water temperature, DO, and TDG. Inclusion of information on project inflows and outflows in monitoring reports during the first 5 years of license issuance should not add any cost, because Idaho Power already monitors outflows from the Swan Falls and C.J. Strike projects, and no substantial inflows occur between the two projects. We estimate that the annualized cost of the water quality monitoring proposed by Idaho Power with the additional monitoring provisions stipulated in Idaho DEQ's WQC would be about $16,610 or about $7,710 more than just the monitoring components proposed by Idaho DEQ. As discussed in section 5.1, the additional monitoring provisions specified by Idaho DEQ would provide more comprehensive information on project effects on water quality. We conclude that this additional benefit

warrants the additional cost of $7,710 for implementing the monitoring components specified by Idaho DEQ.[47]

Terrestrial Resources

As discussed in section 3.3.3.2, we agree that measures are needed to protect wildlife resources at and near the transmission line. Implementation of timing restrictions for maintenance activities could minimize the risk of disturbing benchland nesters and cliff-nesting raptors within or adjacent to the transmission line right-of-way. Idaho Power stated in its application that it anticipates that only routine maintenance activities would occur at the project, and that it is unlikely that it would need to conduct any major maintenance activities. Routine maintenance activities could be easily scheduled to avoid bird nesting periods. For this reason, we conclude that there would be no costs associated with the timing restrictions. Therefore, we recommend that any license issued for the project include a provision to implement timing restrictions on transmission line maintenance activities, as needed, to protect benchland nesters and cliff-nesting raptors.

Recreation Management Plan

As discussed in section 3.3.5.2, several dispersed recreational sites are located within and adjacent to the project boundary. Their proximity to known historic properties suggests that improvement to these sites and recreational use should be managed to avoid adverse effects on affected archaeological sites. Including a provision in the license for Idaho Power to consult with the Idaho SHPO during development and implementation of a final Recreation Management Plan would ensure that operation and maintenance of all project-related recreation measures, including recommended measures at the six dispersed recreation sites, would take into account any archaeological sites that may be affected by recreation activities. Such a provision in the plan would have no additional cost, and therefore, we recommend the consultation provision.

We recommend that Idaho Power revise the Recreation Management Plan to include more specific details, as previously discussed. In addition, we recommend Idaho Power implement the Litter and Sanitation Plan on project lands only. For these staff modifications, we conclude that there would be no additional costs.

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[47] We do note, however, that we are not adopting, as part of the staff alternative, the specific language in the 401 WQC that disallows Idaho Power from recommending any changes to its proposal to seasonally monitor water temperature and DO in the project's outflow. Adopting such language would essentially predetermine the outcome of the need to amend any new license issued for the project.

The applicant proposes to finalize and implement an Interpretation and Education Plan as part of its Recreation Management Plan. The plan would include provisions to install displays at the project that would contain information regarding boating safety, sites and environmental resources of interest in the area, and the project's canoe portage trail. Consultation with federal and state agencies with interests in the management of environmental resources in the project boundary would allow these agencies to assist Idaho Power with the final wording of the displays to ensure that visitors to the project are provided with important safety and project information. A provision to consult with these agencies would have no additional cost; therefore, we recommend that Idaho Power finalize the Interpretation and Education Plan in consultation with BLM, Idaho DPR, and Idaho SHPO.

Recreation Work Group

Idaho DPR recommends that an interagency recreation working group be established that would convene every 6 years to review FERC Form 80 information. Idaho DPR also recommends that it be designated a member of the recreation working group. As discussed in section 3.3.5.2, Idaho Power's draft Recreation Management Plan does not provide a framework for the continued monitoring of recreation facilities, dispersed recreation sites, and usage. Recreational use monitoring and assessment of recreation-related effects on lands within the project boundary as a component of gathering data for FERC Form 80 and as part of the Recreation Management Plan would allow Idaho Power and stakeholders to consider measures to address recreational use, including project dispersed recreation use, over the term of the new license. Inviting BLM, Idaho DFG, and the Idaho SHPO to also become members of the working group would assist Idaho Power and the Commission at identifying any future recreational needs at the project. The cost associated with establishing and convening an interagency recreation working group once every 6 years and filing a report with the Commission on the consultation efforts, would be minimal. Therefore, we recommend that a provision be included in any new license for establishing an interagency recreation working group that includes Idaho Power, Idaho DPR, BLM, Idaho DFG, and Idaho SHPO and convenes every 6 years in coordination with preparation of the FERC Form 80 to assess recreation facilities, dispersed recreation sites, and usage.

Visual Guidelines Plan

Idaho Power proposes to implement its Visual Guidelines Plan to ensure that any new project construction considers the protection of visual resources from important viewpoints. In general, Idaho DPR supports the plan; however, Idaho DPR states that specific approaches are not addressed concerning material colors for structures or plant species used for vegetative planting. Idaho DPR recommends the development of aesthetic guidelines for building structures and vegetative planting at the recreation facilities and in the employee housing area.

Idaho DPR's recommendation for Idaho Power to include specific approaches concerning material colors for structures and plant species used for vegetative planting, along with consultation with Idaho DPR, would help ensure that project changes would have minimal effects on visual resources in the project area. In addition, because of the proximity of BLM lands, it would be beneficial if BLM were added to this consultation process. As discussed in section 3.3.6.2, we recommend that Idaho Power include the following specific elements in its Visual Guidelines Plan:

- A list of neutral paint color schemes identified in consultation with BLM and Idaho DPR to be used on new project structures.
- A list of vegetation species identified in consultation with BLM and Idaho DPR for vegetative planting and/or aesthetic screening purposes.
- A list of the construction materials identified in consultation with Idaho DPR and BLM that could be used for maintaining existing buildings or for new building construction.

Implementation of the above provisions would provide greater specificity to the plan and would add no additional cost to the plan.

Cultural Resources Management

Continued operation of the Swan Falls Project without adequate protection measures could adversely affect properties that are eligible for listing on the National Register. Idaho Power filed an HPMP with its license application in June 2008 for the purpose of protecting and interpreting historic properties. The HPMP was revised again in December 2008.

We find that the HPMP adequately identifies the APE, describes the cultural resources inventories that were conducted within the APE, and indentifies existing disturbances to historic properties. The HPMP also provides procedures for handling unanticipated discoveries and the proper treatment of human remains and sacred objects, if they are encountered. The HPMP provides protocols for emergency undertakings, periodic reporting and meetings, and appropriate review of the HPMP based upon changing conditions over the period of a new license. However, our review of the HPMP reveals that it does not provide enough site-specific measures to ensure that project-related adverse effects on historic properties resulting from operation, maintenance, recreational, or other activities would be adequately addressed over the term of a new license.

Our analysis in section 3.3.7.2 found that erosion associated with the operation of the project is severely affecting at least 10 archaeological sites that are eligible for or currently listed on the National Register. Additionally, we found that implementation of proposed recreation improvements would affect historic properties and that an assessment of those effects in accordance with NHPA section 106 and implementation of appropriate treatment measures is necessary. Finally, significant sites located on

lands owned by Idaho Power are being affected by vandalism and looting as a result of their proximity to formal project recreation facilities, project-related dispersed recreation areas, and/or roads maintained by Idaho Power.

The December 2008 HPMP does not adequately address these project-related effects. For these reasons, we conclude that the HPMP should be revised in consultation with BLM, participating tribes, and Idaho SHPO to include the following additional measures:

- Specific treatment measures to mitigate the 10 archaeological sites identified by Idaho Power that are subject to severe erosion.
- Specific measures to assess and mitigate as necessary any adverse effects of proposed recreation improvements on archaeological sites.
- Measures to protect or mitigate archaeological sites that are being affected by vandalism and looting associated with recreational activities on Idaho Power lands.

Revision of the HPMP with staff's additional measures and subsequent implementation of the revised HPMP would ensure that adverse effects on historic properties as a result of project operation, maintenance, recreational, or other project-related activities would be addressed over the term of the new license. The final PA executed among the Commission, the Idaho SHPO, and the Advisory Council, should the Council choose to participate, would require Idaho power to implement a revised HPMP. Idaho Power, BLM, and the tribes would be invited to sign the PA as concurring parties.

We estimate that implementation of the protective measures proposed in Idaho Power's HPMP would have a levelized annual cost of $91,170. In addition to that cost, we estimate another $35,780 to address our recommended measures for a total levelized annual cost of $126,950. Considering the extent of cultural heritage that is present in the project APE, we consider the benefits to cultural resources to be worth the costs.

Measures Not Recommended by Staff

Staff finds that some of the measures proposed by Idaho Power or recommended by other interested parties would not contribute to the best comprehensive use of the Snake River resources or do not exhibit a sufficient relationship to project environmental effects. The following presents the basis for staff's conclusions not to recommend such measures.

Resident Fish Monitoring

Idaho Power proposes to monitor the population of resident fish species in Swan Falls reservoir and in a 15-mile reach downstream from Swan Falls dam. Sampling would be conducted in the spring and fall every 5 years using boat-mounted electrofishing gear. Basic population characteristics, such as abundance, condition, and

proportional stock density would be assessed. Idaho DFG recommends implementation of this measure.

As discussed in section 3.3.2, *Aquatic Resources*, although the monitoring information could be useful to the decision-making process of federal and state resource agencies charged with general fisheries management in the project area, the proposed monitoring is not designed to detect the effects of any specific project action, such as operations or maintenance, on project area fishery resources, and therefore, would be too broad to be of any project benefit. Moreover, we conclude that resident fish monitoring, even if tied to project actions, would be of little benefit because proposed project operations would improve the project area fishery by reducing daily variations in habitat for all fish species lifestages in the project area. We base this finding on already existing site-specific information on the relationships between project operations and fish habitat, negating the need for any additional monitoring or study. Therefore, we find that the proposed resident fish monitoring is not worth the estimated annualized project cost of $1,250.

Transmission Line Operation and Maintenance Plan

Idaho Power proposes to develop and implement a transmission line operation and maintenance plan for the project's transmission line, the Swan Falls Tap, to eliminate or minimize potential impacts on botanical and wildlife resources that could result during project maintenance activities. Idaho Power also proposes specific management measures related to soils and botanical resources for the transmission line and associated right-of-way that would be included in the Noxious Weed Management Plan, such as weed monitoring and treatment, erosion control, and special status plant protection. Our analysis indicates that measures to protect soils and botanical resources in both a transmission line operation and maintenance plan and a Noxious Weed Management Plan would be duplicative, and that implementation of a Noxious Weed Management Plan only would ensure the protection of soils and botanical resources on all project lands, including the transmission line right-of-way.

Litter and Sanitation Plan

The applicant proposes to implement its Litter and Sanitation Plan on lands downstream of the Swan Falls dam to RM 453.4, which is 2 miles beyond the proposed project boundary at RM 455.4. As discussed in section 3.3.5.2, implementing the plan beyond RM 453.4 to RM 455.4 would benefit BLM lands and recreationists using those lands; however, recreational use of the BLM lands in this area is not related to the project. Therefore, we have no justification for requiring implementation of the Litter and Sanitation Plan beyond RM 453.4. We recommend that Idaho Power modify its Litter and Sanitation Plan, an element of the draft Recreation Management Plan, so that it applies only to lands within the project boundary.

Land Use and Aesthetics

We do not include in the staff alternative Idaho DPR's recommendations to establish both an interagency land use and aesthetic working group that would convene every 6 years to review FERC Form 80 information and make recommendations concerning future management.

We are recommending that Idaho Power convene a recreation working group for the purpose of reviewing and assisting Idaho Power in the preparation of the FERC Form 80. This working group would consist of Idaho Power and federal and state resource agencies, including Idaho DPR. Establishment of separate land use and aesthetic working groups in addition to the recreation working group would be unnecessary and would duplicate Idaho Power's efforts, and therefore, we have no justification for recommending a license requirement for Idaho Power to establish separate land use and aesthetic working groups.

Cultural Resources

We do not include Idaho Power's proposed measure to conduct site monitoring to assess project impacts on historic properties, since we have determined that there are at least 10 National Register-eligible archaeological sites where adverse effects related to the project (i.e., principally shoreline erosion) have already been identified. We also did not include Idaho Power's proposed measure to mitigate adverse effects on only 6 historic properties, since we have identified at least 10 sites that need mitigation for adverse effects, and that Idaho Power needs to consult further with the SHPO, BLM, and involved tribes to determine the particular measures that would be underaken to resolve any identified adverse effects.

5.3 UNAVOIDABLE ADVERSE EFFECTS

Aquatic Resources

Minor effects of the impoundment on water quality and some entrainment mortality of fish would continue to occur, and reservoir and tailwater levels would continue to fluctuate, exposing some aquatic biota to fluctuating habitat conditions.

Terrestrial

Implementation of both the Wildlife Habitat Protection and Enhancement Plan and the Recreation Management Plan would help to reduce the impacts of dispersed recreation use on upland and riparian habitats. However, some unauthorized recreational activities (e.g., development of informal roads, illegal shooting) would continue to affect terrestrial habitat and associated wildlife.

Cultural Resources

Improvements to the Swan Falls downstream boat ramp, Swan Falls Park, and Swan Falls reservoir boat ramp and enhancements to six dispersed recreation sites both upstream and downstream of the Swan Falls dam could affect archaeological sites. Project operation would also result in some continued unavoidable erosion of specific historic properties present on the shorelines of the reservoir and downstream portions of the river.

5.4 FISH AND WILDLIFE AGENCY RECOMMENDATIONS

Under the provisions of section 10(j) of the FPA, each hydroelectric license issued by the Commission shall include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, and enhancement of fish and wildlife resources affected by the project.

Section 10(j) of the FPA states that whenever the Commission believes that any fish and wildlife agency recommendation is inconsistent with the purposes and the requirements of the FPA or other applicable law, the Commission and the agency will attempt to resolve any such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agency. In response to our REA notice, Idaho DFG submitted recommendations on August 14, 2009, for the Swan Falls Project.

Table 18 lists agency recommendations filed subject to section 10(j) and indicates whether the recommendations are adopted under the staff alternative. Environmental recommendations that we consider outside the scope of section 10(j) have been considered under section 10(a) of the FPA and are addressed in the specific resource sections of this document and the previous section.

We include in the staff alternative the single recommendation that we consider to be within the scope of section 10(j). The Commission staff makes a preliminary determination that two recommendations by Idaho DFG may be inconsistent with the purpose and requirements of the FPA or other applicable law. Table 18 indicates the basis for our preliminary determinations concerning the measures that we consider inconsistent with section 10(j).

Table 18. Fish and wildlife agency recommendations for the Swan Falls Hydroelectric Project (Source: staff).

Recommendation	Agency	Within the Scope of Section 10(j)	Annual Cost	Adopted
Clarify plans for White Sturgeon Management Plan implementation [a]	Idaho DFG	No[b]	0	No. The recommendation to provide clarification pertains to a proposed plan under consideration in the Hells Canyon Project No. 1971 relicensing proceeding rather than the Swan Falls Project relicensing proceeding.
Monitor the population of resident fish species in Swan Falls reservoir and in a 15-mile reach downstream from Swan Falls dam	Idaho DFG	No. Not a specific measure to protect, mitigate, or enhance fish and wildlife resources. Although the population monitoring would periodically occur over the life of the license at and near the project, the data that would be acquired would be too broad to specifically relate to the project or project effects.	$1,250	No. The proposed monitoring is not designed to detect the effects of any specific project action, such as operation or maintenance. In addition, we already have sufficient information to assess the relationships between project operations and fishery resources in the project-affected reaches, and therefore, resident fish monitoring would have no benefit to further assessing these relationships.

Recommendation	Agency	Within the Scope of Section 10(j)	Annual Cost	Adopted
Make license term consistent with terms set for the Hells Canyon Complex and C.J. Strike projects	Idaho DFG	No. Not a specific measure to protect, mitigate, or enhance fish and wildlife resources.	0	Consideration of the appropriate license term is typically made in the license order rather than the environmental document.
Implement Idaho Power's proposed measures and implementation schedule to protect, enhance and restore riparian and upland habitat.	Idaho DFG	Yes	0[c]	Yes

[a] As part of its section 10(j) recommendations, Idaho DFG commented on Idaho Power's "Evaluation of the Feasibility of Upstream and Downstream Fish Passage at Swan Falls Dam" included as Appendix E.3.1-C of the license application, and agreed with Idaho Power's evaluation that "structural fish passage is not needed at the project at this time." Idaho DFG instead stated that it "agrees" with the evaluation's proposal to initiate a sturgeon capture and transport program, which we interpret to be the capture and transport ("translocation") element of the White Sturgeon Conservation Plan.

[b] Measures are recommended for a plan proposed for implementation under any new license for the Hells Canyon Hydroelectric Project, and therefore lack sufficient relationship to the Swan Falls Project.

[c] No incremental cost for this item compared to applicant's proposal.

5.5 CONSISTENCY WITH COMPREHENSIVE PLANS

Section 10(a)(2)(A) of the FPA, 16 U.S.C.§803(a)(2)(A), requires the Commission to consider the extent to which a project is consistent with the federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project. Under section 10(a)(2)(A), federal and state agencies filed 37 plans that address various resources in Idaho. Of these, we identified and reviewed 15 comprehensive plans that are relevant to the Swan Falls Project. No conflicts were found.

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Appendix A

Clean Water Act
Section 401 Water Quality Certification

20090817-0003 FERC PDF (Unofficial) 08/13/2009

ORIGINAL

P-503-048

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 North Hilton • Boise, Idaho 83706 • (208) 373-0502

C.L. "Butch" Otter, Governor
Toni Hardesty, Director

FILED
SECRETARY OF THE
2009 MAY 13 P 1:58
FEDERAL ENERGY
REGULATORY COMMISSION

May 4, 2009

Thomas R. Herlihy
Executive Director
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

RE: Swan Falls Dam Project - FERC Permit 503

Dear Mr. Herlihy:

On June 6, 2008, Idaho Power Company (IPC) requested that DEQ issue a certification, pursuant to section 401 of the Clean Water Act, regarding the Company's' application for a New License for the Swan Falls Project that was filed by the Company on June 26, 2008. The original license was issued by the Federal Energy Regulatory Commission (FERC) in December 1982. An order amending the license was issued in December 1989. This original license was certified by DEQ on June 28, 1989.

Please find enclosed the Idaho DEQ final Clean Water Act section 401 Water Quality Certification for the Swan Fall Dam Project - FERC Permit 503.

Questions regarding the actions taken in this certification should be directed to Craig Shepard, Boise Regional Office IDEQ at (208) 373-0557 or craig.shepard@deq.idaho.gov.

Sincerely,

Barry N. Burnell

Barry N. Burnell
Water Quality Division Administrator

BNB:bmm

Enclosure

c: Doug Conde - Deputy Attorney General
Chris Randolph, Idaho Power Company
Craig Shepard - Boise Regional Office

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Idaho Department of Environmental Quality

Final §401 Water Quality Certification

May 4, 2009

FERC Permit 503, Swan Falls Dam

Pursuant to the provisions of Section 401(a)(1) of the Federal Water Pollution Control Act (Clean Water Act), as amended, 33 USC Section 1341 (a)(1), the Idaho Department of Environmental Quality (DEQ) has authority to review applications for licenses issued by the Federal Energy Regulatory Commission (FERC) and issue a water quality certification decision.

On June 6, 2008, Idaho Power Company (IPC) requested that DEQ issue a certification, pursuant to section 401 of the Clean Water Act, regarding the Company's' application for a New License for the Swan Falls Project that was filed by the Company on June 26, 2008. IPC has no existing measures specific to water quality in the project area. In its license application, IPC proposes two new enhancement measures specific to water quality in the project area. These new measures include aquatic macrophyte (i.e., CPOM) removal at Swan Falls Dam and water temperature and dissolved oxygen (DO) monitoring in the outflow from the project.

IPC proposes continued operation of the trash rake over the turbine intakes to remove aquatic macrophytes and debris from the river. This measure would remove nutrients and oxygen-demanding material from the river. Removal of this material would result in downstream decreases in floating or submerged matter, excess nutrients, and oxygen-demanding material.

IPC proposes to monitor temperature and DO in the outflow from Swan Falls Dam. The purpose of the monitoring would be to document and report temperature and DO conditions at the Swan Falls outflow. An automated system would be installed and operated to electronically store measurements every 10 minutes. Temperature and DO would be monitored from June 15 through October 15, and the data would be summarized for reporting on a monthly basis. The specific location of the system will be determined through the development of a water quality monitoring plan required as one of the conditions of the IDEQ §401 certification.

DEQ has considered the application for a license and all other documents filed with FERC relating to the application for a license, including specifically the Environmental Assessment attached as Exhibit E to the application. Based upon its review of this information, DEQ certifies that if IPC complies with the terms set forth in the application for the license, the terms and conditions of the license and the terms and conditions set

forth in this water quality certification, then there is reasonable assurance the operation of the Swan Falls Project will comply with the applicable requirements of Sections 301, 302, 303, 306, and 307 of the Clean Water Act, including the Idaho Water Quality Standards (WQS) (IDAPA 58.01.02) and other appropriate water quality requirements of state law.

This certification does not constitute authorization of the permitted activities by any other state or federal agency or private person or entity. This certification does not excuse the permit holder from the obligation to obtain any other necessary approvals, authorizations or permits.

THE FOLLOWING CONDITIONS ARE NECESSARY TO ENSURE COMPLIANCE WITH IDAHO WATER QUALITY STANDARDS:

MONITORING PLAN

IPC has proposed monitoring temperature and dissolved oxygen at the Swan Falls facility. DEQ agrees that water quality monitoring is necessary. In order to implement the IPC proposed monitoring, and to address DEQ's concerns with water quality in the Swan Falls reach of the Snake River, IPC shall, after issuance of a New License, develop, in consultation with DEQ, a Monitoring Plan that includes the elements described below. The Monitoring Plan shall be submitted to DEQ for approval within six (6) months after issuance of a New License. The purpose of the Monitoring Plan is to evaluate data for comparison with water quality standards and to help determine the effect, if any, of the Swan Falls Project on water quality both within the reservoir and downstream from the Swan Falls Project. The Monitoring Plan shall include a description of the location and method of monitoring the following parameters, as appropriate, in the inflow and the outflow to the Swan Falls Project: discharge flows, dissolved oxygen, total dissolved gas and water temperature in the Snake River. The Monitoring Plan shall include a Quality Assurance Control Project Plan (QAPP). The QAPP shall include appropriate protocols for dissolved oxygen, total dissolved gas, water temperature measurements and continuous flow monitoring. Upon approval, the Monitoring Plan, including the QAPP, shall be implemented in accordance with DEQ's approval.

DATA REVIEW DECISION MAKING

1. IPC shall submit annual reports to DEQ that summarize the results of its water quality monitoring as set out in the approved Monitoring Plan.
2. DEQ intends to review the annual data and report of findings in coordination and consultation with the Idaho Department of Fish and Game (IDFG). After such coordination and consultation, DEQ shall proceed as follows:
    a. After five (5) years, IPC may request the termination of some or all of the monitoring described in the approved Monitoring Plan that is in addition to the monitoring proposed by IPC in its license application. Within sixty (60) days of the request, DEQ shall notify IPC of its decision regarding whether termination of the monitoring is appropriate.

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b. If after review of an annual report, DEQ determines the data shows that the operation of the Swan Falls Project causes or contributes to a violation of Water Quality Standards, Idaho Power Company will be required to develop a contingency plan, within six (6) months of DEQ's determination that addresses IPC's contribution to the violation.

OTHER PROVISIONS

IDEQ reserves the right to amend this certification as authorized under applicable law if it discovers new information not reasonably ascertainable regarding Project impacts that have a significant adverse effect on water quality which is not addressed in this 401 certification.

The final Section 401 Water Quality Certification may be appealed by submitting a petition to initiate a contested case, pursuant to Idaho Code § 39-107(5), and the Rules of Administrative Procedure Before the Board of Environmental Quality, IDAPA 58.01.23, within thirty-five (35) days of the date of the final certification.