

**Colonial Pipeline Oil Spill, Reston, Virginia
Final Restoration Plan and Environmental Assessment**

**United States Department of the Interior
Virginia Department of Environmental Quality
District of Columbia Department of Health**

September 9, 1999

PREFACE TO THE FINAL RESTORATION PLAN AND ENVIRONMENTAL ASSESSMENT

This document constitutes the Final Restoration Plan and Environmental Assessment for the March 28, 1993, Colonial Pipeline Oil Spill near Reston, Virginia (Final Plan). It incorporates the modifications to the October 1, 1998, Draft Restoration Plan and Environmental Assessment (Draft Plan) that were adopted in the Decision Notice and Finding of No Significant Impact approved by the U.S. Department of the Interior on July 13, 1999, following a 30-day public availability period. This Final Plan reflects the Trustees' consideration of public comments and other relevant information.

For this Final Plan, modifications have been clearly delineated in the original text of the Draft Plan to help readers understand changes incorporated in the selected restoration actions. Since the original text of the Draft Plan is reproduced in this Final Plan, readers should disregard any references to the solicitation of public comments.

The Trustees have on a number of occasions solicited public comments on proposed actions to restore injured natural resources and replace interim lost services. The Trustees have considered these comments in selecting restoration actions and in determining that the implementation of those actions will not cause a significant environmental impact. While the Trustees believe that the consideration of public comments has improved the selected restoration actions contained in the Final Plan, comments are no longer being solicited.

This Final Plan is organized in three parts. Part A contains the Decision Notice and Finding of No Significant Impact; Part B presents the original Draft Plan with delineated modifications; and, Part C reproduces the various Federal Register notices that are associated with this restoration effort.

TABLE OF CONTENTS

PART A: Decision Notice and Finding of No Significant Impact

1. Background	A-1
2. Application of NEPA	A-2
3. Decision.....	A-2
4. Selection Criteria.....	A-3
5. Alternatives	A-3
6. The Preferred Alternative (Decision)	A-4
7. Environmental Consequences	A-9
8. Wetland Protection Statement of Findings.....	A-9
9. Finding of No Significant Impact.....	A-10
U.S. Fish and Wildlife Service Concurrence Memorandum.....	A-11

PART B: Original Text of the Draft Restoration Plan and Environmental Assessment with Modifications

Executive Summary	B-i
1.0 Introduction: Purpose and Need for Restoration.....	B-1
1.1 Summary of Incident.....	B-1
1.2 Settlement of Natural Resource Damages.....	B-3
1.3 Summary of the Purpose and Need for Restoration	B-4
1.4 Public Participation	B-5
1.5 Compliance with Other Authorities	B-5
2.0 Injury Assessment: The Affected Environment	B-7

TABLE OF CONTENTS (continued)

2.1 Overview of the Affected Environment B-7

2.2 Injury Assessment and Restoration Scaling Methodologies B-10

 2.2.1 Scaling Ecological Restoration B-10

 2.2.2 Scaling Recreational Use Restoration B-11

2.3 Natural Resources and Services Considered B-12

 2.3.1 Lost Ecological Services B-12

 2.3.1.1 Sugarland Run Aquatic Habitat..... B-14

 2.3.1.2 Bottomland Forest B-15

 2.3.1.3 Wetlands..... B-15

 2.3.1.4 Open Field B-15

 2.3.1.5 Upland Forest B-15

 2.3.1.6 Wildlife Forage Range B-16

 2.3.2 Lost Recreational Use Services B-16

 2.3.2.1 Lost Visits at Closed National Park Service Facilities. B-16

 2.3.2.2 Diminished Visits at Affected National Park Service
Facilities and Diminished Non-Consumptive Wildlife-Associated
Activities B-17

 2.3.2.3 Forgone Recreational Shoreline Fishing B-18

 2.3.2.4 Sugarland Run Lost Recreational Use Services B-18

3.0 Alternatives and Environmental Consequences B-19

3.1 Alternative 1: Restoration Component for Lost Ecological Services (Preferred
Alternative) and Environmental Consequences B-20

 3.1.1 Primary Restoration..... B-20

TABLE OF CONTENTS (*continued*)

3.1.2 Compensatory Restoration	B-20
3.1.2.1 Aquatic Habitat Enhancement.....	B-21
3.1.2.2 Wetland Enhancement.....	B-23
3.1.2.3 Forest Enhancement	B-25
3.1.2.4 Wildlife Forage Range Enhancement.....	B-26
3.1.2.5 Monitoring.....	B-27
3.1.2.6 Environmental Consequences	B-28
3.1.2.7 Evaluation of Proposed Habitat Enhancement Actions	B-29
3.1.3 Other Alternatives Considered But Rejected	B-30
3.2 Alternative 1: Restoration Component for Lost Recreational Use Services (Preferred Alternative) and Environmental Consequences	B-32
3.2.1 Primary Restoration.....	B-32
3.2.2 Compensatory Restoration	B-32
3.2.2.1 Great Falls Park.....	B-33
3.2.2.2 Fletcher's Boat House.....	B-33
3.2.2.3 Dyke Marsh	B-35
3.2.2.4 Little Falls Dam Fish Passage	B-35
3.2.2.5 Sugarland Run Stream Valley Regional Trail	B-35
3.2.2.6 Monitoring.....	B-36
3.2.2.7 Environmental Consequences	B-36
3.2.2.8 Evaluation of Proposed Recreational Use Enhancement Actions	B-37

TABLE OF CONTENTS (*continued*)

3.2.3 Other Alternatives Considered But Rejected B-39

3.3 Alternative 2: No Action and its Environmental Consequences..... B-40

 3.3.1 Environmental Consequences B-40

4.0 Responsible Party Involvement..... B-41

5.0 Consultation and Coordination B-42

6.0 References B-43

7.0 List of Preparers B-44

PART C: Federal Register Notices

Part A

Decision Notice and Finding of No Significant Impact

Decision Notice and Finding of No Significant Impact:
Environmental Assessment of Restoration Alternatives
for the
March 28, 1993, Colonial Pipeline Oil Spill Near Reston, Virginia

The Trustees for the March 28, 1993, Colonial Pipeline Oil Spill near Reston, Virginia, have considered the Draft Restoration Plan and Environmental Assessment together with comments received during the 30-day public availability period. The comments considered by the Trustees include those received during a public meeting held to discuss restoration alternatives.

This document presents both the Decision Notice (DN) of the Trustees' selection of the *preferred alternative* and the Trustees' determination pursuant to the National Environmental Policy Act (NEPA) and the Council on Environmental Quality regulations (40 CFR § 1500 *et seq.*) that the implementation of the *preferred alternative* will not cause a significant environmental impact. This DN and *Finding of No Significant Impact* (FONSI) will be incorporated into the Final Restoration Plan and Environmental Assessment for the Colonial Pipeline Oil Spill, Reston, Virginia (the Final Plan).

1. BACKGROUND

The Trustees, representing the National Park Service (NPS), U.S. Fish and Wildlife Service (FWS), Commonwealth of Virginia, and District of Columbia, prepared and made available for a 30-day public review the Draft Restoration Plan and Environmental Assessment for the Colonial Pipeline Oil Spill, Reston, Virginia (the EA). During the review period that began in October 1998, the Trustees held a public meeting in Herndon, Virginia, to discuss the EA. See the notice of availability published in the Federal Register on October 23, 1998 (63 FR 56939).

The goal of restoration is to make the environment and the public whole for injuries to, or loss of, natural resources and services resulting from the oil spill. The EA follows on the 1998 judicial settlement of the Trustees' claims arising from the 1993 oil spill, and reflects what the Trustees have learned since 1993 about the effects of this incident on this environment. The restoration actions discussed in the EA were also generally outlined in the consent decree settling this case. Before the court approved the settlement, the public had an opportunity to review and comment on the settlement and the proposed approach to restoration.

The EA documents the alternatives considered for restoring or replacing the natural resources and services injured as a result of the oil spill. In addition to the *preferred alternative*, it contains a *no action alternative* and *other alternatives considered but rejected*. It discusses the purpose and need for restoration, affected environment, and environmental consequences of the alternatives considered.

The comments received during the 30-day public availability period were considered by the Trustees in selecting the *preferred alternative* and in determining that the implementation of the *preferred alternative* will not cause a significant environmental impact (FONSI). As noted in Section 6 below, the Final Plan will be modified accordingly in response to comments.

The Trustees received a total of 13 written comments on the EA. Of the nine comments that address substantive issues, seven were submitted during the 30-day public availability period and two were submitted after the public availability period closed. The substantive issues raised by the two comments submitted after the close of the public availability period were also raised by comments submitted during the public availability period. The substantive issues are discussed in Section 6 of this DN/FONSI.

The Trustees mailed copies of the EA to individuals who had submitted comments to the court about the consent decree, which outlined the proposed restoration approach. Four requests for copies of the EA were received by the Trustees during the 30-day public availability period. Approximately 20 people attended the public meeting to discuss restoration alternatives, where copies of the EA were distributed as well. The substantive issues raised during the public meeting were consistent with and/or duplicative of those raised in the written comments received by the Trustees.

2. APPLICATION OF NEPA

NEPA applies to restoration actions undertaken by Federal trustees, although there are circumstances where a categorical exclusion or other exception to NEPA applies. There is a categorical exclusion exempting FWS from certain requirements under NEPA for some restoration actions. See the notice published in the Federal Register on January 16, 1997 (61 FR 2375). While certain NEPA requirements may not be required for all aspects of restoration in this case, the Trustees decided to conduct a comparative evaluation of the environmental consequences of alternative methods for restoring or replacing the natural resources and services injured by the oil spill.

One of the restoration actions pursuant to the judicial settlement is the contribution of \$253,314 towards construction of the Little Falls Dam Fish Passage. This action is a component of the *preferred alternative* as discussed in Section 3.2.2.4 of the EA. The Trustees considered the NEPA process conducted for this action by the U.S. Army Corps of Engineers (Baltimore District), which issued a FONSI on April 29, 1996. Pursuant to the requirements of 40 CFR § 1508.13 and § 1501.7(a)(5), the Trustees note this related NEPA action.

3. DECISION

The Trustees select the *preferred alternative* (Alternative 1), which is described in Sections 3.1 and 3.2 of the EA, with certain modifications adopted from the consideration of comments received during the 30-day public availability period. These modifications will be incorporated in the Final Plan.

The *preferred alternative* contains both *primary* and *compensatory* restoration actions. Natural recovery is the *primary restoration* action selected to return injured natural resources to their baseline conditions. A package of multiple *compensatory restoration* actions, including various wildlife habitat and recreational use enhancement projects, was selected to replace the interim loss of natural resource services.

As work plans are developed to carry out the *preferred alternative*, the Trustees may conduct additional analyses of the selected actions, and will consider further modifications if necessary or beneficial to achieving restoration. Modifications will be considered pursuant to NEPA as appropriate. A factor that could lead to modifications is that the implementation of ecological restoration actions may require approval by affected landowners, and governmental authorities. The *preferred alternative* is further discussed in Section 6 of this DN/FONSI.

4. SELECTION CRITERIA

The restoration actions included in the EA were identified by the Trustees through an initial screening to determine feasibility. Each restoration action was then qualitatively evaluated according to the selection criteria specified in the Natural Resource Damage Assessment regulations promulgated under the Oil Pollution Act of 1990 (15 CFR § 990 *et seq.*). These criteria include the following.

Criterion 1: The extent to which each alternative is expected to meet the Trustees' goals and objectives in returning the injured natural resources and services to baseline and/or compensating for interim losses;

Criterion 2: The likelihood of success of each alternative;

Criterion 3: The extent to which each alternative will prevent future injury as a result of the incident, and avoid collateral injury as a result of implementing the alternative;

Criterion 4: The extent to which each alternative benefits more than one natural resource and/or service;

Criterion 5: The effects of each alternative on public health and safety; and

Criterion 6: The cost to carry out the alternative.

As an additional gauge, in evaluating alternatives for the *primary restoration* of injured natural resources, the Trustees considered the likelihood of natural recovery and the potential for additional injury without human intervention.

5. ALTERNATIVES

The EA contained a *no action alternative* and *other alternatives considered but rejected*, in addition to the *preferred alternative*. The *no action alternative* was rejected since it would not replace the ecological or recreational use services that were lost as a result of the oil spill (and therefore would not satisfy the criteria). Consequently, the *no action alternative* would not achieve the Trustees' goal, which is to restore the natural resources injured by the oil spill to the baseline conditions that would have existed had the incident not occurred, and to provide restoration actions that replace the interim lost ecological and recreational use services resulting from the oil spill.

The *other alternatives considered but rejected* were variously determined to be unreasonable, infeasible, or not tied closely enough to the site of the injury and/or suitably responsive to compensate for the types of losses incurred as a result of the oil spill. In other words, these alternatives were not sufficiently responsive to the selection criteria presented in Section 4 of this DN/FONSI.

6. THE PREFERRED ALTERNATIVE (DECISION)

The alternative selected by the Trustees, the *preferred alternative* (Alternative 1 in the EA), contains a comprehensive list of actions that are divided into *primary* and *compensatory restoration* categories. As noted below, the Trustees adopted certain modifications to the *compensatory restoration* actions presented in the EA from the consideration of comments received during the 30-day public availability period. All selected *primary* and *compensatory restoration* actions, as modified, are considered by the Trustees to be adequately responsive to the selection criteria presented in Section 4 of this DN/FONSI.

The selected *primary restoration* action is natural recovery. *Primary restoration* is intended to return injured natural resources to the baseline conditions that would have existed had the oil spill not occurred.

The *compensatory restoration* actions selected to address lost ecological services include aquatic habitat enhancement projects, wetland enhancement projects, forest enhancement projects, and wildlife forage range enhancement projects. Those projects are intended to replace lost ecological services pending the recovery of injured habitats to their baseline conditions. Lost ecological services include soil stabilization, water quality improvement, and the provision of food and shelter for wildlife.

The *compensatory restoration* actions selected to address lost recreational use services include three projects to enhance visitor experiences along the Potomac River, one project to enhance fishing in the Potomac River, and one project to enhance the general recreational experience along Sugarland Run. Those projects are intended to replace lost recreational use services pending the recovery of injured natural resources to their baseline conditions. Lost recreational use services include wildlife and scenic viewing, fishing, hiking, and the undiminished visitor use of NPS facilities that contain or are closely associated with natural resources injured by the oil spill.

The selected *compensatory restoration* actions, and substantive issues raised in public comments concerning those actions, are summarized below. Issues that relate to multiple projects are addressed separately from those that relate to individual actions.

Ecological Services Restoration

- Aquatic Habitat Enhancement Projects: These projects will enhance existing stream and riparian habitats and provide stormwater management services within the Sugarland Run watershed. See Section 3.1.2.1 of the EA for a description of these projects.

One comment noted that the selected stormwater management actions were subject to design review and construction inspection by the Town of Herndon, and also suggested that project implementation include appropriate landscaping. The Trustees will comply with all applicable design review and construction inspection requirements. Further, if additional analysis warrants, the Trustees may consider substituting more appropriate actions to provide stormwater management services.

Some comments suggested a different project, the removal of a stream barrier on Sugarland Run near Algonkian Park, to increase the level and diversity of fish populations. The Trustees considered that suggestion but decided against incorporating it into the Final Plan for the following reasons. Sugarland Run is characterized by a high sedimentation rate, extensive erosion, and periodic flash flooding that results in poor instream habitat conditions upstream of the fish barrier. Since these appear to be the major factors limiting fish populations in Sugarland Run, attempts to control them will provide the greatest benefit to the aquatic habitat. The Trustees believe that the selected projects, which will improve water quality, control erosion, and moderate the flow regime of Sugarland Run, are the appropriate restoration actions. Therefore, the Trustees decided not to incorporate this suggested project in the Final Plan.

One comment suggested an additional project to remove stream blockages along Folly Lick and Sugarland Run in order to reduce stream bank erosion and to enhance recreational use by canoeists. The Trustees note that the goal of *compensatory restoration* is to replace the services lost or diminished as a result of the oil spill. Along Sugarland Run, those lost or diminished services were associated with fish and wildlife habitat and with streamside recreational use, rather than the instream recreational use indicated by the suggested project. The Trustees believe that stream bank erosion will be better addressed with the selected aquatic habitat enhancement projects, and that the selected Sugarland Run Stream Valley Regional Trail project will better replace the type of recreational use actually affected by the oil spill. Therefore, the Trustees decided not to incorporate this suggested project in the Final Plan.

One comment suggested an additional project to develop a comprehensive watershed inventory and restoration plan for Sugarland Run. As stated in Section 1.3 of the EA and in Section 1 of this DN/FONSI, the goal of restoration is to make the environment and the public whole for injuries to, or loss of, natural resources and services resulting from the oil spill. The Trustees believe that merely studying or evaluating the watershed without actually restoring, rehabilitating, replacing, or acquiring the equivalent of injured natural resources and services would not compensate the public for these losses. Therefore, the Trustees decided not to incorporate this suggested project in the Final Plan.

One comment suggested that the Trustees seek additional damage recoveries to compensate for the direct loss of resident game fish in Sugarland Run. The Trustees note that the selected aquatic habitat enhancement projects were designed and scaled to replace all lost ecological services in the affected aquatic habitat, including the support of resident game fish. Therefore, to avoid the double recovery of damages, the Trustees decided not to incorporate this suggestion in the Final Plan.

- Wetland Enhancement Projects: These projects will enhance the wildlife habitats and water quality improvement services at various wetlands within the Sugarland Run watershed. See Section 3.1.2.2 of the EA for a description of these projects.

Some comments noted that particular features of wetland enhancement project #2 would cause excessive disturbance, disrupt desirable natural processes, and fail to address other existing problems in the wetland. The Trustees agreed that this project should be improved and adopted modifications to address those concerns. Those modifications will be incorporated in the Final Plan.

One comment noted that the Town of Herndon is developing a Resource Management Plan for Runnymede Park, and suggested that the design and implementation of wetland enhancement project #2 be coordinated with that plan. The Trustees agreed with that suggestion and will coordinate project design and implementation with the Town of Herndon.

- Forest Enhancement Projects: These projects will improve the wildlife habitat value of existing forest and open field habitats within the Sugarland Run watershed. See Section 3.1.2.3 of the EA for a description of these projects.

One comment noted that the Friends of Sugarland Run had planted tree seedlings in the Spring Street area and asked that measures be taken to protect them during project implementation. The project description in the EA (Section 3.1.2.3) acknowledges the presence of those tree seedlings and states that restoration efforts will focus on replacing dead tree seedlings and planting additional shrubs among the existing tree seedlings. The Trustees believe that those actions will adequately protect the tree seedlings planted by the Friends of Sugarland Run.

- Wildlife Forage Range Enhancement Projects: These projects will enhance the provision of wildlife foraging services within the watershed of Sugarland Run. See Section 3.1.2.4 of the EA for a description of these projects.

Recreational Use Restoration

The projects located on NPS lands (Great Falls Park, Fletcher's Boat House, and Dyke Marsh projects) have previously been considered in the respective NPS planning processes for those areas.

- Great Falls Park: This project will enhance visitor use of Great Falls Park within George Washington Memorial Parkway by rehabilitating Scenic Overlook Number 2. See Section 3.2.2.1 of the EA for a description of this project.
- Fletcher's Boat House: This project will enhance visitor use of Chesapeake and Ohio Canal National Historic Park by rehabilitating picnicking and other visitor facilities near Fletcher's Boat House. See Section 3.2.2.2 of the EA for a description of this project.
- Dyke Marsh: This project will enhance wildlife and scenic viewing within George Washington Memorial Parkway by providing wildlife viewing and interpretive facilities at Dyke Marsh. See Section 3.2.2.3 of the EA for a description of this project.
- Little Falls Dam Fish Passage: This project will enhance recreational fishing within the Potomac River by partially funding restoration work to facilitate the migration of American Shad to prime spawning habitat. See Section 3.2.2.4 of the EA for a description of this project.
- Sugarland Run Stream Valley Regional Trail: This project will enhance hiking and other recreational use services by funding work to increase access to Sugarland Run. See Section 3.2.2.5 of the EA for a description of this project.

One comment suggested that portions of this trail should be constructed as a raised walkway due to muddy conditions. The Trustees note that at present this project involves only the provision of funds. Actual design and construction of the trail is planned to be carried out at a future date under the Town of Herndon's Comprehensive Plan and Capital Improvements Program pursuant to applicable environmental analysis.

General Issues

- One comment raised the concern that the selected *primary restoration* action of natural recovery might allow the establishment of invasive or exotic plant species. As noted in Sections 3.1.1 and 3.2.1 of the EA, the Trustees determined that baseline

conditions would be achieved through natural recovery based on evidence from site surveys, technical expertise, a review of the relevant scientific literature, and best professional judgement. Since that evaluation, the Trustees have not received any factual information to the contrary. Therefore, the Trustees will incorporate natural recovery in the Final Plan as the selected *primary restoration* action.

- A number of comments noted that some restoration projects were contemplated for privately owned property, and that the Trustees should obtain landowner approval to implement, and assurances not to dismantle, those projects. The Trustees agreed with those recommendations and have begun to analyze the associated issues. The Trustees may consider alternative locations for those projects that are determined to be impracticable. Modifications will be considered pursuant to NEPA as appropriate.
- Some comments raised a concern that native seed and plant stocks used for restoration need to be quality controlled to prevent the introduction of invasive or exotic species. The Trustees agree with that concern, and will take reasonable precautions to prevent the introduction of undesirable species.
- One comment raised a concern about restoration efforts to be conducted outside the Sugarland Run watershed, where, according to the comment, the impacts from the oil spill were less apparent. In response, the Trustees note that significant and widespread impacts were experienced downstream from the confluence of Sugarland Run and the Potomac River. Those impacts are documented in Section 2.0 of the EA. The Trustees have selected appropriate restoration actions outside the Sugarland Run watershed to address those impacts.
- Some comments requested continued public input during all phases of restoration implementation. The Trustees note that opportunities for meaningful public input have already been made available during the lodging of the consent decree, and during the 30-day public availability period for the EA. Five written comments were submitted by the public during the lodging of the consent decree, and 13 written comments were submitted by the public in response to the EA. Additionally, the Trustees announced and held a public meeting to discuss the EA. The Trustees will continue to seek public input as appropriate.
- One comment suggested that public volunteers be used to reduce the cost of restoration in order to achieve additional restoration. The Trustees note that the goal of restoration is to make the environment and the public whole for injuries to, or loss of, natural resources and services resulting from the oil spill. That is, the level of restoration is scaled commensurate with the level of injury. The Trustees' analysis of the injuries resulting from the oil spill indicates that the selected restoration actions are adequately scaled, and will make the environment and the public whole. The Trustees will not seek additional restoration through the use of public volunteers, or other means. However, a number of the Trustee agencies do have

established volunteer programs and generally welcome volunteer assistance in furtherance of their respective missions.

7. ENVIRONMENTAL CONSEQUENCES

The selected ecological service restoration actions of the *preferred alternative* will improve the quality of the existing habitat and benefit fish and wildlife resources in and around Sugarland Run. No significant adverse impacts to natural, cultural, or historic resources are expected to result from the implementation of any selected ecological services or recreational use restoration action. Where implementation will involve construction activity or other disturbance (e.g., canopy thinning or boardwalk installation), minor, short-term impacts typically associated with such activities, such as noise and dust, are expected during project implementation. Any impacts will be minimized by adhering to standard construction practices for erosion and sedimentation control, waste disposal, and site clean up. No negative impacts to threatened or endangered species are anticipated.

A number of comments received during the 30-day public availability period addressed specific issues regarding the environmental consequences of ecological services restoration projects. These issues, and the Trustees' responses to them, are summarized in Section 6 of this DN/FONSI.

As for the Little Falls Dam Fish Passage Project (Section 3.2.2.4 in the EA) the U.S. Army Corps of Engineers (Baltimore District) performed an environmental assessment and on April 29, 1996, issued a FONSI. Potential impacts were assessed with regard to the physical, chemical, and biological characteristics of the aquatic and terrestrial environments, endangered and threatened species, hazardous, radioactive, and toxic materials, aesthetics and recreational resources, cultural resources, and the general needs and welfare of the public. Pursuant to the judicial settlement, funding was contributed toward the completion of this project.

The *cumulative impact* of the combined components of the selected restoration actions is not expected to cause more than minimal impacts on the general land use patterns, socioeconomic conditions, community facilities, and existing circumstances.

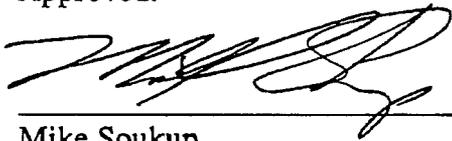
8. WETLAND PROTECTION STATEMENT OF FINDINGS

All restoration actions to be conducted on NPS lands qualify for an exception from Statement of Findings requirements for wetland protection under Section 4.2.A of the NPS Wetland Protection Procedural Manual (#77-1, November 1998). The Best Management Practices and Conditions listed in Appendix 2 of that manual will be complied with.

9. FINDING OF NO SIGNIFICANT IMPACT

The Trustees have considered the information and analysis contained in the EA and the comments received during the 30-day public availability period. This evaluation takes into account applicable law and regulation. The Trustees have considered the selected restoration actions using the criteria of 40 CFR § 1508.27. As a result, the Trustees have determined that the restoration actions selected for the March 28, 1993, Colonial Pipeline Oil Spill near Reston, Virginia, do not constitute a major Federal action significantly affecting the quality of the human environment and that an Environmental Impact Statement will not be prepared.

Approved:



Mike Soukup
Associate Director, Natural Resource Stewardship and Science
National Park Service

7/9/99
Date

Concur:

for Sherry W. Morgan

Ronald E. Lambertson
Regional Director, Region 5
U.S. Fish and Wildlife Service

7/13/99
Date



United States Department of the Interior

FISH AND WILDLIFE SERVICE
300 WESTGATE CENTER DRIVE
HADLEY, MA 01035-9589



In Reply Refer To:
FWS/Region 5/ES-EC

JUL 13 1999

Memorandum

To: Associate Director, Natural Resource Stewardship and Science,
National Park Service

From: **ACTING** Regional Director, Region 5

Subject: Decision Notice and Finding of No Significant Impact: Environmental
Assessment of Restoration Activities for the March 28, 1993, Colonial Pipeline
Oil Spill Near Reston, Virginia

I have reviewed the Decision Notice and Finding of No Significant Impact: Environmental Assessment of Restoration Activities for the March 28, 1993, Colonial Pipeline Oil Spill Near Reston, Virginia, and concur with its findings. I have indicated my concurrence with my signature on page 10 of the attached document. If you have any questions or need further assistance, please contact Robin Heubel, Regional NRDAR Coordinator at 413-253-8630.

Sherry H. Morgan

Attachment

Part B

**Original Text of the Draft Restoration Plan and Environmental
Assessment with Modifications**

**Colonial Pipeline Oil Spill, Reston, Virginia
Draft Restoration Plan and Environmental Assessment**

**United States Department of the Interior
Virginia Department of Environmental Quality
District of Columbia Department of Health**

October 1, 1998

FACT SHEET

Colonial Pipeline Oil Spill, Reston, Virginia Draft Restoration Plan and Environmental Assessment

Lead Trustee Agency: United States Department of the Interior

Cooperating Trustee Agencies: Virginia Department of Environmental Quality
District of Columbia Department of Health

Abstract: On March 28, 1993, a subsurface petroleum products pipeline owned and operated by the Colonial Pipeline Company ruptured near Reston, Virginia, discharging approximately 408,000 gallons of No. 2 fuel oil (diesel) into Sugarland Run, the Potomac River, and surrounding environments. Several natural resources, including fish, wildlife, and their habitats, were adversely affected. Additionally, recreational use of natural resources in and around National Park Service facilities, and regional and local parks, was adversely affected. This Draft Restoration Plan and Environmental Assessment presents the Trustees' proposed restoration alternative for making the environment and the public whole for injuries to, or loss of, natural resources and services resulting from the Oil Spill. The Trustees are soliciting comments on this Draft Restoration Plan and Environmental Assessment, and will consider comments received in the development of the Final Restoration Plan.

Contact Person: Daniel Hamson
National Park Service
Environmental Quality Division
1849 C Street, N.W. (Mail Stop 2749)
Washington, DC 20240

Comments: Comments on this Draft Restoration Plan and Environmental Assessment may be submitted during the 30-day public availability period to be published in the FEDERAL REGISTER. Comments should be sent to Daniel Hamson at the address above.

October 1, 1998

EXECUTIVE SUMMARY

On March 28, 1993, a subsurface petroleum products pipeline, owned and operated by the Colonial Pipeline Company, ruptured near Reston, Virginia, discharging approximately 408,000 gallons of No. 2 fuel oil (diesel) into the environment. Discharged oil flowed into Sugarland Run, a tributary to the Potomac River, and the surrounding environments, and injured fish and wildlife resources, as well as important ecosystem components such as surface water, soil, sediment, and vegetation which support these organisms. Several natural habitats, including aquatic habitats, wetlands, bottomland forest, upland forest, and open field, were contaminated. Several National Park Service facilities, as well as local and regional parks, were also impacted by the Oil Spill. As a result, the recreational use services of affected natural resources were lost or diminished due to the effects of the discharged oil. Ultimately, injuries to natural resources due to the Colonial Pipeline Oil Spill resulted in lost ecological services and lost recreational use services along both Sugarland Run and the Potomac River.

Under the Oil Pollution Act of 1990, natural resource trustees are authorized to recover natural resource damages from responsible parties for injury to natural resources resulting from discharges of oil. Since the time of the Oil Spill, Trustees representing the United States, the Commonwealth of Virginia, and the District of Columbia have been engaged in the process of assessing natural resource damages and developing a plan to restore, rehabilitate, replace, or acquire the equivalent of natural resources and services injured by the Colonial Pipeline Oil Spill. On January 23, 1998, a Consent Decree resolving the Trustees' claims against Colonial was entered in the United States District Court for the Eastern District of Virginia. This Consent Decree outlines a series of proposed restoration actions to be implemented by Colonial. With the exception of a limited number of modifications and substitutions to address issues of technical feasibility, these proposed restoration actions form the basis of this Draft Restoration Plan. Following an opportunity for public participation, Colonial will implement a Final Restoration Plan according to the terms of the Consent Decree.

The Trustees' goal in pursuing restoration for this incident is to restore the natural resources and services injured by the Colonial Pipeline Oil Spill to the baseline conditions that would have existed had the incident not occurred, and to compensate the environment and public for lost ecological services and lost recreational use services resulting from the Oil Spill. To achieve this goal, the Trustees propose a package of restoration actions to enhance the ecological services and recreational use services of the natural resources injured by the Oil Spill.

This Draft Restoration Plan and Environmental Assessment presents a summary of the incident and the injuries caused by the Oil Spill, identifies the restoration alternatives that were considered, outlines criteria used for evaluating those alternatives, and discusses the preferred alternative and environmental consequences. This document also serves as an environmental assessment pursuant to the National Environmental Policy Act. This draft

plan reflects the public comments that the Trustees received throughout this process. Additionally, the Trustees shall also consider those public comments received as a result of the public's review of this document and from the public meeting the Trustees intend to hold during the 30-day public availability period.

1.0 INTRODUCTION: PURPOSE AND NEED FOR RESTORATION

1.1 Summary of Incident

On March 28, 1993, at approximately 8:48 a.m., a subsurface petroleum products pipeline ruptured behind the Reston Hospital Center located at 813 Town Center Parkway in Fairfax County, Virginia. The 36-inch diameter pipeline is a main transmission line owned and operated by the Colonial Pipeline Company (Colonial) and extends from Pasadena, Texas, to Linden, New Jersey. The pipeline rupture resulted in the discharge of approximately 408,000 gallons (9,700 barrels) of No. 2 fuel oil (diesel) into the environment.

The rupture of the pressurized pipeline resulted in the discharge of oil into Sugarland Run, a tributary to the Potomac River, via a storm sewer located approximately one-half mile from the rupture site. Discharged oil flowed down Sugarland Run for approximately nine miles before entering the Potomac River. Discharged oil then flowed down the Potomac River, past Washington, D.C., and towards the Chesapeake Bay. Sheen and pockets of emulsified oil from the discharge were identified on the Potomac River as far south as Quantico, Virginia, approximately 60 miles downstream of the mouth of Sugarland Run. The Oil Spill occurred in the spring of 1993 during the annual Cherry Blossom Festival that is focused in and around the Potomac River.

Emergency oil spill response efforts were conducted by the Fairfax County Fire and Rescue Department, the U.S. Coast Guard, the U.S. Environmental Protection Agency (EPA), and Colonial. Public water supply intakes on the Potomac River downstream of Sugarland Run were immediately notified of the potential for contamination. Oil spill booms were deployed at several locations along Sugarland Run to contain and collect the discharged oil.

Recovery efforts were focused at the Oil Spill source and at the mouth of Sugarland Run. Additional boom collection sites were established along Sugarland Run at two bridge crossings. Vacuum trucks equipped with oil skimmers were used at the collection sites to assist with the removal of oil from Sugarland Run. Containment and recovery efforts along Sugarland Run were hindered by high waters and strong currents resulting from heavy rains preceding the Oil Spill. Despite containment and recovery efforts, the area directly contaminated with discharged oil consists of approximately 48 square miles of surface water, shorelines, islands, and wetlands.

Downstream, the National Park Service (NPS) responded to the Oil Spill and also collected samples and recorded its impact on parkland, the Potomac River, and the Tidal Basin. Measures were taken to protect visitors, affected areas, and associated resources.

Several wildlife agencies and organizations including the U.S. Fish and Wildlife Service (USFWS), the Humane Society of the United States, Tri-State Bird Rescue and Research, Inc., and other local and regional agencies, responded to the Oil Spill and were involved

with wildlife search, rescue, and rehabilitation. Search and rescue efforts were conducted for approximately two weeks following the Oil Spill. Efforts were focused on areas identified as likely wildlife concentration areas (e.g., ponds for waterfowl) and areas where oiled wildlife was reported.

Natural resource agencies at Federal, State, and local levels were notified of the Oil Spill shortly after the incident occurred. USFWS coordinated a multi-agency effort to conduct a preliminary investigation of potential natural resource impacts in the area affected by the Oil Spill. The investigation focused on documenting the extent to which various natural resources were exposed to oiling, direct wildlife mortality, and lost or diminished human use of natural resources. The preliminary investigation included the following preassessment activities.

- Collection of water and sediment samples from Sugarland Run by the Virginia Department of Environmental Quality (VADEQ);
- Rapid shoreline assessment surveys;
- Helicopter overflights;
- Field reconnaissance and photo documentation survey of Sugarland Run conducted by the National Oceanic and Atmospheric Administration (NOAA);
- Benthic and fisheries surveys conducted by VADEQ and Virginia Department of Game and Inland Fisheries;
- Bird resources survey conducted by USFWS;
- Aerial photography;
- Inventory of wildlife impacts and rehabilitation operations during the Oil Spill;
- Monitoring potential impacts to water intake and treatment facilities conducted by NOAA; and
- Assessment of potential groundwater contamination conducted by the Virginia State Water Control Board.

The Oil Spill adversely affected numerous natural resources present within Sugarland Run and the Potomac River. Large numbers of fish and benthic macroinvertebrates were injured as a result of the Oil Spill. Wildlife, including small mammals, migratory birds, reptiles, and amphibians were injured, as well. In addition, other natural resources including surface water, soils, sediments, and vegetation, which comprise the supporting habitats for affected fish and wildlife, were also injured. The degree and extent to which many of these resources were injured was increased by flood conditions and high flows in

Sugarland Run and the Potomac River at the time of the incident. These high flows carried oil into the surrounding floodplain in certain areas, resulting in injury to wetland, bottomland forest, and open field habitats, in addition to aquatic habitat injury. Upland forest located near the rupture site was also injured.

Recreational use services were also impacted by the Oil Spill. Two NPS facilities along the Potomac River were closed to visitors for a period of time following the Oil Spill. The recreational use of natural resources at other NPS facilities, including attractions within the Washington, D.C., monumental core and Tidal Basin, Mount Vernon Trail in Virginia, and Chesapeake and Ohio Canal National Historical Park, were affected by the presence of floating oil sheen, and noxious fumes. Non-consumptive wildlife-associated activities such as bird watching were impacted throughout affected portions of the Potomac River and recreational shoreline fishing along the Potomac River in the District of Columbia was temporarily disrupted immediately following the Oil Spill. Lastly, the recreational use services of public greenways and parklands located within the Sugarland Run stream valley were temporarily disrupted during and after the Oil Spill, disrupting participation in popular outdoor activities such as hiking, bicycling, nature observation, and environmental education.

In response to this discharge, the EPA, Region III, issued a Unilateral Administrative Order (UAO) to Colonial for the "Protection of Public Health and Welfare and the Environment." The UAO required Colonial to conduct sampling to determine the extent and magnitude of residual contamination in the environment following initial oil spill response efforts. The UAO further mandated that areas of residual contamination exceeding certain criteria must be remediated by Colonial to pre-determined clean-up standards.

1.2 Settlement of Natural Resource Damages

A settlement resolving all Federal, State, and District claims for penalties and natural resource damages under section 1006 of the Oil Pollution Act of 1990, section 311(b)(7) of the Clean Water Act, Code 6-937 of the District of Columbia Water Pollution Control Act, and sections 62.1-44.34:18C and 62.1-44.34:20C of the Code of Virginia was reached with the responsible party, Colonial Pipeline Company, in January 1998. Under the terms of the settlement, Colonial agreed to implement and perform the list of restoration projects identified in the Consent Decree based on trustee-approved Work Plans for the implementation of the restoration projects. Work Plans for the restoration projects will be developed by Colonial and approved by the Trustees. The Work Plans will include the design for each restoration project, performance standards for determining when a project is complete, and schedules for the completion of each project.

The trustee approval process for implementing the restoration projects, including the Work Plans, allows for modification of restoration projects as a result of public comments received during the public review period following lodging of the Consent Decree and comments received in connection with the restoration planning process. If

comments received during the restoration planning process indicate a need to modify a proposed restoration project, the Natural Resource Trustees can substitute a project or projects that provide substantially equivalent benefits to natural resources and/or the public as the project or projects that are set out in the Consent Decree. This Draft Restoration Plan provides the public an opportunity to review and comment on the proposed restoration actions. The Trustees will consider comments received in the development of the Final Restoration Plan.

1.3 Summary of the Purpose and Need for Restoration

The goal of the proposed restoration actions is to make the environment and public whole for injuries to, or loss of, natural resources and services resulting from the Colonial Pipeline Oil Spill through the restoration, rehabilitation, replacement, or acquisition of equivalent natural resources and services. The Trustees' goal for this incident is to restore the natural resources and services injured by the Oil Spill to the baseline conditions that would have existed had the incident not occurred, and to provide restoration actions that replace the interim lost ecological and recreational use services resulting from the Oil Spill.

To achieve that goal, the Trustees propose to replace lost ecological services by enhancing wildlife habitat values for the types of natural resources and habitats injured as a result of the Oil Spill. The proposed wildlife habitat enhancement actions include: (1) aquatic habitat enhancement, (2) wetland enhancement, (3) forest enhancement, and (4) wildlife forage range enhancement. Each of these habitat enhancement actions consists of multiple projects at specific locations throughout the Sugarland Run watershed.

In addition to restoration projects associated with lost ecological services, the Trustees propose to replace lost recreational use services by enhancing the recreational use of affected natural resources. The proposed recreational use enhancement actions include: (1) rehabilitation of a scenic overlook at Great Falls Park, Virginia, within George Washington Memorial Parkway, (2) improvement of visitor facilities at Chesapeake and Ohio Canal National Historical Park in the District of Columbia, (3) construction of a raised wetland boardwalk and other improvements at Dyke Marsh within George Washington Memorial Parkway, (4) partial funding for construction of a fish passage through Little Falls Dam on the Potomac River, and (5) funding for construction of the Sugarland Run Stream Valley Regional Trail.

This Draft Restoration Plan provides a description of each of the proposed restoration actions. Descriptions include the objective of the restoration project, the location of the project, and details associated with implementing the project. In addition, the environmental consequences of each proposed restoration action are discussed.

1.4 Public Participation

The Oil Pollution Act of 1990 (OPA) (33 U.S.C. § 2701 *et seq.*) provides for public participation in the restoration planning process. The Natural Resource Damage Assessment (NRDA) regulations promulgated under OPA interpret this as requiring, at a minimum, that trustees provide the public with the opportunity to comment on a draft restoration plan, and that public comments be considered in producing the final restoration plan (15 C.F.R. § 990.55(c)).

This document is being made available to help facilitate meaningful public participation as envisioned by OPA. The public was provided an initial opportunity to review the proposed restoration projects during the public review period prior to entry of the Consent Decree in U.S. v. Colonial, Civil Action No. 97-1680-A, (E.D. Va. 1998). As noted in section 1.2, the Consent Decree included a Restoration Project List that provides conceptual descriptions of the actions intended to restore, rehabilitate, replace, or acquire the equivalent of injured natural resources and services. Notice of the availability of the Consent Decree was published in the November 3, 1997, FEDERAL REGISTER (62 F.R. 59371). In response, the United States received five sets of comments on the Consent Decree which were considered by the United States and the court in approving the Consent Decree. With the exception of a limited number of modifications and substitutions to address issues of technical feasibility, the Restoration Project List included in the Consent Decree is the basis of this Draft Restoration Plan.

The Trustees are soliciting comments on this Draft Restoration Plan and will consider comments received in the development of the Final Restoration Plan. In providing opportunities for public review and comment, the Trustees have considered such factors as the form of public involvement, the extent of public involvement, and the forum for communication with the public. Local governments and interest groups have been consulted during the development of the proposed restoration projects that were included in the Consent Decree and during the initial development of the Draft Restoration Plan.

To further ensure the goal of public participation, the Trustees plan to hold a public meeting to describe the Draft Restoration Plan and process. Efforts will be made to ensure that interested parties are aware of these opportunities to review and comment on the Draft Restoration Plan.

This Draft Restoration Plan is also an Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA) (42 U.S.C. § 4321 *et seq.*). Before issuing the decision notice and findings on this EA, the Trustees will consider all public comments received during the 30-day public availability period.

1.5 Compliance with Other Authorities

In addition to any requirements for restoration outlined in the OPA NRDA regulations, the restoration actions proposed in this Draft Restoration Plan must comply with other

statutory authorities. Based on consideration of the nature of the proposed activities, restoration actions outlined in this plan may be subject to the requirements of NEPA and Sections 404 and 401 of the Clean Water Act. The scope of these authorities, as well as requirements for compliance relative to the proposed restoration actions are briefly discussed below.

NEPA requires an assessment of any Federal action that may impact the environment. NEPA applies to restoration actions undertaken by Federal trustees, except where a categorical exclusion or other exception to NEPA applies. There is a categorical exclusion exempting USFWS from certain requirements under NEPA for some restoration actions (see the January 16, 1997, FEDERAL REGISTER notice, 61 F.R. 2375). While NEPA requirements may not be required for all aspects of the proposed restoration actions, the Trustees determined to treat the Draft Restoration Plan as both a restoration planning document and an EA under NEPA. In order to assist in planning, this document includes a comparative evaluation of the environmental consequences of alternative methods for restoring or replacing the natural resources and services injured by the Colonial Pipeline Oil Spill.

The objective of the Clean Water Act (Federal Water Pollution Control Act, 33 U.S.C. § 1251 *et seq.*) is to restore and maintain the chemical, physical, and biological integrity of the Nation's water. To this end, Section 404 of the Clean Water Act requires a permit from the U.S. Army Corps of Engineers (COE) for the discharge of dredge or fill material into waters of the United States, including most wetlands. Section 401 of the Clean Water Act requires the States (and eligible Indian Tribes) to certify that any Federally permitted or licensed activity that might result in a discharge to waters of the United States, including issuance of a Section 404 permit, will not violate applicable water quality standards established by the States. In Virginia, the Section 401 water quality certification program is administered by VADEQ. Together, these statutory authorities regulate most types of work conducted in wetlands. In addition, NPS has requirements to be met when activities on parkland occur within floodplain and wetland areas.

Several of the restoration actions proposed in this Draft Restoration Plan involve activities conducted in wetlands and waters of the United States. Therefore, these activities are subject to review and approval by the appropriate regulatory agencies. Permits must be issued by COE and VADEQ prior to conducting any work in wetlands proposed in this plan. Projects may require either individual permits (i.e., project-specific) or general permits. Proposed restoration actions requiring Section 404 or 401 permits are subject to modification during the regulatory review process.

2.0 INJURY ASSESSMENT: THE AFFECTED ENVIRONMENT

2.1 Overview of the Affected Environment

Sugarland Run is a third-order tributary to the Potomac River flowing through Fairfax and Loudoun counties, Virginia (Figure 1). From its origin near Reston, Virginia, Sugarland Run flows in a northerly direction for approximately 10.4 miles before converging with the Potomac River just west of the Fairfax-Loudoun county border. Land use within the 20.8 square mile Sugarland Run watershed is characterized by a mixture of suburban development, parks and open space, and natural habitats. The town of Herndon, Virginia, and a portion of Reston represent the major centers of commercial and residential development within the watershed. Despite the relative degree of development within the watershed, a well-defined riparian corridor containing a diversity of natural habitats exists along the majority of the Sugarland Run stream valley. Several public parks and a greenway trail network are located within this riparian corridor, making the Sugarland Run stream valley an important recreational area for the local communities. These recreational amenities provide valuable opportunities for environmental education, hiking, fishing, bird watching, and other activities associated with public parks and greenways. Several types of natural habitats, including vernal pool wetlands, riparian forest, and bottomland forested wetlands also occur within the Sugarland Run stream valley. These riparian habitats border the riffles, runs, and pools that comprise the aquatic habitat of Sugarland Run. Together, these riparian and aquatic habitats support a variety of wildlife including migratory birds, fish, reptiles, amphibians, and mammals.

Sugarland Run flows into the Potomac River, the second largest tributary flowing into the Chesapeake Bay (Figure 2). From its headwaters in the Appalachian Mountains, the Potomac River flows southeastward through the Washington, D.C. metropolitan area before entering the Chesapeake Bay at Lookout Point. Like Sugarland Run, the Potomac River has a high ecological and recreational value. The natural habitats along the Potomac River are highly diverse between the mouth of Sugarland Run and Great Falls and provide a variety of complex, productive habitats including small islands, rocky shoreline, vernal pool wetlands, and bottomland forested wetlands. The Potomac River becomes a tidal estuary downstream of the fall zone near Chain Bridge in the District of Columbia. This area provides valuable spawning and rearing habitat for anadromous fish, as well as food and shelter for large numbers of colonial waterbirds and waterfowl. The Potomac River also provides important habitat for threatened and endangered plant and animal species including bald eagles. Some bald eagle habitats occur on lands managed by the Federal government, such as Mason Neck National Wildlife Refuge and Great Falls Park within George Washington Memorial Parkway, while other bald eagles use nests and roosts on private land along tidal portions of the Potomac River.

Several National Park Service areas are located on or adjacent to the Potomac River within the portion affected by the Oil Spill. These units of the National Park System and

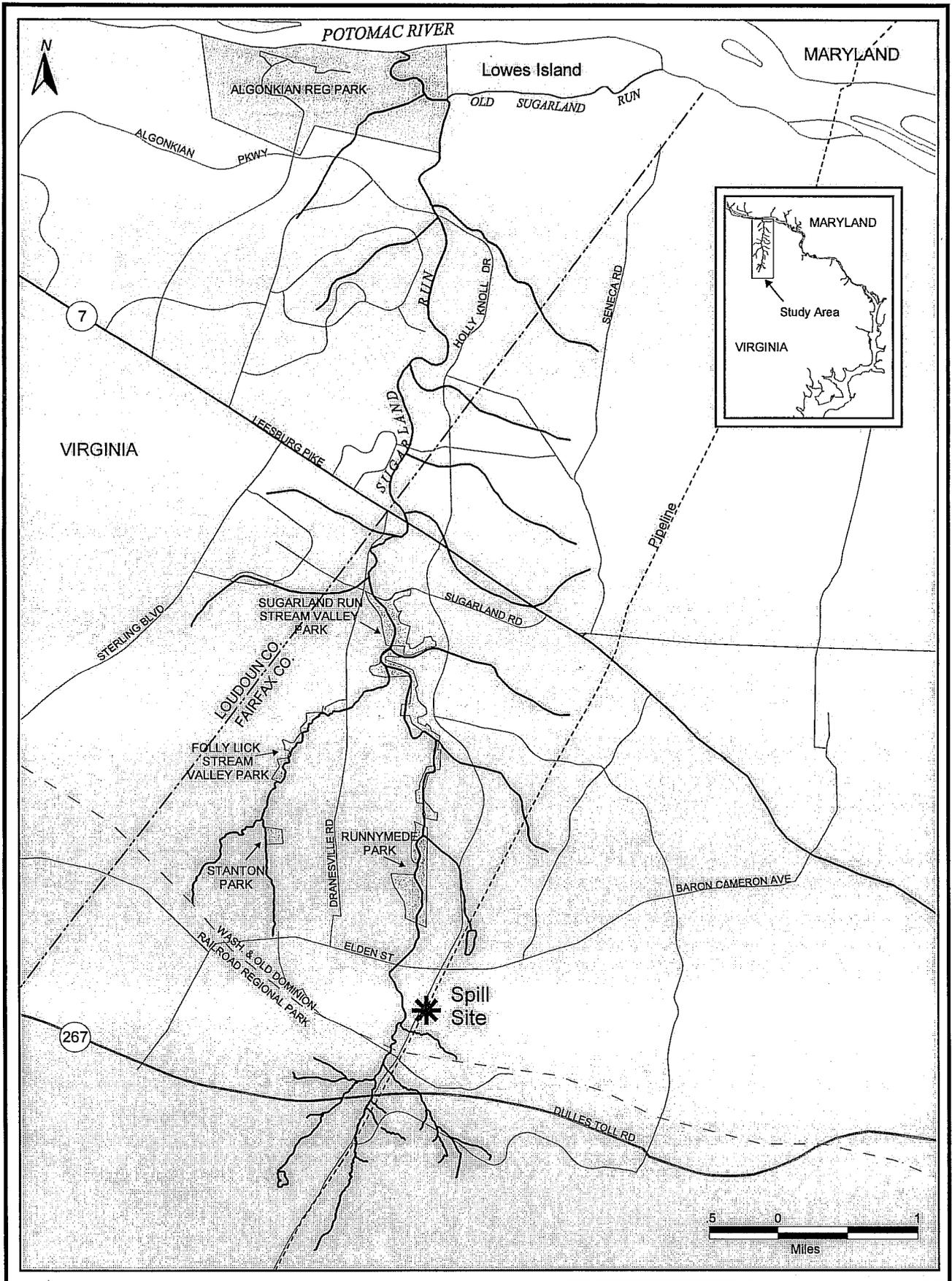


Figure 1.
Affected Environment Along Sugarland Run

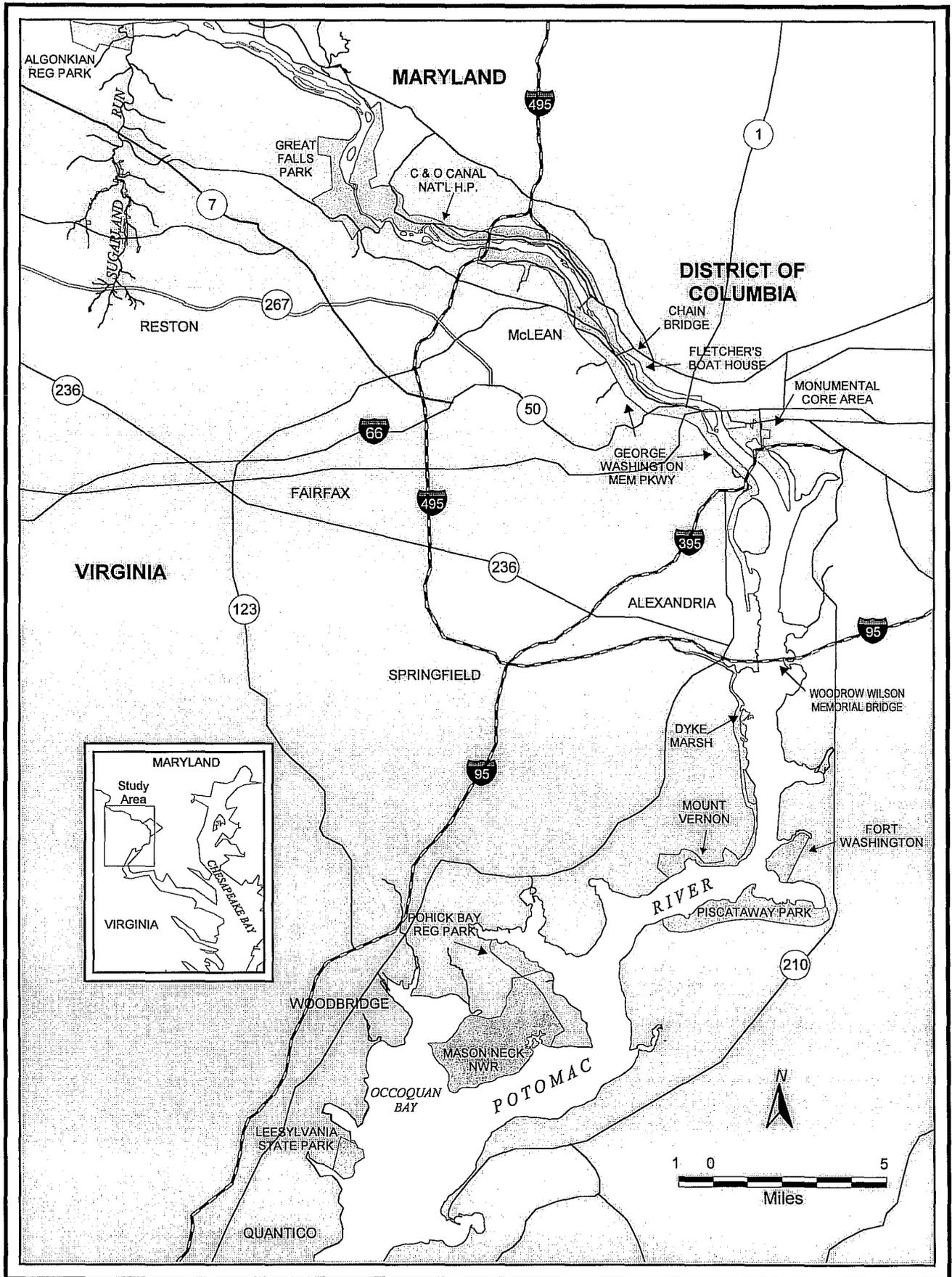


Figure 2.
Affected Environment Along the Potomac River

their related sites include: George Washington Memorial Parkway, including Great Falls Park, Virginia, Theodore Roosevelt Island, and Mount Vernon Trail; Chesapeake and Ohio Canal National Historical Park, including Great Falls, Maryland, Chesapeake and Ohio Canal Towpath from Great Falls to Georgetown, and Fletcher's Boat House; National Capital Parks - Central, including the Tidal Basin and the Washington, D.C., monumental core; and National Capital Parks - East, including Piscataway and Oxon Cove Parks. The Washington, D.C., monumental core contains some of the Nation's most significant cultural and historic sites, including the Lincoln Memorial, Jefferson Memorial, Washington Monument, and Vietnam Veterans Memorial. All of these areas provide important historic, recreational, and educational opportunities to local, national, and frequently international visitors.

2.2 Injury Assessment and Restoration Scaling Methodologies

Based on the preliminary investigation of potential oil spill-related natural resource injuries, the United States Department of the Interior, serving as lead Trustee agency, notified Colonial of their intent to initiate an incident-specific assessment. As a part of the assessment process, the Trustees conducted an injury assessment to quantify the nature, degree, and extent of natural resource and service injuries. Under the OPA NRDA framework, that information provides the technical basis for evaluating the need for, type of, and scale of restoration actions.

Different injury quantification and restoration scaling methodologies were used to address lost ecological services and lost recreational use services. The Trustees used the habitat equivalency analysis (HEA) methodology to determine compensation for lost ecological services resulting from the Oil Spill. An economic analysis methodology known as consumer surplus valuation was used to quantify injuries and scale restoration for lost recreational use services. Each of these methods is described below.

2.2.1 Scaling Ecological Restoration

Ecological restoration was scaled using HEA, a restoration-based damage assessment approach that is used to determine compensation for lost ecological services based on the quantification of oil spill-related natural resource injuries. The underlying assumption of HEA is that the environment and public may be compensated for lost ecological services in the past through the provision of additional ecological services of comparable type and quality in the future. HEA has previously been applied to a wide variety of incidents affecting a range of different habitat types.

HEA mathematically determines the quantity of comparable habitat that must be restored (beyond the restoration of injured resources and services to their baseline conditions) to ensure that the total quantity of ecological services provided by the restored habitat over its life span functionally replaces the total quantity of ecological services lost due to the injury. HEA considers several factors in scaling restoration, including the areal extent of injury, initial degree of injury, recovery time-path of injured resources and services,

elapsed time to restoration implementation, relative productivity¹ of restored habitats, maturity time-path of restored habitats, and project life span. HEA compounds past service flows, and discounts future service flows, to account for observed differences in the public's perception of value through time. HEA is appropriate for use where service losses are primarily ecological in nature and the creation, restoration, enhancement, or acquisition of comparable habitat types is technically feasible.

Since HEA is a habitat-based approach that determines compensation in terms of the amount of comparable habitat required to replace lost ecological services, oil spill-related natural resource injuries must be determined at the habitat level. The HEA conducted for the Trustees' injury assessment of the Colonial Pipeline Oil Spill includes five habitat types: (1) Sugarland Run aquatic habitat, (2) wetlands, (3) bottomland forest, (4) upland forest, and (5) open field. A sixth category, termed wildlife forage range, was added to the HEA to address likely wildlife impacts that extended beyond these injured habitats. For each of these injury categories, the Trustees estimated the overall level of injury based on site surveys, technical expertise, a review of the relevant technical literature, best professional judgment, and selected data from incident-specific field studies of key indicator resources and ecosystem components (i.e., fish, benthos, soils, vegetation, wildlife, etc.).

2.2.2 Scaling Recreational Use Restoration

For purposes of expediting the settlement of natural resource damages for this incident, the Trustees used an economic valuation methodology based on consumer surplus to quantify injuries and scale restoration for lost recreational use services. Consumer surplus is a measure of the economic value of recreational benefits that individuals receive in excess of their costs to participate in specific recreational activities. Consumer surplus is generally defined as the maximum amount an individual is willing to pay to obtain a specific good or service minus the actual costs of use.

Recreational use injuries resulting from the Oil Spill were quantified by estimating the consumer surplus value of the recreational use services that were temporarily lost or diminished by the Oil Spill. Lost use values were calculated for different categories of recreational lost use based on activity-specific user-day values and historic visitation and participation data for the affected recreational activities (i.e., number of user days). User-day values represent the consumer surplus value per day resulting from an individual's participation in a specific recreational activity. User-day values for a number of popular outdoor recreation activities have been estimated and are reported in the economics literature.

The number of user days expresses the cumulative number of users who participate in a certain activity on a given day. This number is usually based on historic visitation data collected by managing officials. The number of user days lost due to an oil spill is

¹ The term "relative productivity" refers to the proportional equivalence of the net ecological services provided by the compensatory restoration project relative to the baseline productivity of the injured habitat.

typically determined by comparing historic baseline visitation data to the actual number of visitors and participants during and immediately following the oil spill. The difference between these two numbers represents the number of user days lost due to the oil spill. Likewise, the number of user days diminished by an oil spill is typically determined by the actual number of people using the affected facilities. The value of lost and diminished recreational use services due to the oil spill is then calculated by multiplying the user-day value by the number of user days lost or diminished.

Compensation for lost recreational use services is provided by implementing restoration projects that generate public benefits (i.e., consumer surplus). Restoration projects generate consumer surplus by increasing user-day values (i.e., improved quality) or by increasing the number of user days (increased capacity or draw). For purposes of expediting settlement negotiations for this incident, compensation for lost recreational use services was scaled based on the criterion that the proposed restoration actions must collectively generate public benefits (i.e., consumer surplus) at least equal to the value of lost recreational use services due to the Oil Spill.

2.3 Natural Resources and Services Considered

For this incident, the Trustees assessed damages for two types of injury: lost ecological services, and lost recreational use services. These two categories of injury were selected based on the consideration of the major types of natural resources and services injured by the Oil Spill. Due to the nature and pathway of contamination resulting from the Oil Spill, as well as the predominant types of services provided by natural resources in the affected areas, lost ecological services were assessed along Sugarland Run, while lost recreational use services were assessed along the Potomac River. Some lost recreational use services were addressed along Sugarland Run, as well. These lost ecological services and lost recreational use services are described below.

2.3.1 Lost Ecological Services

Sugarland Run was the primary receiving environment for the discharged oil. During the course of the Oil Spill, a large volume of floating oil and sheen were transported down Sugarland Run. As the oil moved downstream, water-soluble fractions of the discharged oil dissolved in the water column. In addition, small droplets of oil were entrained in the water column, especially in areas of turbulent water (e.g., riffles). Due to the large volume of discharged oil relative to the amount of water flowing in Sugarland Run, dissolved hydrocarbon concentrations in the water column exceeded toxic thresholds for the aquatic organisms present in Sugarland Run. Consequently, large numbers of fish and benthic macroinvertebrates in Sugarland Run were injured as a result of the Oil Spill.

Electro-fishing surveys conducted a short time after the Oil Spill indicated an extensive fish kill in Sugarland Run from the point of the Oil Spill downstream to the confluence with the Potomac River. Fish mortality was likely due to direct impacts such as acute toxicity of the oil, and indirect impacts such as changes in the food supply and predation

rates. Species affected included minnows, sunfish, bass, suckers, catfish, and darters. A limited number of fish were found during a follow-up fish survey conducted approximately six months after the Oil Spill, suggesting that natural recovery of the fishery had begun. Fish are an important component of the aquatic ecosystem, providing food for other aquatic and terrestrial species, including humans. They are the largest consumers in the aquatic ecosystem and include scavenger, prey, and sport and commercial species. Consumption of fish by terrestrial consumers such as fish-eating birds and mammals provides a direct link between terrestrial and aquatic ecosystems.

Benthic macroinvertebrate surveys completed after the Oil Spill also indicated extensive mortality of these organisms in portions of Sugarland Run. These surveys further indicated that the benthos in riffle habitats sustained greater injury than the benthos in depositional habitats. Benthic macroinvertebrate injury was due to acute toxicity resulting in direct mortality, as well as changes in community structure (i.e., loss of pollution-sensitive species). Benthic macroinvertebrates are an important component of aquatic food chains. Fish, birds, carnivorous mammals, reptiles and amphibians all depend directly or indirectly on these organisms for food.

Heavy rains preceding the Oil Spill resulted in high flows and flood conditions in Sugarland Run at the time of the incident. As a result, floating oil and sheen, as well as oil dissolved and entrained in the water column, were carried outside the banks of Sugarland Run and into the surrounding floodplain. Several natural habitat types present within the floodplain of Sugarland Run, including wetlands, bottomland forest, and open field, were exposed to oil in this manner. Soils and vegetation within these floodplain habitats were contaminated by direct contact with oil or by flooding with a mixture of oil and water. Additionally, a limited amount of injury to these habitats occurred as a result of clearing oiled areas to facilitate emergency response and clean-up activities. Upland forest located near the rupture site was also injured by oil spraying from the broken pipeline.

Various wildlife resources utilizing Sugarland Run and surrounding habitats were injured by the Oil Spill, including migratory birds, small mammals, reptiles, and amphibians. These animals have individual habitat requirements and roles in the ecosystem, but together provide ecosystem services such as food for other organisms, seed dispersal and insect control. Based on USFWS data, approximately 84 vertebrates (excluding fish) were collected and recorded as oiled. Of the 84 animals collected, at least 48 died from suspected exposure to oil. The remainder were rehabilitated and released to other areas.

In addition to the wildlife impacts described above, the Trustees determined that additional wildlife impacts occurred beyond the areas directly exposed to discharged oil. Those additional impacts are associated with wildlife "foraging," or the movement of wildlife within their specific habitats in search of food, water, and other resources needed to survive and reproduce. The specific area of habitat utilized by particular species and individuals to meet these requirements is referred to as wildlife forage range. The Trustees determined that wildlife with forage ranges overlapping areas contaminated by

oil sustained some level of injury. Although there was no direct evidence, organisms likely suffered a decreased food supply, contaminated water, or disruption by clean-up activities as a result of the Oil Spill.

The Oil Spill injured fish and wildlife resources, as well as the habitats that support those resources. Injury to fish and wildlife resulted in the interim loss of ecological services provided by these organisms to other natural resources and to humans (i.e., food web support, biological diversity, ecosystem integrity, etc.). Habitat injury resulted from contamination and clean-up related impacts to the individual natural resources and ecosystem components, such as water, soil, sediment, and vegetation, which comprise the affected habitats. Injury to these habitat and ecosystem components resulted in the interim loss of ecological services provided by the different habitat types affected. Important ecological services provided by habitats include the support of fish and wildlife resources, and valuable services such as carbon storage, chemical and nutrient cycling, water filtration, soil stabilization, shade, aesthetics, and open space. Loss or reduction of these services affects the quality of the environment for both natural resources and humans.

As described earlier, a habitat-based approach was employed to assess injury and scale restoration for lost ecological services resulting from the Oil Spill. Lost ecological services were assessed for five habitat types impacted by the Oil Spill, including aquatic habitat (i.e., Sugarland Run), wetlands, bottomland forest, upland forest and open field. A sixth category for wildlife forage range injury was also assessed.

The Trustees' assessment of lost ecological services using this habitat-based framework is presented below. As mentioned previously, the overall level of injury for the habitat types discussed was based on site surveys, technical expertise, a review of the relevant technical literature, best professional judgment, and selected data from incident-specific field studies of key indicator resources (i.e., fish, benthos, soils, vegetation, wildlife, etc.). This injury assessment information formed the technical basis for the restoration actions proposed in the following section.

2.3.1.1 Sugarland Run Aquatic Habitat

Sugarland Run aquatic habitat includes the water column, streambed sediments, streambank soils, and all related aquatic biota. Aquatic habitats in Sugarland Run were classified as either riffle zones or depositional zones.

Sugarland Run was the primary receiving environment for the discharged oil. Consequently, of the different habitat types affected by the Oil Spill, aquatic habitats sustained the highest degree of injury. The entire surface area of Sugarland Run downstream of the Oil Spill site, estimated at 32.5 acres, was exposed to discharged oil. Aquatic habitat injury included contamination of the water column, sediments, and streambank soils in Sugarland Run by direct contact with oil or by oil dissolved or entrained in the water column and injury to aquatic biota (i.e., fish and benthos).

2.3.1.2 Bottomland Forest

Bottomland forest was the predominant terrestrial habitat type injured by the Oil Spill due to its landscape position and relative abundance in the vicinity of Sugarland Run. A total of 18.36 acres of bottomland forest were injured by the Oil Spill. Bottomland forest injury was concentrated in low-lying areas subject to flooding at the time of the Oil Spill. Of the total acres injured, approximately 4.4 acres were directly exposed to oil, 2.3 acres were impacted by clean-up activities, and 11.66 acres were exposed by flooding to a mixture of oil and water. Injury due to clean-up activities occurred in Algonkian Regional Park where vegetation was cleared to create an access road to facilitate recovery operations at the mouth of Sugarland Run.

2.3.1.3 Wetlands

Approximately 2.3 acres of wetlands were injured by the Oil Spill through direct exposure to oil. Injury to wetlands was concentrated primarily in an area near Algonkian Regional Park known locally as the "Turtle Pond." Wetland vegetation and soils were oiled as flood waters carrying floating oil receded to normal levels. Injury to forested areas subject to periodic flooding (i.e., forested floodplain wetlands) has been included separately under bottomland forest habitat.

2.3.1.4 Open Field

For this assessment, open field habitat was defined as areas that are generally lacking significant woody vegetation and are dominated by herbaceous plants (e.g., grasses). Open field habitat included areas subject to periodic disturbance (e.g., road right-of-ways) and areas in early stages of ecological succession.

A total of 2.8 acres of open field habitat were injured by the Oil Spill as a result of flooding at the time of the incident. The most severe injury to open field habitat occurred on Lowes Island (1.1 acres) and was due to direct exposure to oil. An additional 1.3 acres of open field were exposed to an oil/water mixture and sustained lesser degrees of injury. Clean-up operations impacted a few small areas of open field (0.4 acres) located along upstream portions of Sugarland Run.

2.3.1.5 Upland Forest

Upland forest habitat was defined as forest habitat not directly adjacent to Sugarland Run, which is not subject to periodic flooding. Upland forest includes canopy, midstory, and herbaceous vegetation species characteristic of mature forests (i.e., late-successional species such as hardwood trees). One acre of upland forest located adjacent to the rupture site behind the Reston Hospital Center was injured by the Oil Spill. Vegetation and soils were sprayed with oil as it exited the pipeline. Additional soil and vegetated areas were impacted by the oil as it flowed overland towards Sugarland Run.

2.3.1.6 Wildlife Forage Range

A separate category of injury, wildlife forage range injury, was established to address additional wildlife impacts that likely occurred beyond the areas directly exposed to discharged oil. The Trustees determined that wildlife occupying forage ranges that overlapped with areas exposed to oiling were likely affected due to decreased food supply, contaminated water, or disruption by clean-up operations. An estimated 528.9 acres of terrestrial habitat was likely affected by these impacts.

2.3.2 Lost Recreational Use Services

As discharged oil entered the Potomac River from Sugarland Run, the toxic effects of the oil were slowly ameliorated. Dissolved hydrocarbon concentrations in the water column were diluted by the additional volume of the Potomac River, floating oil and sheen dispersed over a greater surface area, and volatile fractions of the discharged oil evaporated into the atmosphere. These factors, as well as the presence of refugia, helped to greatly reduce the harmful effects of the discharged oil to biota and other natural resources along the affected portion of the Potomac River. However, floating oil, sheen, and noxious fumes from the discharged oil adversely affected human uses along Sugarland Run and the Potomac River.

Lost human use resulting from the Colonial Pipeline Oil Spill is generally characterized by lost or diminished recreational use services. While lost recreational use services were greatest for the Potomac River, the Oil Spill also resulted in lost recreational use services along Sugarland Run. In both cases, some recreational activities were eliminated for a period of time, while others were only partially diminished. For purposes of assessing injury, lost recreational use services were categorized into four components including (1) lost visits at closed NPS facilities, (2) diminished visits at affected NPS facilities and diminished non-consumptive wildlife-associated activities, (3) forgone recreational shoreline fishing, and (4) lost recreational use services along Sugarland Run.

2.3.2.1 Lost Visits at Closed National Park Service Facilities

Two NPS facilities located on the Potomac River were closed due to the Oil Spill. Both Great Falls Park within George Washington Memorial Parkway and Fletcher's Boat House within Chesapeake and Ohio Canal National Historical Park were temporarily closed to visitors due to the presence of oil on the Potomac River.

Great Falls Park, situated on the southern shore of the Potomac River in Fairfax County, Virginia, was closed to visitors for two days with an estimated loss of 1,163 visitors per day. After reopening the park, visitation rates were depressed below normal for three days by an estimated 50%, 33%, and 25%, respectively. Great Falls Park is administered by the George Washington Memorial Parkway.

Fletcher's Boat House is located on the northern shore of the Potomac River in the District of Columbia and is administered by the Chesapeake and Ohio Canal National Historical Park. Fletcher's Boat House was closed for one week following the Oil Spill resulting in the loss of an estimated 404 visits. Motorized boating was assumed to be the primary recreational activity forgone due to the closure.

2.3.2.2 Diminished Visits at Affected National Park Service Facilities and Diminished Non-Consumptive Wildlife-Associated Activities

Many of the recreational resources located on or near sections of the Potomac River affected by the Oil Spill remained open to the public despite the Oil Spill. Consequently, people visiting these resources were aware of contamination due to the presence of oil on the water and/or noxious fumes. Economic studies have documented values that people place on water quality as a component of the recreational experience. Therefore, while visitors did not forego the entire value of their visits to these resources, they did suffer a loss (i.e., their experience was not as enjoyable) due to the effects of diminished water quality caused by the Oil Spill.

NPS identified National Capital Parks - Central as one of the areas most affected by diminished water quality resulting from the Oil Spill. This area contains numerous walkways and park benches located along the Potomac River waterfront. This area also contains some of the Nation's most significant cultural and historic sites, including the Lincoln Memorial, Jefferson Memorial, Washington Monument, and Vietnam Veterans Memorial. Other NPS facilities along the Potomac River similarly affected by diminished water quality and/or noxious fumes include the Mount Vernon Trail and Theodore Roosevelt Island within George Washington Memorial Parkway, Chesapeake and Ohio Canal National Historical Park, and Great Falls Park, Maryland. Visitors to these areas included both tourists and those who jog, bicycle, and participate in other outdoor activities, including fishing. The number of visitors to these facilities was high since the Oil Spill occurred during the annual Cherry Blossom Festival.

The Trustees estimated that 100% of the visitors to these facilities suffered a loss (e.g., reduced enjoyment) due to diminished water quality for the first two days following the Oil Spill. The Trustees further estimated that 50%, 33%, and 25% of the visitors were affected during the next three consecutive days, respectively.

Non-consumptive wildlife-associated activities, such as bird watching, were also adversely affected by diminished water quality due to the Oil Spill. A 1991 national survey of wildlife-associated recreation conducted by the USFWS indicates that participation in non-consumptive wildlife-associated activities accounted for at least 1,986,515 user days per year in the District of Columbia and affected portions of Maryland and Virginia. The Trustees estimate that fish and wildlife resources in and around contaminated portions of the Potomac River were noticeably affected for a period of up to two months following the Oil Spill. Therefore, a total of 331,086 user days for

non-consumptive wildlife-associated recreation were estimated to have been adversely affected because of the Oil Spill.

2.3.2.3 Forgone Recreational Shoreline Fishing

Recreational shoreline fishing along the Potomac River within the District of Columbia was disrupted by the Oil Spill. Oil sheen was visible on this portion of the Potomac River for eight days following the pipeline rupture. A survey of recreational fishing activity in the District of Columbia indicated that an average of 397 individuals per day participated in shoreline fishing activities during March and April, 1994. It is assumed that this level of activity was lost during the eight days following the Oil Spill in which oil remained visible on the water.

2.3.2.4 Sugarland Run Lost Recreational Use Services

Several local and regional parks within the Sugarland Run stream valley, including Runnymede Park in the Town of Herndon and Sugarland Run Stream Valley Park in Fairfax County, were adversely affected by the Oil Spill. The Oil Spill generally affected the use and enjoyment of these parks and the amenities they provide to visitors. Many segments of the trail networks along Sugarland Run were closed or unusable immediately following the Oil Spill, and strong fumes from the discharged oil were present for several days. Local residents were encouraged to avoid the stream, and park usage was discouraged as a public health and safety precaution. Use of natural resources within Runnymede Park for environmental education programs was also curtailed, as were wildlife viewing opportunities throughout the stream valley parks. No visitation data are available for the affected recreational resources and facilities along Sugarland Run.

3.0 ALTERNATIVES AND ENVIRONMENTAL CONSEQUENCES

The Trustees are responsible for determining the appropriate restoration actions that return injured natural resources and services to baseline and compensate for interim lost services pending restoration or natural recovery. Based on this responsibility, the Trustees' goal for this incident is to restore injured natural resources, and compensate the environment and public for lost ecological services and lost recreational use services resulting from the Colonial Pipeline Oil Spill. The following section describes the actions considered by the Trustees to restore injured natural resources and to replace lost ecological and recreational use services resulting from the Oil Spill.

To achieve the restoration goal, the Trustees ultimately considered two restoration alternatives. The first alternative, the Trustees' preferred alternative, consists of a package of multiple restoration actions including various wildlife habitat and recreational use enhancement projects. The second alternative considered by the Trustees is the no action alternative. As part of this process, however, the Trustees also evaluated other alternatives that were considered but rejected as unreasonable or unworkable for this plan.

The proposed restoration actions contained in the Trustees' preferred alternatives were separated into two main categories in order to address restoration for lost ecological services and lost recreational use services separately. The proposed restoration actions in the Trustees' preferred alternative parallel the two types of injury resulting from the Oil Spill. The specific actions and projects included in each of the alternatives are discussed below.

A variety of primary and compensatory restoration actions were considered to address injured natural resources and services, lost ecological services, and lost recreational use services. Primary restoration is any action, including natural recovery, which returns injured natural resources and services to the baseline conditions that would have existed had the incident not occurred. Compensatory restoration is any action taken to compensate for the interim loss of natural resources and services from the date of injury until complete recovery to baseline. Restoration alternatives were developed in conjunction with, among other parties, Federal, State, and District Natural Resource Trustees, regional, county, and local agencies and authorities, and non-governmental organizations.

The restoration actions included in this Draft Restoration Plan were identified by the Trustees through an initial screening to determine feasibility. Each of these restoration actions was then qualitatively evaluated according to the selection criteria specified in the OPA NRDA regulations. These criteria include:

- Criterion 1 The extent to which each alternative is expected to meet the Trustees' goals and objectives in returning the injured natural resources and services to baseline and/or compensating for interim losses;

- Criterion 2 The likelihood of success of each alternative;
- Criterion 3 The extent to which each alternative will prevent future injury as a result of the incident, and avoid collateral injury as a result of implementing the alternative;
- Criterion 4 The extent to which each alternative benefits more than one natural resource and/or service;
- Criterion 5 The effects of each alternative on public health and safety; and
- Criterion 6 The cost to carry out the alternative.

In evaluating alternatives for primary restoration for injured natural resources and services, the Trustees considered the likelihood of natural recovery and the potential for additional injury without human intervention.

3.1 Alternative 1: Restoration Component for Lost Ecological Services (Preferred Alternative) and Environmental Consequences

3.1.1 Primary Restoration

Various active primary restoration actions were considered to address injuries to the affected habitats and natural resources. However, selected results from incident-specific field studies conducted after the Oil Spill indicated that natural recovery of the injured habitats and resources had begun. Based on evidence from site surveys, technical expertise, a review of the relevant scientific literature, and best professional judgment, the Trustees determined that baseline conditions would be achieved through natural recovery and no additional human intervention would be required. Therefore, the natural recovery alternative was selected as the preferred primary restoration alternative.

3.1.2 Compensatory Restoration

Oil Spill-related injuries to the affected habitats and natural resources resulted in the interim loss of ecological services from the time of the incident until completion of natural recovery. In order to achieve the Trustees' restoration goal, the public and environment must be compensated for these lost services. Therefore, the Trustees are proposing to implement compensatory restoration actions to replace the lost ecological services resulting from the Oil Spill.

A set of four wildlife habitat enhancement actions are proposed to replace lost ecological services and thereby compensate the environment and public for related natural resource injuries resulting from the Oil Spill. The proposed wildlife habitat enhancement actions include: (1) aquatic habitat enhancement, (2) forest enhancement, (3) wetland enhancement, and (4) wildlife forage range enhancement. Each of these habitat

enhancement actions consists of multiple projects at specific locations throughout the Sugarland Run watershed. Each of the proposed wildlife habitat enhancement actions and constituent projects are described below. Proposed locations for these actions and projects are shown in Figure 3.

Modification to Draft Restoration Plan and Environmental Assessment

A number of comments received in response to the Draft Plan noted that some restoration projects were contemplated for privately owned property, and that the Trustees should obtain landowner approval to implement, and assurances not to dismantle, those projects. The Trustees agreed with those recommendations and have begun to analyze the associated issues. The Trustees may consider alternative locations for those projects that are determined to be impracticable.

Modification to Draft Restoration Plan and Environmental Assessment

Some comments received in response to the Draft Plan raised a concern that native seed and plant stocks used for restoration need to be quality controlled to prevent the introduction of invasive or exotic species. The Trustees agree with that concern, and will take reasonable precautions to prevent the introduction of undesirable species.

3.1.2.1 Aquatic Habitat Enhancement

The Consent Decree specifies 3.1 acres of aquatic habitat enhancement to replace the lost ecological services resulting from Oil Spill-related injuries to the aquatic habitats and related natural resources (e.g., fish and benthos) in Sugarland Run. This acreage is based on a requirement to provide structural stormwater management in addition to non-structural habitat enhancement. To compensate for these lost ecological services, the Trustees' propose to enhance existing stream and riparian habitats at various locations within the watershed of Sugarland Run using both structural and non-structural methods. Three proposed restoration projects, including 3.1 acres of stream and riparian habitat enhancement and 3 stormwater management structures, are described below.

Aquatic Habitat Enhancement Project #1: This project would implement stream habitat enhancements along a 2.9 acre portion of Sugarland Run and its floodplain adjacent to Sunset Business Park, west of the Fairfax County Parkway between Spring Street and the Dulles Toll Road. This segment of Sugarland Run is characterized by eroding streambanks and sparse riparian forest buffer. Enhancement activities would focus on restoring eroded streambanks, protecting less eroded streambanks from further damage, and re-establishing a vegetated riparian buffer. Streambank stabilization would be accomplished using various bioengineering techniques including grading selected areas of the streambank and installing fascines (bundles of unrooted shrub cuttings), live stakes (unrooted cuttings), coconut fiber "logs" and/or erosion control matting. Planting nursery-grown herbaceous vegetation and seeding with native grasses would also be used to control erosion. Re-establishment of the riparian buffer would be achieved by planting

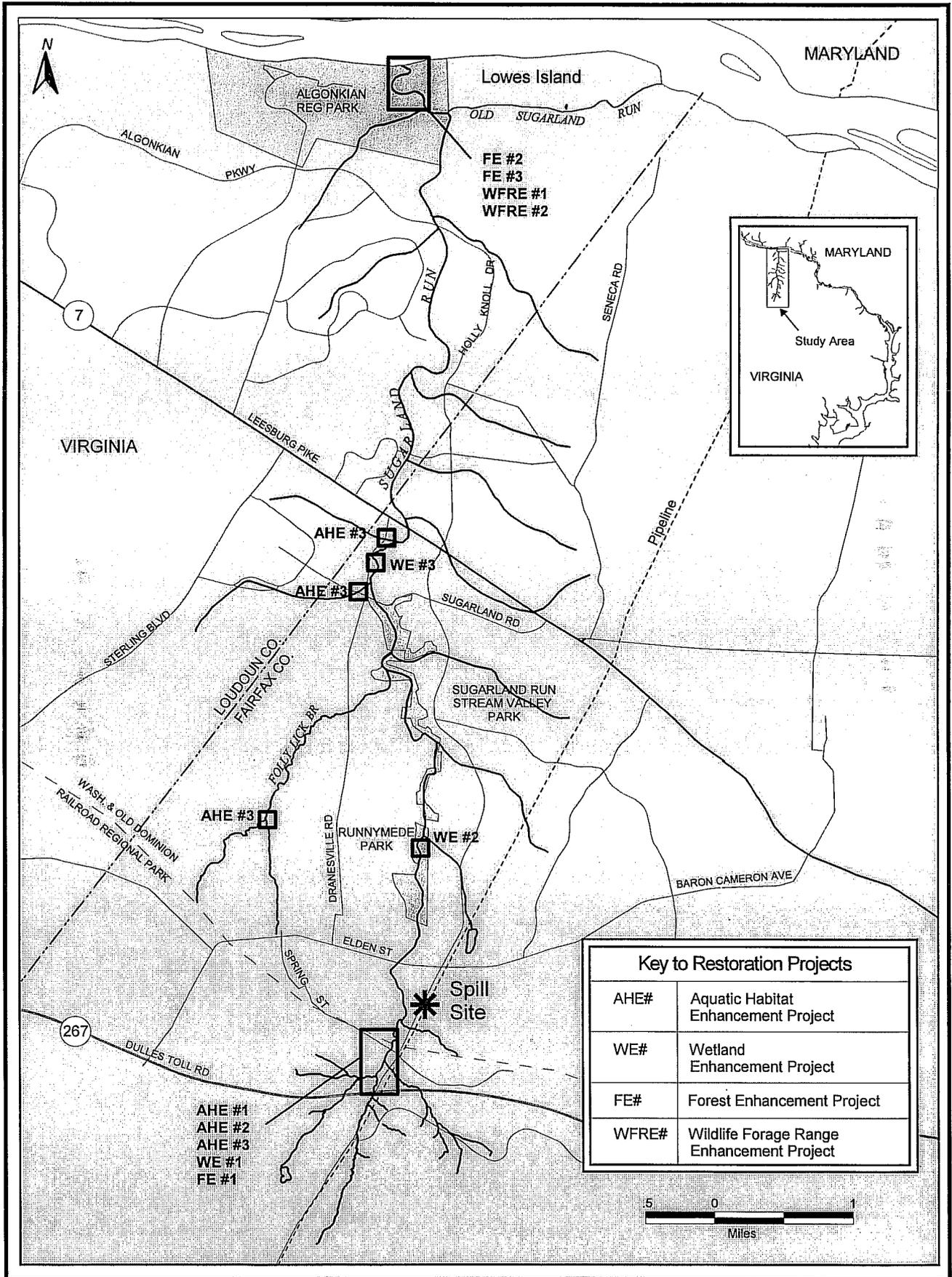


Figure 3.
Trustees' Proposed Compensatory Restoration Projects for Lost Ecological Services

shrubs with scattered trees within a 50-foot buffer-zone extending along each side of Sugarland Run for a distance of approximately 1000 feet. Nursery-grown native trees and shrubs with high wildlife value would be used for the plantings.

Aquatic Habitat Enhancement Project #2: This project would be implemented near the site described above (Project #1), along a 0.2 acre portion of an unnamed tributary to Sugarland Run, downstream of the point where Sugarland Run passes under the Dulles Toll Road. Enhancement activities would include stabilizing streambanks using bioengineering techniques similar to those already described. Shrub seedlings would then be planted behind the bioengineered areas on both sides of the tributary, and graded streambanks would be stabilized with erosion control matting and native grasses until woody vegetation becomes established. Nursery-grown native trees and shrubs with high wildlife value would be used for the plantings.

Aquatic Habitat Enhancement Project #3: Three structural stormwater best management practices (BMPs) would be constructed to improve the quality of urban stormwater runoff. BMPs would be constructed by retrofitting existing roadway culverts with engineered water control structures designed to function as extended-detention, dry-pond stormwater basins. Preferred locations for constructing these BMPs are Spring Branch at Herndon Parkway, Hughes Branch at Dranesville Road, and Sugarland Run at Spring Street. Muddy Branch at Sugarland Road would be an alternate location. Each of the stormwater management projects was selected from a list of potential options compiled by representative from the Fairfax County and Town of Herndon Departments of Public Works. Final implementation of these projects would be contingent on approval by landowners, and local and county authorities.

Modification to Draft Restoration Plan and Environmental Assessment

One comment received in response to the Draft Plan noted that the proposed stormwater management actions were subject to design review and construction inspection by the Town of Herndon, and also suggested that project implementation include appropriate landscaping. The Trustees will comply with all applicable design review and construction inspection requirements. Further, if additional analysis warrants, the Trustees may consider substituting more appropriate actions to provide stormwater management services.

3.1.2.2 Wetland Enhancement

The Consent Decree specifies 4.8 acres of wetland enhancement to replace lost wetland services resulting from the Oil Spill. To compensate for these lost ecological services, the Trustees propose to enhance wetland habitat at three locations along Sugarland Run. One of the project areas originally specified in the Consent Decree for wetland enhancement has subsequently been planted with tree and shrub seedlings, and is therefore unavailable for purposes of this Restoration Plan. The three proposed projects described below include two project areas originally specified in the Consent Decree, and

one substitute project area intended to replace that area made unavailable by other re-vegetation efforts. These proposed wetland enhancements would increase the wildlife habitat value and/or water quality improvement services on a total of 6.6 acres of existing wetlands.

Wetland Enhancement Project #1 (original): This proposed wetland enhancement project would be located adjacent to Sugarland Run, west of the Fairfax County Parkway between the Dulles Toll Road and Fairbrook Drive. The 0.5 acre wetland occupies the site of a former beaver impoundment. The wetland currently contains a low diversity of herbaceous vegetation and no trees or shrubs. The proposed enhancement for this site would consist of planting small clusters of wetland shrubs among the existing herbaceous vegetation. Only native species of shrubs adapted to growing in wetlands would be planted. Shrub seedlings would be purchased from native plant nurseries. The addition of shrubs to this wetland would improve its wildlife habitat value by increasing habitat structure and diversity, as well as increasing the available food and cover for birds and small mammals.

Wetland Enhancement Project #2 (original): This proposed project would involve enhancing a 1.2 acre wetland located along Sugarland Run in Runnymede Park. The objective of this project would be to protect and increase the water quality improvement services provided by the existing wetland. To achieve this objective, the proposed enhancements would involve installing two types of water control structures--level spreaders and adjustable risers or weirs--at key locations within the wetland. These small, unobtrusive structures would be used to create conditions known to improve pollutant removal by wetlands. Specifically, water control structures would be designed to facilitate settling of suspended solids, as well as nutrient removal/transformation by extending the contact between runoff and wetland vegetation. These wetland enhancements would ultimately help to improve water quality in Sugarland Run.

Modification to Draft Restoration Plan and Environmental Assessment

Some comments received in response to the Draft Plan noted that particular features of wetland enhancement project #2 would cause excessive disturbance, disrupt desirable natural processes, and fail to address other existing problems in the wetland. The Trustees agreed that this project should be improved and adopted modifications to address those concerns. The revised project description is given below. Another comment noted that the Town of Herndon is developing a Resource Management Plan for Runnymede Park, and suggested that the design and implementation of wetland enhancement project #2 be coordinated with that plan. The Trustees agreed with that suggestion and will coordinate project design and implementation with the Town of Herndon.

Wetland Enhancement Project #2: This project would involve enhancing a 1.2 acre wetland located along Sugarland Run in Runnymede Park. The objectives of this project would be to increase the wetland's water quality improvement functions, maintain wetland conditions for the long-term, and reduce flooding of nearby hiking trails. To

achieve these objectives, the proposed enhancement would involve installing water control structures at key locations in the wetland. Installation of the water control structures would maintain water levels in the wetland to create conditions known to improve pollutant removal by wetlands and would also restore water flow to a portion of the wetland from which water has been diverted. Specifically, water control structures would be designed to facilitate settling of suspended solids and removal/transformation of other pollutants entering the wetland by increasing the contact time between runoff and wetland vegetation. Installation of water control structures would be accompanied by the installation and/or repair of necessary erosion and sedimentation control practices. Specifically, the project will include reducing erosion at the outflow of the marsh, below the culvert that empties into Sugarland Run and correction of scouring and erosion problems occurring at the outlet of storm drainage pipes that discharge water from the nearby subdivision into the marsh.

Wetland Enhancement Project #3 (substitute): This proposed wetland enhancement project would improve habitat value of a 4.9 acre wet meadow wetland located along Dranesville Road. Enhancements would include installing a check dam along a tributary to Sugarland Run to divert flow into a small channel that supplies water to the wetland. Shrubs would be planted along the channel to stabilize the banks. In addition, small clusters of shrubs would be planted throughout the wetland to provide wildlife habitat and increase structural diversity. Native species of wetland shrubs with high wildlife value for food and cover would be selected. Shrub seedlings would be purchased from native plant nurseries.

3.1.2.3 Forest Enhancement

The Consent Decree specifies 10.5 acres of forest enhancement projects to compensate for lost ecological services due to the combined injuries to bottomland forest, upland forest, and open field habitats. Compensatory restoration for impacts to these three habitat types was combined because the types of ecological services provided by the proposed forest enhancements are likely to replace the types of services lost within each of the three habitat types. One of the project areas originally specified in the Consent Decree for forest enhancement has subsequently been planted with tree and shrub seedlings, and is therefore unavailable for purposes of this Restoration Plan. Additionally, the natural succession of another project area has necessitated the reconfiguration of three proposed enhancement projects, including one for forest enhancement. The three proposed projects described below include one project area originally specified in the Consent Decree, another original project that has been reconfigured to accommodate natural selection, and one substitute project area intended to replace that area made unavailable by other revegetation efforts. These proposed forest enhancement projects would be located within the Sugarland Run watershed, and would produce the same total quantity of habitat services as those originally specified in the Consent Decree. These projects would improve the wildlife habitat value of existing forest and open field habitats through reforestation, supplemental planting, and/or canopy thinning and similar forest stand improvement techniques.

Forest Enhancement Project #1 (original): This proposed forest enhancement project would be located on a 2.4 acre site adjacent to Sunset Business Park, west of the Fairfax County Parkway between Spring Street and the Dulles Toll Road. The site is currently an open field that has been highly disturbed by highway and commercial development. Tree seedlings were previously planted over a portion of the site by volunteers. Forest enhancement efforts at this site would focus on replacing dead tree seedlings and planting additional shrubs among the existing tree seedlings. Planting trees and shrubs in this area would accelerate the natural process of forest succession, increase horizontal and vertical diversity, and enhance the food and cover value of vegetation for birds and small mammals utilizing this site.

Forest Enhancement Project #2 (reconfigured): This proposed forest enhancement project would be located on a parcel of abandoned farm land situated on the northwest corner of Lowes Island in Algonkian Regional Park. The site is currently in the early stages of old-field succession and is dominated by grasses and herbaceous annuals, with a few scattered young trees. The proposed enhancements would include removing invasive, non-native plant species and planting a diversity of native trees and shrubs on a 3.8 acre portion of the site. Prior to planting tree and shrub seedlings, the area would be disced, retaining all desirable young trees, and planted with a mixture of native grasses to stabilize soils and reduce competition. Planting additional trees and shrubs would increase structural and vegetative diversity within the site and enhance wildlife habitat value. Nursery-grown native tree and shrub seedlings would be planted.

Forest Enhancement Project #3 (substitute): This forest enhancement project is proposed within a 36.6 acre forest stand in Algonkian Regional Park located along the western shoreline of Sugarland Run. Proposed forest enhancement activities at this location would include thinning the forest canopy, creating snags (i.e., standing dead wood), and planting additional trees and shrubs to supplement the existing vegetation. These actions would be scattered throughout the stand in appropriate locations and would directly improve a total of 5.51 acres. This project and Wildlife Forage Range Enhancement Project #1, described below, are anticipated to provide some level of enhanced ecological services over the entire 36.6 acre stand.

3.1.2.4 Wildlife Forage Range Enhancement

The Consent Decree specifies 8.9 acres of wildlife forage range enhancement to replace wildlife foraging services lost due to the Oil Spill. To compensate for wildlife forage range injuries, the Trustees propose to enhance wildlife foraging opportunities within existing forested habitats at two locations along Sugarland Run. Natural succession of one project area originally specified in the Consent Decree has necessitated the reconfiguration of these two projects. The reconfigured projects described below would also improve the habitat value on a total of 8.9 acres of wildlife forage range. The proposed wildlife forage enhancement would be accomplished through various techniques which improve the wildlife value of forest stands, including canopy thinning,

supplemental planting, creation of tree snags, installation of habitat structures, and removal of invasive, non-native plant species.

Wildlife Forage Range Enhancement Project #1 (reconfigured): This proposed wildlife forage range enhancement project would be located within the same 36.6 acre forest stand in Algonkian Regional Park described above (Forest Enhancement Project #3).

Enhancement efforts would include selective thinning and creation of tree snags, tree and shrub planting, and installation of wildlife attractors. Small areas would also be cleared within the forest to create herbaceous openings. Native trees and shrubs with high value to wildlife would be planted in clear-cut and thinned areas. Bird nesting boxes and brush piles would be installed to provide cover for birds and small mammals. These measures would enhance species diversity, promote the development of multiple vegetation layers, increase edge habitat, and provide additional wildlife food sources. These actions would be scattered throughout the stand in appropriate locations and would directly improve a total of 7.1 acres. This project and Forest Enhancement Project #3, described above, are anticipated to provide some level of enhanced ecological services over the entire 36.6 acre stand.

Wildlife Forage Range Enhancement Project #2 (reconfigured): This proposed wildlife forage range enhancement project would be located on the parcel of abandoned farm land on Lowes Island described above (Forest Enhancement Project #2). A 1.8 acre portion of the former agricultural field is currently dominated by a dense stand of even-aged trees, a product of the natural succession already described. Enhancement efforts would include selective thinning of this stand, followed by planting trees and shrubs to promote greater species diversity, development of multiple vegetation layers, and additional wildlife food sources. Invasive, non-native plants would also be removed from the site to promote the growth of the planted trees and shrubs.

3.1.2.5 Monitoring

A monitoring program would be implemented for each of the proposed habitat and wildlife forage range enhancement projects. Monitoring is an essential component of any habitat-based restoration project because it forms the foundation for objectively determining whether the project goals and objectives have been achieved. Information gathered during monitoring would help the Trustees assess the performance, viability, and stability of each habitat enhancement project.

Monitoring would consist of both qualitative and quantitative assessments of various components of each project. Qualitative monitoring would consist of periodic visual inspections and photo-documentation. Vegetation would be used as the primary indicator of project performance for most of the habitat enhancement projects. Quantitative vegetation monitoring would consist of measuring various parameters related to vegetation establishment such as percent survival, stem density, species composition, and stem height. Project performance would then be assessed by comparing monitoring results to pre-determined performance standards. Performance standards are criteria

developed by the Trustees that define the minimum physical or structural conditions of an enhancement project deemed to represent normal and acceptable growth and development. Performance standards for the proposed habitat enhancement projects are typically based on minimum project acreage, minimum percent seedling survival, and minimum stem density. For structurally based restoration actions, such as stormwater BMPs and wetland water control structures, performance would be determined through the qualitative assessment of structural integrity and proper function.

Most of the proposed habitat enhancement projects would be monitored annually for a period of five years. However, certain components of the proposed aquatic habitat enhancements would be monitored annually for two years, since establishment is expected to occur more rapidly. Achievement of performance standards would be assessed at two years and five years after initial project implementation. In the event performance standards are not achieved, mid-course corrections would be implemented. Mid-course corrections consist of replanting sites with additional seedlings if the minimum seedling survival or stem density criteria are not achieved. Corrective actions for improperly functioning structures include repair or replacement. Once the performance standards have been achieved, the project would be assumed to be on the proper "trajectory" and should, over time, replace the ecological services lost due to the Oil Spill.

3.1.2.6 Environmental Consequences

The proposed habitat enhancement actions would increase the ecological services currently provided by the proposed project areas. These actions would improve the quality of available habitat in these areas and benefit fish and wildlife resources in and around Sugarland Run.

Revegetating eroding streambanks and reestablishing a riparian buffer of trees and shrubs along Sugarland Run would stabilize the streambanks and help reduce or prevent future erosion. Reducing streambank erosion would yield localized water quality improvements by reducing turbidity and instream sediment loads. Too much sediment in streams can smother critical streambed habitats needed for fish spawning and benthic macroinvertebrate production. In addition, riparian vegetation would increase overhead cover for fish, help regulate water temperature by shading, and support the aquatic food web (i.e., insects, detritus, etc.). Enhancement of riparian buffers along Sugarland Run and the Potomac River would further benefit water quality by filtering nonpoint source sediment and nutrient inputs carried by surface runoff. Finally, re-establishment or widening of riparian buffers would improve important wildlife travel and migration corridors.

Planting native trees and shrubs, a component of several of the proposed habitat enhancement actions, would increase many of the habitat services upon which wildlife resources depend. The addition of trees and shrubs to natural habitats would increase the structural complexity and plant species diversity within these areas. Greater habitat

complexity is generally believed to increase wildlife diversity by providing a greater number of available niches. Fruits, nuts, berries, and seeds produced by the trees and shrubs would provide a variety of high-energy food sources for wildlife. The vegetation itself would provide perching and nesting sites for birds, as well as browse and cover for small mammals and deer.

Some of the proposed wildlife forage range and forest enhancement actions would result in the intentional mortality of selected trees, removal of invasive, non-native plant species, and increased amounts of edge habitat. Clearing and canopy thinning would increase light penetration into the understory, resulting in increased growth of forest herbs, shrubs, and tree seedlings. Any short-term impacts that may arise from these actions would be mitigated by the increased services resulting from enhancement.

Installation of the proposed stormwater BMPs would improve water quality by aiding the removal of sediment and adsorbed nutrients from urban runoff. Structures would be designed to temporarily impound water during runoff periods and then slowly release the detained stormwater as stream flows return to normal. The temporary impoundment of stormwater is not anticipated to significantly impact natural resources. Stormwater BMPs would remain dry during periods of normal stream flow. Actual installation of the retrofit structures is expected to result in only minor, short-term impacts due to limited construction activities.

Installing water control structures in the proposed wetland, a primary component of one of the wetland enhancement projects, would enhance the water quality improvement and pollutant removal services currently provided by the wetland. These actions may alter the existing wetland hydrology slightly and could cause minor shifts in plant communities. However, no widespread changes to the wetland type or level of habitat services are expected as a result of these actions. Actual installation of the structure is expected to result in only minor, short-term impacts due to limited construction activities.

None of the proposed habitat enhancement actions are expected to adversely impact cultural or historic resources. Likewise, no threatened or endangered species would be negatively affected by the proposed actions. The cumulative impact, as defined by the Council on Environmental Quality in 40 C.F.R. § 1508.7, of the combined components of the preferred alternative, is not expected to cause more than minimal impacts on the general land use patterns, socioeconomic conditions, community facilities, and existing circumstances.

3.1.2.7 Evaluation of Proposed Habitat Enhancement Actions

The proposed habitat enhancement actions were qualitatively evaluated according to the criteria listed in Section 3.0 of this Draft Restoration Plan. This evaluation is described below, and summarized in Table 1.

- Criterion 1 Enhancing the affected habitat types would directly and indirectly benefit the natural resources injured by the Oil Spill. Furthermore, habitat-based restoration would help ensure that the ecological services provide by restoration actions replace the types of ecological services lost due to the Oil Spill. Therefore, the proposed habitat enhancement actions would achieve the Trustees' goal of compensating the environment and public for interim lost ecological services.
- Criterion 2 Each of the proposed habitat enhancement actions is based on proven techniques that are supported in the restoration literature. As a result, there is a high likelihood that properly designed and installed projects would achieve their objectives of enhancing ecological services.
- Criterion 3 Given the simple nature of the proposed habitat enhancement actions, implementation of non-structural actions such as thinning and planting is not anticipated to result in collateral injury to natural resources or services at the project sites. Minimal collateral injury resulting from installation of stormwater BMPs and wetland water control structures is expected to result in only incidental, short-term impacts due to limited construction activities.
- Criterion 4 Each habitat enhancement action would increase multiple ecological services and benefit a variety of fish and wildlife resources.
- Criterion 5 The proposed restoration actions would have no adverse impacts on public health and safety.
- Criterion 6 Based on an analysis of relevant factors, the estimated costs for implementing the proposed habitat enhancement actions were determined to be acceptable.

Moreover, based on evidence from site surveys and other relevant information, the preferred primary restoration action of natural recovery would return injured natural resources to their baseline conditions without additional human intervention.

3.1.3 Other Alternatives Considered But Rejected

A variety of restoration alternatives were considered by the Trustees in the course of developing the proposed compensatory restoration actions for lost ecological services. Restoration alternatives which were considered but rejected can be grouped into the following four categories.

- (1) Habitat Preservation: Restoration actions related to habitat preservation included actions which would protect existing natural habitats from development via land acquisition, conservation easements, and voluntary landowner agreements.

Table 1: Evaluation of Restoration Alternatives (*)

Alternative	Achieves Restoration Goals	Likelihood of Success	Prevents Future Injury & Avoids Collateral Injury	Benefits Multiple Natural Resources or Services	Public Health and Safety	Cost
Alternative 1: Restoration of Lost Ecological Services (Preferred)	Injured natural resources returned to baseline; lost ecological services replaced by compensatory restoration	High likelihood of success – projects utilize proven technologies	No significant collateral injuries to natural resources; some short-term, incidental impacts due to limited construction activities	Benefits a variety of fish and wildlife species and their habitats	No adverse effects on public health and safety	Acceptable
Alternative 1: Restoration of Lost Recreational Use Services (Preferred)	Injured natural resources returned to baseline; lost recreational use services replaced by compensatory restoration	High likelihood of success – projects utilize proven technologies	No significant collateral injury to natural resources; some short-term, incidental impacts due to limited construction activities	Benefits a variety of recreational use services and some natural resources	No adverse effects on public health and safety; some actions will improve visitor safety	Acceptable
Alternative 2: No Action	Will not replace lost ecological or recreational use services	Not applicable – no restoration implemented	Not applicable – no restoration implemented	Benefits no natural resource or service	Continued degradation of some park facilities	No cost

(*) Alternatives considered but rejected are discussed in Sections 3.1.3 and 3.2.3 of this Draft Restoration Plan and Environmental Assessment.

- (2) Biological Monitoring: Monitoring-related restoration actions included funding or conducting various types of biological field studies such as plant and wildlife inventories, water quality monitoring, wildlife utilization, fish and macroinvertebrate surveys, and long-term recovery monitoring.
- (3) Natural Resource Management: Restoration actions associated with natural resource management included funding or preparing different natural resource management strategies or “tools” for Sugarland Run such as a watershed protection plan, a land trust or conservancy group, and a legal defense fund.
- (4) Environmental Education: Restoration actions related to environmental education included building a nature center, conducting local community workshops, initiating an environmental awareness media campaign, and “adopting” Sugarland Run.

All of these restoration alternatives would potentially benefit the environment and the public. However, it would be difficult to establish the connection between the benefits of these alternatives and the direct replacement of lost ecological services associated with the Colonial Pipeline Oil Spill. The alternatives listed above were studied by the Trustees and determined to be unreasonable, infeasible, or not tied closely enough to the site of the injury and/or suitably responsive to compensate for the types of losses incurred. Once it was determined that an alternative would not be adequate to compensate for these particular injuries, it received no further analysis.

3.2 Alternative 1: Restoration Component for Lost Recreational Use Services (Preferred Alternative) and Environmental Consequences

3.2.1 Primary Restoration

The natural resources injured as a result of the Colonial Pipeline Oil Spill provide recreational use services in addition to the ecological services discussed above. Impacts such as oil sheen and noxious fumes, which indicate injury to water and air resources, resulted in the temporary closure of park facilities or otherwise diminished visitors' use and enjoyment of the affected facilities and resources. Based on evidence from site surveys, technical expertise, a review of the relevant scientific literature, and best professional judgement, the Trustees determined that the baseline conditions of injured natural resources would be best achieved through natural recovery. Therefore, the natural recovery alternative was selected as the preferred primary restoration alternative.

3.2.2 Compensatory Restoration

The Colonial Pipeline Oil Spill resulted in lost recreational visits associated with closed park facilities and diminished recreational visits associated with water quality impacts from the time of the incident until the time baseline conditions of the injured natural resources are achieved. Therefore, to meet the restoration goal, the Trustees propose

restoration actions to compensate the public for lost recreational use services resulting from the Oil Spill.

The proposed recreational use enhancement actions include: (1) rehabilitation of a scenic overlook at Great Falls Park, Virginia, an area of the George Washington Memorial Parkway (GWMP), (2) improvement of visitor facilities at the Chesapeake and Ohio Canal National Historical Park in the District of Columbia, (3) construction of a wetlands boardwalk trail at Dyke Marsh within GWMP on the Virginia shoreline of the Potomac River, (4) partial funding for construction of a fish passage through Little Falls Dam on the Potomac River, and (5) funding for construction of the Sugarland Run Stream Valley Regional Trail. Each of the proposed recreational use enhancement actions is described below. Except for the proposed Sugarland Run Stream Valley Regional Trail project, proposed locations for these actions are shown in Figure 4.

3.2.2.1 Great Falls Park

To compensate for lost recreational use services due to the closure of NPS facilities and diminished water quality within this region of the National Park System, the Trustees propose to rehabilitate Scenic Overlook Number 2 at Great Falls Park within GWMP in Virginia. This overlook structure provides visitors with an unrestricted view of Great Falls, one of the park's primary attractions. Rehabilitation of the overlook would include expanding, refurbishing, or replacing the current overlook structure, resulting in a larger, decked facility at this site. In addition, a paved path from the main trail to the renovated viewing structure and permanent fencing would be installed to direct visitor traffic and discourage use of unplanned social trails. Detailed planning and design of the rehabilitation project would be conducted in collaboration with the National Park Service. The new overlook structure would address visitor safety issues at the site, promote protection of the natural environment around the structure, and ensure universal access for visitors with physical disabilities.

3.2.2.2 Fletcher's Boat House

The Trustees propose to compensate for lost recreational use services due to diminished water quality and closed NPS facilities within this region of the National Park System by improving visitor facilities at the Chesapeake and Ohio Canal National Historical Park. Specifically, the Trustees propose to rehabilitate the existing picnic and boat launch facilities near Fletcher's Boat House within the Park. Proposed activities would include installing additional picnic tables and barbecue grills, performing general landscape beautification, and stabilizing eroded slopes near the boat launch area, as necessary. The goal of this project would be to enhance recreational use by improving the quality of the existing visitor facilities.

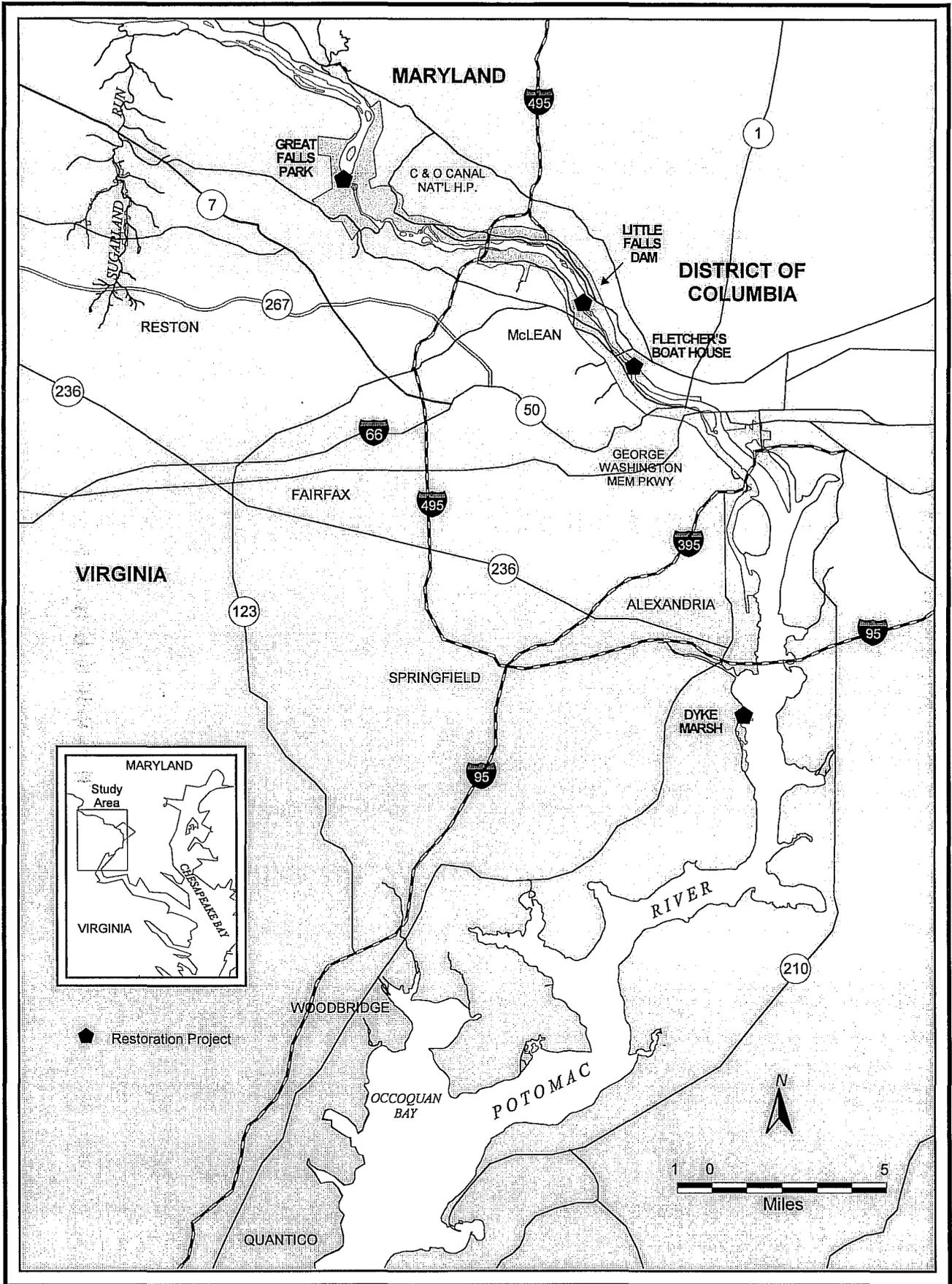


Figure 4.

Trustees' Proposed Compensatory Restoration Projects for Lost Recreational Use Services Along the Potomac River

3.2.2.3 Dyke Marsh

To compensate for lost recreational use services, such as non-consumptive wildlife-associated activities, due to diminished water quality within this region of the National Park System, the Trustees propose to enhance visitor facilities at Dyke Marsh located within GWMP on the Potomac River south of Alexandria, Virginia. The proposed enhancements would entail constructing a raised wetland boardwalk, improving the upland access trail, installing interpretive signs, and limited landscaping. The goals of this project would be to improve opportunities for wildlife viewing and nature interpretation, and to protect fragile wetland habitats by providing controlled access to valuable, but under-utilized, natural resources.

3.2.2.4 Little Falls Dam Fish Passage

To compensate for forgone recreational shoreline fishing and diminished water quality, the Trustees propose to provide partial funding for the construction of a fish passage or “notch” through Little Falls Dam on the Potomac River. The goal of the fish passage project would be to restore a viable American shad population in the Upper Potomac River capable of supporting a recreational fishery by eliminating a major barrier to seasonal migration. The construction of Little Falls Dam over 35 years ago has restricted migration of American shad and other anadromous fishes attempting to return to prime spawning habitat located between Little Falls Dam and Great Falls. This barrier to migration has been cited as the primary factor currently limiting shad populations on the Potomac. Restoration of a viable recreational fishery for shad is expected to provide additional opportunities for recreational shoreline fishing along the Potomac River.

3.2.2.5 Sugarland Run Stream Valley Regional Trail

To compensate for lost recreational use services along Sugarland Run, the Trustees proposed to fund construction of a new multi-purpose recreational trail within the Sugarland Run stream valley corridor. Specifically, the Trustees propose to implement an existing plan for the Sugarland Run Stream Valley Regional Trail. This project has been included in the Town of Herndon’s Comprehensive Plan and Capital Improvements Program, but has never been implemented due to a lack of funds. The Sugarland Run Stream Valley Regional Trail would be a one-mile long, paved, multi-purpose, recreational trail located along a portion of Sugarland Run impacted by the Oil Spill. The new trail segment would connect the Washington & Old Dominion Trail and the Fairfax County Sugarland Run Trail, linking existing regional trail systems to form a greenway network serving suburban northern Virginia. The goal of this restoration action would be to increase access to Sugarland Run to allow a wide variety of user groups to increase participation in the types of recreational activities temporarily lost or disrupted by the Oil Spill (i.e., hiking, bicycling, bird-watching, nature education, etc.).

3.2.2.6 Monitoring

The recreational use enhancements proposed under this alternative would not require monitoring to the same degree as the proposed habitat enhancement actions. Except for the Little Falls Dam fish passage, the recreational services that would be provided by the proposed projects are a function of structural design. Consequently, achievement of project goals and objectives would be less subject to uncertain natural factors that influence the performance of the habitat-based restoration actions. Considerations that affect the services provided by the recreational use enhancements have been factored into the project designs. If these projects are constructed as designed, the intended recreational services should be provided. Therefore, monitoring for all of the recreational use enhancements except for the Little Falls Dam fish passage would consist of post-construction inspections to certify that the respective structures and other physical components were properly constructed or installed. Any deficiencies identified during the post-construction inspections would be addressed immediately. Since the proposed restoration action for the Little Falls Dam fish passage consists of a funding contribution only, no monitoring for this action is proposed as part of this Draft Restoration Plan. Monitoring for this project would be performed by the Federal and State agencies undertaking this effort.

3.2.2.7 Environmental Consequences

Except for the Little Falls Dam fish passage, the proposed recreational use enhancement actions would result in the construction or installation of physical structures at Great Falls Park, Virginia, within GWMP; Fletcher's Boat House in the Chesapeake and Ohio Canal National Historical Park; Dyke Marsh within GWMP; and a portion of the Sugarland Run stream valley. Each of these projects would enhance public use and enjoyment of these facilities.

Rehabilitation of Scenic Overlook Number 2 at Great Falls Park, Virginia, would improve visitor safety and promote universal accessibility for visitors with physical disabilities. The project would reduce impacts to surrounding natural and historic resources by directing visitor traffic into desired areas and deterring use of unplanned social trails. Enhancements at Fletcher's Boat House would improve visitor use and enjoyment of the picnicking and boating facilities there.

The proposed enhancement of visitor facilities at Dyke Marsh within GWMP would increase visitation at an under-utilized recreational resource by improving access. Construction of the wetland boardwalk would result in the placement of pilings and decking through wetlands resulting in short-term impacts and incidental loss of wetland habitat. However, construction of the raised boardwalk would help to protect sensitive natural resources by confining visitor traffic to pre-determined areas and reducing impacts to vegetation by trampling. Disturbance of wildlife and impacts to sensitive plants by construction and increased visitation are possible, but would be minimized through

careful trail alignment. Construction would be scheduled to avoid work during critical reproductive seasons for birds and anadromous fish.

Construction of the Sugarland Run Stream Valley Regional Trail would also result in short-term impacts to some natural resources along Sugarland Run. Vegetation would be cleared and limited grading may be performed in preparation for trail surfacing. The new trail would be designed to minimize potential streambank erosion, structural barriers to stormwater flows, and removal and destruction of natural resources present along Sugarland Run. Disturbance of wildlife and impacts to sensitive plants by construction and increased visitation are possible, but would be minimized by careful planning and design.

No significant impacts to natural resources are expected to result from construction and installation of the proposed recreational use enhancements. Minor, short-term impacts typically associated with construction activities (i.e., noise, dust, etc.) are expected during project implementation. These impacts would be minimized by adhering to standard construction practices for erosion and sedimentation control, waste disposal, and site clean-up. The specific facilities under construction would be inaccessible to visitors for a brief period of time during construction. In most cases, other recreation amenities in the project areas would remain open to visitors. No adverse impacts to cultural or historic resources would result from implementation of the proposed recreational use enhancements. Likewise, no negative impacts to threatened and endangered species are anticipated. All projects to be placed on Federal parkland will comply with all applicable laws, regulations, and NPS guidance. The cumulative impact, as defined by the Council on Environmental Quality in 40 C.F.R. § 1508.7, of the combined components of the preferred alternative, is not expected to cause more than minimal impacts on the general land use patterns, socioeconomic conditions, community facilities, and existing circumstances.

The U.S. Army Corps of Engineers (Baltimore District) issued a Finding of No Significant Impact on April 29, 1996, after reviewing an Environmental Assessment of the Little Falls Dam Fish Passage project. Potential impacts were assessed with regard to the physical, chemical, and biological characteristics of the aquatic and terrestrial environments, endangered and threatened species, hazardous, radioactive, and toxic materials, aesthetics and recreational resources, cultural resources, and the general needs and welfare of the public.

3.2.2.8 Evaluation of Proposed Recreational Use Enhancement Actions

The proposed recreational use enhancement actions were qualitatively evaluated according to the criteria listed in Section 3.0 of this Draft Restoration Plan. This evaluation is described below, and summarized in Table 1.

Criterion 1 The proposed recreational use enhancement actions would provide the types of recreational services that were temporarily lost or impaired as a

result of the Oil Spill. Locating these enhancements in the areas and facilities affected by the Oil Spill would help ensure that the user groups impacted most by the lost use receive the benefits of restoration. Therefore, the proposed recreational use enhancements would achieve the Trustees' goal of compensating the public for interim lost recreational use services resulting from the Colonial Pipeline Oil Spill.

- Criterion 2 Each of the proposed recreational use enhancements has a high likelihood of success. The facilities which must be constructed would utilize relatively simple, straight-forward designs that have been used in the past with a high degree of success. Fish passages constructed for many dams across the country have been successful in mitigating the effects of artificial barriers to fish migration. Fisheries experts from agencies designing the Little Falls Dam fish passage predict a high likelihood of success in re-establishing a recreational shad fishery in the Upper Potomac River.
- Criterion 3 No significant collateral injury to natural resources is expected to result from implementing the proposed restoration actions. As discussed above, the short-term, incidental impacts associated with constructing and installing these recreational use enhancements would be minor.
- Criterion 4 Several of the proposed recreational use enhancements would benefit both humans and natural resources. These projects would expand or improve recreational opportunities, while protecting sensitive natural resources from further degradation caused by continued or increased visitation. Likewise, significant ecological and recreational benefits would result from restoring shad to the Upper Potomac River via the Little Falls Dam fish passage.
- Criterion 5 The proposed restoration actions would have no adverse affects on public health and safety. In fact, many of the projects would improve visitor safety.
- Criterion 6 Based on the consideration of relevant factors, the estimated costs for implementing the proposed recreational use enhancements were found to be acceptable.

As already discussed in section 3.1 above, the preferred primary restoration action of natural recovery would return injured natural resources to their baseline conditions without additional human intervention. This determination is based on evidence from site surveys and other relevant information.

3.2.3 Other Alternatives Considered But Rejected

A variety of restoration alternatives were considered by the Trustees in the course of developing the compensatory restoration actions for lost recreational use services. The alternatives listed below were studied by the Trustees and determined to be unreasonable, infeasible, or not tied closely enough to the site of the injury and/or suitably responsive to compensate for the type of losses incurred. Once it was determined that an alternative would not be adequate to compensate for these particular injuries, it received no further analysis. The alternatives considered but rejected include:

- Constructing and enhancing visitor facilities for viewing and interpreting the historic Patowmack Canal located in Great Falls Park, Virginia, within GWMP;
- Dredging accumulated silt from the cove at Fletcher's Boat House within Chesapeake and Ohio National Historical Park to improve access to the Potomac River for recreational boating and fishing;
- Rehabilitating trails in the Chesapeake and Ohio Canal National Historical Park;
- Developing and distributing environmental education brochures to educate the public about sound land use and environmental stewardship practices;
- Improving other visitor facilities along the George Washington Memorial Parkway to provide universal access for visitors with physical disabilities;
- Renovating restroom facilities at the Washington Monument Lodge in the Washington, D.C., monumental core;
- Restoring and rehabilitating sections of the Mount Vernon Trail within GWMP by performing various maintenance and repair activities;
- Reintroducing or propagating native wildlife species through nest box installation and captive breeding;
- Removing within Rock Creek Park in Washington, D.C., in-stream barriers to fish migration on Rock Creek and constructing a fish passage through Peirce Mill Dam;
- Restoring wetlands habitat in Kingman Lake and the Anacostia River; and
- Rehabilitating the public boat ramp at Belle Haven Marina within GWMP.

3.3 Alternative 2: No Action and its Environmental Consequences

The no action alternative consists of taking no actions to restore natural resources injured by the Oil Spill, or to compensate the environment or public for lost ecological and recreational use services resulting from those injuries. The ability of injured natural resources to contribute to the productivity of the Sugarland Run and Potomac River ecosystems has been temporarily lost or otherwise diminished. The ecological services that would have been provided by the injured habitats were lost from the time of the incident until completion of natural recovery. Similarly, the recreational use services that would have been provided by the injured natural resources were also lost from the time of the incident until completion of natural recovery and resumption of normal visitation and participation.

Since the no action alternative would not replace the ecological or recreational use services that were lost due to the Oil Spill, this alternative would not compensate the environment or public for these losses. Consequently, the no action alternative would not achieve the Trustees' restoration goal. This alternative would be appropriate only where no significant natural resource injuries and service losses occurred as a result of the Oil Spill, or when restoration alternatives that meet the Trustees' criteria are not available.

3.3.1 Environmental Consequences

The no action alternative would not introduce any elements that would further impact the affected area. However, some existing environmental impacts unrelated to the Oil Spill would continue to occur, and perhaps worsen, under the no action alternative. Such existing impacts are expected to diminish as a result of implementing the preferred alternative.

The existing environmental impacts in areas proposed to receive projects to compensate for lost ecological services include degradation of urban stormwater runoff and in-stream water quality, additional streambank erosion, persisting low habitat value of wetlands and forests, and continued presence of invasive, non-native plant species.

The existing environmental impacts in areas proposed to receive projects to compensate for lost recreational use services include further degradation of parkland in those locations where new trails, boardwalks, and visitor facilities would otherwise lessen human impacts on surrounding natural resources. If the Little Falls Dam fish passage project is not implemented, or if this project is delayed, migration of fish up the Potomac River would continue to be thwarted and the absence of these fish would continue to have a negative effect on the Potomac River ecosystem and recreational fishery.

4.0 RESPONSIBLE PARTY INVOLVEMENT

The participation of responsible parties in a cooperative NRDA is encouraged under the OPA NRDA regulations. In response to Colonial's cooperation during the response and preassessment phase, the Trustees invited Colonial, early in the process, to actively participate in a cooperative NRDA. A cooperative approach was selected since it was considered to be more likely to increase cost-effectiveness, reduce duplication of effort, and expedite restoration of injured natural resources and services.

Colonial has actively participated in both the restoration planning and restoration implementation phases of this NRDA. Following the incident, Colonial designed and implemented injury determination and quantification field studies to assess injuries to key resources. Selected data from these studies was used by the Trustees to indicate the overall level of injury to affected habitats. Colonial has participated with the Trustees in the identification and selection of the restoration actions proposed in this Draft Restoration Plan. While Colonial participated in the assessment process and in the restoration planning process, the Trustees maintained oversight and decision making authority related to the selection of appropriate restoration actions.

Under the terms of the settlement between the Trustees and Colonial, Colonial will implement the restoration projects according to approved Work Plans under the direct supervision of the Trustees or their designees. Restoration projects will be monitored by Colonial, as appropriate, with oversight by the Trustees. Should Colonial fail to achieve the specified performance standards, they will be required to implement mid-course corrections according to trustee-approved monitoring plans.

5.0 CONSULTATION AND COORDINATION

In developing this Draft Restoration Plan, the Trustees consulted or coordinated with, among other parties, the following agencies and organizations, listed in alphabetical order.

Colonial Pipeline Company
District of Columbia Department of Health
ENTRIX, Inc. (consultant for Colonial Pipeline Company)
Fairfax County, Virginia
Fairfax County Park Authority
Fairfax County Re-Leaf
Friends of Sugarland Run
Loudoun County, Virginia
Loudoun Soil and Water Conservation District
Maryland Department of Natural Resources
Metropolitan Washington Council of Governments
National Energy Education Development Project
National Park Service
Northern Virginia Regional Park Authority
Reston Environmental Education Foundation
Town of Herndon, Virginia
United States Army Corps of Engineers
United States Fish and Wildlife Service
Virginia Cooperative Extension
Virginia Department of Environmental Quality
Virginia Department of Forestry
Virginia Department of Game and Inland Fisheries
Virginia Department of Transportation
Virginia Marine Resources Commission
Virginia Power

6.0

REFERENCES

In developing this Draft Restoration Plan, the Trustees referred to, among other information sources, applicable National, State, and District statutes, implementing regulations and guidance, published scientific and economics literature, governmental agency studies and reports, incident-specific field studies, and official visitation records.

7.0 LIST OF PREPARERS

Christopher Pfeifer
ENTRIX, Inc.
200 Bellevue Parkway (Suite 200)
Wilmington, DE 19809

Bruce Peacock
National Park Service
Environmental Quality Division
1849 C Street, N.W. (Mail Stop 2749)
Washington, DC 20240

The Trustees would like to acknowledge the contributions and assistance provided by Shelly Hall and Josefa O'Malley of the U.S. Department of the Interior Office of the Solicitor, Amy Clarke and David Paylor of the Virginia Department of Environmental Quality, Robert Foley and Fred Pinkney of the U.S. Fish and Wildlife Service, and James Collier of the District of Columbia Department of Health.

ENTRIX wishes to acknowledge the contributions and assistance provided by Ralph Markarian, Angel Parker, Sarah Miller, Faith Zerbe, and Jessica Webber of ENTRIX, Joe Nicolette of Nicolette Environmental, Carole Sims of Colonial Pipeline Company, and Manning Gasch, Jr. of Hunton & Williams.

Part C

Federal Register Notices

**Notice of Lodging of Consent Decree Under the Clean Water Act
(November 3, 1997, Federal Register Notice)**

of Oregon, and the Klamath Indian Tribe of Oregon.

This notice has been sent to officials of the Burns Paiute Tribe of Burns Paiute Indian Colony of Oregon, the Confederated Tribes of the Warm Springs Reservation of Oregon, and the Klamath Indian Tribe of Oregon. Representatives of any other Indian tribe that believes itself to be culturally affiliated with these human remains and associated funerary objects should contact Richard Hanes, Cultural Program Lead, Bureau of Land Management, P.O. Box 10226, Eugene, OR 97440; telephone: (541) 683-6669, before December 3, 1997. Repatriation of the human remains and associated funerary objects to the culturally affiliated tribes may begin after that date if no additional claimants come forward.

Dated: October 29, 1997.

Francis P. McManamon,
Departmental Consulting Archeologist,
Manager, Archeology and Ethnology Program.
[FR Doc. 97-29017 Filed 10-31-97; 8:45 am]
BILLING CODE 4310-70-F

DEPARTMENT OF JUSTICE

Notice of Lodging of Consent Decrees Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act

In accordance with Departmental policy, 28 CFR 50.7, and 42 U.S.C. 9622(d), notice is hereby given that on October 16, 1997, the trustees for natural resources at the Tulalip Landfill Superfund Site on Ebey Island in Puget Sound, WA ("the Site") lodged with the United States District Court for the Western District of Washington a civil natural resource damages complaint against defendants the Boeing Company, Kaiser Cement Corporation, Safeway Inc., Richard Halffman, Washington Iron Works, Seattle Goodwill Industries, Manson Construction Co., Inc. and R.W. Rhine, Inc. in the civil action styled *United States v. The Boeing Company, et al.*, Civil Action No. C97-1648-WD. On the same day, the trustees lodged two consent decrees resolving the trustees' claims against all defendants except R.W. Rhine and Seattle Goodwill Industries.

The consent decrees require the defendants to compensate the trustees for natural resource damages resulting from the release of hazardous substances at the Site. The trustees consist of the State of Washington Department of Ecology, the Tulalip Tribes of Washington, the National Oceanic and Atmospheric

Administration of the United States Department of Commerce, and the United States Department of Interior. Under the consent decrees, the settling defendants will pay a total of \$183,068 for natural resource damages.

The Department of Justice will receive, for a period of thirty (30) days from the date of this publication, comments relating to the proposed consent decrees. Comments should be addressed to the Assistant Attorney General for the Environment and Natural Resources Division, Department of Justice, Washington, D.C. 20530, and should refer to *United States v. The Boeing Company, et al.*, DOJ Ref. #90-11-3-1412.

The proposed consent decrees may be examined at the office of the United States Attorney, 1010 Fifth Avenue, Seattle, WA 98104; and at the Consent Decree Library, 1120 G Street, N.W., 4th Floor, Washington, D.C. 20005, (202) 624-0892. A copy of the proposed consent decrees may be obtained in person or by mail from the Consent Decree Library, 1120 G Street, N.W., 4th Floor, Washington, D.C. 20005. In requesting copies please refer to the referenced case, specify which decree or decrees you would like to receive, and enclose a check payable to the Consent Decree Library in the amount of \$12.00 for the decree with Boeing, Kaiser, Safeway, Halffman and Washington Iron Works (48 pages), and/or \$8.50 for the decree with Manson Construction Co., Inc. (34 pages) (25 cents per page reproduction costs).

Joel M. Gross,
Chief, Environmental Enforcement Section,
Environment and Natural Resources Division.
[FR Doc. 97-29012 Filed 10-31-97; 8:45 am]
BILLING CODE 4410-15-M

DEPARTMENT OF JUSTICE

Notice of Lodging of Consent Decree Under the Comprehensive Environmental Response, Compensation and Liability Act

Notice is hereby given that on October 22, 1997, a proposed Consent Decree in *United States v. Charles Chrin et al.*, Civil Action No. 39-CV-4244 was lodged with the United States District Court for the Eastern District of Pennsylvania.

In this action the United States sought reimbursement of past response costs pursuant to Section 107 of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. 9607, incurred by the United States Environmental Protection Agency

("EPA") in connection with the Industrial Lane Superfund Site (also known as the Chrin Landfill Site) located in Williams Township, Northampton County, Pennsylvania. Under the proposed Consent Decree 51 original and third party defendants agree to reimburse the United States \$2.5 million in past response costs incurred by EPA at the Site.

The Department of Justice will receive for a period of thirty (30) days from the date of this publication comments relating to the proposed Consent Decree. Comments should be addressed to the Assistant Attorney General of the Environment and Natural Resources Division, Department of Justice, Washington, D.C. 20503, and should refer to *United States v. Charles Chrin et al.*, D.J. Ref. 90-11-2-908. Commenters may request an opportunity for a public meeting in the affected area, in accordance with Section 7003(d) of RCRA, 42 U.S.C. 6973(d).

The Consent Decree may be examined at the Office of the United States Attorney, 615 Chestnut Street, Suite 1250, Philadelphia, PA 19106, at U.S. EPA Region 3, 841 Chestnut Building, Philadelphia, PA 19107, and at the Consent Decree Library, 1120 G Street, N.W., 4th Floor, Washington, D.C. 20005, (202) 624-0892. A copy of the Consent Decree may be obtained in person or by mail from the Consent Decree Library, 1120 G Street, N.W., 4th Floor, Washington, D.C. 20005. In requesting a copy exclusive of exhibits and defendants' signatures, please enclose a check in the amount of \$12.50 (25 cents per page reproduction cost) payable to the Consent Decree Library.

Walker Smith,
Deputy Chief, Chief, Environmental
Enforcement Section, Environment and
Natural Resources Division.
[FR Doc. 97-29011 Filed 10-31-97; 8:45 am]
BILLING CODE 4410-15-M

DEPARTMENT OF JUSTICE

Notice of Lodging of Consent Decree Under the Clean Water Act

Under 28 CFR 50.7, notice is hereby give that on October 21, 1997 a proposed consent decree ("the decree") in *United States, Commonwealth of Virginia, and District of Columbia v. Colonial Pipeline Company*, Civil Action No. 97-1680-A, was lodged with the United States District Court for the Eastern District of Virginia.

In this action brought pursuant to the Clean Water Act, as amended by the Oil

Pollution Act of 1990, 33 U.S.C. 1251 *et seq.*, the United States, Commonwealth of Virginia and District of Columbia sought civil penalties and natural resource damages regarding a March 1993 oil discharge to Sugarland Run, a tributary of the Potomac River. The proposed decree requires Colonial Pipeline Company to perform comprehensive projects to restore natural resources that were damaged as a result of the oil discharge, reimbursing all assessment costs of the natural resource trustees, and monitoring and oversight costs associated with the projects. In addition, the decree requires Colonial Pipeline Company to pay \$253,314 toward the notching of Little Falls Dam on the Potomac River, a joint project of the District of Columbia, State of Maryland and U.S. Army Corps of Engineers, and to pay a \$1.5 million civil penalty, \$750,000 to the United States, and \$750,000 to the Commonwealth of Virginia.

The Department of Justice will receive written comments relating to the decree for thirty (30) days from the date of publication of this notice. Please address comments to the Assistant Attorney General, Environment and Natural Resources Division, Department of Justice, P.O. Box 7611, Ben Franklin Station, Washington, D.C. 20044 and refer to *United States, Commonwealth of Virginia, and District of Columbia v. Colonial Pipeline Company*, D.J. Ref. #90-5-1-1-4055.

The decree may be examined at the Office of the United States Attorney, Eastern District of Virginia, 2100 Jamieson Avenue, Alexandria, VA 22314; the Region III Office of the United States Environmental Protection Agency, 841 Chestnut Building, Philadelphia, PA 19107; and at the Consent Decree Library 1120 G Street, N.W., 4th Floor, Washington, D.C. 20005 (202) 624-0892. A copy of the decree may be obtained in person or by mail at the Consent Decree Library, 1120 G Street, N.W., 4th Floor, Washington, D.C. 20005 (202-624-0892). When requesting a copy, please enclose a check in the amount of \$16.75 (twenty-five cents per page reproduction costs) payable to the "Consent Decree Library."

Joel M. Gross,

Chief, Environmental Enforcement Section,
Environment and Natural Resources Division,
U.S. Department of Justice.

[FR Doc. 97-29010 Filed 10-31-97; 8:45 am]

BILLING CODE 4410-15-M

DEPARTMENT OF JUSTICE

Immigration and Naturalization Service

Agency Information Collection Activities: Proposed Collection; Comment Request

ACTION: Request OMB emergency approval; application to register permanent residence or adjust status and supplement A to Form I-485.

The Department of Justice, Immigration and Naturalization Service (INS) has submitted the following information collection request (ICR) utilizing emergency review procedures, to the Office of Management and Budget (OMB) for review and clearance in accordance with the Paperwork Reduction Act of 1995. OMB approval has been requested by October 31, 1997. If granted, the emergency approval is only valid for 180 days. All comments and/or questions pertaining to this pending request for emergency approval must be directed to OMB, Office of Information and Regulatory Affairs, Attention: Ms. Debra Bond, 202-395-7316, Department of Justice Desk Officer, Washington, DC 20503. You may also submit comments to Ms. Bond via facsimile at 202-395-6974.

During the first 60 days of this same period a regular review of this information collection is also being undertaken. Comments are encouraged and will be accepted until January 2, 1997. During the 60-day regular review all comments and suggestions, or questions regarding additional information, to include obtaining a copy of the proposed information collection instrument with instructions, should be directed to Mr. Richard A. Sloan, 202-514-3291, Director, Policy Directives and Instructions Branch, Immigration and Naturalization Service, U.S. Department of Justice, Room 5307, 425 I Street, NW., Washington, DC 20536. Your comments should address one or more of the following four points.

- (1) Evaluate whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information will have practical utility;
- (2) Evaluate the accuracy of the agencies estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used;
- (3) Enhance the quality, utility, and clarity of the information to be collected; and
- (4) Minimize the burden of the collection of information on those who are to respond, including through the

use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, e.g., permitting electronic submission of responses.

Overview of This Information Collection

(1) *Type of Information Collection:* Extension of a currently approved information collection.

(2) *Title of the Form/Collection:* Application to Register Permanent Residence or Adjust Status and Supplement A to Form I-485.

(3) *Agency form number, if any, and the applicable component of the Department of Justice sponsoring the collection:* Form I-485/Form I-485 Supplement A. Adjudications Division, Immigration and Naturalization Service.

(4) *Affected public who will be asked or required to respond, as well as a brief abstract:* Primary: Individuals or Households. This form allows an applicant to determine whether he or she must file under section 245 of the INA, and it allows the Service to collect information needed for reports to be made to different government committees.

(5) *An estimate of the total number of respondents and the amount of time estimated for an average respondent to respond:* I-485 Adult respondents is 160,000 at 5.25 hours per response; I-485 Children respondents is 112,000 at 4.5 hours per response; and I-485 Supplement A respondents is 50,000 at 13 minutes (.216) hours per response.

(6) *An estimate of the total public burden (in hours) associated with the collection:* Form I-485 annual burden hours are 1,316,000 and Form I-485 Supplement A annual burden hours are 10,800.

If you have additional comments, suggestions, or need a copy of the proposed information collection instrument with instructions, or additional information, please contact Mr. Richard A. Sloan, 202-514-3291, Director, Policy Directives and Instructions Branch, Immigration and Naturalization Service, U.S. Department of Justice, Room 5307, 425 I Street, NW., Washington, DC 20536.

If additional information is required contact: Mr. Robert B. Briggs, Clearance Officer, United States Department of Justice, Information Management and Security Staff, Justice Management Division, Suite 850, Washington Center, 1001 G. Street, NW., Washington, DC 20530.

**Availability of Draft Restoration Plan and Environmental Assessment
for the Colonial Pipeline Oil Spill, Reston, Virginia
(October 23, 1998, Federal Register Notice)**

Program	Estimated number of	
	Responses	Burden hours
Federal Lands to Parks (FLP) Program	75	25
Wild and Scenic Rivers Coordination (WSR) Program	3	1
Historic Preservation Technical Assistance Program	369	123
Total	643	214

SUMMARY: Under the provisions of the Paperwork Reduction Act of 1995 and 5 CFR part 1320, Reporting and Record Keeping Requirements, the NPS invites public comment on these five proposed information collection requests (ICR). Comments are invited on: (1) The need for the information including whether the information has practical utility; (2) the accuracy of the reporting burden estimate; (3) ways to enhance the quality, utility, and clarity of the information to be collected; and (4) ways to minimize the burden of the information collection on respondents, including the use of automated collection techniques or other forms of information technology.

The NPS goal in conducting these surveys is to obtain information to help evaluate and improve its recreation and conservation assistance program and its historic preservation programs

There were no public comments received as a result of publishing in the **Federal Register** a 60 day notice of intention to request clearance of information collection for these five surveys (FR Vol. 63, No 119 6/22/98).

DATES: Public comments will be accepted on or before November 23, 1998.

Send comments to: Office of Information and Regulatory Affairs of OMB, Attention Desk Officer for the Interior Department, Office of Management and Budget, Washington, DC 20530; and also to Dr. Steven Hollenhorst (Voice: (304) 293-3721 x2441) (e-mail: shollenh@wvu.edu) or Dr. Michael A. Schuett (Voice: (304) 293-3721 (x2415) (e-mail: mschuett@wvu.edu), West Virginia University, Division of Forestry, PO Box 6125, Morgantown, WV 26506-6125.

The OMB has up to 60 days to approve or disapprove the information collection but may respond after 30 days. Therefore, to ensure maximum consideration, OMB should receive public comments on or before November 23, 1998.

FOR FURTHER INFORMATION OR A COPY OF THE STUDY PACKAGES SUBMITTED FOR OMB REVIEW, CONTACT: Dr. Steven Hollenhorst (Voice: (304) 293-3721 x2441) (email: shollenh@wvu.edu); Dr. Michael A. Schuett (Voice: (304) 293-

3721 x2415) (email: mschuett@wvu.edu); West Virginia University, Division of Forestry, PO Box 6125, Morgantown, WV 26506-6125.

SUPPLEMENTARY INFORMATION:

Titles: National Park Service Partnership Programs GPRA Information Collections.

Bureau Form Number: None.

OMB Number: To be requested.

Expiration Date: To be requested.

Type of request: Request for new clearance.

Description of need: The Government Performance and Results Act requires the Federal agencies to prepare an annual performance report documenting the progress made toward achieving long term goals. The National Park Service needs the information in the proposed collections to assess the annual progress being made toward meeting Long-term Goals IIIa2 and IIIa3 of the National Park Service Strategic Plan of 1997. The information sought is not collected elsewhere by the Federal Government. The proposed information collections impose no data burden on the potential responders. Responding to the proposed collections is voluntary and is based on data that the respondents already collect and/or personal opinion. The National Park Service needs to obtain information to help evaluate and improve its recreation and conservation assistance program and its historic preservation programs.

Automated data collection: At the present time, there is no automated way to gather this information.

Description of respondents: A sample of partners (individuals, organizations, and/or public agencies) who have received services and/or assistance from the National Park Service Rivers, Trails, and Conservation Assistance Program (RTCA), Federal Lands to Parks Program (FLP), National Heritage Area Program (NHA), Wild and Scenic Rivers Coordination Program (WSR), and/or the Historic Preservation Technical Assistance Program (HP).

Estimated average number of respondents: 643 (mail survey).

Estimated average number of responses: Each respondent will respond only one time, so the number

of responses will be the same as the number of respondents.

Estimated average burden hours per response: 20 minutes (mail survey).

Frequency of response: 1 time per respondent.

Estimated annual reporting burden: 214 hours (mail survey).

Diane M. Cooke,

Information Collection Clearance Officer,
WASO Administrative Program Center,
National Park Service.

[FR Doc. 98-28434 Filed 10-22-98; 8:45 am]

BILLING CODE 4310-70-M

DEPARTMENT OF THE INTERIOR

National Park Service

Draft Restoration Plan and Environmental Assessment for the Colonial Pipeline Oil Spill, Reston, VA

AGENCY: National Park Service, Department of the Interior.

ACTION: Availability of draft restoration plan and environmental assessment for the Colonial Pipeline Oil Spill, Reston, Virginia.

SUMMARY: Pursuant to the Oil Pollution Act of 1990 and the National Environmental Policy Act of 1969 (NEPA), the National Park Service and U.S. Fish and Wildlife Service, jointly with the Commonwealth of Virginia and the District of Columbia, announce the availability of the Draft Restoration Plan and Environmental Assessment for the Colonial Pipeline Oil Spill, Reston, Virginia.

DATES: The Draft Restoration Plan and Environmental Assessment will remain available for public review through November 20, 1998. Comments regarding this document should be received no later than November 20, 1998. Additionally, a public meeting will be held to discuss the Draft Restoration Plan and Environmental Assessment starting at 7 p.m. on November 5, 1998, at the Herndon Middle School, 901 Locust Street, Herndon, Virginia.

ADDRESSES: Comments on the Draft Restoration Plan and Environmental Assessment should be sent to the following contact person Daniel

Hamson, National Park Service, Environmental Quality Division, 1849 C Street, NW. (Mail Stop 2749), Washington, DC 20240.

Public reading copies of the Draft Restoration Plan and Environmental Assessment will be available for review at the following location. Virginia Department of Environmental Quality, Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193.

SUPPLEMENTARY INFORMATION: On March 28, 1993, a subsurface petroleum products pipeline owned and operated by the Colonial Pipeline Company ruptured near Reston, Virginia, discharging approximately 408,000 gallons of No. 2 fuel oil (diesel) into Sugarland Run, the Potomac River, and surrounding environments. Several natural resources, including fish, wildlife, and their habitats, were adversely affected. Additionally, recreational use of natural resources in and around National Park Service facilities, and regional and local parks, was adversely affected. This Draft Restoration Plan and Environmental Assessment presents the Trustees' proposed restoration alternative for making the environment and the public whole for injuries to, or loss of, natural resources and services resulting from the Oil Spill. It also evaluates the environmental impacts and considers the no action alternative as required by NEPA. The Trustees are soliciting comments on this Draft Restoration Plan and Environmental Assessment. These comments will be considered in evaluating the Environmental Assessment, making decisions pursuant to NEPA, and developing the Final Restoration Plan.

FOR FURTHER INFORMATION: Contact Daniel Hamson, National Park Service, at the above address.

Dated: October 19, 1998.

Sharon Kliwinski,

Acting Associate Director, Natural Resource Stewardship and Science, National Park Service.

[FR Doc. 98-28433 Filed 10-22-98; 8:45 am]
BILLING CODE 4310-70-M

DEPARTMENT OF THE INTERIOR

National Park Service

Notice of Continuation of the preparation of an Environmental Impact Statement for the Great Egg Harbor National Scenic and Recreational River Comprehensive Management Plan

AGENCY: National Park Service.

ACTION: Continuation of the Preparation of an Environmental Impact Statement.

SUMMARY: This notice announces the continuation of the work toward preparation of an Environmental Impact Statement for the development of a Comprehensive Management Plan for the Great Egg Harbor National Scenic and Recreational River in New Jersey. The Notice of Intent for this project appeared in the April 10, 1997 *Federal Register*. Upon completion of an Environmental Assessment, a further determination was made that an Environmental Impact Statement should be prepared to address National Environmental Policy Act requirements for development of the Comprehensive Management Plan. We encourage all who have an interest in this National Park System unit's future to contact Mary Vavra, National Park Service Program Manager, by letter or telephone.

FOR FURTHER INFORMATION CONTACT: Mary Vavra, Program Manager, National Park Service, Philadelphia Support Office, 200 Chestnut Street, 3rd Floor, Philadelphia, PA 19106, (215) 597-9175.

Dated: October 12, 1998.

Marie Rust,

Field Director, Northeast Field Area, National Park Service.

[FR Doc. 98-28430 Filed 10-22-98; 8:45 am]
BILLING CODE 4310-70-M

DEPARTMENT OF THE INTERIOR

National Park Service

Meeting: The Christmas Pageant of Peace Inc.

The National Park Service is seeking public comments and suggestions on the planning of the 1998 Christmas Pageant of Peace, which opens December 9, on the Ellipse (President's Park), south of the White House. The meeting will be held at 11:00 a.m., Wednesday, November 4, 1998, in room 234 of the National Capital Region Building, at 1100 Ohio Drive, S.W., in East Potomac Park.

Persons who would like to comment at the meeting should notify the National Park Service by October 30, by calling the White House Visitor center between 9 a.m. and 4 p.m. weekdays, at (202) 208-1631. Written comments may be sent to the Park Manager, White House Visitor Center, 1100 Ohio Drive, S.W., Washington, DC 20242, and can be accepted until October 28.

Dated: October 16, 1998.

Stan E. Lock,

Deputy Director, White House Liaison.

[FR Doc. 98-28431 Filed 10-22-98; 8:45 am]
BILLING CODE 4310-70-M

INTERNATIONAL TRADE COMMISSION

[Investigation No. TA-201-68]

Lamb Meat

AGENCY: United States International Trade Commission.

ACTION: Institution and scheduling of an investigation under section 202 of the Trade Act of 1974 (19 U.S.C. § 2252) (the Act).

SUMMARY: Following receipt of a properly filed petition on October 7, 1998, on behalf of the American Sheep Industry Association, Inc., National Lamb Feeders Association, Harper Livestock Co., Winters Ranch Partnership, Godby Sheep Co., Talbott Sheep Co., Iowa Lamb Corp., Ranchers' Lamb of Texas, Inc., and Chicago Lamb & Veal Co., the Commission instituted investigation No. TA-201-68 under section 202 of the Act to determine whether lamb meat, provided for in subheadings 0204.10.00, 0204.22.20, 0204.23.20, 0204.30.00, 0204.42.20, and 0204.43.20 of the Harmonized Tariff Schedule of the United States, is being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing an article like or directly competitive with the imported article.

For further information concerning the conduct of this investigation, hearing procedures, and rules of general application, consult the Commission's Rules of Practice and Procedure, part 201, subparts A through E (19 CFR part 201), and part 206, subparts A and B (19 CFR part 206).

EFFECTIVE DATE: October 7, 1998.

FOR FURTHER INFORMATION CONTACT: Valerie Newkirk (202-205-3190), Office of Investigations, U.S. International Trade Commission, 500 E Street SW, Washington, DC 20436. Hearing-impaired persons can obtain information on this matter by contacting the Commission's TDD terminal on 202-205-1810. Persons with mobility impairments who will need special assistance in gaining access to the Commission should contact the Office of the Secretary at 202-205-2000. General information concerning the Commission may also be obtained by

**Notice of Availability of the Decision Notice and Finding of No Significant Impact
for the Environmental Assessment of Restoration Alternatives for the
March 28, 1993, Colonial Pipeline Oil Spill Near Reston, Virginia
(July 20, 1999, Federal Register Notice)**

ACTION: Segregation Terminated, Recreation and Public Purpose Lease/Conveyance.

SUMMARY: The following described public land in Las Vegas, Clark County, Nevada was segregated on July 23, 1997 for exchange purposes under serial number N-61855. The exchange segregation on the subject lands will be terminated upon publication of this notice in the **Federal Register**. The land has been examined and found suitable for lease/conveyance for recreational or public purposes under the provisions of the Recreation and Public Purposes Act, as amended (43 U.S.C. 869 *et seq.*). Clark County proposes to use the lands for a public park.

Mount Diablo Meridian, Nevada

T. 19 S., R. 60 E., M.D.M., sec. 31, Lots 15, 18, 20,
SE $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$, W $\frac{1}{2}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$,
W $\frac{1}{2}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$,
W $\frac{1}{2}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$,
T. 20 S., R. 60 E., M.D.M., sec. 6, Lots 27, 32-35, 37.

Containing 80.00 acres, more or less, located at Lone Mountain Road and Jensen Street.

The land is not required for any federal purpose. The lease/conveyance is consistent with current Bureau planning for this area and would be in the public interest. The lease/patents, when issued, will be subject to the provisions of the Recreation and Public Purposes Act and applicable regulations of the Secretary of the Interior, and will contain the following reservations to the United States:

1. A right-of-way thereon for ditches or canals constructed by the authority of the United States, Act of August 30, 1890 (43 U.S.C. 945).

2. All minerals shall be reserved to the United States, together with the right to prospect for, mine and remove such deposits from the same under applicable law and such regulations as the Secretary of the Interior may prescribe and will be subject to:

1. Easements in accordance with the Clark County Transportation Plan.

2. Those rights for distribution line purposes which have been granted to Kern River Gas Company by Permit No. N-42581 under the Act of February 25, 1920 (30 U.S.C 185, sec. 28).

3. Those rights for distribution line purposes which have been granted to Nevada Power Company by Permit No. N-59043 under the Act of October 21, 1976 (43 U.S.C 1761).

4. Those rights for roadway purposes which have been granted to Clark County by Permit No. N-59198 under the Act of October 21, 1976 (43 U.S.C 1761).

5. Those rights for roadway purposes which have been granted to Clark County by Permit No. N-60728 under the Act of October 21, 1976 (43 U.S.C 1761).

6. Those rights for roadway purposes which have been granted to Clark County by Permit No. N-60903 under the Act of October 21, 1976 (43 U.S.C 1761).

7. Those rights for distribution line purposes which have been granted to Nevada Power Company by Permit No. N-61629 under the Act of October 21, 1976 (43 USC 1761).

8. Those rights for distribution line purposes which have been granted to Las Vegas Valley Water District by Permit No. N-62096 under the Act of October 21, 1976 (43 USC 1761).

Detailed information concerning this action is available for review at the office of the Bureau of Land Management, Las Vegas Field Office, 4765 W. Vegas Drive, Las Vegas, Nevada.

Upon publication of this notice in the **Federal Register**, the above described land will be segregated from all other forms of appropriation under the public land laws, including the general mining laws, except for lease/conveyance under the Recreation and Public Purposes Act, leasing under the mineral leasing laws and disposals under the mineral material disposal laws.

For a period of 45 days from the date of publication of this notice in the **Federal Register**, interested parties may submit comments regarding the proposed lease/conveyance for classification of the lands to the Las Vegas Field Office Manager, Las Vegas Field Office, 4765 Vegas Drive, Las Vegas, Nevada 89108.

Classification Comments

Interested parties may submit comments involving the suitability of the land for a park site. Comments on the classification are restricted to whether the land is physically suited for the proposal, whether the use will maximize the future use or uses of the land, whether the use is consistent with local planning and zoning, or if the use is consistent with State and Federal programs.

Application Comments

Interested parties may submit comments regarding the specific use proposed in the application and plan of development, whether the BLM followed proper administrative procedures in reaching the decision, or any other factor not directly related to the suitability of the land for a park site.

Any adverse comments will be reviewed by the State Director.

In the absence of any adverse comments, the classification of the land described in this Notice will become effective 60 days from the date of publication in the **Federal Register**. The lands will not be offered for lease/conveyance until after the classification becomes effective.

Dated: July 8, 1999.

Rex Wells,

Assistant Field Office Manager, Las Vegas, NV.

[FR Doc. 99-18392 Filed 7-19-99; 8:45 am]

BILLING CODE 4310-HC-P

DEPARTMENT OF THE INTERIOR

National Park Service

Notice of Availability of the Decision Notice and Finding of No Significant Impact for the Environmental Assessment of Restoration Alternatives for the March 28, 1993, Colonial Pipeline Oil Spill Near Reston, Virginia

ACTION: Notice of availability of the Decision Notice (DN) and Finding of No Significant Impact (FONSI) for the Environmental Assessment of Restoration Alternatives for the March 28, 1993, Colonial Pipeline Oil Spill near Reston, Virginia.

SUMMARY: Pursuant to the Council on Environmental Quality regulations, the Trustees, representing the National Park Service, U.S. Fish and Wildlife Service, Commonwealth of Virginia, and District of Columbia, prepared and made available for a 30-day public review the Draft Restoration Plan and Environmental Assessment for the Colonial Pipeline Oil Spill, Reston, Virginia (the EA). During the review period, the Trustees held a public meeting in Herndon, Virginia, to discuss the EA. See the notice of availability for the EA published in the **Federal Register** on October 23, 1998 (63 FR 56939).

After the end of the 30-day public availability period, the Trustees selected the preferred alternative, described in Sections 3.1 and 3.2 of the EA, and determined that the implementation of the preferred alternative will not cause a significant environmental impact (FONSI). In making that selection and determination, the Trustees considered the information and analysis contained in the EA and the comments received during the 30-day public availability period. As a result, the Trustees adopted certain modifications to the preferred

alternative. Those modifications are described in the DN/FONSI and will be incorporated in the Final Restoration Plan and Environmental Assessment.

The preferred alternative contains both primary and compensatory restoration actions. Natural recovery is the primary restoration action selected to return injured natural resources to their baseline conditions. A package of multiple compensatory restoration actions, including various wildlife habitat and recreational use enhancement projects, was selected to replace the interim loss of natural resource services. The goal of primary and compensatory restoration is to make the environment and the public whole for injuries to, or loss of, natural resources and services resulting from the oil spill.

SUPPLEMENTARY INFORMATION: Requests for copies of the DN/FONSI, or for any additional information, should be directed to Daniel Hamson, National Park Service, Environmental Quality Division, 1849 C Street, NW (Mail Stop 2749), Washington, DC 20240, Telephone: (202) 208-7504.

Dated: July 14, 1999.

Mike Soukup,

Associate Director, Natural Resource Stewardship and Science, National Park Service.

[FR Doc. 99-18386 Filed 7-19-99; 8:45 am]

BILLING CODE 4310-70-P

DEPARTMENT OF THE INTERIOR

National Park Service

Notice of Intent to Prepare an Environmental Impact Statement for a Roads and Trails Management Plan for Big Fork National River and Recreation Area, Kentucky and Tennessee

SUMMARY: Road and trail uses are among the most serious and volatile issues facing Big South Fork National River and Recreation Area (BISO) personnel. Therefore, the National Park Service (NPS) has decided to prepare a Roads and Trails Management Plan (RTMP) which will include an Environmental Impact Statement (EIS). While roads and trails provide appropriate access to resources and recreational opportunities, their use often involves resource impacts, user conflicts, and carrying capacity concerns. Strong pressures exist to develop additional trails, and there are strongly held positions of various user groups concerning the amounts, locations, and types of roads and trails that are needed. Road and trail standards are needed. The RTMP will address these concerns

and needs and provide guidance to BISO personnel. The EIS will provide an environmental evaluation of system options. The RTMP is considered a follow-up implementation effort to BISO's General Management Plan (GMP) which is nearing completion.

DATES: The NPS currently estimates formulating and evaluating alternatives by December 31, 1999, and comments would be most helpful prior to that date. Comments concerning roads and trails that were furnished by the public during the GMP process will be fully considered for development of the draft RTMP/EIS and need not be resubmitted. The public will be furnished an opportunity to review the draft RTMP/EIS and submit comments. Written comments and suggestions on the RTMP/EIS will be accepted anytime during the process.

FOR FURTHER INFORMATION CONTACT: Superintendent, Big South Fork National River and Recreation Area, 4564 Leatherwood Road, Onieda, Tennessee 37841, Telephone (423) 569-2404.

Dated: July 9, 1999.

W. Thomas Brown,

Regional Director, Southeast Region.

[FR Doc. 99-18387 Filed 7-19-99; 8:45 am]

BILLING CODE 4310-70-M

DEPARTMENT OF THE INTERIOR

National Park Service

National Register of Historic Places; Notification of Pending Nominations

Nominations for the following properties being considered for listing in the National Register were received by the National Park Service before July 10, 1999. Pursuant to § 60.13 of 36 CFR part 60 written comments concerning the significance of these properties under the National Register criteria for evaluation may be forwarded to the National Register, National Park Service, 1849 C St. NW, NC400, Washington, DC 20240. Written comments should be submitted by August 4, 1999.

Carol D. Shull,

Keeper of the National Register.

Connecticut

Hartford County

Capewell Horse Nail Company, 60-70 Popieluszko St., Hartford, 99000927
Melrose Road Bridge, Melrose Rd. over Scantic River, East Windsor, 99000922
Town Bridge, Town Bridge over Farmington River, Canton, 99000923
Woodbridge Farmstead, 495 Middle Turnpike East, Manchester, 99000925

Middlesex County

Emmanuel Church, 50 Emmanuel Church Rd., Killingworth, 99000924

Georgia

Chatham County

Tybee Island Back River Historic District, Along Chatham Ave., from Tybee River to Venetian Dr., Tybee Island, 99000928

Louisiana

Avoyelles Parish

Bailey Hotel, 102 Magnolia St., Bunkie, 99000929

Ouachita Parish

Wossman House, 1205 St. John Dr., Monroe, 99000930

Maryland

Washington County

St. Mark's Episcopal Church—Lappans, 18313 Lappans Rd., Boonsboro vicinity, 99000931

Minnesota

Hennepin County

Glen Lake Children's Camp, 6350 Indian Chief Rd., Eden Prairie, 99000932
Nokomis Knoll Residential Historic District, Bounded by W. Fifty-Second St., West Lake Nokomis Parkway, E Fifty-Fourth St., and Bloomington Ave., Minneapolis, 99000938

Le Sueur County

Broadway Bridge (Reinforced-Concrete Highway Bridges in Minnesota MPS) MN 99 over Minnesota River, Saint Peter, 99000934

Nicollet County

Bridge No. 6422—Saint Peter (Reinforced-Concrete Highway Bridges in Minnesota MPS) MN 99 over Washington Ave., Saint Peter, 99000933

Missouri

Johnson County

Pleasant View School, 674 SW 131 Highway, Medford vicinity, 99000935

Osage County

Townley, Alvah Washington, Farmstead Historic District, 304 S. Market St., Chamois, 99000937

St. Louis Independent City

Bell Telephone Building, 920 Olive St., St. Louis, 99000936

Nevada

Washoe County

First Church of Christ, Scientist, 501 Riverside Dr., Reno, 99000939

New Jersey

Bergen County

Palisade Interstate Parkway, Palisade Interstate Parkway, Fort Lee, 99000940

Oregon

Jackson County

Rich Gulch Diggings, 0.75 mi. SW of Jacksonville, Jacksonville, 99000947

**Notice of Availability of the Final Restoration Plan and Environmental Assessment
for the March 28, 1993, Colonial Pipeline Oil Spill Near Reston, Virginia
(Forthcoming Federal Register Notice)**

DEPARTMENT OF THE INTERIOR

National Park Service

Notice of Availability of the Final Restoration Plan and Environmental Assessment for the March 28, 1993, Colonial Pipeline Oil Spill Near Reston, Virginia

Action: Notice of availability of the Final Restoration Plan and Environmental Assessment for the March 28, 1993, Colonial Pipeline Oil Spill near Reston, Virginia.

Summary: The Final Restoration Plan and Environmental Assessment for the March 28, 1993, Colonial Pipeline Oil Spill near Reston, Virginia, has been completed. Pursuant to the Council on Environmental Quality regulations, the Trustees, representing the National Park Service, U.S. Fish and Wildlife Service, Commonwealth of Virginia, and District of Columbia, in 1998 prepared and made available for a 30-day public review the Draft Restoration Plan and Environmental Assessment for that Oil Spill (the EA). During the review period, the Trustees held a public meeting in Herndon, Virginia, to discuss the EA. See the notice of availability for the EA published in the Federal Register on October 23, 1998 (63 FR 56939).

Following the 30-day public availability period, the Trustees selected the preferred alternative, described in Sections 3.1 and 3.2 of the EA, and determined that the implementation of the preferred alternative will not cause a significant environmental

impact. See the notice of availability for the Decision Notice and Finding of No Significant Impact (DN/FONSI) published in the Federal Register on July 20, 1999 (64 FR 38915). In making that selection and determination, the Trustees considered the information and analysis contained in the EA and the comments received during the 30-day public availability period. As a result, the Trustees adopted certain modifications to the preferred alternative. Those modifications are described in the Final Restoration Plan and Environmental Assessment.

The preferred alternative contains both primary and compensatory restoration actions. Natural recovery is the primary restoration action selected to return injured natural resources to their baseline conditions. A package of multiple compensatory restoration actions, including various wildlife habitat and recreational use enhancement projects, was selected to replace the interim loss of natural resource services. The goal of primary and compensatory restoration is to make the environment and the public whole for injuries to, or loss of, natural resources and services resulting from the oil spill. This follows on the 1998 judicial settlement resolving the Federal, State, and District claims for penalties and natural resource damages with the responsible party, Colonial Pipeline Company.

Supplementary Information: Requests for copies of the Final Restoration Plan and Environmental Assessment, or for any additional information, should be directed to Daniel Hamson, National Park Service, Environmental Quality Division, 1849 C Street, N.W. (Mail Stop 2749), Washington, D.C. 20240, Telephone: (202) 208-7504.

Date: 9/10/99



Sharon Kliwinski

Acting Associate Director, Natural
Resource Stewardship and Science

SELECTED APPENDICES TO ATTACHMENT A
APPENDICES 10-12 of the FINAL RESTORATION PLAN dated April 30, 2004

**Appendix 10 - Adaptation of the Savannah District Corps of Engineers Stream
Mitigation SOP including the Debit/Credit Worksheets for this Incident**

Compensatory Stream Mitigation Definitions of Factors

Bankfull Discharge: The bankfull discharge is the flow at which channel maintenance is most effective. It is the discharge that is most effective at moving sediment, forming or removing bars, forming or changing bends and meanders, and doing work that results in the average morphologic characteristics of channels (Dunne and Leopold 1978). The bankfull stage is the point at which water begins to overflow onto a floodplain. Bankfull may not be at the top of the streambank in incised or entrenched streams.

Bankfull width is the width of the stream channel at bankfull measured in a riffle section.

Buffer Calculations: The **minimum buffer width** for which mitigation credit will be earned is 50 feet. The buffer width will be measured from the top of the stream bank, perpendicular to the channel. If a stream buffer has more than a 2% slope, 2 additional feet of buffer width are required for every additional percent of slope (e.g., minimum width of a 50' buffer with a +10% slope is 70'). Buffer slope will be determined in 50' increments, beginning at the stream and moving away from the stream. No additional buffer width will be required for negative slopes. For the segment of stream being buffered, degree of slope will be determined at 100' intervals, and averaged to obtain a mean degree of slope for calculating minimum buffer width. This mean degree of slope will be used to calculate the minimum buffer width for the entire segment of stream being buffered.

Channel Dimension: The dimension of a stream is its cross-sectional area (bankfull width multiplied by mean depth at bankfull). Changes in bankfull channel dimensions correspond to changes in the magnitude and frequency of bankfull discharge that are associated with water diversions, reservoir regulation, vegetation conversion, development, overgrazing, and other watershed changes. Stream width is a function of occurrence and magnitude of discharge, sediment transport (including sediment size and type), and the stream bed and bank materials.

Channel Features: Natural streams have sequences of riffles and pools or steps and pools that maintain channel slope and stability and provide diverse aquatic habitat. A **riffle** is a bed feature with gravel or larger size particles where the water depth is relatively shallow and the slope is steeper than the average slope of the channel. At low flows, water moves faster over riffles, which provides oxygen to the stream. Riffles are found entering and exiting meanders and control the streambed elevation. Pools are located on the outside bends of meanders between riffles. The pool has a flat slope and is much deeper than the average depth. Step/pool sequences are found in high gradient streams. Steps are vertical drops often formed by large boulders or downed trees. Deep pools are found at the bottom of each step.

Control:

Conservancy means a conservation easement held by a non-profit conservation organization or government agency with natural resource or environmental responsibilities/functions.

POA-CE means the mitigation site is protected by a conservation easement held by a property owners association or other formally chartered non-profit organization.

POA-RC means the mitigation site is protected by a restrictive covenant held by a property owners association or other formally chartered non-profit organization.

Private-CE means the mitigation site is protected by a conservation easement held by a private citizen or business enterprise.

Private-RC means the mitigation site is protected by a restrictive covenant held by a private citizen or business enterprise.

Compensatory Stream Mitigation Definitions of Factors

Subdivided means the mitigation site is protected by a restrictive covenant and different portions of the mitigation site are owned by different citizens or business enterprises.

Types of Compensatory Mitigation:

Stream restoration means actions taken to correct previous alterations that have destroyed, diminished, or impaired the character and function of riverine systems. Restoration is the process of converting an unstable, altered, or degraded stream channel to its natural or referenced stable condition, considering recent and future watershed conditions. This process may include restoration of the stream's geomorphic dimension, pattern and profile and/or biological and chemical integrity, including transport of water and sediment produced by the streams' watershed in order to achieve dynamic equilibrium.

Riparian buffer restoration means implementing stream rehabilitation practices within a riparian buffer zone to improve water quality and/or ecological function. Buffer restoration may include increasing or improving upland buffers or wetlands within or adjacent to riverine systems.

Stream Relocation means moving a stream to a new location to allow a project, authorized under Section 404 of the Clean Water Act, to be constructed in the stream's former location. Relocated streams should reflect the dimension, pattern and profile of natural, referenced stable conditions and have at least a 25' buffer from each bank of the stream in order to receive mitigation credit. This 25' buffer will not receive riparian buffer restoration credit.

Preservation means the conservation, in its naturally occurring or present condition, of a stream, its banks, and riparian buffers, in perpetuity, to prevent their destruction, degradation, or alteration in any manner not authorized by the governing authority. Channel preservation alone will not be accepted without inclusion of a 25' buffer.

Conservation Easement: Conservation Easement means a legally binding, recorded instrument, approved by the Department of the Army's Office of Counsel, that conserves a site in perpetuity.

Credits: For Non-Banks:

Schedule 1: All mitigation is completed before the impacts occur.

Schedule 2: A majority of the mitigation is completed before the impacts, and the remainder is completed concurrent with or after the impacts occur.

Schedule 3: A majority of the mitigation is completed concurrent with the impacts, and the remainder is completed after the impacts occur.

Schedule 4: A majority of the mitigation is initiated after the impacts occur.

Schedule 5: Mitigation will be completed significantly after the impacts occur.

For Stream Mitigation Banks: Release of credits for stream mitigation banks will be determined by the Mitigation Bank Review Team on a case-by-case basis.

Dominant Impact: Dominant impact is the type of impact proposed that will diminish the functional integrity of the riparian system.

Fill means permanent fill of a stream channel.

Compensatory Stream Mitigation

Definitions of Factors

Morphologic alteration means to channelize, dredge, or otherwise alter the established or natural dimensions, depths, or limits of a stream corridor.

Impound means to dam a stream or otherwise convert it to a lentic state. Installation of sediment control structures that modify the stream to facilitate sediment control and/or stormwater management is considered impoundment.

Culvert means to route a stream through pipes, box culverts, or other enclosed structures for <100 feet.

Enhanced culverts are structures that approximate the stream's width/depth ratio at bankfull discharge and that minimize potential impacts to aquatic fauna movement. Floodplains, if present, should be adequately culverted at an elevation equal to or greater than bankfull to pass flows.

Standard Culverts are structures of appropriate size to pass bankfull discharge but that are not specifically designed to approximate the stream's width/depth ratio at bankfull discharge or to minimize potential impacts to fish movements.

Armor means to rip-rap, bulkhead, or use other rigid methods to contain stream channels.

Shading and clearing means activities, such as bridging or streambank vegetation clearing, that reduce or eliminate the quality and functions of the vegetation within the riparian habitat without disturbing the existing topography or soil stratigraphy. Although these impacts may not be directly regulated, mitigation for these impacts may be required if the impact occurs as a result of, or in association with, an activity requiring a permit.

Utility crossings means open cut construction or other pipeline/utility line installation methods that require disturbance of the streambed.

Duration: Duration is the amount of time the adverse impacts are expected to last.

Seasonal means impacts will be limited to times outside of breeding and growth periods for applicable species (Federally listed species and Species of Management Concern, State Species of Concern, and trout).

0 -1 year means impacts will occur within a period of up to one year and recovery of most system integrity will follow the cessation of permitted activity.

Greater than 1 year means project impacts will be permanent for most types of construction activities.

Entrenchment Ratio: The entrenchment ratio is an index value used to describe the degree of vertical confinement of a river channel. It is the ratio of the width of the flood-prone area divided by bankfull width.

Existing Condition: The functional state of a stream before any pre-project/project impacts. This is a measure of the stream's natural stability and resilience relative to the physical, chemical and biological integrity of the system.

Fully functional means that the physical geomorphology of the reach is stable and is representative of an appropriate stream hydrograph for the topographical setting. The biological community is diverse and

Compensatory Stream Mitigation Definitions of Factors

unimpaired by excessive anthropogenic inputs. For purposes of this SOP, a fully functional stream is one that has not been channelized; has no culverts, pipes, impoundments, or other instream manmade structures on site; has 3 or less stream reaches within 0.5 miles upstream that have been culverted, piped, impounded, or otherwise modified by manmade structures; has an appropriate entrenchment ratio and width/depth ratio at bankfull discharge relative to unimpaired stream condition; shows little evidence of human-induced sedimentation; and has a wide riparian buffer of deep-rooted vegetation (>50').

Somewhat Impaired means that stability and resilience of the stream or river reach has been compromised, to a limited degree, through partial loss of one or more of the integrity functions (chemical, physical, biological). System recovery has a moderate probability of occurring naturally. For purposes of this SOP, a stream is considered somewhat impaired if the entrenchment ratio and/or width/depth ratio at bankfull discharge is inappropriate relative to unimpaired stream condition; human-induced sedimentation is moderate; a moderate riparian buffer of deep-rooted vegetation is present (minimum of 25 feet); and/or 3-5 reaches within 0.5 miles upstream have been culverted, piped, impounded, or otherwise modified by manmade structures.

Impaired means that there is a very high loss of system stability and resilience characterized by loss of one or more integrity functions. Recovery is unlikely to occur naturally without further damage, unless restoration is undertaken. For purposes of this SOP, a stream is considered impaired if the reach has been channelized or if the entrenchment ratio and/or width/depth ratio at bankfull discharge is inappropriate relative to unimpaired stream condition; has extensive human-induced sedimentation; has little or no riparian buffer with deep-rooted vegetation (<25'); has banks that are extensively eroded or unstable; and/or >5 reaches within 0.5 miles upstream have been culverted, piped, impounded, or otherwise modified by manmade structures.

Flood-prone Area Width: The width of the flood-prone area is measured in the field at an elevation twice-maximum depth at bankfull. Maximum depth is the difference between the bankfull stage and thalweg elevations in a riffle section.

Kind: In-kind mitigation means the lost functions of the impacted stream will be mitigated through restoration or preservation of a stream of the same general order and/or morphological classification. Out-of-kind mitigation means the lost functions of the impacted stream will be mitigated through restoration or preservation of a stream with a different morphological classification or order (> 2 stream order difference).

Location:

Location is a factor used to compare the relative location of the mitigation site to the impact site. For Stream Mitigation Banks, Location will be defined for the bank after an assessment of the banking proposal. For mitigation proposals not involving mitigation banks, location categories are as shown below.

Onsite means within ½ mile up or downstream of the impact.

Offsite means greater than ½ mile from the impact site, and within the watershed (8-digit HUC as mapped by USGS).

Outside Watershed means the mitigation site is not within the same watershed as the impacts

Compensatory Stream Mitigation Definitions of Factors

Lost Type:

First and Second Order Perennial Streams
Greater than Second Order Perennial Streams
Intermittent Streams

Mean Depth at Bankfull: Mean depth at bankfull is the mean depth of the stream channel cross-section at bankfull stage as measured in a riffle section.

Monitoring and Contingencies: Monitoring and contingency plans are actions that will be undertaken during the mitigation project to measure the level of success of the mitigation work and to correct problems or failures. All projects should include contingency actions that will achieve specified success criteria if deficiencies or failures are found during the monitoring period.

Vegetation monitoring includes measurement of vegetation survival and growth (height, diameter at breast height, or other biomass measure). **Physical parameters** to be monitored include water temperature, DO, turbidity, pH, substrate characteristics, streambank erosion patterns, and longitudinal and cross sectional profiles at sites above, within, and below the stream mitigation project. **Biological parameters** to be monitored include density and diversity of mammals, birds, reptiles, amphibians, fish, macroinvertebrates and other fauna at sites within the stream mitigation project.

Minimum Level M&C:

At least 5 years of vegetation monitoring in restored riparian buffers.

At least 5 years of monitoring physical parameters in preserved/restored/relocated streams.

Moderate Level M&C Plans (not applicable to preservation/relocation):

At least 5 years of vegetation monitoring in restored riparian buffers.

At least 5 years of monitoring physical parameters in restored streams.

Snapshop data on physical parameters in the restored stream or riparian buffer before mitigation is implemented.

Substantial Level M&C:

At least 5 years of vegetation monitoring in restored riparian buffers.

At least 5 years of monitoring physical parameters in preserved/restored/relocated streams.

Snapshop baseline data on physical parameters in the restored stream or riparian buffer before the mitigation is implemented.

At least 5 years of monitoring biological parameters in preserved/restored/relocated streams.

Simultaneous collection of baseline data on physical and biological parameters in a reference site for 5 years.

Excellent Level M&C:

At least 7 years of vegetation monitoring in restored riparian buffers.

At least 7 years of monitoring physical parameters in preserved/restored/relocated streams.

Snapshop baseline data on physical parameters in the restored stream or riparian buffer before the mitigation is implemented.

At least 7 years of monitoring biological parameters in preserved/restored/relocated streams.

Simultaneous collection of baseline data on physical and biological parameters in a reference site for 7 years.

Compensatory Stream Mitigation Definitions of Factors

Net Benefit: Net benefit is an evaluation of the proposed mitigation action relative to the restoration, enhancement, and maintenance of the chemical, biological, and physical integrity of the Nation's waters. Stream mitigation within 100' of a culvert, dam, or other project impact to waters of the United States generally will generate only the minimal level of restoration or preservation credit due to upstream and downstream impacts associated with these structures. NOTE: Calculating credit for installation of restoration structures will be based on 3X the length of the appropriate size structure (e.g., 600' for 200' of tree revetment).

Excellent stream restoration actions include:

Removing stream impoundments and restoring stream channels to referenced, stable morphologic patterns

Restoring appropriate bankfull discharge width, stream sinuosity, entrenchment ratio, and width/depth ratio to referenced morphologic patterns

Creating floodplains of appropriate dimensions adjacent to streams with inappropriately low width/depth ratios at bankfull discharge.

Construction of off-channel stormwater detention facilities in areas where runoff is accelerating streambank erosion. Off-channel stormwater detention facilities should not be placed in jurisdictional wetlands, forested floodplains, or riparian buffer zones.

Watershed improvement actions, such as sediment reduction (i.e., paving dirt roads sloping to a stream), contaminant reduction, and stormwater surcharge reduction.

Restoring channels for piped or culverted streams (i.e., daylighting) to referenced, stable morphologic patterns

Implementing restoration activities that will improve water quality or reduce sedimentation in State of Georgia primary trout streams or waters with Federal or State listed endangered or threatened species

Good stream restoration actions include:

Restoring streambank stability using non-rigid methods in highly eroded areas

Restoring natural channel features (i.e., riffle/run/pool/glide habitat) using methodology appropriate to stream type

Reducing nonpoint pollution sources by methods other than buffering

Implementing restoration activities that will improve water quality or reduce sedimentation in State of Georgia secondary trout streams or waters with Federal Species of Management Concern or State listed rare or uncommon species

Moderate stream restoration actions include:

Restoring streambank stability in moderately eroded areas

Constructing fish ladders, where appropriate

Culverting floodplains at existing road crossings to allow more natural flood flows

Adding woody debris to create fish habitat, where appropriate to stream type

Replacing inappropriately sized/designed culverts

Removing checkdams, weirs, and other manmade instream structures where these structures are contributing to bank erosion or scour

Excellent riparian restoration actions include:

Restoring vegetated riparian buffers at least 3X as wide as the minimum buffer width on both sides of a stream

Compensatory Stream Mitigation Definitions of Factors

Restoring vegetated riparian buffers at least 2X as wide as the minimum buffer width on both sides of a State of Georgia primary trout stream or a stream with Federal or State listed endangered or threatened species

Fencing livestock from a riparian buffer at least 75' wide on both sides of a stream, if one or more livestock crossings are planned, or from a buffer 50' wide on both sides of a stream if no livestock crossings are planned

Good riparian restoration actions include:

Restoring vegetated riparian buffers at least 4X as wide as the minimum buffer width on one side of a stream or 2X as wide as the minimum width on both sides of a stream

Restoring a vegetated riparian buffer of at least minimum buffer width on both sides or at least 2X minimal buffer width on one side of a State of Georgia primary trout stream or a stream with Federal or State listed endangered or threatened species

Restoring vegetated riparian buffers at least 2X as wide as the minimum buffer width on both sides of a State of Georgia secondary trout stream or a stream with Federal Species of Management Concern or State listed rare or uncommon species

Fencing livestock from a riparian buffer at least 50' wide on both sides of a stream, if one or more livestock crossings are planned, or from a buffer 25' wide on both sides of a stream if no livestock crossings are planned

Moderate riparian restoration actions include:

Restoring vegetated riparian buffers at least 3X as wide as the minimum buffer width on one side of a stream or 1X as wide as the minimum buffer width on both sides of a stream

Restoring a vegetated riparian buffer of at least minimum buffer width on one side of a State of Georgia primary trout stream or a stream with Federal or State listed endangered or threatened species

Restoring vegetated riparian buffers of at least minimal buffer width on both sides or at least 2X minimal width on one side of a State of Georgia secondary trout stream or a stream with Federal Species of Management Concern or State listed rare or uncommon species

Fencing livestock from a riparian buffer at least 25' wide on both sides of a stream (with livestock crossings planned) or 75' wide on one side of a stream (no livestock crossings planned)

Low riparian restoration actions include:

Restoring vegetated riparian buffers at least 2X as wide as the minimum buffer width on one side of a stream.

Restoring a vegetated riparian buffer of at least minimum buffer width on one side of a State of Georgia secondary trout stream or a stream with Federal Species of Management Concern or State listed rare or uncommon species

Fencing livestock from a riparian buffer at least 75' wide on one side of a stream, if one or more livestock crossings are planned, or from a buffer 50' wide on one side of a stream if no livestock crossings are planned

Minimal riparian restoration actions include:

Restoring vegetated riparian buffers of at least minimum buffer width on one side of a stream.

Fencing livestock from a riparian buffer at least 50' wide on one side of a stream, if one or more livestock crossings are planned, or from a buffer 25' wide on one side of a stream if no livestock crossings are planned

Compensatory Stream Mitigation

Definitions of Factors

A **well-designed relocated stream** has an appropriate geomorphic dimension, pattern and profile, maintains the capacity to transport bedload sediment, and is constructed with at least a 25' riparian buffer on each side of the stream.

A **minimally-designed relocated stream** has an appropriate geomorphic dimension, pattern, and profile and the streambanks are stabilized with tree revetments, willow plantings, or other non-rigid measures. **No mitigation credit is generated for relocated streams that are riprapped, constructed with concrete, or serve as stormwater conduits.**

Excellent preservation actions include:

Preserving vegetated riparian buffers at least 3X as wide as the minimum buffer width on both sides of a stream

Preserving vegetated riparian buffers at least 2X as wide as the minimum buffer width on both sides of a State of Georgia primary trout stream or a stream with Federal or State listed endangered or threatened species

Good preservation actions include:

Preserving vegetated riparian buffers at least 4X as wide as the minimum buffer width on one side of a stream or 2X as wide as the minimum buffer width on both sides of a stream

Preserving a vegetated riparian buffer of at least minimum buffer width on both sides or at least 2X minimal buffer width on one side of a State of Georgia primary trout stream or a stream with Federal or State listed endangered or threatened species

Preserving vegetated riparian buffers at least 2X as wide as the minimum buffer width on both sides of a State of Georgia secondary trout stream or a stream with Federal Species of Management Concern or State listed rare or uncommon species

Moderate preservation actions include:

Preserving vegetated riparian buffers at least 3X as wide as the minimum buffer width on one side of a stream or 1X as wide as the minimum buffer width on both sides of a stream

Preserving a vegetated riparian buffer of at least minimum buffer width on one side of a State of Georgia primary trout stream or a stream with Federal or State listed endangered or threatened species

Preserving vegetated riparian buffers of at least minimal buffer width on both sides or at least 2X minimal width on one side of a State of Georgia secondary trout stream or a stream with Federal Species of Management Concern or State listed rare or uncommon species

Low preservation actions include:

Preserving vegetated riparian buffers at least 2X as wide as the minimum buffer width on one side of a stream.

Preserving a vegetated riparian buffer of at least minimum buffer width on one side of a State of Georgia secondary trout stream or a stream with Federal Species of Management Concern or State listed rare or uncommon species

Minimal preservation actions include:

Preserving vegetated riparian buffers of at least minimum buffer width on one side of a stream.

Preserving stream channel, with at least 25' buffers on both sides of stream. No credit for channel preservation if only one bank of the stream has a 25' buffer.

Compensatory Stream Mitigation Definitions of Factors

Non-profit Organization: Non-profit organization means an entity recognized and operating under the rules of the Internal Revenue Services for non-profit purposes.

Priority Areas: These are stream and riverine systems with various levels of functional attributes that contribute to their existing physical, chemical and biological state. They may be systems that also have a high social, cultural, or economic component.

Primary Priority: These areas provide important contributions to biodiversity on an ecosystem scale or high levels of function contributing to landscape or human values. Impacts to these areas should be rigorously avoided or minimized. Compensation for impacts in these areas should emphasize replacement nearby and in the same immediate 8-digit watershed. Designated **primary priority** areas include:

National Estuarine Research Reserves	Streams in greenways corridors
Wild and Scenic Rivers	Anadromous fish spawning habitat
Designated shellfish grounds	State Heritage Trust Preserves
Outstanding Resource Waters	Waters adjacent to Federal or State
Essential Fish Habitat	protected areas or other mitigation sites
Waters on the 303(d) list	Waters officially designated by State or
Primary trout streams	Federal agencies as high priority
Federal or State listed threatened or endangered species waters	

Secondary Priority: Secondary priority areas include:

Waters with Federal Species of Management Concern or State listed rare or uncommon species
Secondary trout streams
Stream and river reaches within 0.5 mile upstream or downstream of primary priority reaches
Stream or river reaches within high growth areas that aren't ranked as primary priority systems
Stream or river reaches within 0.5 miles of a groundwater recharge area
Stream or river reaches within 0.5 miles of a drinking water withdrawal site

Tertiary Priority: These areas include all other freshwater or tidally influenced lotic systems not ranked as primary or secondary priority.

Size of Impact: Cumulative impact means the total linear feet of stream impacted by the project.

Stable Stream: A naturally stable stream channel is one that maintains its dimension, pattern, and profile over time such that the stream does not degrade or aggrade. Naturally stable streams must be able to transport the sediment load supplied by the watershed. Instability occurs when scouring causes the channel to incise (degrade) or when excessive deposition causes the channel bed to rise (aggrade).

Sinuosity and Stream Pattern: Stream pattern describes the view of a stream channel as seen from above. Streams are rarely straight; they tend to follow a sinuous path across a floodplain. Sinuosity of a stream is defined as the ratio of channel length/valley length. In addition to slope, the degree of sinuosity is related to channel dimensions, sediment load, streamflow, and the bed and bank materials.

Compensatory Stream Mitigation Definitions of Factors

Stream Profile: The profile of a stream refers to its longitudinal slope. At the watershed scale, channel slope generally decreases in the downstream direction with commensurate increases in streamflow and decreases in sediment size. Channel slope is inversely related to sinuosity, so steep streams have low sinuosities and flat streams have high sinuosities.

Threat: Threat is an assessment of the level of imminent risk of loss or damage to a system.

Width/Depth Ratio: The width/depth ratio is an index value that indicates the shape of the channel cross-section. It is the ratio of the bankfull width divided by the mean depth at bankfull.

STREAM MITIGATION WORKSHEETS

ADVERSE IMPACT TABLE

Factors	Options								
Loss Type	Intermittent 0.3			>2 nd Order Perennial Stream 0.5			1 st or 2 nd Order Perennial Stream 0.7		
Priority Area	Tertiary 0.1			Secondary 0.2			Primary 0.4		
Existing Condition	Impaired 0.1			Somewhat Impaired..... 0.5			Fully Functional 0.8		
Duration	Seasonal 0.05			0-1 Year 0.1			> 1 Year 0.2		
Dominant Impact	Shade/Clear 0.05	Utility X-ing 0.1	Armor 0.15	Detention (weir) 0.75	Road X-ing 1.0	Impound (dam) 1.5	Morphologic 2.0	Pipe 2.5	Fill 3.0
Linear Distance	<100 0	100-200 0.05	201-500 0.1	501-1000 0.2	1001-2000 0.4	2001-3000 0.6	3001-4000 0.8	4001-5000 1.0	>5000 N/A

Factor	Area 1	Area 2	Area 3	Area 4	Area 5
Loss Type					
Priority Area					
Existing Condition					
Duration					
Dominant Impact					
Linear Distance					
Sum of Factors	M =				
Linear Feet Impact	A =				
M X A					

Total Mitigation Credits Required = (M X A) = _____

STREAM MITIGATION WORKSHEETS

**STREAM AND RIPARIAN RESTORATION MITIGATION FACTORS
FOR RIVERINE SYSTEMS**

Factors	Options								
Net Benefit	Riparian Restoration					Stream Restoration			
	Minimal 1-2	Low 1-3	Moderate 1-4	Good 1-7	Excellent 1-9	Moderate 1-6	Good 2-0	Excellent 3-0	
Monitoring/Contingency	Minimal 0-1		Moderate 0-2		Substantial 0-3		Excellent 0-4		
Priority Area	Tertiary 0-05			Secondary 0-1			Primary 0-15		
Location	Outside Watershed 0-1			Offsite 0-5			Onsite 1-0		
Control	Sub-divided 0	Private-RC 0-05	Private-CE 0-1	POA-RC 0-1		POA-CE 0-15		Conservancy 0-2	
Kind	Out-of-Kind 0				In-Kind 0-1				
Credits	Schedule 5 0		Schedule 4 0-02		Schedule 3 0-05		Schedule 2 0-08		Schedule 1 0-1

Factors	Area 1	Area 2	Area 3	Area 4	Area 5
Net Benefit					
Monitoring/Contingency					
Priority Area					
Location					
Control					
Kind					
Credits					
Sum Factors	M =				
Linear Feet	A =				
M X A					

Total Restoration Credits = (M X A) = _____

0.9
0.2
0.05
0.1
0.1
0.25

Attachment 1. Worksheet of Debits owed by Genesis as Calculated by the Trustees

STREAM MITIGATION WORKSHEETS

ADVERSE IMPACT TABLE

Factors	Options								
	Lost Type	Intermittent 0.3			>2nd Order Perennial Stream 0.5			1st or 2nd Order Perennial Stream 0.7	
Priority Area	Tertiary 0.1			Secondary 0.2			Primary 0.4		
Existing Condition	Impaired 0.1			Somewhat Impaired 0.5			Fully Functional 0.8		
Duration	Seasonal 0.05			0-1 Year 0.1			> 1 Year 0.2		
Dominant Impact	Shade/Clear 0.05	Utility X-ing 0.1	Armor 0.15	Detention (weir) 0.7	Road X-ing 1.0	Impound (dam) 1.5	Morphologic 2.0	Pipe 2.5	Fill 3.0
Linear Distance	<100 0	100-200 0.0	201-500 0.1	501-1000 0.2	1001-2000 0.4	2001-3000 0.6	3001-4000 0.8	4001-5000 1.0	>5000 N/A

Factor	Area 1	Area 2	Area 3	Area 4	Area 5
Lost Type	0.3	0.3	0.7		
Priority Area	0.1	0.1	0.1		
Existing Condition	0.1	0.5	0.5		
Duration	0.2	0.2	0.2		
Dominant Impact	2.0	1.0	1.0		
Linear Distance	1.0	1.0	1.0		
Sum of Factors	M= 3.7	3.1	3.5		
Linear Feet impact	A= 4354	8666	10900		
M X A	16109.8	26864.6	38150		

Total Mitigation Credits Required = (M X A) = 81124.4

Attachment 2. Calculation of Credits earned by Genesis for on-site Stream Restoration Project

STREAM MITIGATION WORKSHEETS

**STREAM AND RIPARIAN RESTORATION MITIGATION FACTORS
FOR RIVERINE SYSTEMS**

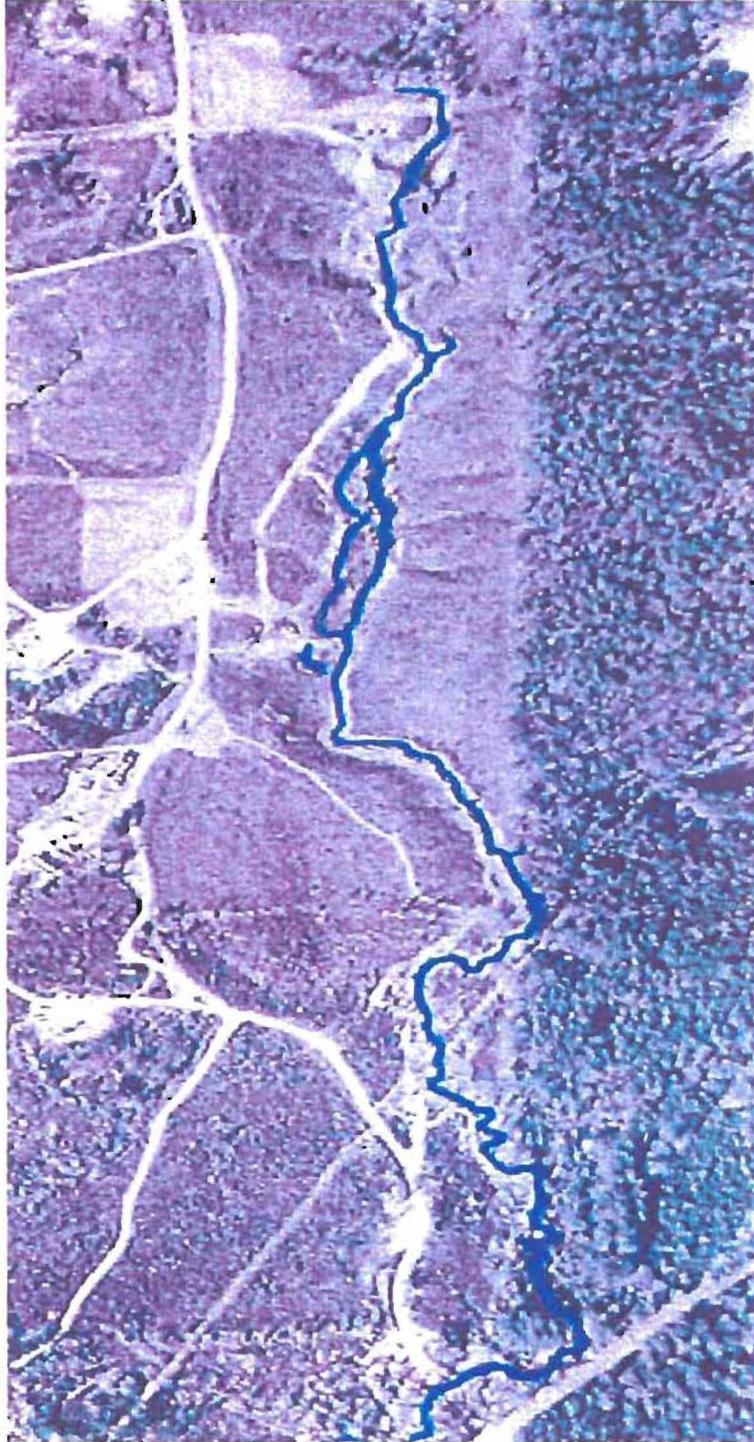
Factors	Options								
Net Benefit	Riparian					Stream Restoration			
	Minimal 1.2	Low 1.3	Mod- erate 1.4	Good 1.7	Ex- cellent 1.9	Mod- erate 1.6	Good 2.0	Excellent 3.0	
Monitoring/ Contingency	Minimal 0.1		Moderate 0.2		Substantial 0.3		Excellent 0.4		
Priority Area	Tertiary 0.05			Secondary 0.1			Primary 0.15		
Location	Outside Watershed 0.1			Offsite 0.5			Onsite 1.0		
Control	Sub- divided 0	Private-RC 0.0	Private -CE 0.1	POA-RC 0.1		POA-CE 0.15		Conservancy 0.2	
Kind	Out-of-Kind 0				In-Kind 0.1				
Credits	Schedule 5 0		Schedule 4 0.02		Schedule 3 0.05		Schedule 2 0.08		Schedule I 0.1

Factors	Area 1	Area 2	Area 3	Area 4	Area 5
Net Benefit	2	1.6			
Monitoring/ Contingency	0.2	0.2			
Priority Area	0.05	0.05			
Location	1	1			
Control	0.05	0.05			
Kind	0.1	0.1			
Credits	0	0			
Sum Factors	M = 3.4	3.0			
Linear Feet	A = 5530	2545			
M X A =	18802	7635			

Total Restoration Credits = (M X A) = 26,437

**Appendix 11 - Stream Restoration Plan developed by The Nature Conservancy
for this Incident**

**Conceptual Restoration Plan
For
Unnamed Tributary to Leaf River, Collins MS.**



October 12, 2002/ Edited May 24, 2004

Table of Contents

- 1.0 Existing Site Conditions
 - 1.1 Conditions of watershed
 - 1.2 Conditions of existing channel

- 2.0 Conceptual Restoration Strategies
 - 2.1 Prescribed Conceptual Operational Plan for the Restoration of Subject Stream Reach
 - 2.2 Discussion of Prescribed Restoration Strategies and Techniques

- 3.0 Stream Mitigation Credit Production
 - 3.1 Methodologies used
 - 3.2 Estimated credits produced by the conceptual restoration plan

1.0 Existing Site Conditions

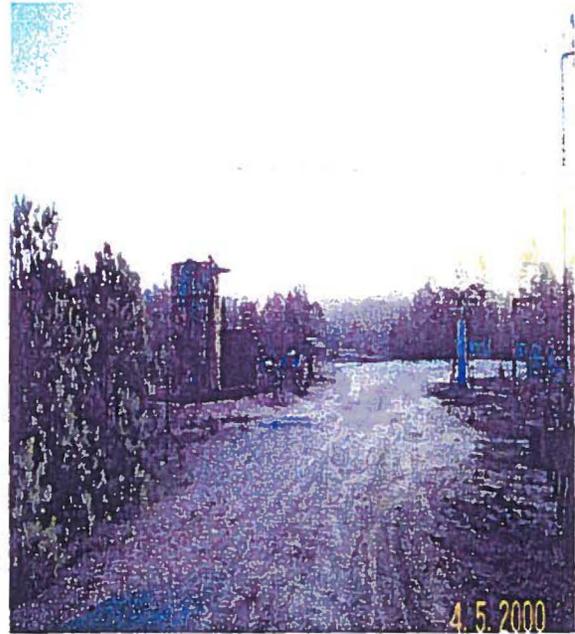
1.1 Existing Condition of Subject Watershed

The existing condition of the subject watershed was determined by aerial photo analysis and field visits to the subject site during 2002. The dominant land-use within the subject watershed is Loblolly Pine plantations with a high-intensity rotational harvest / replant cycle. This type of forest management most often causes excessive erosion in moderately steep channels and floodplains, due mainly to changes in the hydrologic regime, changes in sediment discharge, and the amount of coarse organic (woody) debris entering the channel. The second most prevalent land-use that occurs within the subject watershed is petroleum exploration and production. The scale of this land-use can swing wildly with market fluctuations and could become a potential source for future development pressure (land clearing and increased runoff). The subject watershed is entirely in private land ownership and thusly enjoys no restrictive covenants or conservation easements to date. This may greatly reduce the chance for the stream channel to reach a stable (dynamic equilibrium) state for its desired future condition (DFC).

Figure 1.1.a



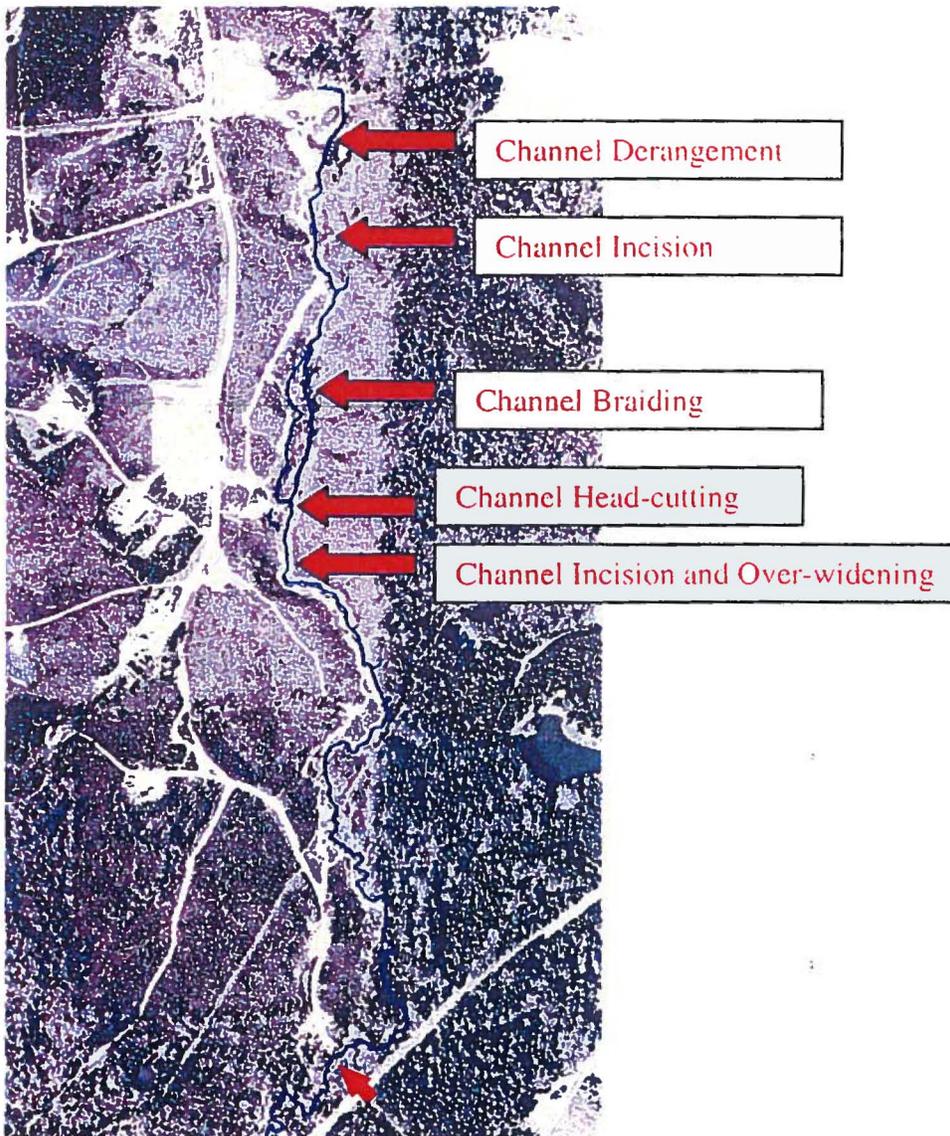
Figure 1.1.b



1.2 Existing Condition of Subject Channel Reach

The existing condition of the subject channel reach was determined by site visits and a pedestrian survey of the entire channel length during 2002. While conducting the pedestrian survey we performed a coarse scale assessment of the subject channel's geomorphic stability. We found the subject stream channel to be in very unstable condition. We recognized the following five major exhibitions of geomorphic instability: 1.) Channel derangement, 2.) Channel braiding, 3.) Channel incision, 4.) Rotational bank failure, 5.) Head-cut migration. The most severe perturbation to the subject channel within our study reach is the head-cut migration. We surveyed the entire channel from the headwater area down to the subject channel's confluence with the Leaf River. We observed many head-cutting knick-points that are eroding headward (in the upstream direction) as the subject stream works to flatten its gradient (slope along the longitudinal profile). Please refer to attached Power Point Slides for additional site photographs.

Figure x



2.0 Conceptual Restoration Strategies

2.1 Prescribed Conceptual Operational Plan for the Restoration of Subject Stream Reach

The prescribed conceptual restoration strategies for the subject stream reach will be implemented using the following three phase operational plan:

Phase 1.

- Locate and Measure Stable Reference Stream Reach with the similar watershed landuses and watershed properties as the Subject Stream Reach.
- Develop Preliminary Construction Design Plans
- Submit 30% Design Plans to Regulatory Agencies and Incorporate Agency Feedback
- Submit 60% Design Plans to Regulatory Agencies and Incorporate Agency Feed back
- Submit 90% Design Plans to Regulatory Agencies and Incorporate Agency Feedback
- Finalize Design Plans and Submit Plans to Agency and Contractors

Phase 2.

- Salvage and depot any existing vegetation to be transplanted post construction
- Divert Stream Flow to a stabilized diversion ditch for the duration of the construction phase and implement erosion control measures to reduce and abate site runoff to the downstream reach
- Conduct earth work operations to grade and cut the subject stream reach and floodplain to design plan specifications
- Install bioengineering treatments to channel and floodplain
- Relocate the transplanted vegetation to appropriate areas and reforest the remaining riparian buffer zones
- Conduct as-built post construction survey and establish monumented cross-sections and longitudinal profiles for the restored channel and floodplain

Phase 3.

- Route the stream flow through newly constructed channel and observe channel adjustments to flow
- Conduct post construction monitoring of the stream channel geomorphic stability
- Prepare a condition report each year for a five year duration

2.2 Discussion of Prescribed Restoration Strategies and Techniques

The goal of the restoration plan is to realign and construct a channel and floodplain with the appropriate planform, profile, and cross-sectional area to remain stable overtime. The prescribed treatment is to use heavy construction equipment to grade an adequate floodplain (width, gradient, and features) that allows for the reestablishment of appropriate sinuosity of the stream channel. To enhance the hydraulic residence time for the watershed there will be additional high-flow channels constructed offline from the main channel that will connect constructed oxbows with the main channel during high flow events. As presented in the watershed land-use discussion, the stream channel will be subjected to significant disturbance at an average thirty-year frequency due to high intensity forestry practices. During site visits with Agency personnel, we discussed offline channel water features (oxbows or floodplain pools) to enhance ecosystem functions and to provide additional habitat for wildlife. A major function of the floodplain pools would be the addition of flood flow storage. These features while

providing habitat will also store floodwaters and attenuate flows allowing more treatment time of sediment-laden waters. This benefit will assist the riparian buffers in mitigating for the excessive sediment and increased water runoff that will result from future timber clear-cuts within the subject watershed. Using the floodplain pools to slow flows down in consortium with using bioengineering treatments such as log J Hook Cross Vanes and log Grade Stabilization Structures will greatly enhance the subject stream reach's ability to remain stable. native hardwood logs will be used to provide grade stabilization along the longitudinal profile and root-wads will be used where appropriate to increase the surface roughness of the channel banks.

Live staking will be used on the banks of the newly constructed channel to stabilize the disturbed soil. The typical live staking treatment for the type of soils that we will be working with is a one-foot by one-foot spacing with willow bundles set horizontally to interface the bankfull flow elevation. A native seed mix along with transplanted sedges and rushes will be used to quickly stabilize the channel edges and top of banks. The establishment of vegetation and the reforestation efforts will be scheduled with sufficient time to establish roots prior to the redirecting of stream flow to the newly constructed channels and floodplain pools.

The riparian buffers will be planted in accordance with the guidelines set forth by the USACE Savannah Stream Mitigation Standard Operating Procedure regarding buffer widths to generate stream restoration credits. The designated riparian zones will be reforested (hand planted) with an appropriate native hardwood community with a stand stocking density of eight foot by eight foot centers.

With proper adjustments to channel planform, profile, and cross-section along with the proper application of bioengineering treatments and riparian buffer establishment the subject stream reach is fully expected to reach a level that approaches geomorphic stability. Although it will be highly unlikely that the subject stream reach will attain a state of dynamic equilibrium given the repetitive disturbance of clear-cutting. We predict that the rates of channel bed and bank erosion measured on the newly constructed channel will be equal to or less than the natural streams in the surrounding area and watershed that are experiencing similar landuses and landcover perturbations.

3.0 Stream Mitigation Credit Production

3.1 Methodologies Used

The methods used to determine stream restoration credit production for the conceptual restoration plan was the USACE Savannah District SOP-Stream Mitigation Worksheet.

3.2 Estimated Credits Produced by the Conceptual Restoration Plan

The prescribed conceptual restoration plan for the subject stream reach will result in the restoration of 5,530 linear feet of Priority One geomorphic restoration and 2545 linear feet of Priority Three geomorphic restoration. The prescribed restoration scenario will produce a total of 26,437 stream restoration credits. The restoration of the mainline subject channel and the creation of the offline high flow channels and floodplain pools will produce approximately 18,802 stream restoration credits. The restoration and stabilization of the channels in area two will produce an additional 7635 stream restoration credits. The stream credit production summary is depicted in table 3.2.a.

Table 3.2.a

Stream Mitigation Worksheets									
Stream and Riparian Restoration Mitigation Factors For Riverine Systems									
Factors	Options								
Net Benefit	Riparian Restoration				Stream Restoration				
	Minimal 1.2	Low 1.3	Moderate 1.4	Good 1.7	Excellent 1.9	Moderate 1.6	Good 2.0	Excellent 3.0	
Monitoring g/	Minimal 0.1		Moderate 0.2		Substantial 0.3		Excellent 0.4		
Priority Area	Tertiary 0.05				Secondary 0.1		Primary 0.15		
Location	Outside Watershed 0.1				Offsite 0.5		Onsite 1		
Control	Subdivided 0		Private-RC 0.05		Private-CE 0.1		POA_RC 0.1	POA-CE 0.15	Conservancy 0.2
Kind	Out-of-Kind 0				In-Kind 0.1				
Credits	Schedule 5 0		Schedule 4 0.02		Schedule 3 0.05		Schedule 2 0.08	Schedule 1 0.1	

Factors	Area 1	Area 2	Area 3	Area 4	Area 5
Net Benefit	2	1.6			
Monitoring g/ Contingency	0.2	0.2			
Priority Area	0.05	0.05			
Location	1	1			
Control	0.05	0.05			
Kind	0.1	0.1			
Credits	0	0			
Sum of Factors (M) =	3.4	3	0	0	0
Linear Foot Impact (A) =	5530	2545			
M(A) =	18802	7635	0	0	0
Total Restoration Credits = M(A) =					26437

GENESIS STREAM RESTORATION

Construction Plans for Restoration Activities

Phases:

Construction of all restoration activities shall be conducted in phases. The site is currently set up to include five phases. *Phase 1* shall be devoted to excavating the ground water treatment oxbow in vicinity of station 2+50 and the large oxbow lake in vicinity of station 31+00. These lakes will serve multiple purposes throughout construction implementation. The ground water treatment oxbow lake at station 2+50 will receive NPDES discharge from the ground water treatment system. *Phase 2* will include all construction of both the new stream channel and all structures between the new stream channel stations 31+50¹ and 47+60. Any activities involving the pipes at the end of the project area shall be implemented during this phase. *Phase 3* shall include all construction/restoration activities between new stream channel stations 0+00 and 17+00. *Phase 4* continues beyond phase 3 beginning at station 17+00 and ending at station 31+50. Activities include bank stabilization, new channel construction and bioengineering. During phase 4, the new tributary and all structures associated with the oxbow lake will also be constructed. *Phase 5* will include all construction/restoration activities beyond station 47+60. Activities include bank stabilization and bioengineering.

Water Diversion:

A water diversion plan shall be implemented to allow any and all construction/restoration activities to be conducted in the driest conditions possible. This includes the new stream channel and the new tributary channel and all structures associated with these channels to be constructed to for the purpose of minimizing erosion and sedimentation. The proposed diversion technique is currently phased to provide drier conditions throughout construction. *Phase 1* of the water diversion will be to reactivate an abandoned channel and will be located between stations 5+00 and 20+00. *Phase 2* of the water diversion includes routing water into the existing channel at station 20+00 and then flows into a trench that is connected to the oxbow lake. *Phase 3* of the water diversion involves creating a channel in such a manner that all water is routed into the previously constructed oxbow lake. The existing stream channels shall be "plugged" with impervious select material to divert water into any trenches and the lake. The water shall then be pumped from the lake to a downstream location beyond the construction phase 2 working limits. A settling basin shall be placed at the end of all diversions to trap sediment before water re-enters the lake or stream. All trenches shall be lined with filter fabric to reduce erosion.

Grading/Staging Areas:

¹ Station numbering (37+50, 41+20, etc.) corresponds to the "stream stations" (3750', 4120', etc.) as depicted on Map Page 3 of 3.

Several areas have been designated to provide the project site with staging areas for materials and equipment. These areas include may need additional grading for the purposes of increasing the floodplain boundary or for any material needed to fill the existing channels. Not all staging areas will need to be graded.

Clay Source Areas:

Clay material shall be needed throughout construction and used as impervious select material to prevent the new stream channel from reoccupying the existing (degraded) channel. The designated areas have been verified in the field and shall be used as needed.

Stream/Diversion Crossings:

Two crossings will be needed to complete construction. One shall be placed near station 9+00 to provide equipment access to the adjoining clay source and phase 1 of the water diversion. Another crossing will allow access of heavy equipment to cross phase 3 of the water diversion. This crossing will consist of water flowing through a pipe large enough to support the weight of heavy equipment.

Tributaries:

Two tributaries flow into the project stream; one located at station 16+50 and the other at station 45+50. The confluence of each tributary shall be adjusted to match the grade of the newly constructed stream channel.

Oxbow Lake:

The oxbow lake shall be immediately excavated before any stream construction begins. This lake will serve multiple purposes. Two depth elevations are planned for the lake. The deepest area of the lake shall be up to 12 feet in depth. The shallow water area shall be at a depth of one foot or less to allow growth of emergent wetland vegetation.

Structures:

The new stream channel will be constructed with various structures placed strategically to protect the integrity of the new channel and to provide the stream with additional habitat. Currently, a palette of five "hard" structures are planned to be used as follows:

1. *Rootwads*-- This provides the stream with bank slope protection in the meanders, energy dissipation, and habitat for invertebrates and small fish.
2. *Log sills*-- Sills will be used to maintain grade in the new channel.
3. *J-Hook Vanes*-- These will be used to control grade, dissipate energy, prevent streambank erosion, and to provide pool habitat.
4. *Cross Vanes*-- Cross Vanes will be used to maintain grade where all tributaries are located.

5 *Notched Log Sill*-- This will be used at station 25+00. This allows the constructed tributary to be accessed during flooding.

New Stream Channel:

The new stream channel planned to be constructed is approximately 4800 linear feet and the new tributary channel is approximately 620 linear feet in length. Typical cross sections of the new stream and tributary channel are included. Two stream types will be constructed. Prior to station 31+50, the channel shall correspond to the parameters of the Rosgen classification of an "E". Below station 31+50, the "E" channel will transition into a "B" channel before eventually becoming a "Bc".

Existing Channel:

The existing channel shall be abandoned and filled with material excavated from the new channel. Impervious plugs shall be strategically placed along the new channel to prevent the new stream from re-occupying the previous channel.

Bioengineering:

Bank stabilization shall include a combination of techniques using native plants, biodegradable materials, and log structures to prevent erosion. Various techniques shall be used throughout the project as needed. Stone shall not be used in any of the construction involving the stream channel, tributary channel, or the oxbow lake. Stone may be used at the settling basins and at the pipe structures at the end of the project site.

Post Construction Monitoring:

Hydraulic/ Hydrologic Data:

There will be an established hydrologic monitoring network consisting of a pressure transducer surveyed in and utilized as a stage discharge gauge. There also will be an established rain gage with an in situ digital data logger to collect hydrologic runoff data.

Geomorphic Monitoring: (Channel Planform, Thalweg Profile, Channel Cross Section)

There will be 10 monumented channel cross sections established for the purpose of demonstration of stream restoration success and overall channel geomorphic stability. The channel cross section locations are referenced on the plan set. Thalweg profiles will tie into and reference each cross section set (such as Pool X Section 1-Riffle X Section 1). The thalweg profile will begin one full meander arc length upstream of each cross section set such as Pool X Section 1 and will end one full meander arc length downstream of the lower cross section of the cross section set such as Riffle X Section 1. Planform mapping will be conducted in the detailed study reaches where the cross sections and thalweg profiles are located.

Photographic Monitoring:

There will be twenty fixed point panoramic photographic stations established with two of the stations being established within each of the five thalweg profile study reaches. The photography will be conducted biannually and referenced in project reporting.

Sedimentological Monitoring:

There will be pebble counts conducted within each of the five study reaches following the project's post construction completion date. The pebble counts will be conducted at a frequency of years one, three, and five. The purpose of the pebble counts is to demonstrate the trend of coarse to fine sediments during channel stabilization and vegetation establishment.

Vegetation Survival and Recruitment Monitoring:

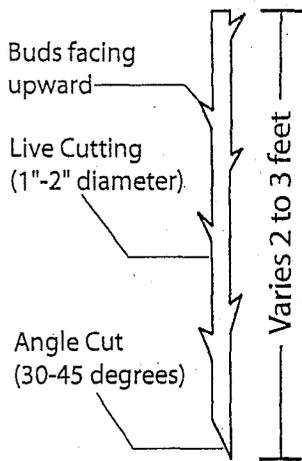
There will be five vegetative sampling belt transects established, one within each study reach that crosses perpendicular to the thalweg profiles. Along each belt transect 15 square feet sampling plots will be established and monumented. The vegetation communities and densities will be sampled annually for the purpose of project success reporting and documentation.

Remedial Action Plan:

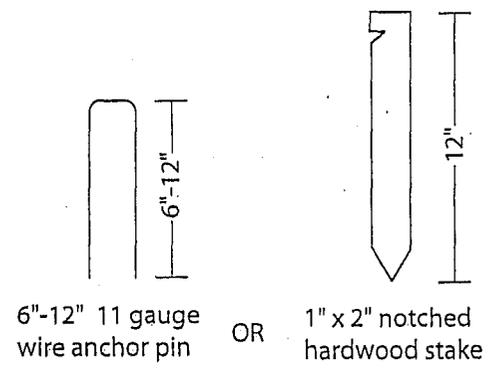
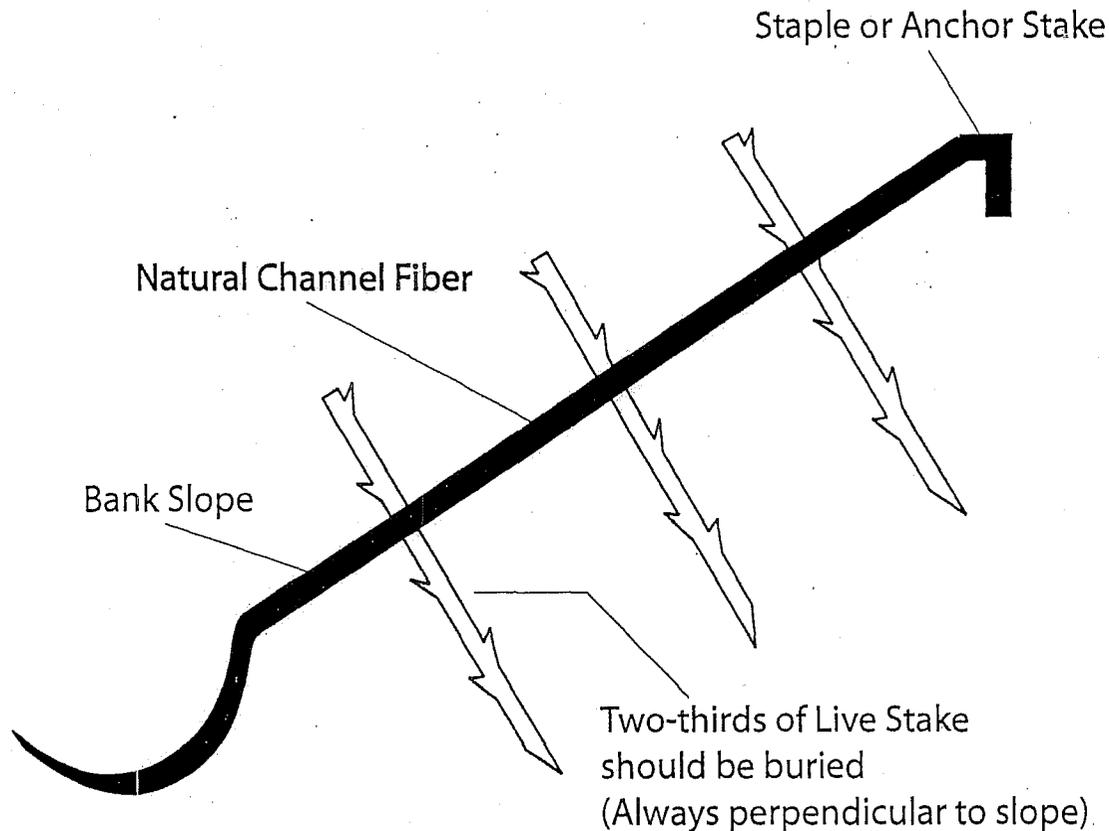
Remedial actions would begin following the discovery of structural failures and or failure in bioengineering treatments. Once structural failures were identified corrective actions would begin within sixty days of discovery or notification. Vegetation transplantation or reestablishment will be conducted during the dormant season following problem notification. All corrective actions will be situational dependant on the threat severity, the weather conditions, etc... The remedial action plan will be funded by a trust fund that was estimated at twenty percent of the project construction budget. This will ensure that post construction touch up work will be completed. The fund will also assist with the costs associated with post construction monitoring and reporting.

Anticipated Work Schedule:

All phases of construction, planting, and bioengineering treatment installation shall have a four month window to complete work. This includes any days lost due to inclement weather conditions, poor site conditions, or equipment failure. Any changes to the design plans made following the date of final approval are subject to increase the window of time for completion.



LIVE STAKE

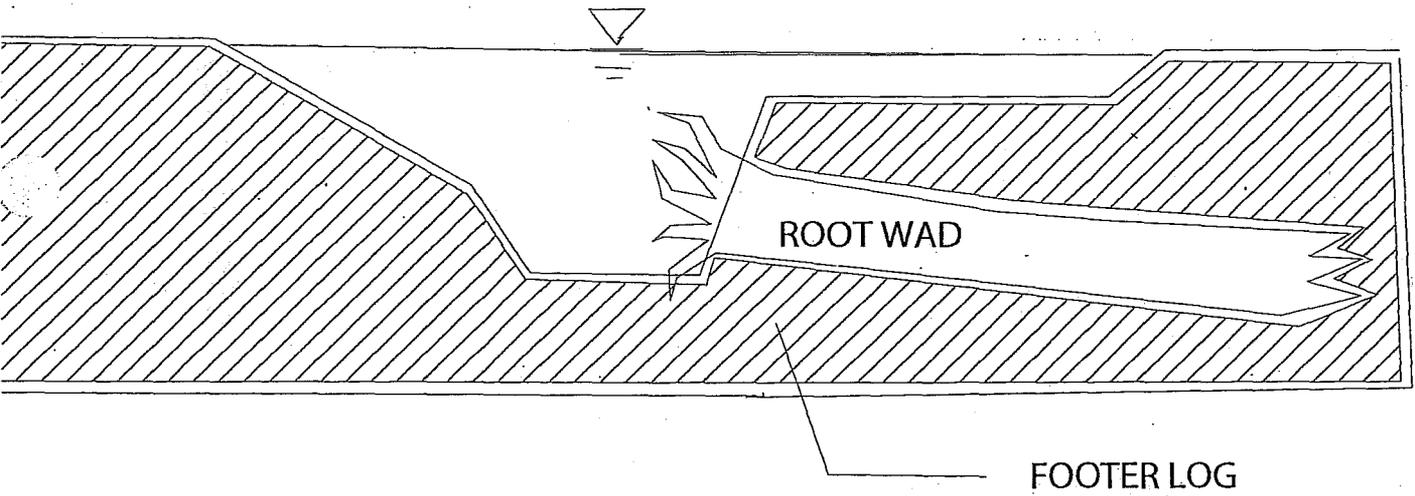


Anchoring

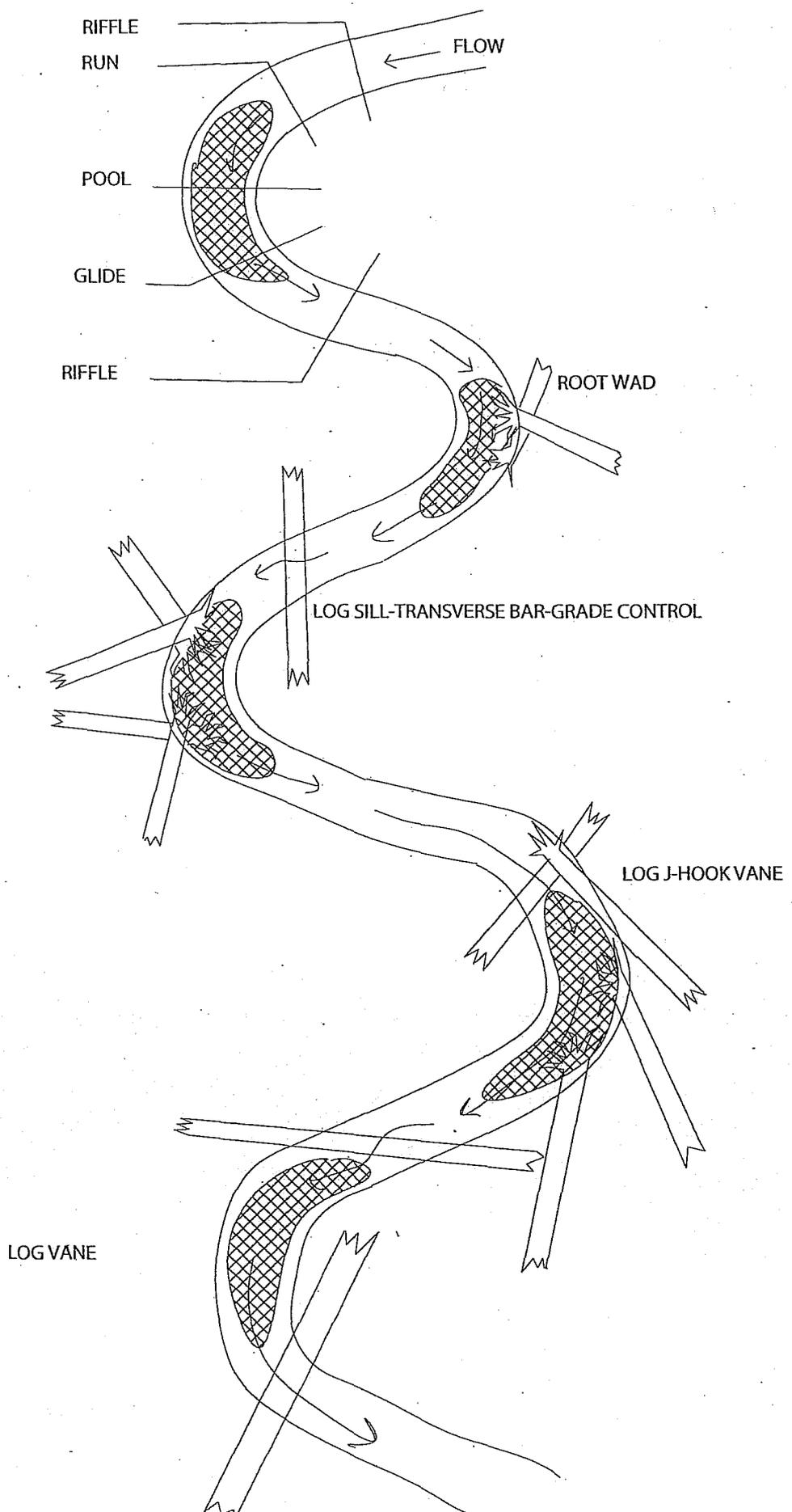
LIVE STAKES

Scale: N.T.S.

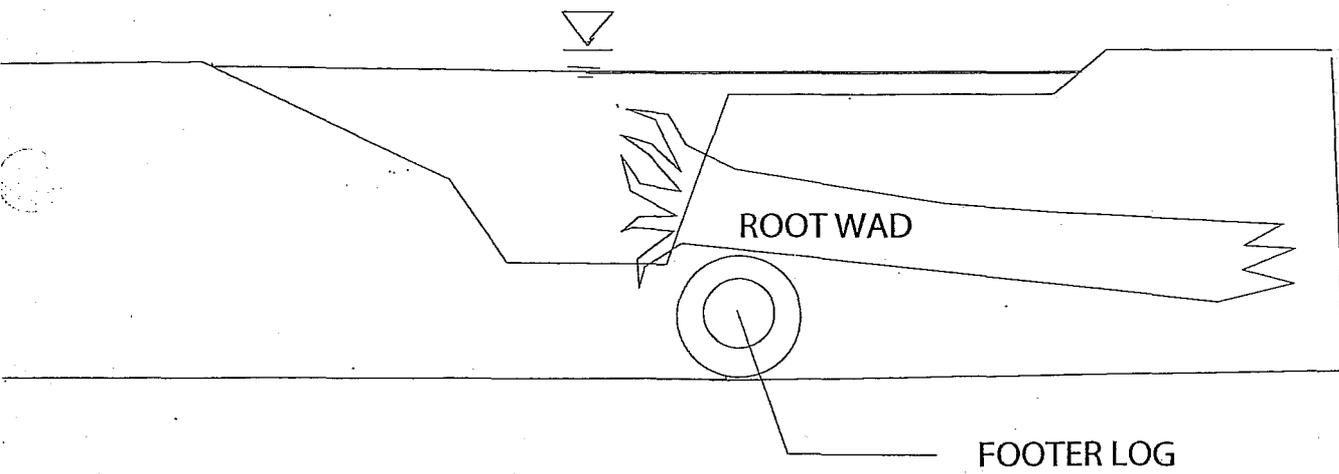
CROSS SECTION VIEW OF ROOT WAD WITHOUT FOOTER LOG



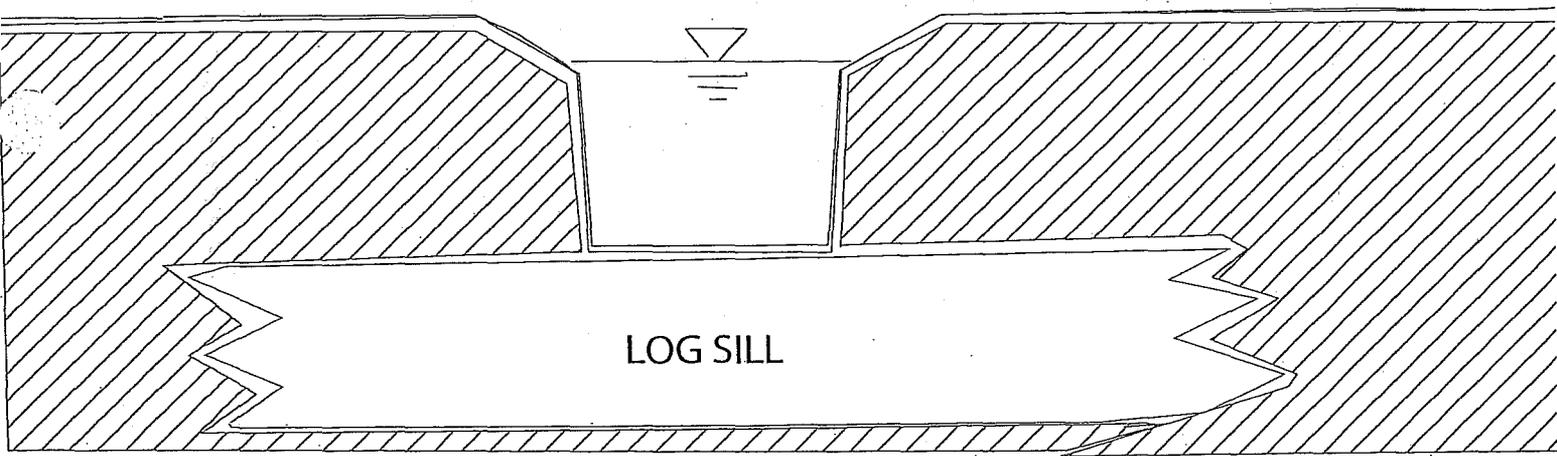
PLAN VIEW OF RESTORATION STRUCTURES

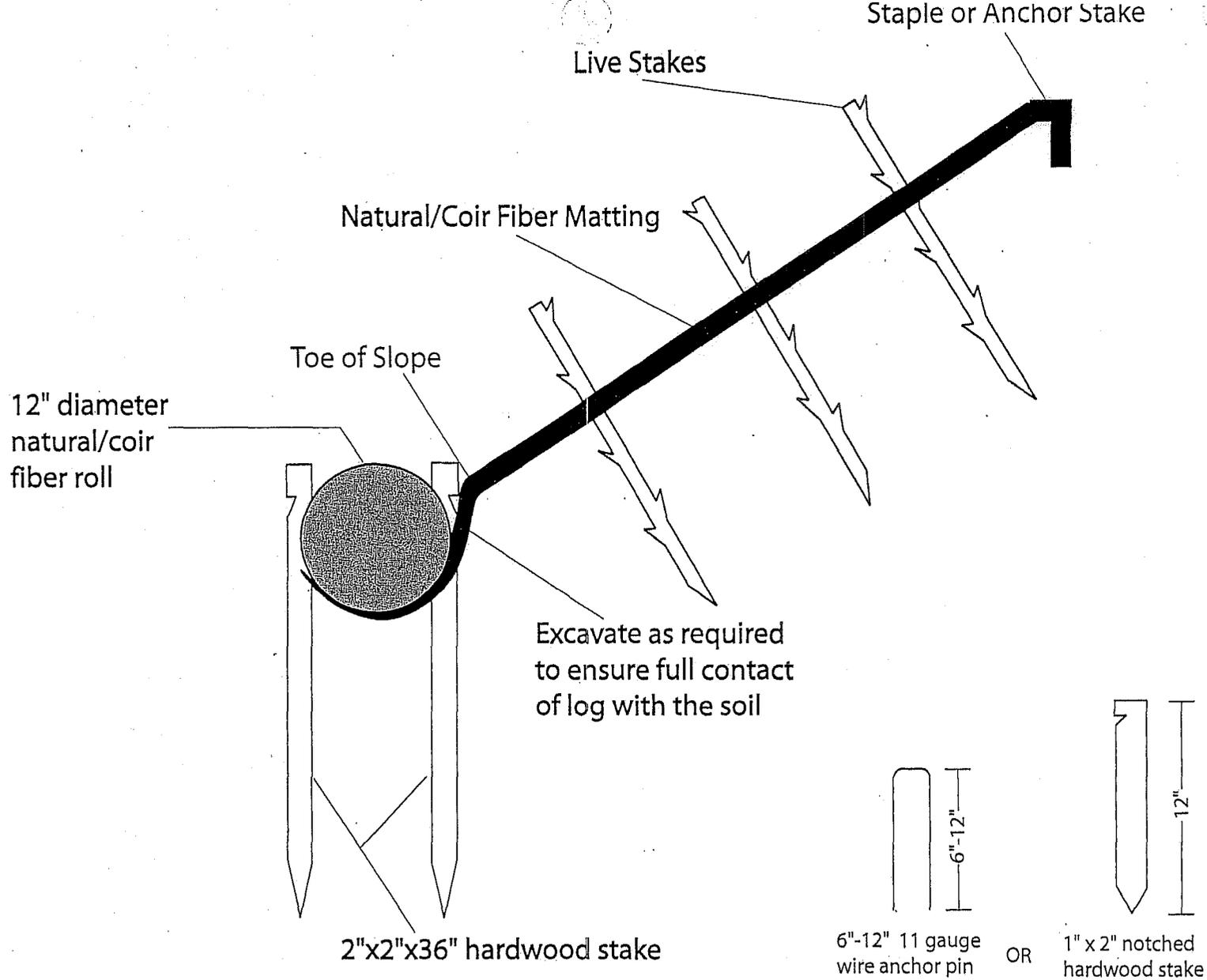


CROSS SECTION VIEW OF ROOT WAD WITH FOOTER LOG

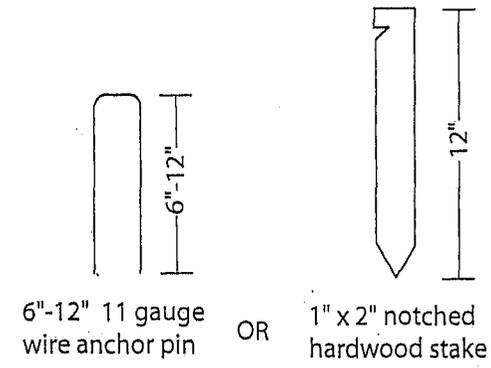


CROSS SECTION TYPICAL FOR LOG SILL



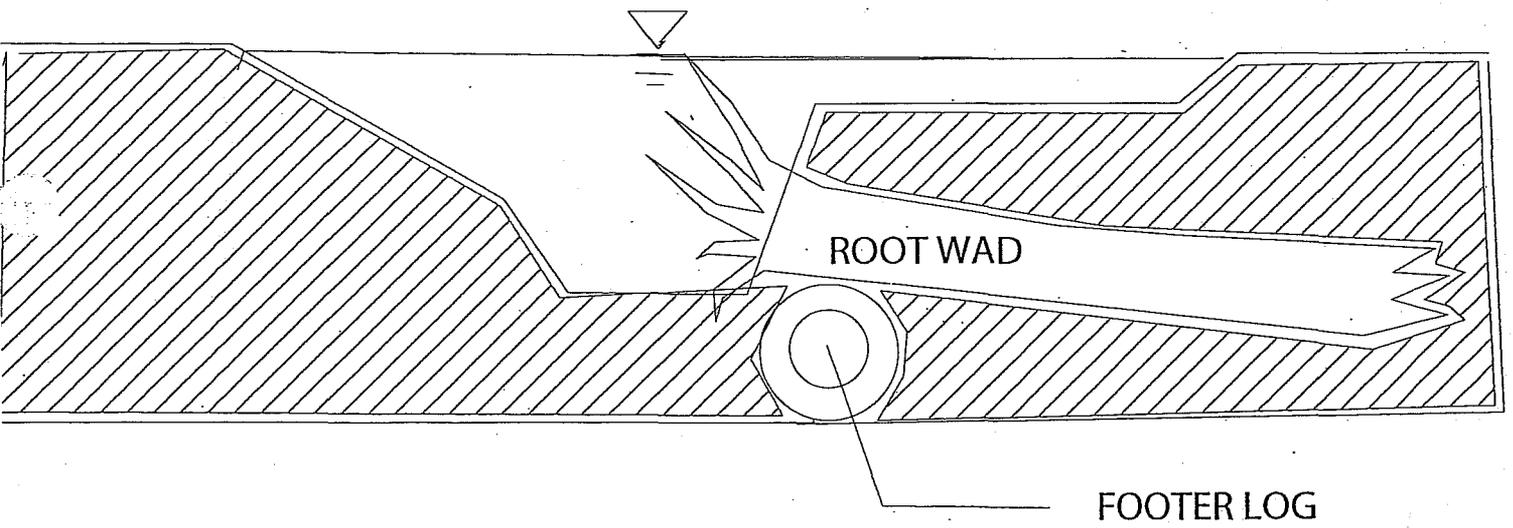


- Note:
1. Stakes should be evenly spaced throughout length of the log 2 feet apart.
 2. Stakes shall be driven flush with the fiber roll.



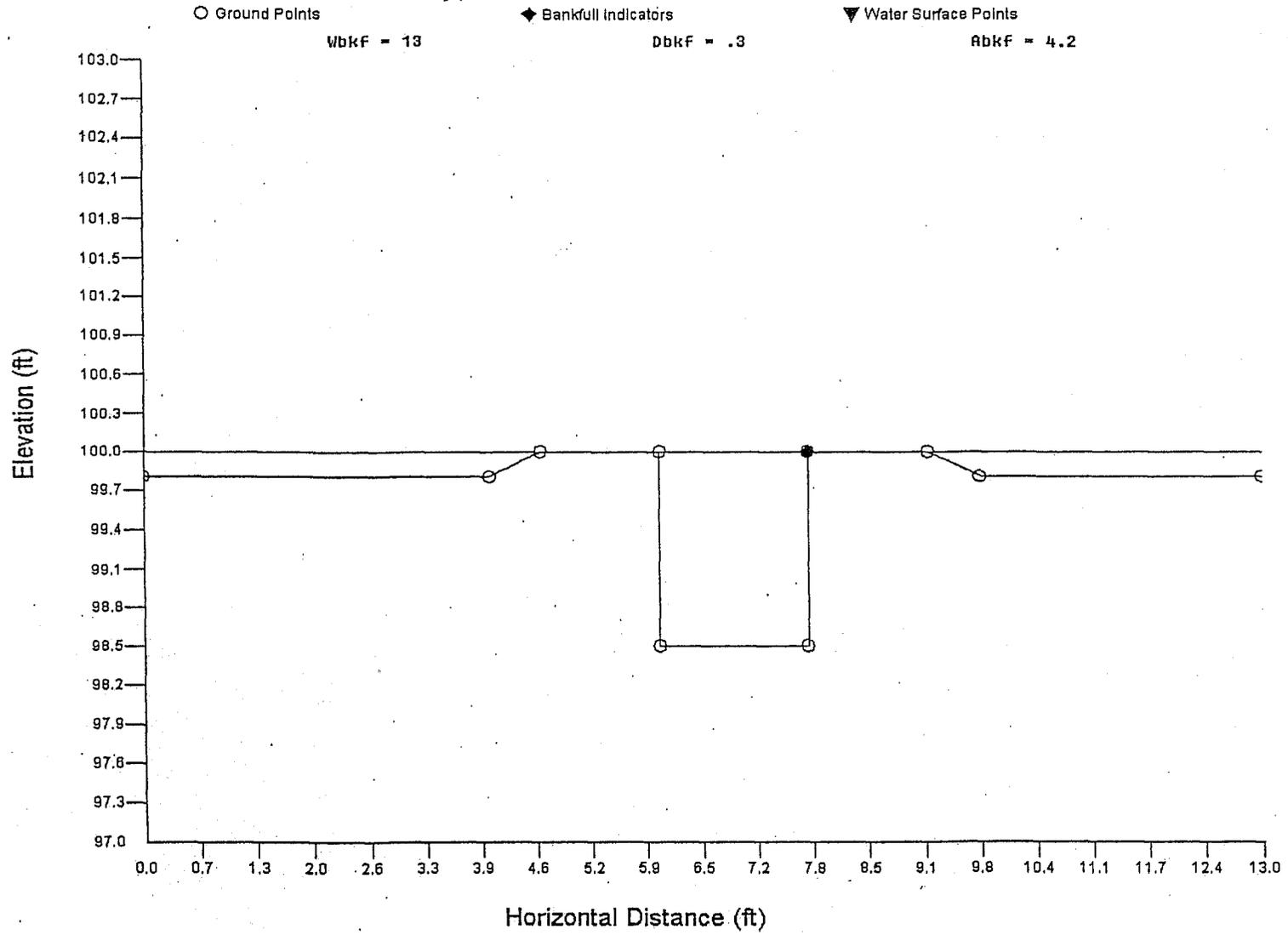
NATURAL/COIR FIBER ROLL
 Scale: N.T.S.

CROSS SECTION VIEW OF ROOT WAD WITH FOOTER LOG



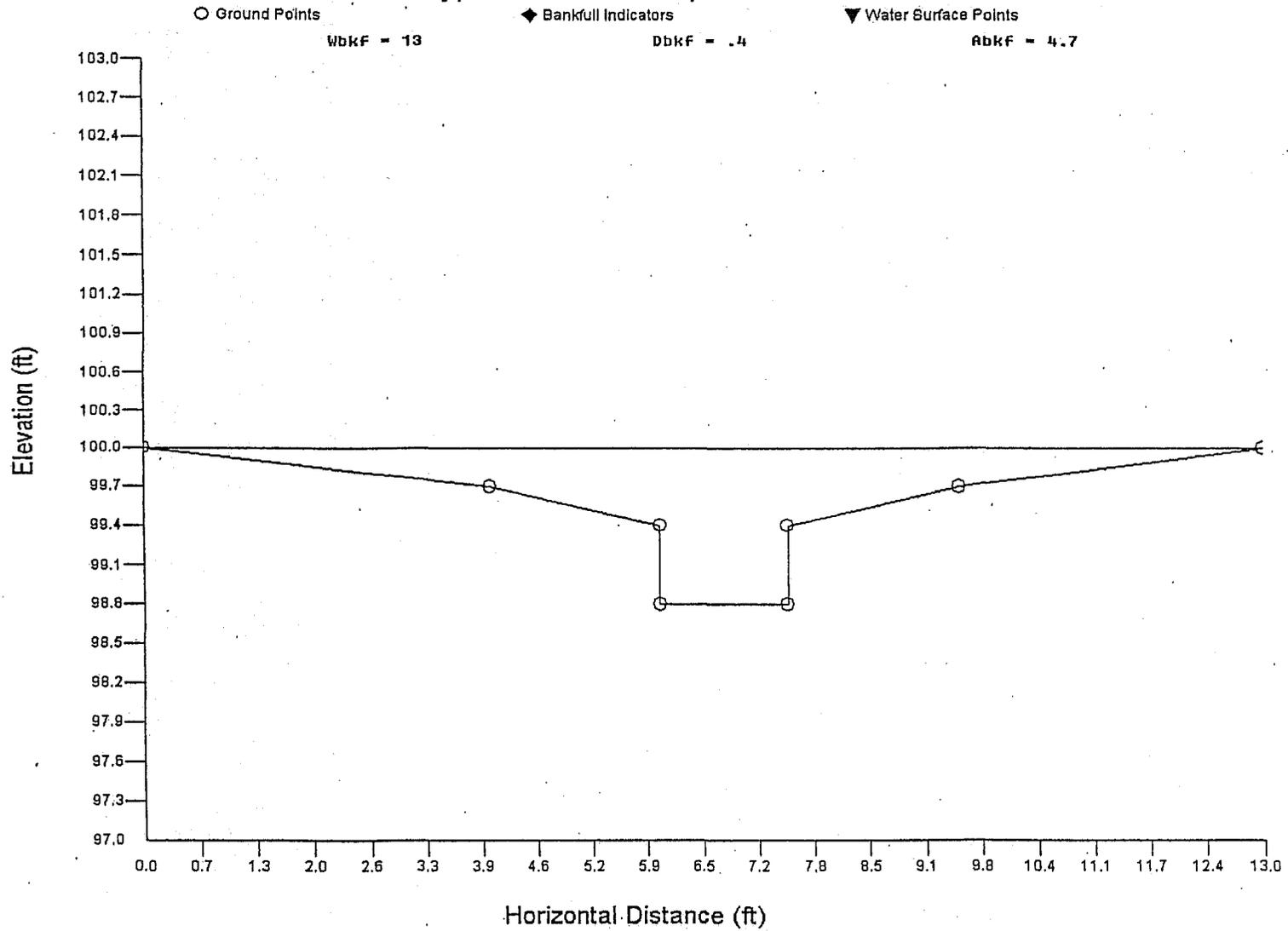
Corresponds to Monitoring Cross
Section : Riffle XS 4
See Map

Typical E Riffle -xs area = 1



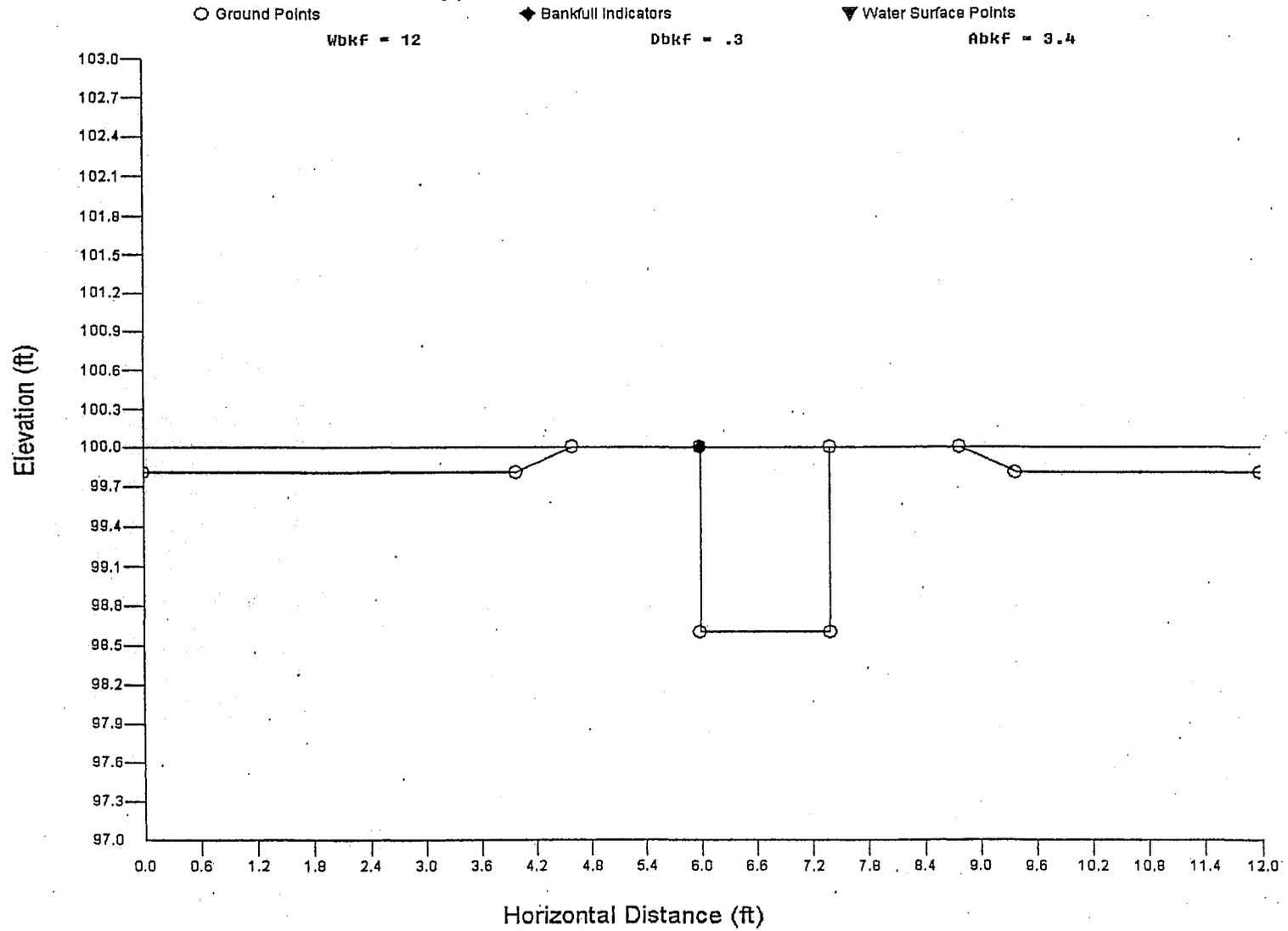
Corresponds to Monitoring Cross
Section : Pool XS 4
See Map

Typical E Pool -depth 1.3 ft.



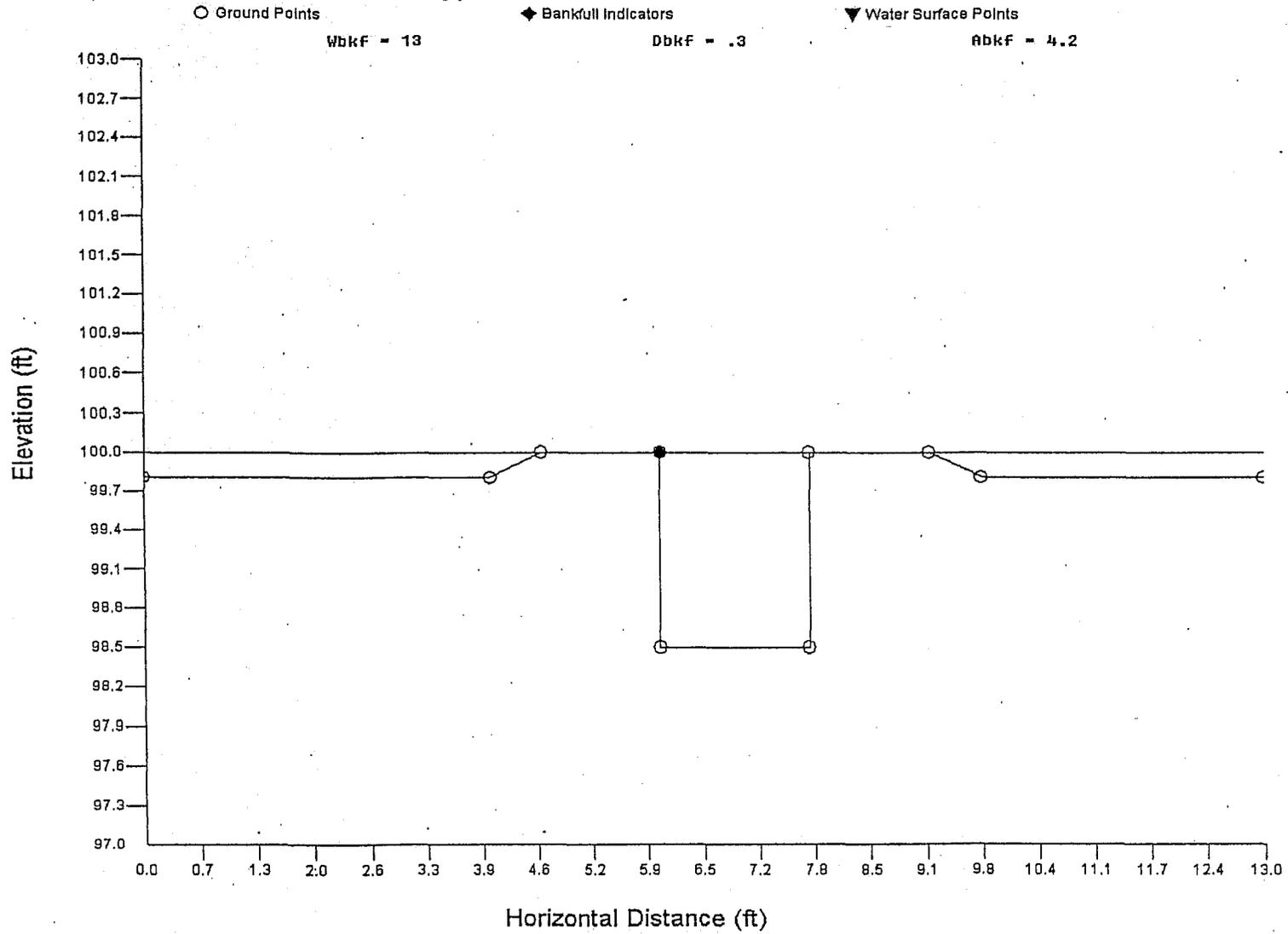
Corresponds to Monitoring Cross
Section : Riffle.XS 1
See Map

Typical E Riffle -xs area = 2



Corresponds to Monitoring Cross
Section : Riffle XS 3
See Map

Typical E Riffle -xs area = 3



Typical E Pool -max depth 1.5 ft.

○ Ground Points

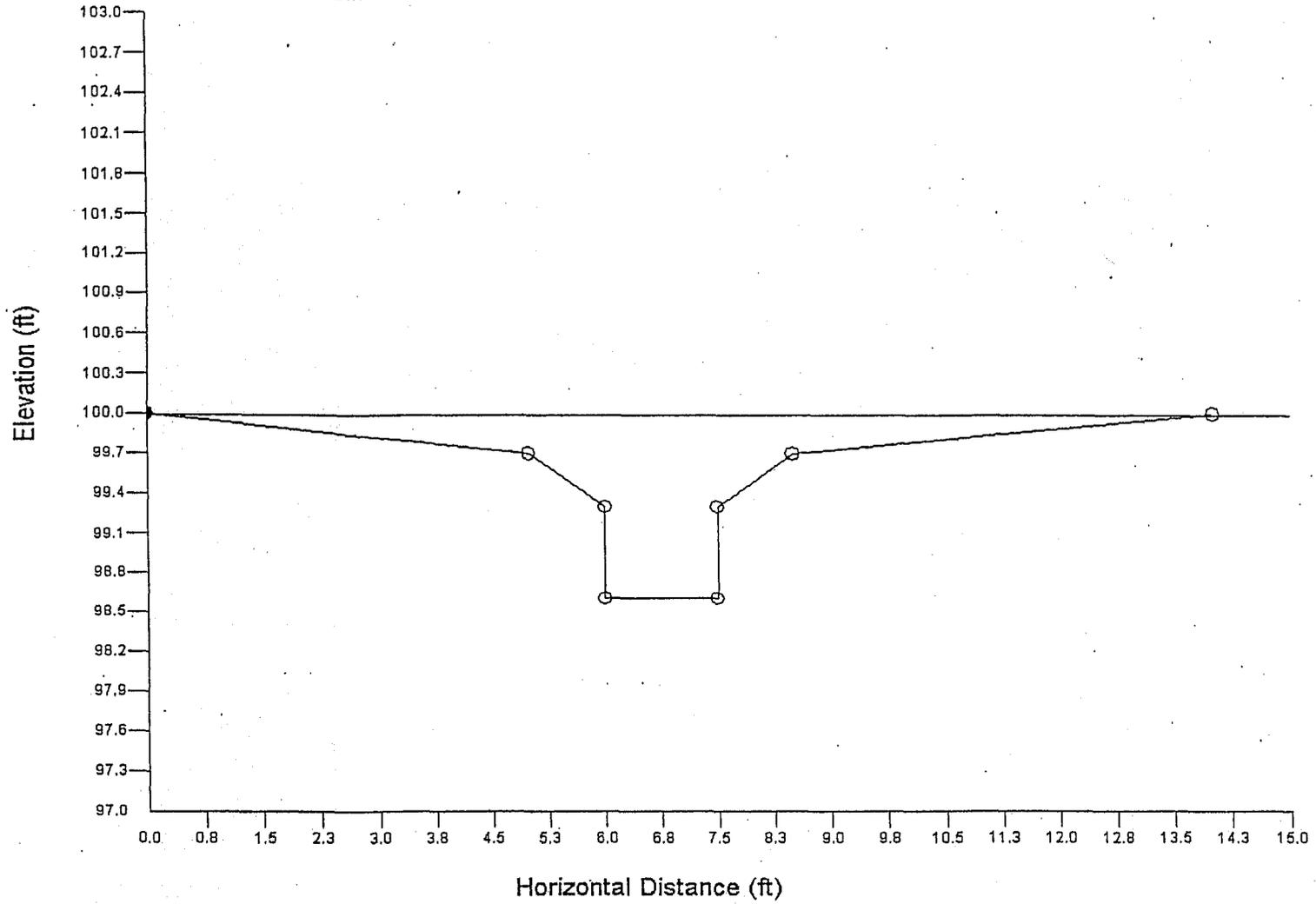
◆ Bankfull Indicators

▼ Water Surface Points

Mbkf = 13.6

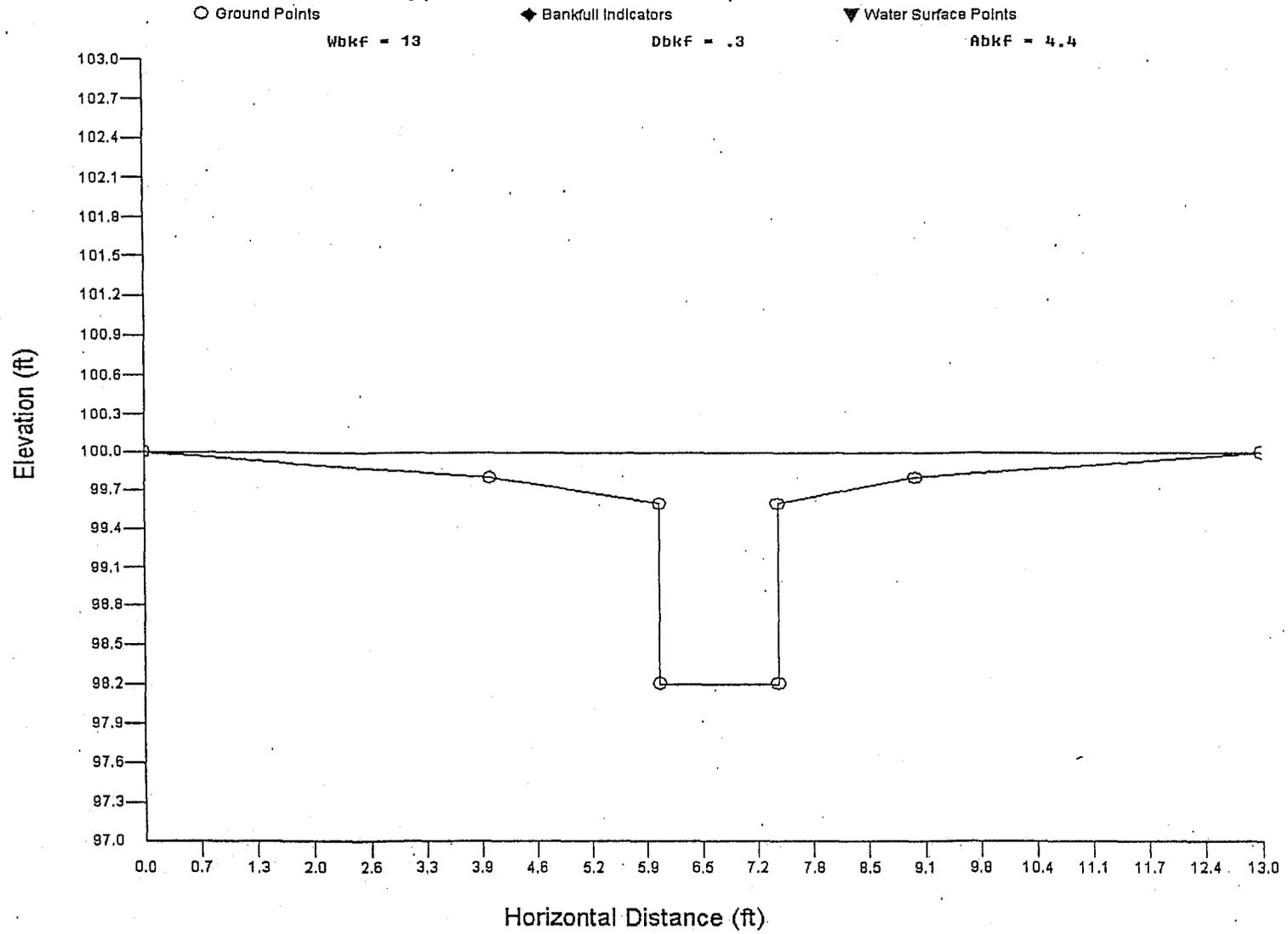
Dbkf = .3

Abkf = 4.5



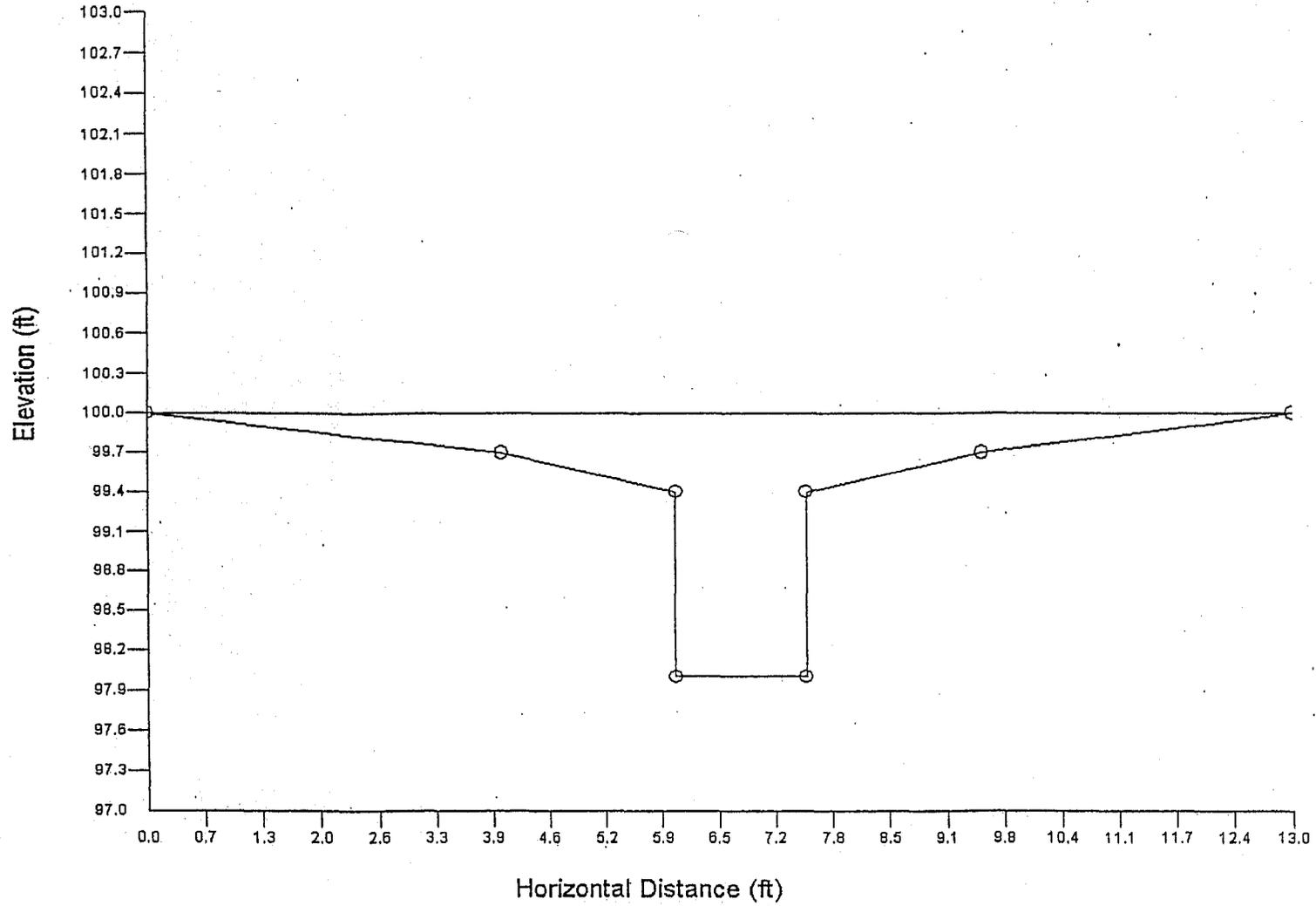
Corresponds to Monitoring Cross
Section : Pool XS 2
See Map

Typical E Pool -max depth 1.8 ft.



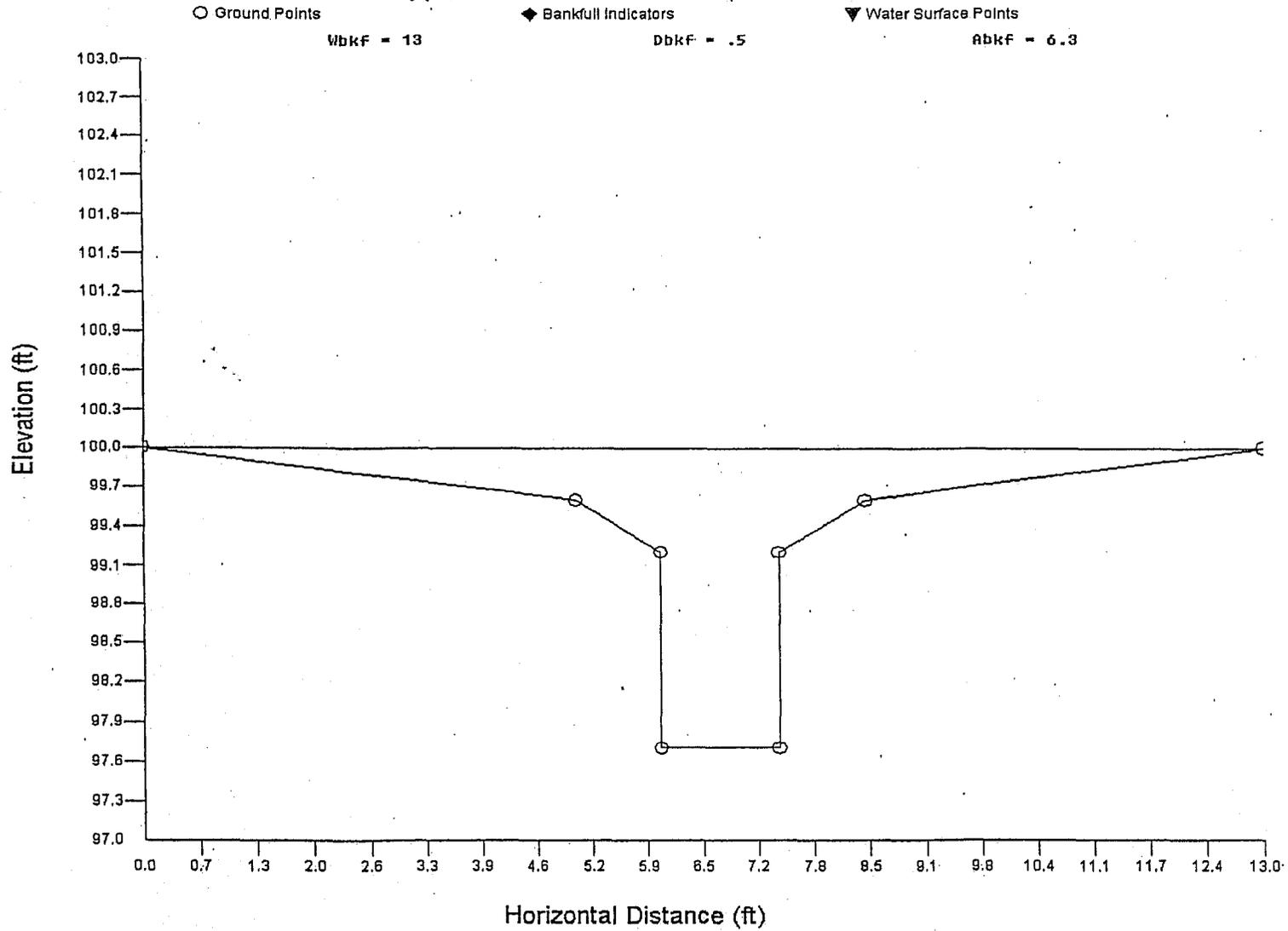
Typical E Pool -max depth 2 ft

○ Ground Points ◆ Bankfull Indicators ▼ Water Surface Points
Wbkf = 13 Dbkf = 1.5 Abkf = 5.9

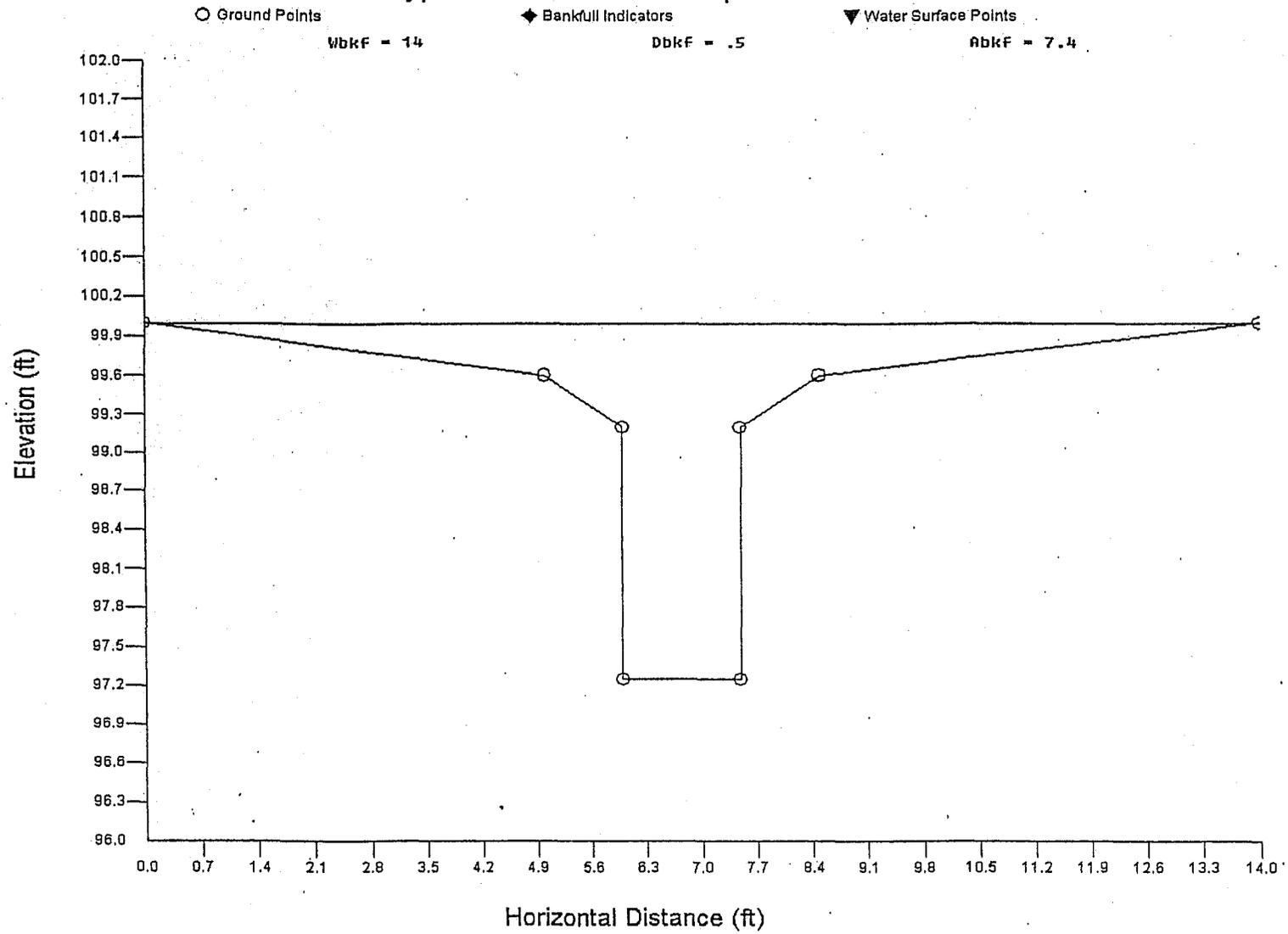


Corresponds to Monitoring Cross
Section : Pool XS 3
See Map

Typical E Pool -max depth 2.3 ft.

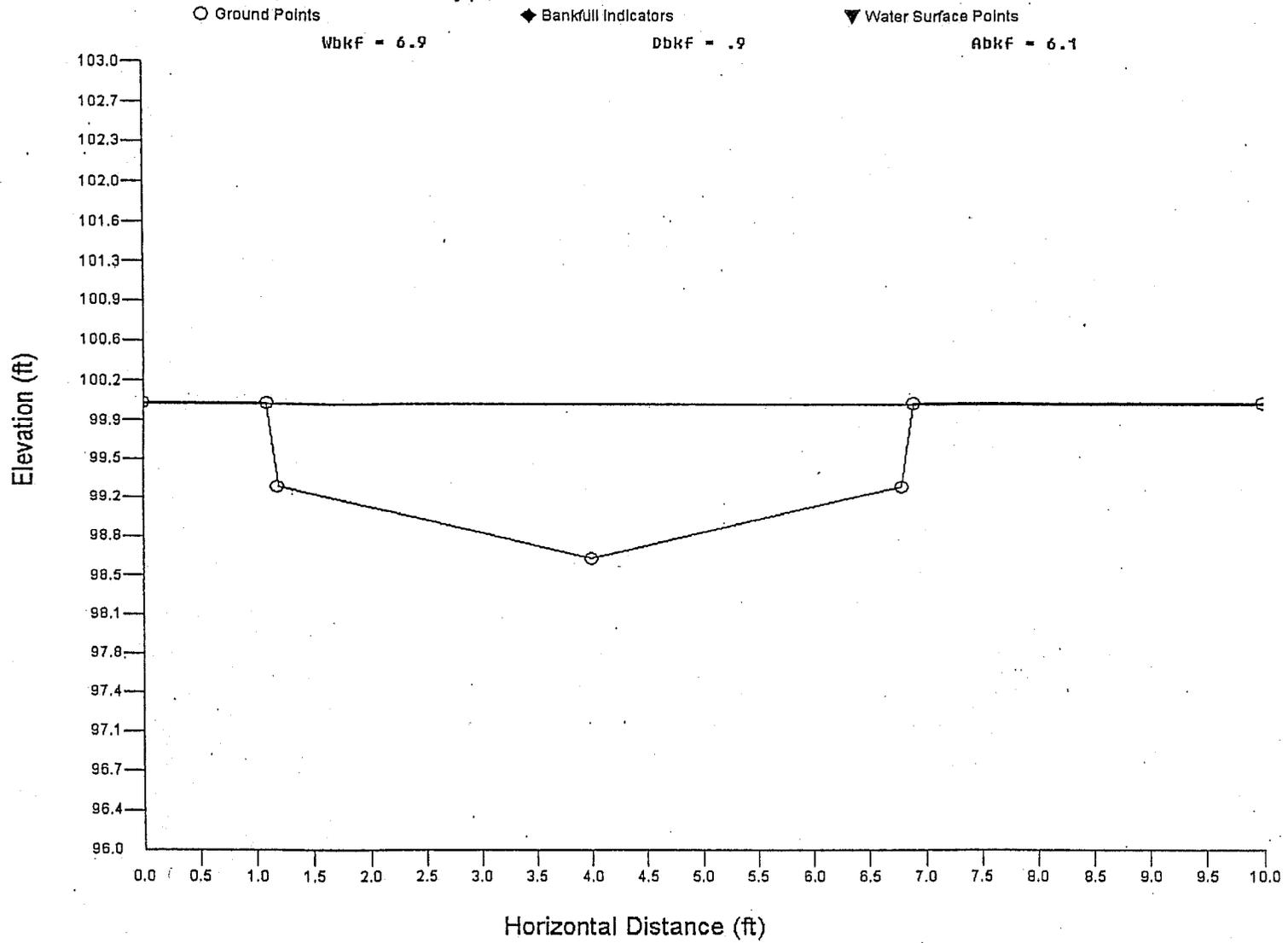


Typical E Pool -max depth 2.75 ft

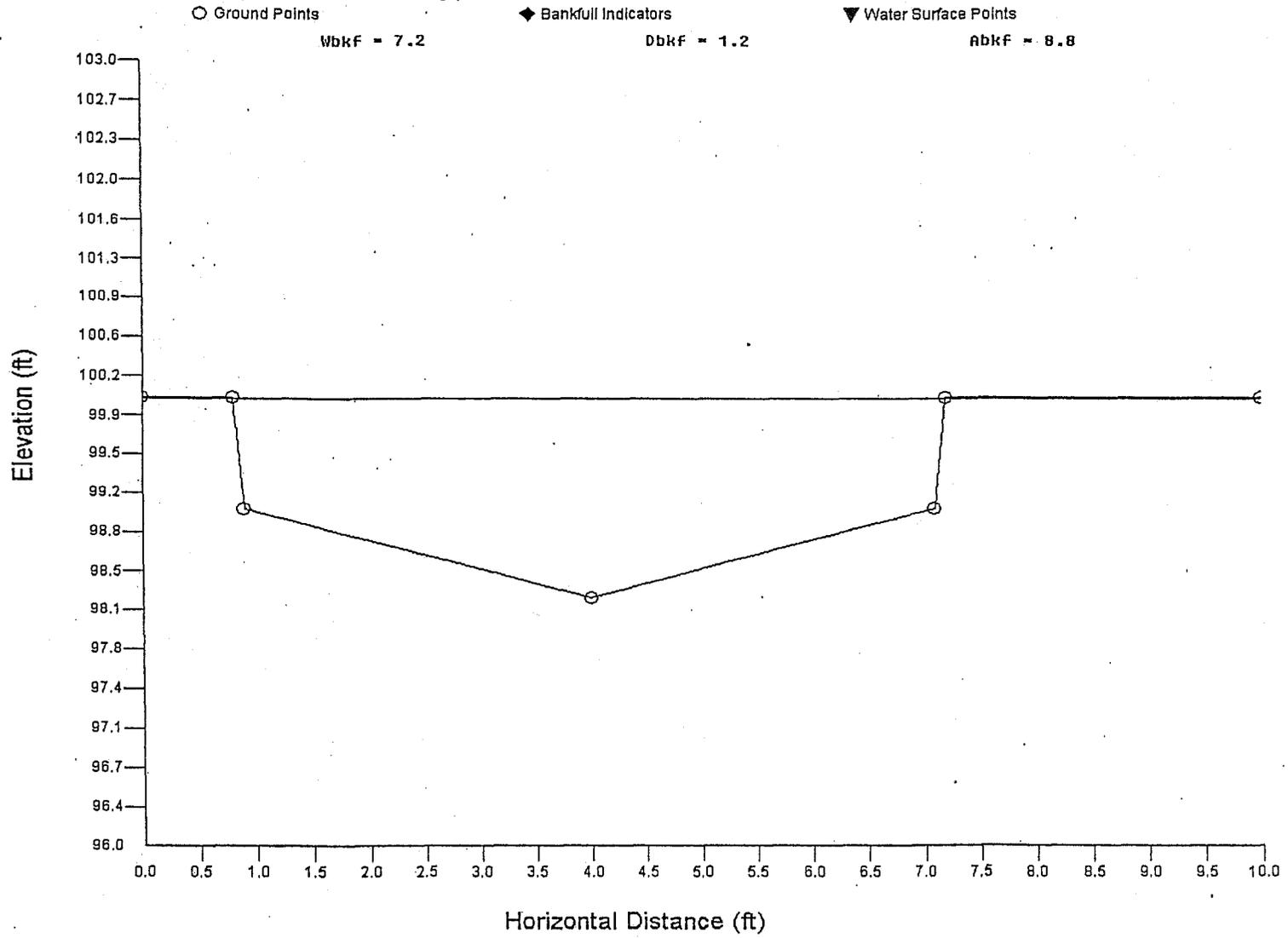


Corresponds to Monitoring Cross
Section : Riffle XS 5
See Map

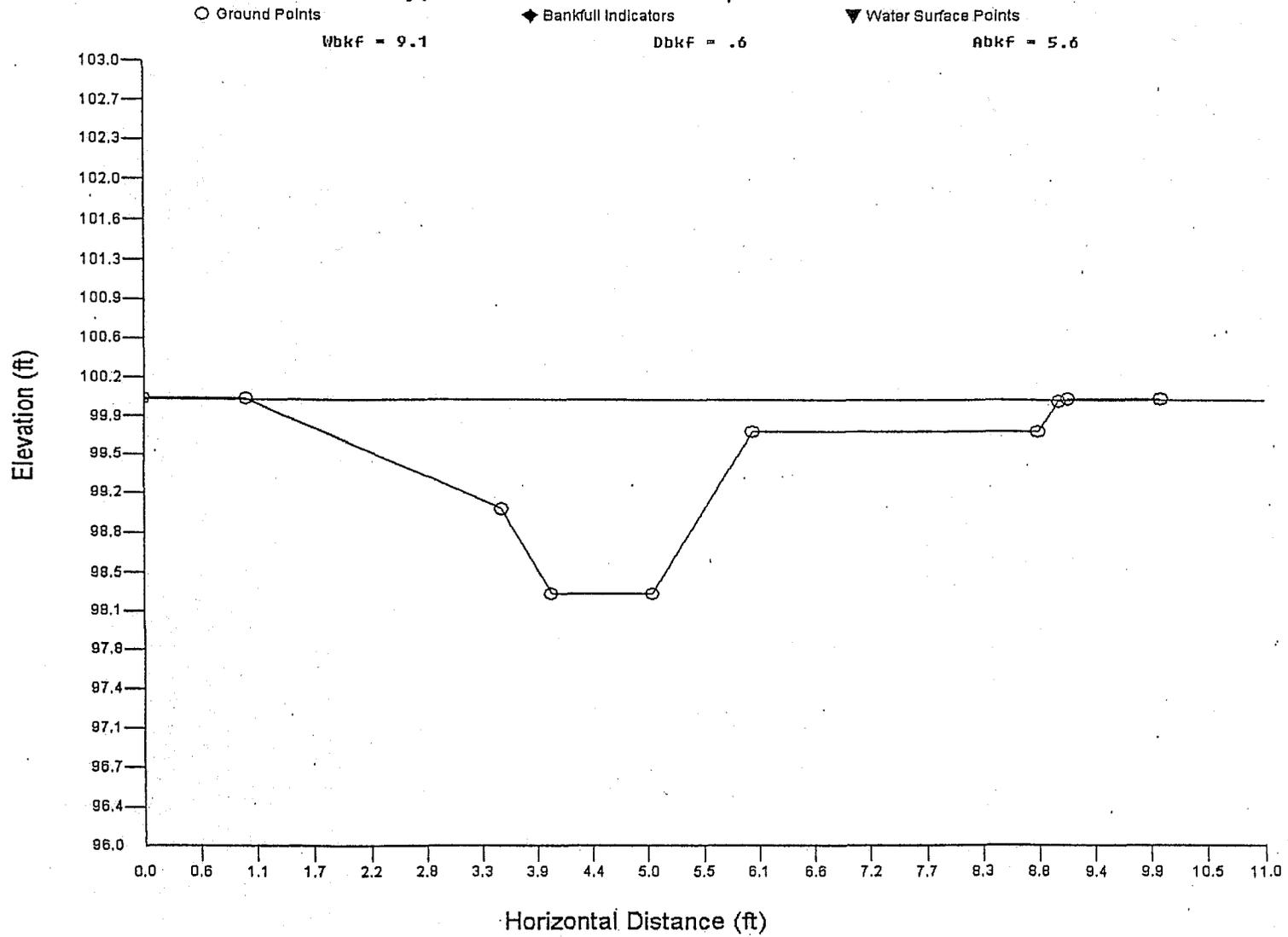
Typical B Riffle -xs area 7



Typical B Riffle -xs area = 9

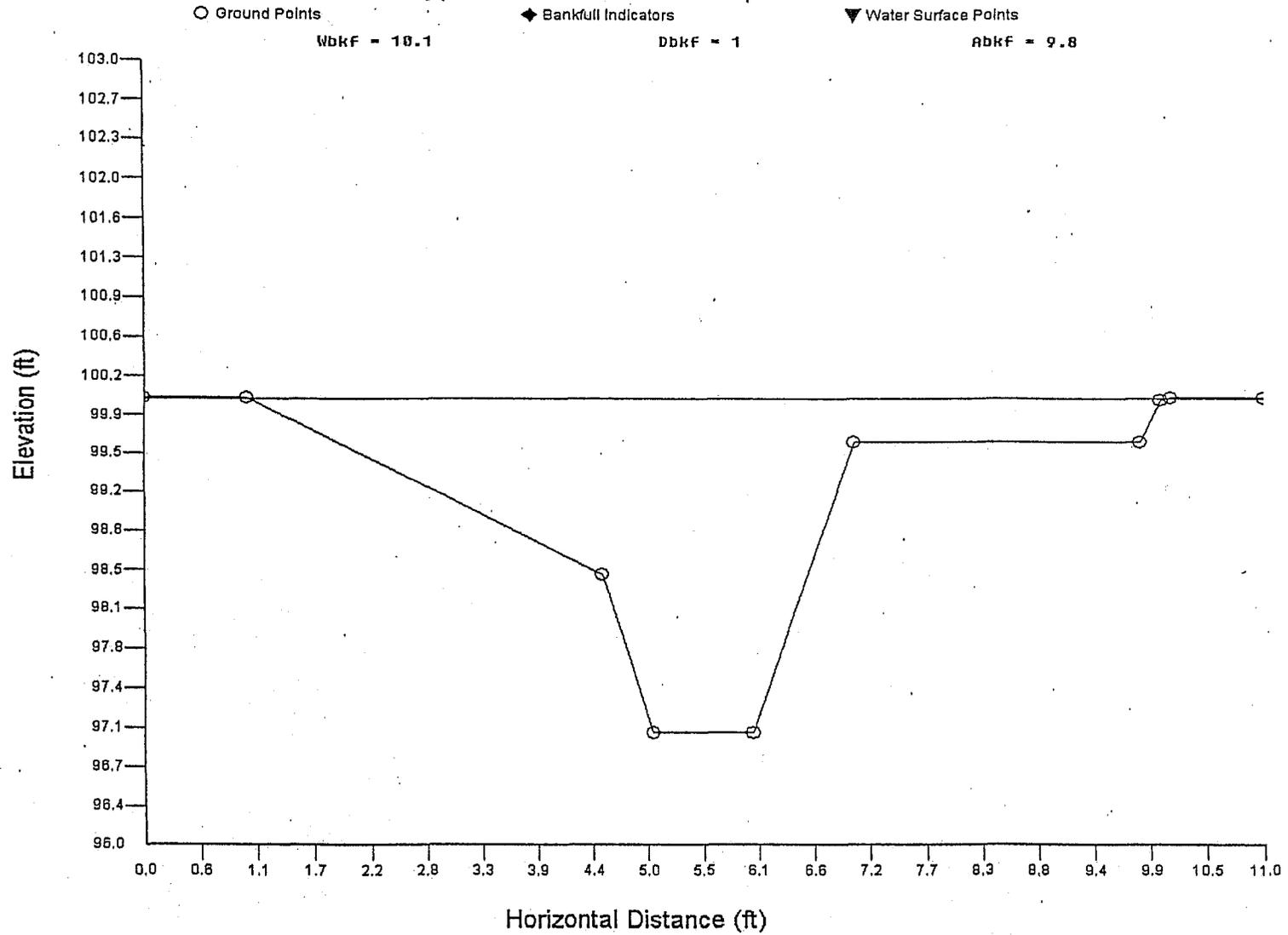


Typical B Pool -max depth 1.75 ft



Corresponds to Monitoring Cross
Section : Pool XS 5
See Map

Typical B Pool -max depth 3 ft



Typical B Pool - max depth 3.5 ft

○ Ground Points

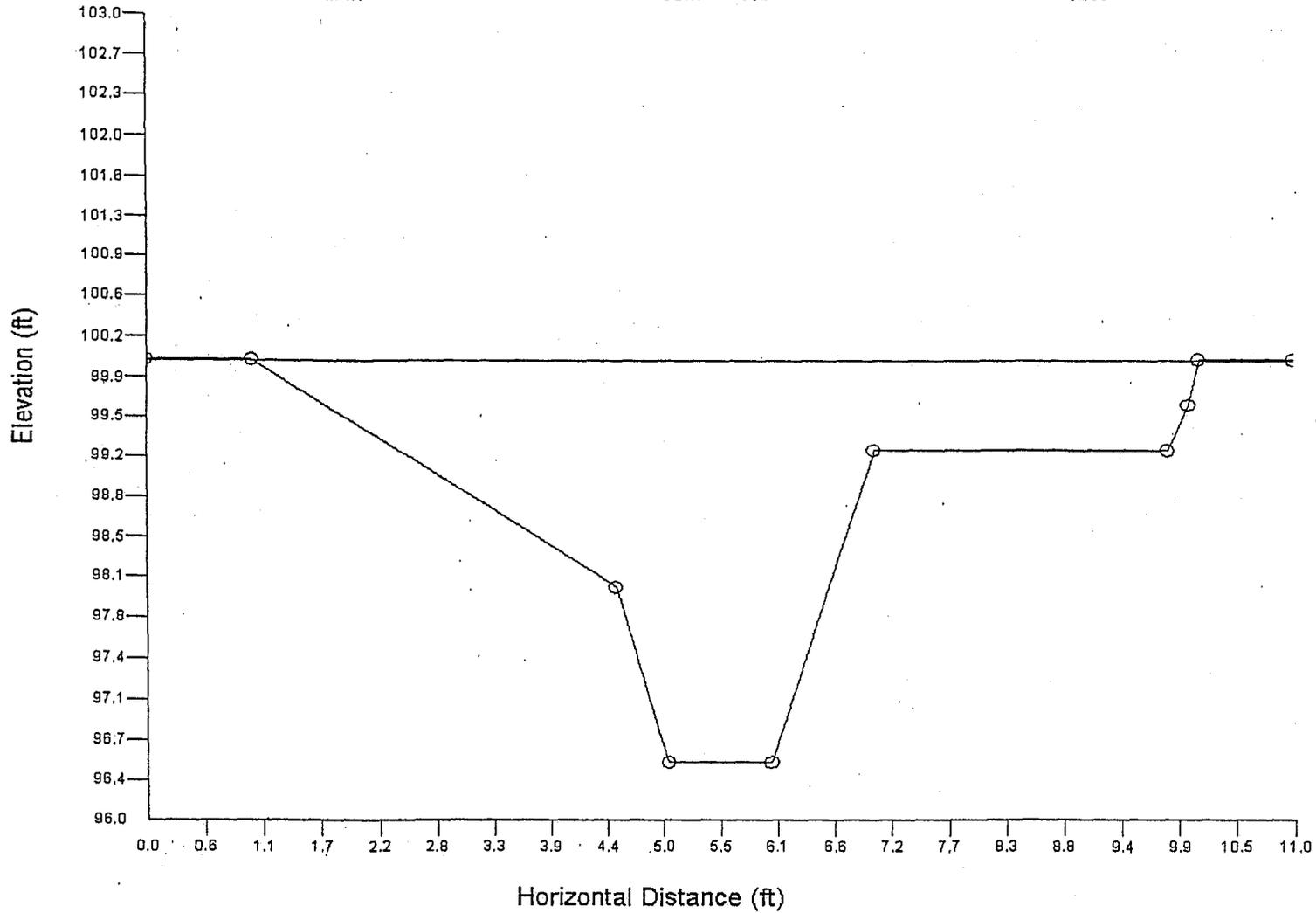
◆ Bankfull Indicators

▼ Water Surface Points

Wbkf = 10.1

Dbkf = 1.3

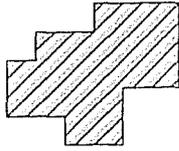
Abkf = 12.9



Legend



Phases of Construction



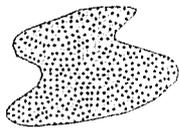
Grading and Staging Areas



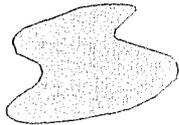
Water Diversion



Tributary Planform Alignment



Groundwater Treatment Oxbow



Oxbow Lake

- Tributary Stations

Stream Planform Alignment

- Stream Stations

Appendix 12 - Ratio Method for Establishing Compensatory Ratios

**JOINT FEDERAL/STATE PROCEDURES FOR
THE ESTABLISHMENT AND OPERATION OF WETLAND
MITIGATION BANKS IN THE U.S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT**

**Guidance Process Developed by the Following Agencies on the
Mitigation Bank Review Team**

U.S. Army Corps of Engineers – Mobile District
U.S. Environmental Protection Agency – Region IV
U.S. Fish and Wildlife Service – Daphne, Alabama
U.S. Fish and Wildlife Service – Jackson, Mississippi
Mississippi Department of Marine Resources
Alabama Department of Environmental Management
Mississippi Department of Environmental Quality

Last Revised:
May 2002

The Ratio Method is included as a sub-part of a larger document including the guidance process as described above, but only the relevant, applicable Ratio Method section is included in this Appendix as the remaining portion of the document is not applicable to the case at hand. The document in its entirety is available for viewing at the Mississippi Department of Environmental Quality or at <https://samribits.sam.usace.army.mil/ribits/pdfs/ALMS%20MBRTGUIDE%205-14-02.pdf>.

Ratio Method

The Ratio Method (RM) is a qualitative approach to determining the amount of credits available at a proposed wetland mitigation bank. The RM has historically been utilized to determine credits at mitigation banks when other more quantitative methods, such as HGM or WRAP, have not been available. The RM utilizes the following set of Base Ratios:

Type of Mitigation	Value of Impacted Wetland		
	Low	Medium	High
Restoration	1:2	1:3	1:4
Enhancement	1:3	1:5	1:9
Preservation	1:7	1:12	1:23

These ratios qualitatively consider 1) the different levels of functional lift associated with different types of mitigation, 2) the time required for the mitigation site to reach maturity or target condition, 3) the risk of the mitigation not achieving functional replacement, and 4) an appropriate consideration of the loss of function over time.

The following example illustrates how the RM would be applied to determine the number of available credits and the Compensatory Ratios at a proposed bank.

The first step in applying the RM is to determine what percentage of a proposed bank are wetland restoration, wetland enhancement, and wetland preservation (as defined in the Federal Banking Guidance) and what portion of the bank consists of non-wetlands. For example, a theoretical proposed 1300-acre wetland mitigation bank consists of:

Mitigation Action	Affected Area (acres)	Percent of Total Area
Restoration	1000	77
Enhancement	200	15
Preservation	50	4
Non-wetland	50	4
Totals	1300	100

Since non-wetlands compose only a small fraction of the total acreage of this bank, the bank has a total of 1300 [acre] credits and each [acre] credit represents 77% wetland restoration, 15% wetland enhancement, 4% wetland preservation, and 4% upland preservation. The Base Ratios are then utilized to determine the bank's Compensatory Ratios:

Type of Mitigation	Area Affect (AA)	Value of Impacted Wetland = BR (base ratio) x AA		
		Low BRxAA	Med BRxAA	High BRxAA
Restoration	0.77	1:2 = 1: 1.54	1:3 = 1: 2.31	1:4 = 1: 3.08
Enhancement	0.15	1:3 = 1: 0.46	1:5 = 1: 0.77	1:9 = 1: 1.38
Preservation	0.4	1:7 = 1: 0.27	1:12 = 1: 0.46	1:23 = 1: 0.88
*Non-wetland	0.4	N/A	N/A	N/A
Total		1: 2.27	1: 3.54	1: 5.35

*As non-wetlands compose only a fraction of the total acreage of this bank, they were not included in determining Compensatory Ratios.

Thus, in this example, the proposed bank has 1300 [acre] credits and the bank's Compensatory Ratios are:

Low Quality Wetland Impacts	Medium Quality Wetland Impacts	High Quality Wetland Impacts
1:2	1:3.5	1:5

Therefore, if the Corps determined that a project within the service area of this proposed bank needed mitigation for impacts to 3 acres of medium quality wetlands, then 10.5 credits from this bank would be necessary to compensate or off set those wetland losses.

ATTACHMENT B

Department of the Interior
Natural Resource Damage Assessment and Restoration Fund
Assessment and Settlement Deposit Remittance Procedures

The Department of Interior's Interior Service Center has established procedures with the Department of Treasury to provide two electronic options for remitting payments to the Natural Resource Damage Assessment and Restoration Fund. Procedures for using these processes are attached.

The preferred electronic method is the Department of Treasury's Automated Clearing House (ACH)/Remittance Express. If your bank does not have ACH deposit transmission capabilities, then Treasury's Federal Wire (Fed Wire) Transfer procedure is the required alternative. Use the attached forms to assist in preparing your remittance.

All remitters are encouraged to use these electronic methods. Non-electronic remittances (checks) should be payable to the Department of Interior and forwarded to:

DOI Restoration Fund
NBC Division of Financial Management Services
Branch of Accounting Operations
Mail Stop 1313
1849 C St. NW
Washington, D.C. 20240

Attachment I-1

Department of the Interior

Natural Resource Damage Assessment and Restoration Fund
Assessment and Settlement Deposit Remittance Procedures

In order to accomplish electronic transfers, in addition to other settlement or billing information, please provide the following information to the remitter:

Preferred method of electronic transfer: Automated Clearing House (ACH)

Receiver name: DOI Restoration Fund
ALC 14010001

Receiver Tax ID Number: 53-0196949

Receiver address: 1849 C St. NW
Mailstop 1313
Washington, D.C. 20240

Receiver bank: Federal Reserve Bank
New York, NY
ABA # 051036706

Receiver ACH Account No.: 312024

Receiver Fedwire Acct No.: Treasury NYC 021030004
(To be used only for Fedwire transfers)

Payment Related Data: Should at a minimum reference site location

Attachments I-3 and I-4 provide more technical specifics which can be provided to the remitters banking institution. Questions concerning electronic deposit procedures should be directed to Robert (Bob) White at 303-969-7170.

Attachment I-2

Department of the Interior
Natural Resource Damage Assessment and Restoration Fund
Assessment and Settlement Deposit Remittance Procedures

The following information is provided to assist Remitters in giving complete and accurate data to their financial institution for use in originating Automated Clearing House payments. The industry name for the following format is CCD+.

ACH CCD+ Format

Data Element Name	Contents	Size	Position
<i>Record Type Code</i>	'6'	1	01-01
<i>Transaction Code</i>	'22'	2	02-03
<i>Receiving ABA</i>	'05103670'	8	04-11
<i>Check Digit</i>	'6'	1	12-12
<i>Account Number</i>	'312024'	17	13-29
<i>Payment Amount</i>		12	30-41
<i>Identification #</i>		12	42-54
<i>Receiver Name</i>	<i>DOI Restoration Fund</i>	22	22-76
<i>Discretionary</i>	N/A	2	77-78
<i>Addenda Indicator</i>	'2'	1	79-79
<i>Trace Number</i>	Assigned by Remitters Bank	15	80-94

ACH Addenda Record Format

Data Element Name	Contents	Size	Position
<i>Record Type Code</i>	'7'	1	01-01
<i>Addenda Type Code</i>	'05'	2	02-03
<i>Payment Related</i>		32	04-35
<i>Sequence Number</i>	'0001'	4	84-87
<i>Addenda Trace</i>	Assigned by Remitters Bank	17	88-94

The data items in bold must be provided to the bank by the Remitter. Those items bolded and italicized must be provided verbatim. The Payment Amount is the judgement or settlement amount being remitted; dollars and cents must be separated by a decimal point, do not use commas or any other punctuation. The Identification Number is the case Court Number. The Payment Related data should include the paying potentially responsible party(ies) name, site or case name and site location.

Department of the Interior

Natural Resource Damage Assessment and Restoration Fund

Assessment and Settlement Deposit Remittance Procedures

Federal Wire (FedWire) Transfer

The following information is provided to assist Remitters in giving complete and accurate data to their financial institution for use in originating FedWire payments. The industry name for the following format is FedWire Transfer Format.

Required Fields and Tags

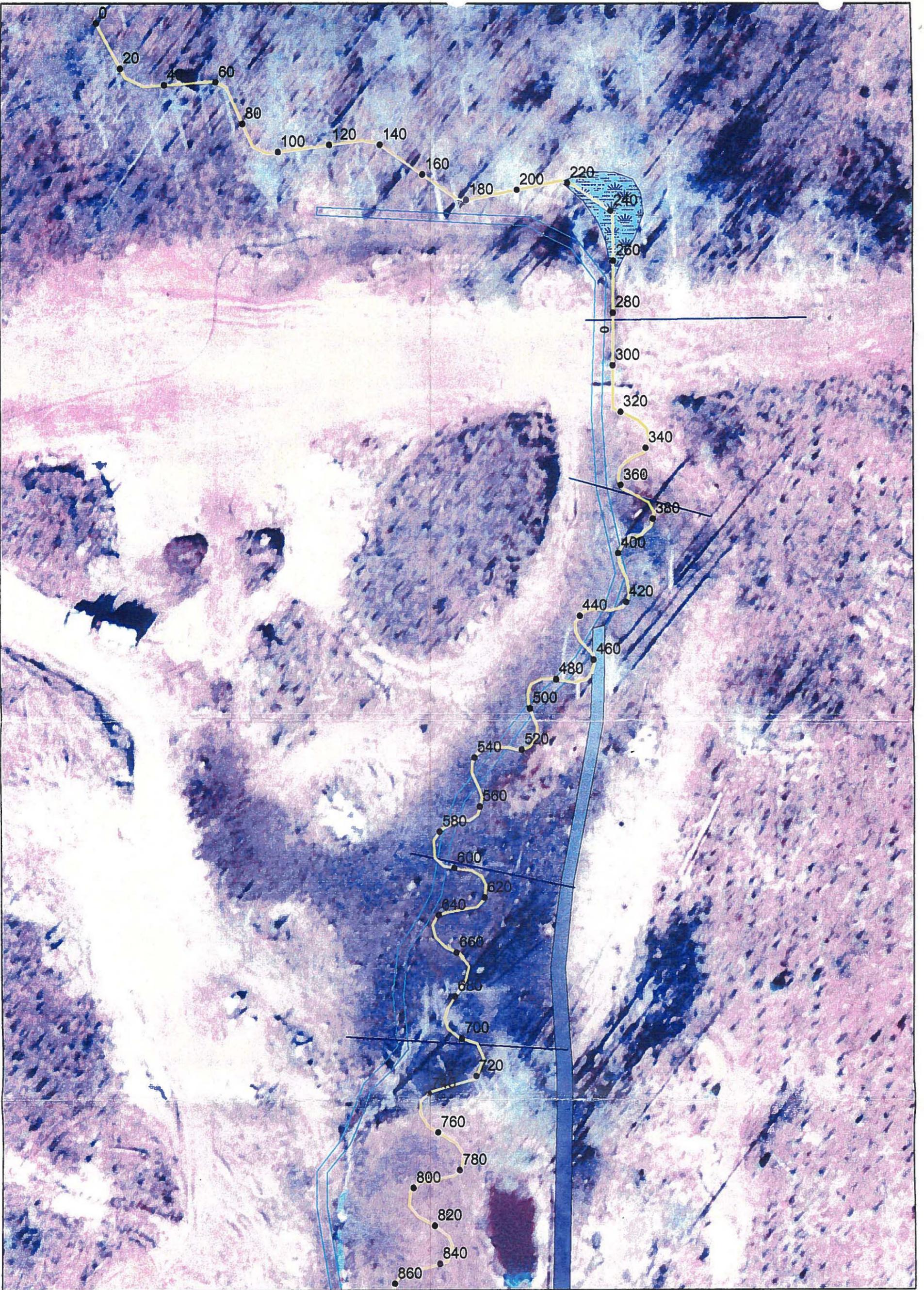
Field Tag Name	Field Tag Number	Field Tag Contents
Message Disposition	(1100)	Assigned by Federal Reserve Bank
Acceptance Time Stamp	(1110)	Assigned by Federal Reserve Bank
OMAD	(1120)	Assigned by Federal Reserve Bank
IMAD	(1520)	Assigned by Remitters Bank
Amount	(2000)	
Sender FI	(3100)	Assigned by Remitters Bank
Sender Reference	(3320)	Assigned by Remitters Bank
<i>Receiver FI</i>	<i>(3400)</i>	<i>'Treasury NYC 021030004'</i>
<i>Beneficiary</i>	<i>(4200)</i>	<i>'DOI Restoration Fund ALC 14010001'</i>
Ref for Beneficiary	(4320)	
Originator	(5000)	
Originator Financial Institution	(5100)	Assigned by Remitters Bank
Orig to Beneficiary	(5000)	

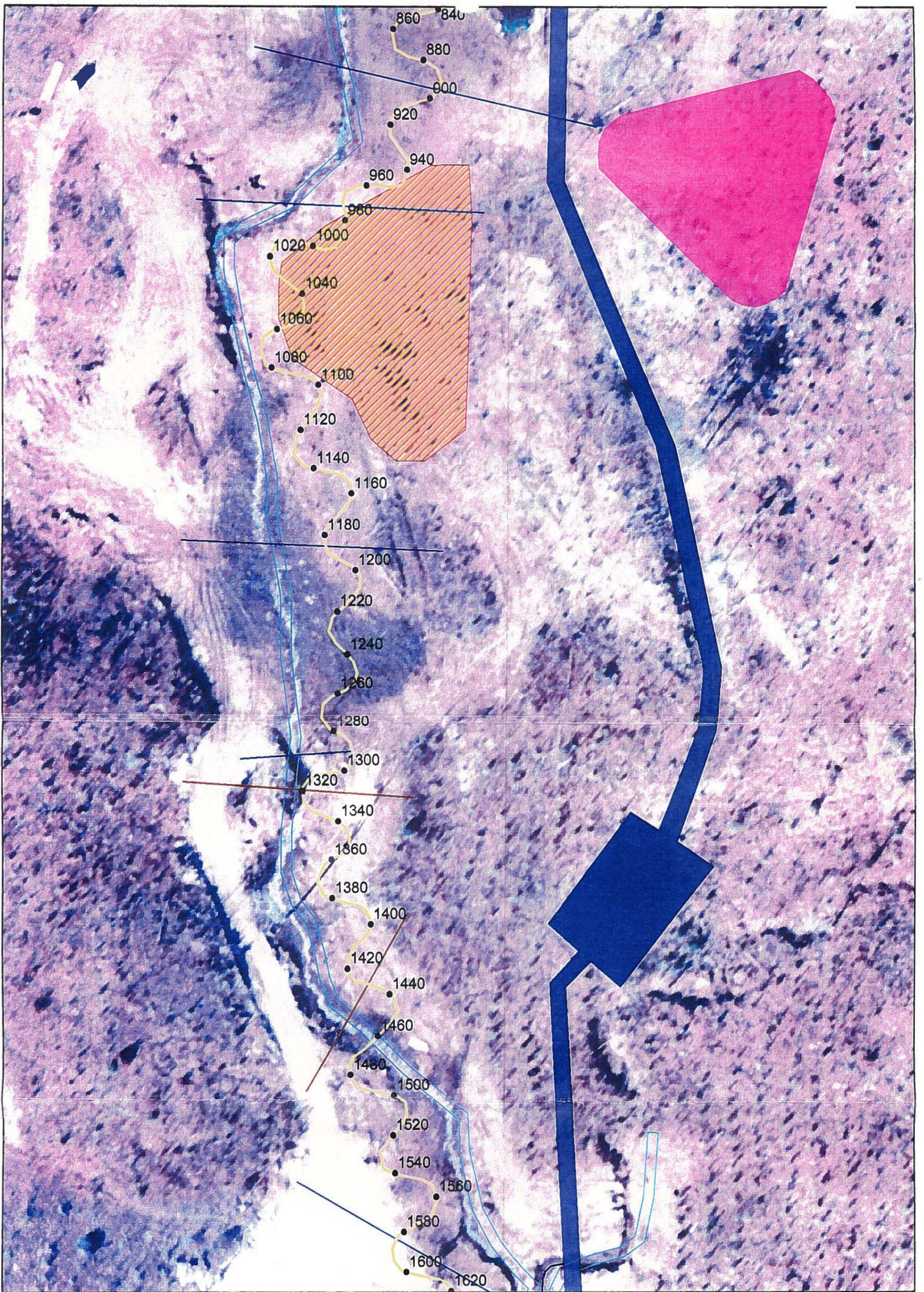
The data items in bold must be provided to the bank by the Remitter. Those bolded and italicized must be provided verbatim. The **Amount** is the judgement or settlement amount being remitted; dollars and cents must be separated by a decimal point, do not use commas or any other punctuation. The **Reference for Beneficiary** is the case Court Number. **Originator** is the paying potentially responsible party(ies). **Originator to Beneficiary** should include the site or case name and site location.

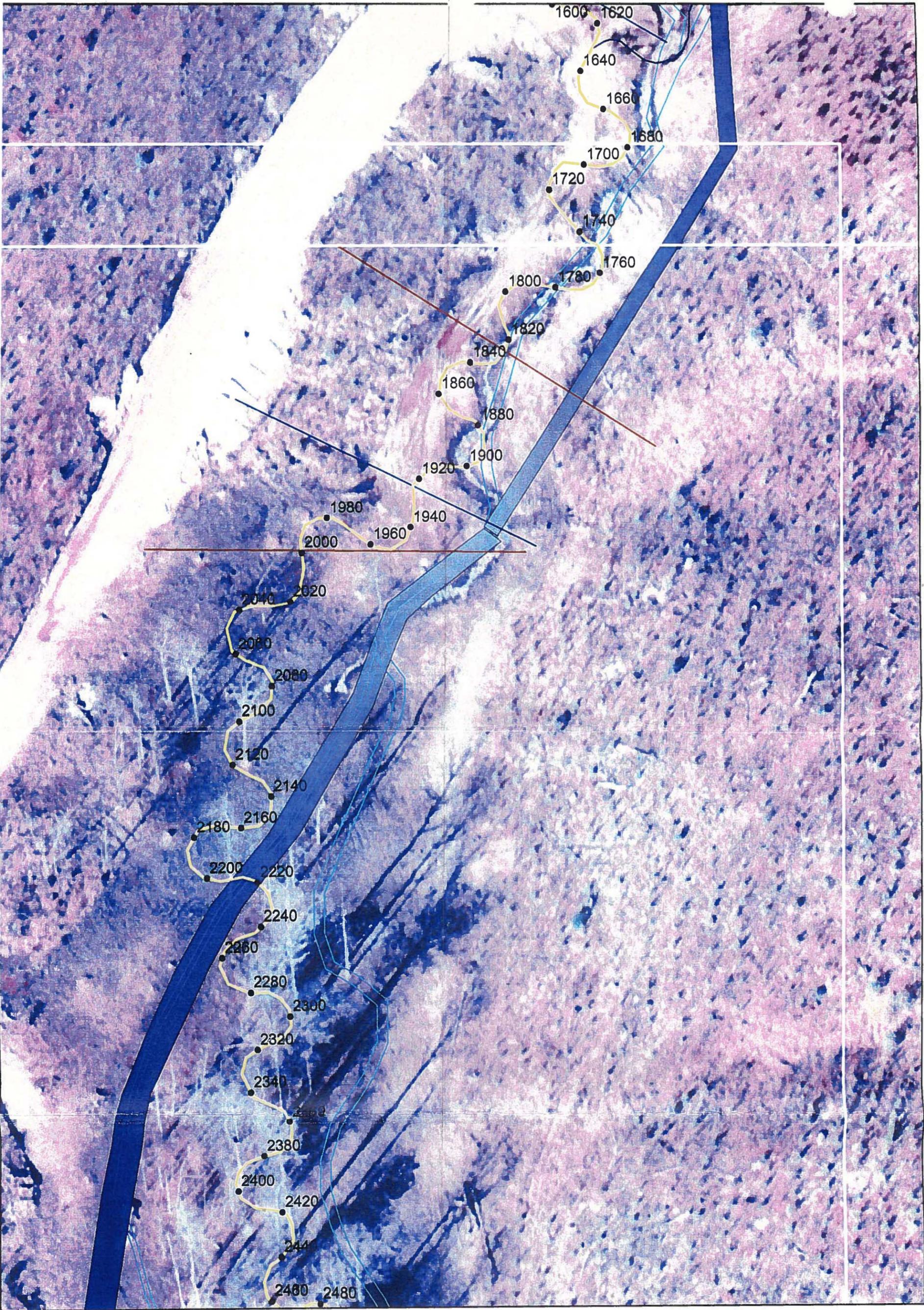
ATTACHMENT C

PROPOSED PROPERTY FOR LAND ACQUISITION AND CONSERVATION
SUPPLEMENTAL ENVIRONMENTAL PROJECT

The 1,312-acre McNeal tract which is proposed for the Supplemental Environmental Project is in the northwest corner of George County, Mississippi, about 12 miles northwest of Lucedale and about 50 miles north of the city of Pascagoula. The property is one mile west of the junction of the Leaf and Chickasawhay Rivers, where they form the Pascagoula River. The property's northern boundary is the Salem-Merrill Road, and it is in Township 1 South, Range 8 West. The property, which is in the Leaf River watershed and near the DeSoto National Forest, possesses significant wildlife, fish, and plant habitat, and significant scenic and open space values. It contains bottomland hardwood flood-plain forests and cypress/tupelo gum sloughs and ponds which contain potential habitat for Osprey, Gopher tortoise, Swallow-tail kite, Gulf sturgeon, Pearl darter, Louisiana black bear, Yellow blotched and Alabama map turtle, Southern hickorynut, Florida flame azalea, Silky camellia and the Green fly orchid. The approximately 450-acre cypress / tupelo gum swamp forms the headwater of Big Creek, a stream whose primary reach is protected within The Nature Conservancy's Murrah Preserve as it connects to the Pascagoula River.





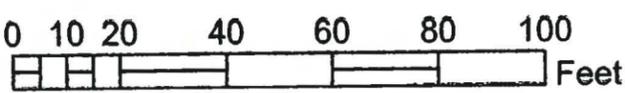


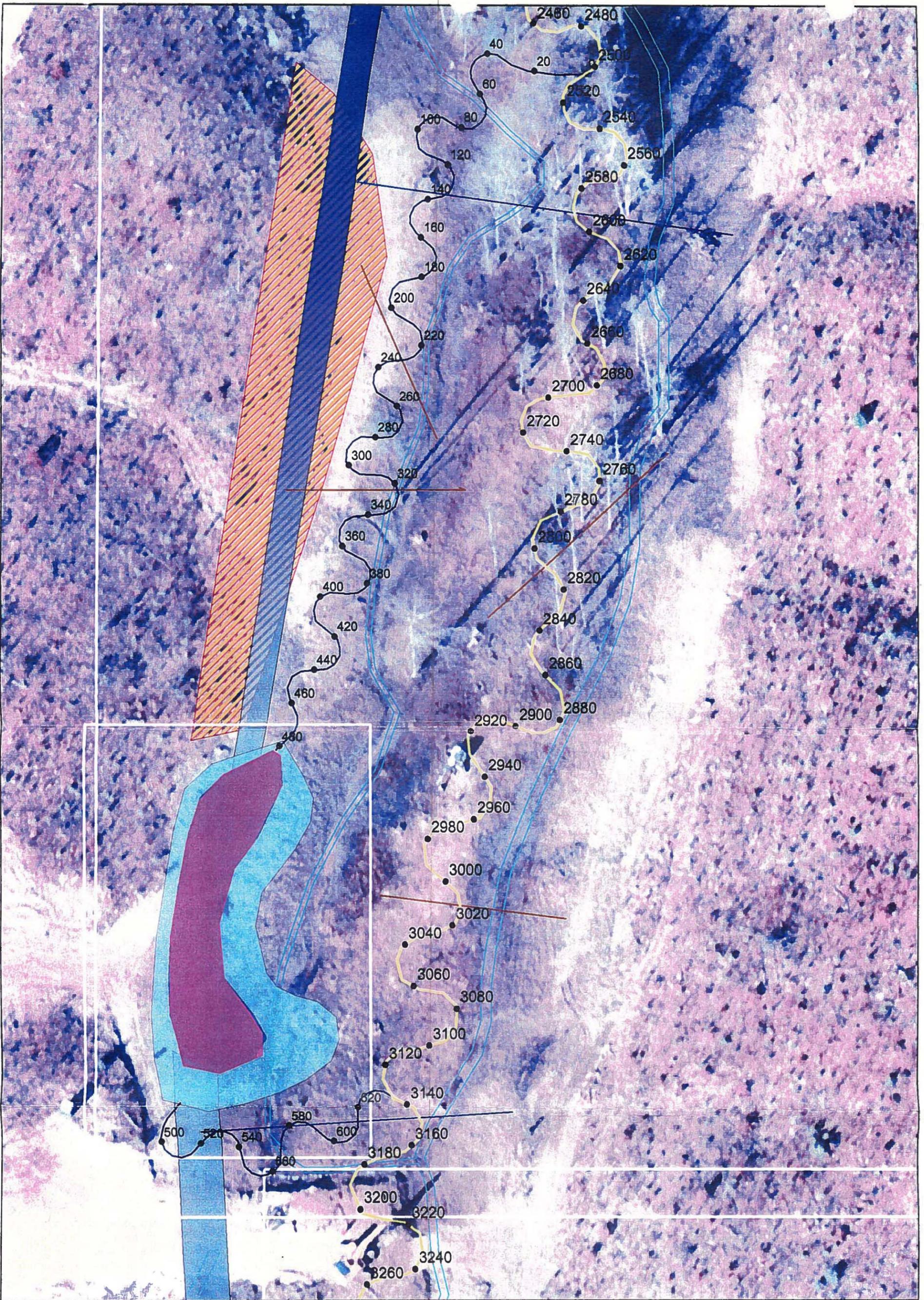
Sheet 3

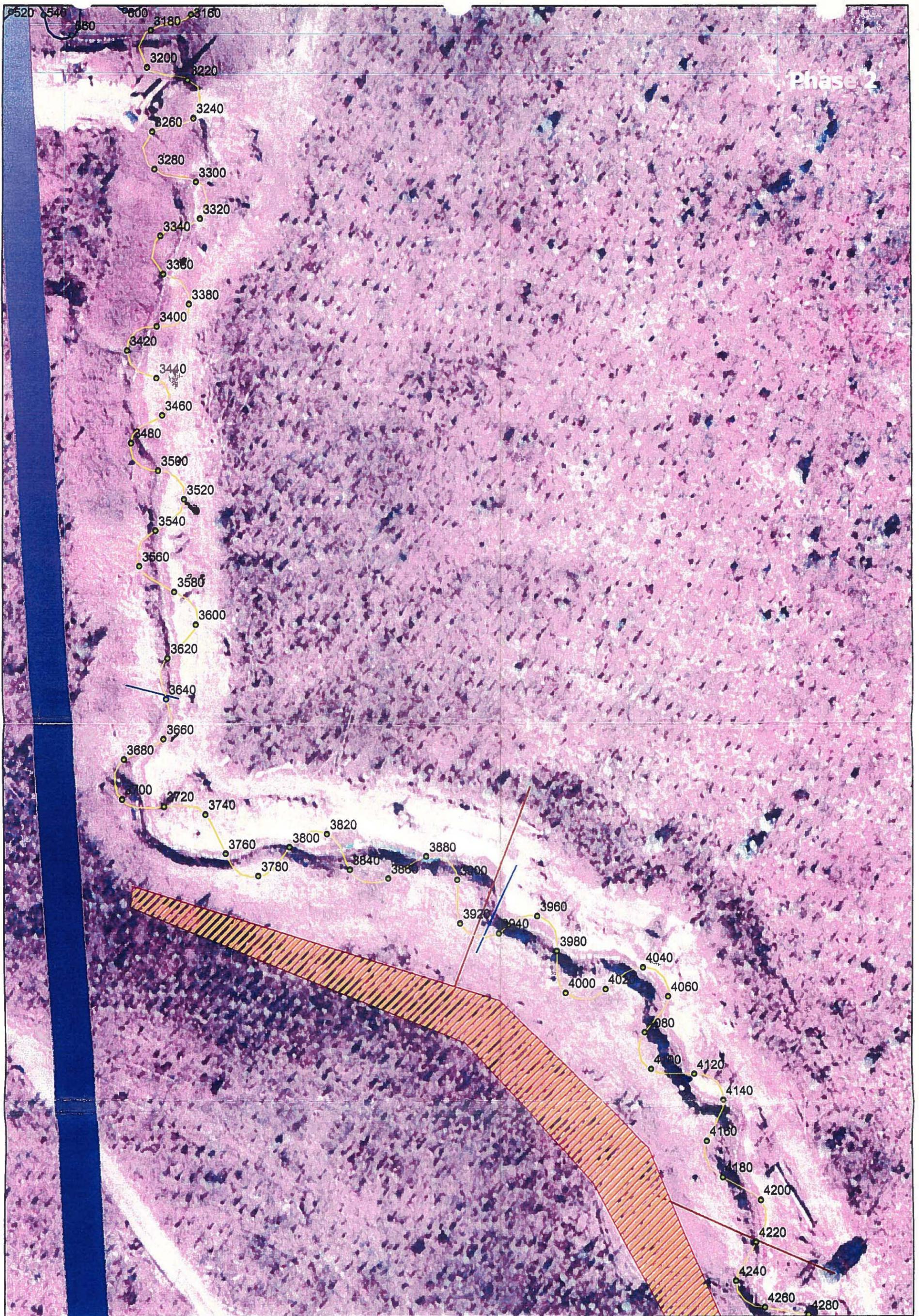
Map Produced by:
 Brad Humber
 ARFO GIS Lab
 March 22, 2004
 Datum: NAD83
 Projection: UTM Zone 16 North

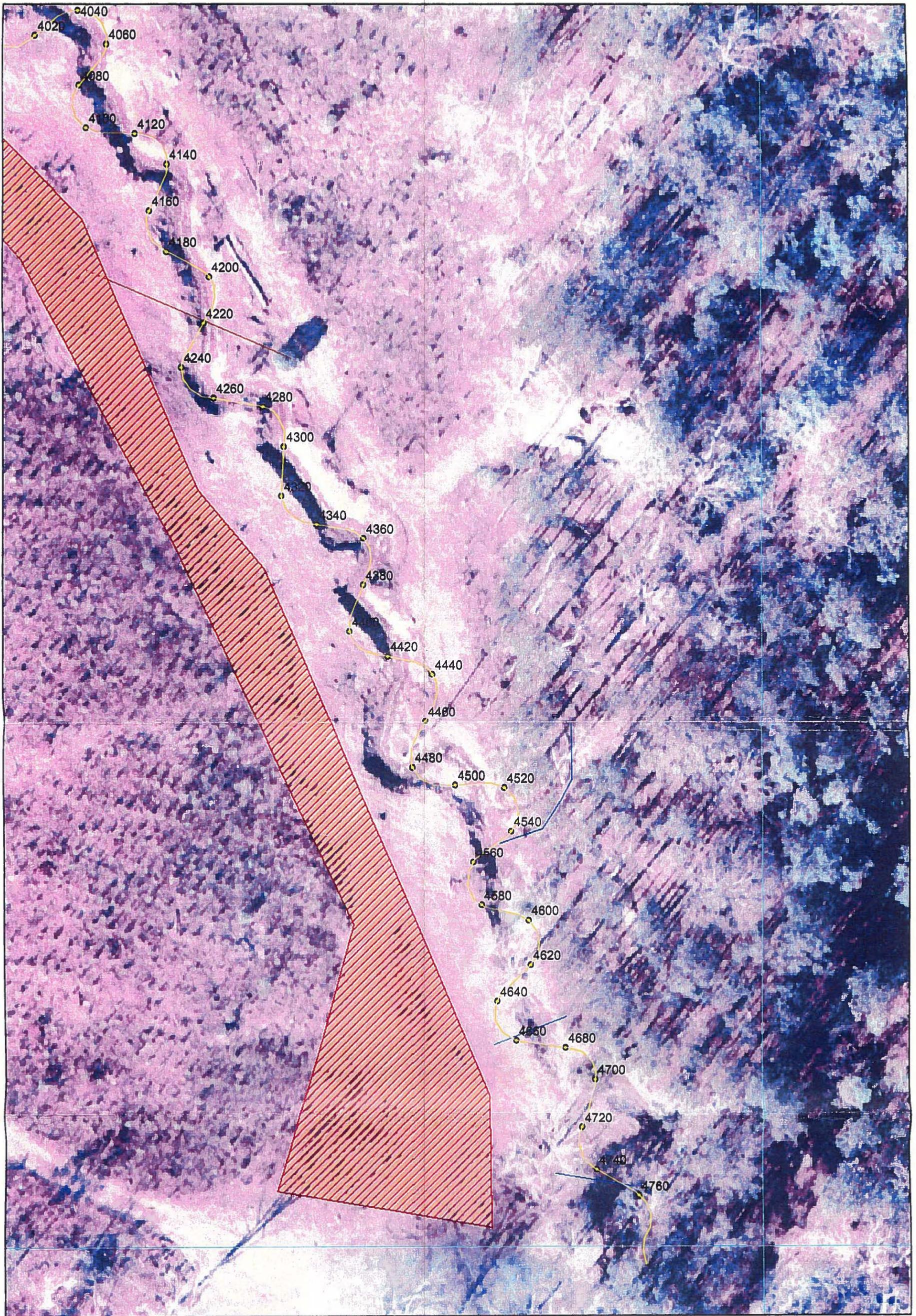


**Genesis
 Stream
 Restoration
 Plan**









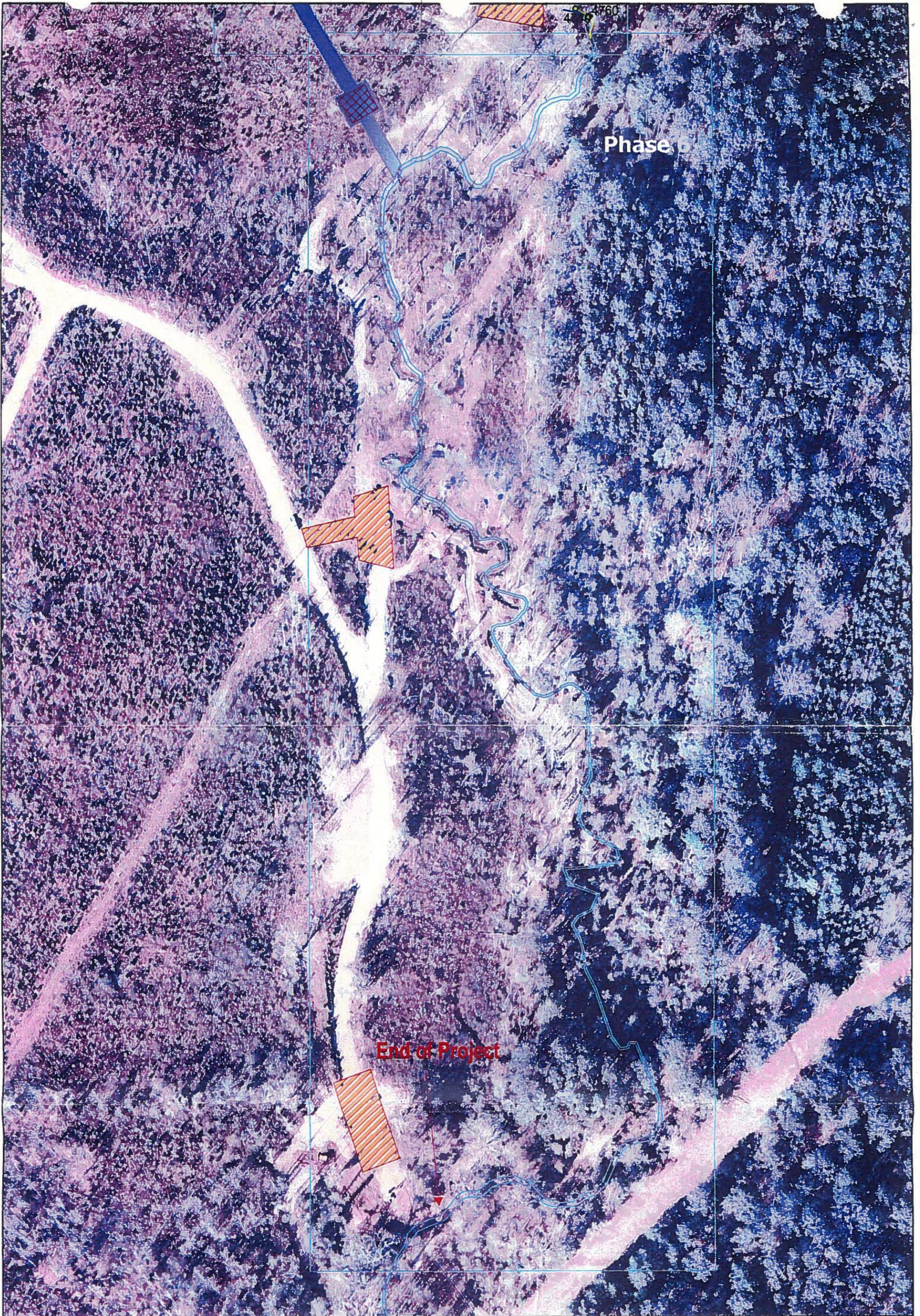
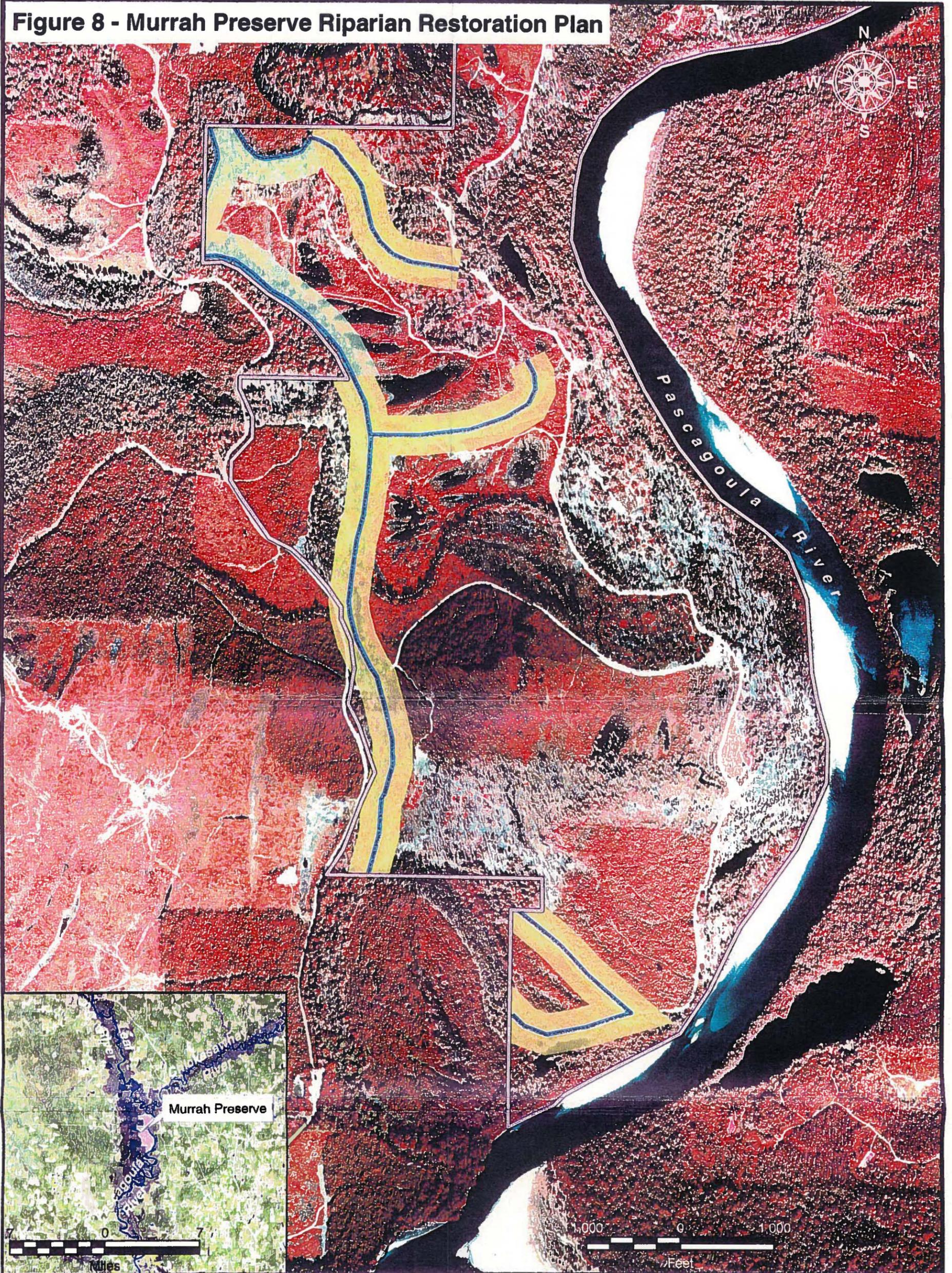


Figure 8 - Murrah Preserve Riparian Restoration Plan



Note:
Base image is aerial photography mosaic dated November 5, 2001.

Legend

-  Murrah Preserve Boundary (approx.)
-  Stream Centerline

Restoration Areas

-  1
-  2



Environmental Science Services, Inc.
P.O. Box 84408
Baton Rouge, Louisiana 70884-4408
(225) 927-7171