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Storage/Sedimentation Facilities for Control of Storm and Combined Sewer Overflows

Design Manual

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NOTICE

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FOREWORD

The U.S. Environmental Protection Agency is charged by Congress with protecting the Nation's land, air, and water resources. Under a mandate of national environmental laws, the Agency strives to formulate and implement actions leading to a compatible balance between human activities and the ability of natural systems to support and nurture life. To meet this mandate, EPA's research program is providing data and technical support for solving environmental problems today and building a science knowledge base necessary to manage our ecological resources wisely, understand how pollutants affect our health, and prevent or reduce environmental risks in the future.

The National Risk Management Research Laboratory is the Agency's center for investigation of technological and management approaches for reducing risks from threats to human health and the environment. The focus of the Laboratory's research program is on methods for the prevention and control of pollution to air, land, water, and subsurface resources; protection of water quality in public water systems; remediation of contaminated sites and ground water; and prevention and control of indoor air pollution. The goal of this research effort is to catalyze development and implementation of innovative, cost-effective environmental technologies; develop scientific and engineering information needed by EPA to support regulatory and policy decisions; and provide technical support and information transfer to ensure effective implementation of environmental regulations and strategies.

This publication has been produced as part of the Laboratory's strategic long-term research plan. It is published and made available by EPA's Office of Research and Development to assist the user community and to link researchers with their clients.

E. Timothy Oppelt, Director
National Risk Management Research Laboratory

ABSTRACT

This report describes applications of storage facilities in wet-weather flow management and presents step-by-step procedures for the analysis and design of storage-treatment facilities. Retention, detention, and sedimentation storage are classified and described. International as well as national state-of-the-art projects are discussed.

Retention storage facilities capture and dispose of stormwater runoff through infiltration, percolation, and evaporation. Detention storage is temporary storage for stormwater runoff or combined sewer overflow. Stored flows are subsequently returned to the sewerage system at a reduced rate of flow when downstream capacity is available, or the flows are discharged to the receiving water with or without further treatment. Sedimentation storage alters the wastewater stream by gravity separation. The stormwater runoff and combined sewer overflow must be characterized to estimate the efficiency of any sedimentation basin.

The detailed design methodology of the storage and/or sedimentation facility presented in this report includes: identifying functional requirements; identifying site constraints; establishing basis of design; selecting storage and/or treatment option; and conducting a cost analysis.

CONTENTS

Section Page

1 INTRODUCTION AND USERS' GUIDE
Stormwater, Urbanization, and Control....1-1
Purpose of the Manual....1-5
Organization....1-5
Users' Guide....1-6
Section 1 - Introduction and Users's Guide....1-6
Section 2 - Urban Stormwater: An Overview....1-6
Section 3 - Terminology and Classification of Storage/Sedimentation Facilities....1-7
Section 4 - System Planning, Design Procedures, and Integration....1-7
Section 5 - Design of Retention Storage Facilities....1-7
Section 6 - Design of Detention Facilities....1-8
Section 7 - Design of Storage/Sedimentation Facilities....1-8
Section 8 - International Perspective....1-8
Appendixes....1-8
Special Acknowledgments....1-8

2 URBAN STORMWATER: AN OVERVIEW
Urban Stormwater Pollution....2-1
Representative Concentrations....2-3
Impacts of Urbanization....2-5
Receiving Water Assessments....2-11
Urban Stormwater Control....2-12
References....2-14

3 TERMINOLOGY AND CLASSIFICATION OF STORAGE AND/OR SEDIMENTATION FACILITIES
Terminology....3-1
Classification....3-3
Main Function Principles....3-8
Location in the Sewerage Network....3-9
Technical Configuration....3-11
References....3-14

CONTENTS (Continued)

4 SYSTEM PLANNING, DESIGN PROCEDURES, AND INTEGRATION
System Planning....4-2
Conditions for Planning....4-2
Establishment of Goals....4-3
Planning Methodology....4-4
Cost Optimization Methodology....4-8
Storage Volume Determination Methods....4-10
Effect of Storage and/or Sedimentation....4-11
The Integration Process....4-12
Identify Existing System an Needs....4-12
Establish System Needs....4-12
Identify Applicable Control Alternatives....4-12
Determine Control Method Compatibility....4-15
Design Procedure for Combined Sewer Systems....4-16
Problem Identification....4-16
Data Needs....4-16
Determine Pollution Load....4-22
Identify Pollutant Removal Objectives....4-23
Control Optimization....4-23
Pollutant Budget Analysis....4-24
Operating Strategy for Design....4-25
Instrumentation and Control Strategy for Operation....4-26
Design Procedure for Separate Storm Sewer Systems....4-27
Problem Identification....4-27
Data Needs....4-27
Determine Pollution Load....4-28
Identify Flood Control and Pollutant Removal Objectives....4-28
Control Optimization....4-29
Pollutant Budget Analysis....4-30
Operating Strategy for Design....4-30
Retrofitting of Existing Flood Control Facilities....4-30
Integration Process Examples....4-32
Storage and/or Sedimentation Basin Integration....4-32
Flood Control Retrofit....4-34
Retention and Attenuation Facility Integration....4-36
References....4-38

5 DESIGN OF RETENTION STORAGE FACILITIES
Design Considerations....5-1
Size....5-2
Location....5-5
Design Procedure....5-6
Step 1 - Quantify Functional Requirements....5-6
Step 2 - Identify Required Waste Load and Flow Reduction....5-7
Step 3 - Determine Preliminary Basin Sizing....5-7
Step 4 - Identify Feasible Pond Sites....5-10
Step 5 - Investigate Most Promising Sites....5-12
Step 6 - Establish Basin Sizes....5-12

CONTENTS (Continued)

Step 7 - Design Solids Removal Technique and Facilities.....5-14
Step 8 - Determine Pond Configuration.....5-16
Performance.....5-16
Operations.....5-21
Costs.....5-25
References.....5-27

6 DESIGN OF DETENTION FACILITIES
Introduction.....6-1
Onsite Detention.....6-3
In-System Detention Storge.....6-3
Design Considerations.....6-4
Tributary Area.....6-4
Storage Area and Volume.....6-5
Structural Considerations.....6-5
Responsibility to the Owner.....6-5
Slope and Size of Sewers.....6-6
Peak Flows.....6-6
Controls.....6-6
Resuspension of Sediment.....6-6
Design Procedure/Examples.....6-7
Step 1 - Identify Functional Requirements.....6-7
Step 2 - Identify Site Constraints.....6-8
Step 3 - Establish Basis of Design.....6-9
Step 4 - Select Storage Option(s) and Locations.....6-11
Step 5 - Estimate Costs and Cost Sensitivities.....6-12
Step 6 - Complete Design.....6-13
Operation and Maintenance Considerations.....6-13
Onsite.....6-13
In-System.....6-13
Costs.....6-14
References.....6-14

7 DESIGN OF SEDIMENTATION FACILITIES
Design Considerations.....7-1
Storage.....7-1
Treatment Efficiency.....7-5
Disinfection.....7-9
Site Constraints.....7-11
Design Procedure/Example.....7-12
Step 1 - Identify Functional Requirements.....7-12
Step 2 - Identify Site Constraints.....7-13
Step 3 - Establish Basis of Design.....7-14
Step 4 - Select Main Treatment Geometry.....7-17
Step 5 - Identify and Select Preteatment Components 7-22
Step 6 - Detail Auxiliary Systems.....7-22
Step 7 - Estimate Costs and Cost Sensitivities.....7-23
Step 8 - Complete Design.....7-24

CONTENTS (Concluded)

Operation and Maintenance Considerations.....7-24
Costs.....7-25
Capital Cost Breakdown - Illustrative Examples.....7-25
Operation and Maintenance Costs.....7-26
References.....7-28

8 INTERNATIONAL PERSPECTIVE
Introduction.....8-1
Storage/Sedimentatin Practices Manual.....8-2
Flow Control Devices.....8-3
Flow Regulator.....8-3
Hydrobrake.....8-4
Wirbeldrossel.....8-6
Flow Valve.....8-8
Innovative Technology Applications.....8-9
Flow Balance System.....8-9
Self-Cleaning Storage/Sedimentation Basin.....8-9
References.....8-12

Appendix

A POLLUTANT CHARACTERIZATION AND ESTIMATION OF REMOVAL

B ASSESSMENT METHODS

C INFILTRATION MEASUREMENT TECHNIQUES

FIGURES

1 Response of watershed to precipitation under different conditions.....1-2

2 Common elements of a combined sewer system.....1-4

3 Hyetographs and hydrographs for watershed under predevelopment and postdevelopment conditions.....2-2

4 Combined sewer overflow quality versus time for selected cities.....2-10

5 Hydrograph of a watershed showing effects of storage.....2-13

6 Schematic classification of storage and/or sedimentation facilities...3-4

7 Classification scheme based on type of sewer system.....3-5

8 Classification of storage and/or sedimentation facilities based on main function of principle.....3-7

9 Source control design methodology.....4-5

10 In-system control design methodology.....4-6

11 Downstream control design methodology.....4-7

12 Determination of optimal combination of storage and/or treatment alternatives.....4-9

13 Storm magnitude versus frequency.....4-17

14 Storm intensity versus frequency.....4-18

15 Storm duration versus frequency.....4-18

16 Schematic showing relation of total head, pressure head, and gravitation head for saturation flow.....5-3

17 Routing curves for a typical reservoir.....5-8

18 Brune's trap efficiency curve.....5-9

FIGURES (Continued)

19 Soil permeabilty versus ranges of application rates.....5-11

20 Inlet structure/forebay.....5-15

21 Effect of impoundment on storm runoff in The Woodlands, Texas.....5-17

22 Effect of vegetation on soil infiltration raes.....5-23

23 Floating material trapped by log boom.....5-24

24 Cost of dry pond construction 5-26

25 Storage pond construction costs.....5-26

26 Representative process schematics.....7-2

27 Typical TSS removal efficiencies by sedimentation.....7-8

28 Experienced TSS removal efficiency variations.....7-8

29 Pollution and volumetric retention versus storage tank volume for wet- and dry-years.....7-10

30 Unit removal efficiencies for combined sewer overflow detention tanks.....7-10

31 Flushing water system concept.....7-23

32 Flow regulator.....8-3

33 Comparison of discharge curves for unrestricted pipe and pipe with flow regulator.....8-4

34 Schematic of Hydrobrake.....8-5

35 Schematic of flow patterns during Hydrobrake operation.....8-5

36 Discharge curve comparison for Hydrobrake and short pipe of same diameter.....8-6

37 Schematic of flow pattern in a Wirbeldrossel.....8-7

38 Discharge curves for Wirbeldrossel and circular outlet of the same size.....8-7

39 Diagram of a flow valve.....8-8

FIGURES (Concluded)

40 Typical discharge curve for flow valve.....8-8

41 Schematic of pontoon tank system at Lake Tehormingen, Sweden.....8-10

42 Self-cleaning storage/sedimentation basin.....8-11

A-1 Flows into, through, and out of a storage/tretament unit.....A-5

A-2 Camp's sediment trap efficiency curves.....A-14

A-3 Limiting cases in sediment trap efficiency.....A-15

B-1 Assessment model categories.....B-3

C-1 Cylinder infiltrometer in use.....C-4

C-2 Variability of infiltrometer test results on relatively homogenous site.....C-6

C-3 Number of tests required for 90% confidence that the calculated mean is within stated percent of the true mean.....C-8

C-4 Number of tests required for 95% confidence that the calculated mean is within stated percent of the true mean.....C-8

TABLES

1 Average Pollutant Concentrations in Stormwater Runoff.....2-3

2 Average Pollutant Concentrations in Combined Sewer Overflows.....2-4

3 Comparison of Stormwater Discharges to Other Pollutant Sources.....2-4

4 Priority Pollutants Measured in Urban Stormwater Systems - Liquid Fraction.....2-6

5 Priority Pollutants Measured in Urban Stormwater Systems - Sediment Fraction.....2-8

6 Surface Runoff Loadings to Bay, Pre- and Post-Development.....2-11

7 Classification of Storage and/or Sedimentation Facilities.....3-6

8 Storage and/or Sedimentation Control Method Versus Flow or Quality Approach.....4-13

9 Storage and/or Sedimentation Control Method Versus Physical and Effectiveness Limitations.....4-14

10 Trace Organics in Groundwater Donwstream of Spreading Basins of Whittier Narrows, California.....5-19

11 Reported Isolations of Virus Beneath Land Treatment Sites.....5-20

12 Factors that Affect the Survival of Enteric Bacteria and Viruses in Soil.....5-20

13 Removal Mechanisms of Trace Elements in Soil.....5-22

14 Some Insecticdes Used for Lagoon Insect Control.....5-25

15 Detention Facilities in Use in the United States and Canada.....6-2

16 Objectives in Requiring Detention.....6-2

17 Depth of Flooding Allowed on Streets.....6-10

18 Pilot Plant Performance on Richmond-Sunset Stormwater Flows.....7-9

TABLES (Concluded)

19 Common Removal Efficiencies Associated with Primary Sedimentation of Sanitary Wastewater....7-9

20 Performance of the Red Run CSO Sedimentation/Transport Basin....7-12

21 Performance of the Hancock Street Sedimentation, Saginaw....7-17

22 Performance of the Spring Creek Auxiliary Water Pollution Control Plant....7-18

23 Net Benefits Approximation of Spring Creek Facilities....7-19

24 Example Capital Cost Breakdowns....7-26

A-1 Preservation of Wastewater Samples....A-3

A-2 Routing Data for Hypothetical Reservoir....A-6

B-1 Characteristics of Assessment Models, By Level, In Order of Increasing Complexity....B-4

B-2 Model Selection Criteria....B-5

C-1 Comparison of Infiltration Measurement Using Standard USPHS Percolation Test and Double-Cylinder Infiltrometer....C-2