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| CONTRACT NO. N62472-94-D-0398 | DELIVERY ORDER # 0010 Mod. J | ACTIVITY LOCATION Portsmouth Naval Shipyard, Kittery, ME |
|---|--|--|

PROJECT TITLE:
DRMO SHORELINE REHABILITATION

| | |
|---|-----------------------------|
| FROM: Foster Wheeler Environmental Corp. (PQCM) : Mark Miller | DATE June 6, 2001 |
| TO: C DAVIS | DATE June 6, 2001 |

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FOSTER WHEELER ENVIRONMENTAL CORPORATION

June 6, 2001

File #: 1284-0010-01-0205

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State House Station #17
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Subject: Final Action Memorandum
Site 6, Defense Reutilization and Marketing Office (DRMO) Shoreline Stabilization
Portsmouth Naval Shipyard
Kittery, Maine

Dear Ms. Cassidy and Mr. McLeod:

On the behalf of the US Navy, Foster Wheeler Environmental Corporation is pleased to present the Final Action Memorandum for Site 6, Defense Reutilization and Marketing Office (DRMO) Shoreline Stabilization at the Portsmouth Naval Shipyard in Kittery, Maine. This Final Action Memorandum has been revised to address comments from the USEPA and MEDEP on the October 13, 2000 Draft Removal Action Report for DRMO Shoreline Stabilization. The comments and responses are included herein.

Should you have any questions or request for additional information please feel free to contact Mr. Fred Evans at (610) 595-0567 Extension 159.

Very truly yours,

Carl Tippmann, PE

cc: Distribution
File



**Distribution List for Navy EFA Northeast RAC I – DO 10
Site 6, DRMO Shoreline Stabilization Final Action Memorandum
Portsmouth Naval Shipyard, Kittery, Maine.**

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FOSTER WHEELER ENVIRONMENTAL CORPORATION

**RESPONSES TO USEPA COMMENTS DATED DECEMBER 12, 2000
DRMO SHORELINE STABILIZATION DRAFT REMOVAL ACTION REPORT
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
SUBMITTED OCTOBER 13, 2000**

1. **Comment:** The first paragraph of the report text indicates that this report is the Action Memorandum for the emergency removal action taken at the DRMO site. The title of the report should therefore be changed to reflect the fact that the document is an Action Memorandum.

Response: The title of the report has been changed to reflect that the document is an Action Memorandum.

2. **Comment:** In general, the outline of this document adheres to EPA's guidance on the preparation of Action Memorandum. However, there are problems throughout the document with respect to the fact that the removal action has already been taken. The document needs to be reviewed to ensure that it reflects the fact that actions have already been taken.

Response: The document has been revised throughout to indicate that the action has already taken place.

3. **Comment:** Page 1, Section 2.1.1: This section needs to be revised to reflect what the conditions were that led to the need for an emergency action. As drafted, this section implies that the conditions presented here are still in existence. The last sentence of this paragraph should discuss what the project objective was, not "is".

Response: The text has been revised to indicate the work has been performed.

4. **Comment:** Page 2, Section 2.1.3: Some information should be added to this section describing the characteristics of the DRMO shoreline since this was the subject of the emergency removal action.

Response: Text describing the characteristics of the DRMO shoreline has been added to the end of this section.

5. **Comment:** Page 2, Section 2.1.4, 2nd Paragraph: The information presented in this paragraph is confusing and not wholly appropriate for the section in question. This paragraph basically discusses issues related to health and safety concerns during a removal action (although it inaccurately discusses the action as if it will take place in the future rather than acknowledging that it has already occurred). This paragraph should be deleted.

Response: The paragraph has been deleted as requested.

6. **Comment:** Page 3, Section 2.1.4, 3rd Paragraph: This paragraph briefly reviews that information that was the basis for the emergency removal action. EPA recommends that this information be expanded to discuss the fact that the shoreline rip-rap that had been in place was eroded resulting in the potential for highly contaminated soil to be released into the river.

Response: A fuller description of the shoreline erosion has been added to Sections 2.1.1 and 2.1.3.

7. **Comment:** Page 3, Section 2.1.5: The discussion of the Feasibility Study does not really relate the NPL status of the site, as is the purpose of this section. This information should be deleted. Information regarding the HSWA permit and the CERCLA/NPL status is appropriate and should remain.

Response: The discussion of the Feasibility Study has been deleted from this section.

8. **Comment:** Page 3, Section 2.2.1: It appears that these two paragraphs are discussing the same action. Clarify the fact and combine the two paragraphs into one concise paragraph discussing the 1993 action. This should include the objectives of the action and a description of the action.

Response: The two paragraphs have been replaced with the following:



"In 1993, an Interim Corrective Action (ICA) under RCRA (McLaren/Hart, 1992) was conducted at DRMO because of metals contamination in the soil. A portion of the site was paved and another section covered with a Geosynthetic Clay liner cap with twelve inches of crushed stone "choked" with cement. Additional interim corrective actions taken as part of the ICA included installation of storm water controls, and a concrete curb to prevent sheet water runoff."

9. **Comment:** Page 4, Section 2.3.1: The text indicates that "The Navy is the lead agency under the cooperative agreement with EPA". This information is totally inaccurate and reflects the poor quality of this document as a whole. The Navy and its contractors should be fully aware of the regulatory/enforcement framework for PNS. This section should describe that lead agency status in relation to CERCLA, Executive Orders, etc. In addition, the Federal Facility Agreement should be referenced.

Response: The paragraph has been revised to more accurately describe the regulatory framework. Reference has been made to the Federal Facilities Agreement as requested.

10. **Comment:** Page 5, Section 3.0: The last sentence of this paragraph must be revised to indicate that implementing the removal action "did" or "has" provided protection to the river.

Response: The last sentence of this paragraph was revised to indicate: "Implementing this emergency removal action has provided protection of the Piscataqua River from further releases from the DRMO shoreline."

11. **Comment:** Page 5, Section 7.0: Add the following sentence to this section.

"This decision document was developed in accordance with CERCLA as amended, and is not inconsistent with the NCP."

Response: The sentence has been included as requested.



**RESPONSES TO MEDEP COMMENTS DATED JANUARY 2, 2001
DRMO SHORELINE STABILIZATION DRAFT REMOVAL ACTION REPORT
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
SUBMITTED OCTOBER 13, 2000**

1. **Comment:** This document was written very poorly. In many places it reads like a Scope of Work rather than report of work performed. Indeed, it appears that many portions of this document were cut-and-pasted from the scope of work. This problem has occurred with Foster Wheeler reports in the past. The MEDEP expects that in the future the Navy will not distribute documents that have apparently been prepared with little attention to even basic issues such as updating text to reflect current conditions.

In addition, the pertinent details of the removal action are not described. The report only refers to details provided in the Work Plan. This is unacceptable and the MEDEP is surprised that the Navy would allow such a sloppy report to be passed on to the regulators. Until significant revisions are made to this document the MEDEP cannot accept it.

Response: A description of the work performed has been incorporated into the report as Section 2.2.2 Current Actions (Stabilization Activities). Also, the text has been updated to reflect current conditions.

2. **Comment:** 2.1.1 Removal Site Evaluation, p. 1

This entire paragraph appears to have been copied from the scope of work. For instance, the first sentence states, "A portion of the DRMO shoreline is covered with large riprap and concrete keel blocks...". A further sentence states, "Much of the slope is left with exposed soil only."

For a document that's supposed to report on how the exposed soil was remedied this is a gross error.

Response: The text has been revised to indicate that these are the former conditions that led to the removal action and that the work has been performed.

3. **Comment:** 2.1.3 Site Characteristics, p. 2

"As a result of the RCRA investigation..."

This investigation has not been previously mentioned in this report. Therefore, it should be referenced for readers not familiar with the RCRA investigation.

Response: The RCRA Facility Investigation has been referenced as requested.

4. **Comment:** Section 2.1.4, p. 2, 1st para:

"Elevated levels of lead and nickel have been observed in seawater, mussel, and algae samples..."

DEP does not recall that elevated lead has been detected in seawater. Please confirm and add more specific information to the report (i.e., where, when, etc.).

Response: MEDEP is correct that elevated lead has not been detected in seawater. The first paragraph of Section 2.1.4 will be revised as follows:

"Soil sampling and chemical analysis activities (LEA, 1986) indicated high levels of cadmium and lead, moderate to high levels of nickel, and moderate levels of chromium. Contamination was highest in the upper few feet of soil profile, but also had infiltrated into the deeper, saturated zone. Elevated levels of lead and nickel were also observed in mussel and algae samples associated with the DRMO site (LEA, 1986). The RFI (McLaren/Hart, 1992) found that metal concentrations in the soil exceeded the proposed Federal Action Levels of the time. In addition, hydraulic conductivity estimates



computed for the test wells on the DRMO site have shown the fill materials underlying the site to be highly permeable, particularly along the river. Water level data indicate that the tides influence all DRMO wells, and that the shallow groundwater underlying DRMO is generally flowing southward into the estuary.”

5. **Comment:** Section 2.1.4, p. 2, 2nd para:

“Various metals have been detected in the soil at the DRMO site from a depth of 0 to 39 inches.”

Lead at 7300 ppm was detected at DSB-8B at a sample depth of 37-39 feet below ground surface. Please correct this sentence.

Response: The paragraph containing this sentence has been deleted in response to an EPA comment stating that because the paragraph deals with health and safety concerns during the removal action, it is not applicable to the section.

6. **Comment:** Section 2.1.4, p. 2, title:

Please edit the title to read “*Release or Potential Release to the Environment of a Hazardous Substance*”

Response: The title has been revised to read “*Release or Potential Release to the Environment of a Hazardous Substance*” as requested.

7. 2.1.4, p. 3

“The results of the soil samples are presented as Attachment 5.”

a) **Comment:** The source of this table must be referenced.

Response: The source of the table has been referenced as requested. The following note has been added to the table:

“Source: Appendix A of Revised OU2 Risk Assessment for Portsmouth Naval Shipyard, Kittery, Maine, Tetra Tech NUS, Inc., King of Prussia, PA, November 2000).

b) **Comment:** This is a very poor reproduction since it is a copy of a fax. Please provide a cleaner copy of this table.

Response: A cleaner table has been provided as requested.

8. **Comment:** 2.1.5, National Priority List (NPL) Status, p. 3

It is unclear why the Halliburton FS report is discussed here. This report was never finalized and therefore was never used for making decisions. Therefore, please delete references to that report.

Response: References to the Halliburton FS report have been deleted as requested.

9. **Comment:** 2.1.5, National Priority List (NPL) Status, p. 3

“The slope stabilization is considered consistent with any final action that may be taken under CERCLA at DRMO.”

This is incorrect. All parties agreed that when it is time to select a final remedy for the DRMO the 1999 Shoreline Stabilization work would be evaluated to determine its consistency with a final remedy.



Response: Comment noted. However, the statement is correct. The slope stabilization is consistent with any final action which may be performed at the site. This means slope stabilization will most likely be a part of any final remedy for the site. But, prior to selection of the final remedy the Navy will prepare a Feasibility Study to evaluate remedies prior to preparing a proposed plan for the Navy's proposed remedy. The following sentence has been added at the end of the paragraph: "However, the Navy is required to prepare a Feasibility Study to evaluate remedial alternatives, and issue a Proposed Plan for public comment prior to selection of a final remedy."

10. 2.2.1 Previous Actions, p. 3:

- a) **Comment:** The two paragraphs in this section appear to be quite repetitious. Please simplify to state the pertinent information only once.

Response: The two paragraphs have been replaced with the following:

"In 1993, an Interim Corrective Action (ICA) under RCRA (McLaren/Hart, 1992) was conducted at DRMO because of metals contamination in the soil. A portion of the site was paved and another section covered with a Geosynthetic Clay liner cap with twelve inches of crushed stone "choked" with cement. Additional interim corrective actions taken as part of the ICA included installation of storm water controls, and a concrete curb to prevent sheet water runoff."

- b) **Comment:** "The action in 1993..."

Please indicate what type of action this was, e.g. Emergency Removal, etc. Also, reference any reports related to the 1993 action.

Response: The action in 1993 was taken as an Interim Corrective Action under RCRA. Please see the Navy's response to MEDEP comment 10a) above for the revised wording.

11. **Comment:** Section 2.2.2, p. 4, 2nd para and bullets:

"Detailed procedures for the shoreline stabilization are in the workplan..."

This is an unacceptable means to report the work that occurred. See Comment 1. A fuller description of this work must be provided, and appropriately referenced to the Attachments (figures).

Response: A detailed description of the work performed, with references to Figures and Appendices, has been provided as Section 2.2.2.

12. **Comment:** 2.3.1, p. 4, last sentence:

"The Navy is the lead agency under the cooperative agreement with the EPA."

Identify the agreement by proper name (Federal Facilities Agreement). How is this different from the first sentence in this paragraph?

Response: The paragraph has been revised to more accurately describe the regulatory framework. Reference has been made to the Federal Facilities Agreement.

13. **Comment:** 3.0, p. 5:

This is Work Plan information that should not be repeated in this report. It should be deleted.

Response: Please see the Navy's Response to USEPA Comment No. 10.



14. **Comment:** 4.0 Estimated Costs, p. 5

This section should present actual, not estimated costs.

Response: The costs presented are actual project costs. The heading has been changed to Actual Project Costs.

15. **Comment:** 4.1, Project Schedule, p. 5

Is the schedule presented as Attachment 6 the actual schedule in which work took place? If not, it should be.

Response: The schedule presented in Appendix B is the actual project schedule.

16. **Comment:** Section 7.0, Recommendation, p. 5

The statement under this heading is not a recommendation. It should be revised or deleted.

Response: Please see the Navy's Response to USEPA Comment No. 11.

17. **Comment:** Section 8.0, References, p. 5

The Removal Action Work Plan should also be included in the references.

Response: The Removal Action Work Plan has been incorporated as requested.

18. **Comment:** 9.0 Attachments

Figures in the report should include pre-construction and post-construction photographs.

Response: Pre-construction and post-construction photographs have been added to the document as Appendix A.

19. Attachment 3

- a) **Comment:** The title box of this figure reads, "Figure 4-1" indicating it is from a different document. This figure should be an as-built figure of the shoreline stabilization. Please clarify that this is or is not the case.

Response: The shoreline cross-section is an as-built figure, and the title block has been revised to indicate this.

- b) **Comment:** This figure indicates that there should be figure showing curb detail. There is no such figure. Please include a figure showing curb detail.

Response: A figure showing the curb detail has been included as requested.

20. Attachment 4, p. 10

- a) **Comment:** There is no discussion in the text regarding this figure. There should be.

Response: A reference to Figure 6, Slope Stabilization, has been provided in Section 2.2.2.4.3 Shoreline Stabilization.

- b) **Comment:** The title on the fold-out reads "Slope Stabilization". The title page insert reads, "Slope Survey".



Response: The Table of Contents has been corrected to read "Slope Stabilization".

- c) **Comment:** On the figure, the Engineer's Seal is not legible. Please correct.

Response: The figure has been corrected to provide a more legible Land Surveyor's Seal. Also, the following note has been added to the figure:

"Jerome B. Watts, PLS #1245".

- d) **Comment:** The figure needs a footnote that explains the elevation datum that is used in the profiles.

Response: The following note has been added to the figure:

"Vertical-Horizontal Datums are based on a plan entitled, "Control Map", Scale 1"=200', provided by Engineering Department of Portsmouth Naval Shipyard in Kittery, Maine."

21. Attachment 5, p. 11

- a) **Comment:** Indicate the source of the information in Attachment 5.

Response: The source of the table has been referenced as requested. The following note has been added to the table:

"Source: Appendix A of Revised OU2 Risk Assessment for Portsmouth Naval Shipyard, Kittery, Maine, Tetra Tech NUS, Inc., King of Prussia, PA, November 2000).

- b) **Comment:** The table in Attachment 5 is basically illegible. The final copy should include a cleaner table that is not a photocopy of a fax.

Response: A cleaner table has been provided as requested.

22. **Comment:** Attachment 6, p. 12

See Comment 15.

Response: Please see the Navy's response to MEDEP Comment No. 15.



**FINAL ACTION MEMORANDUM
FOR
SITE 6, DEFENSE REUTILIZATION AND MARKETING OFFICE (DRMO)
SHORELINE STABILIZATION
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE**

Issued:

June 6, 2001

Prepared for:

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Delivery Order No. 0010**

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**FINAL ACTION MEMORANDUM
 REMEDIAL ACTION CONTRACT N62472-94-D-0398
 DELIVERY ORDER NO. 0010
 SITE 6, DRMO SHORELINE STABILIZATION
 PORTSMOUTH NAVAL SHIPYARD
 KITTERY, MAINE**

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1.0 PURPOSE

The purpose of this Action Memorandum is to document the emergency removal action described herein at the Defense Reutilization and Marketing Office (DRMO) Storage Yard, located at the Portsmouth Naval Shipyard (PNS) in Kittery, Maine. The action was performed by the Foster Wheeler Environmental Corporation (Foster Wheeler), which has experience with similar disposal sites.

2.0 SITE CONDITIONS AND BACKGROUND

2.1 Site Description

2.1.1 Removal Site Evaluation

The DRMO shoreline formerly was covered with embankment rock (large riprap) and concrete keel blocks at a steep slope of approximately sixty (60) degrees 2H:1V (2 feet horizontally to 1 foot vertically), extending approximately 30 vertical feet below the low tide level. The keel blocks were constructed of concrete and wood and were used to support submarines in dry docks before being used for erosion protection. Despite this attempt to stabilize the shoreline, wave action of the river caused the shoreline to deteriorate due to scouring behind the large keel blocks. This was caused by a lack of intermediate size stone and small stone bedding layers. Additional erosion was caused by the deterioration of the concrete keel blocks through contact with the saline water. Many of the riprap stones and keel blocks moved down the slope. Much of the slope surface was left with exposed soil only, with no protection from erosion. In some locations, the deterioration of the shoreline had destabilized the fence to the extent that it was at risk of falling into the river.

The objective of the project was to stabilize the DRMO shoreline in order to minimize additional soil erosion and migration of chemicals into the Piscataqua River and Great Bay Estuary. The stabilization design provides for filtering by using multiple layers of increasingly larger materials. Foster Wheeler removed the existing curb and fence and created a temporary berm before proceeding with work on the shoreline. The keel blocks and other debris were removed and disposed. The existing embankment rock, much of which had fallen to the bottom of the slope, was regraded. Layers of fine gravel, geotextile fabric, bedding stone, intermediate rock, and surface rock were placed to stabilize the slope. The curb and fence were replaced, and the section of the GCL cap disturbed during construction of the berm was restored. Specific aspects of the work are discussed in Section 2.2.2 of this Action Memorandum.

2.1.2 Physical Location

The site location is presented in Figure 1. PNS is situated within the city limits of Kittery, Maine. PNS is located on an island in the Piscataqua River referred to on NOAA charts as Seavey Island. Surface elevations within the PNS facility range from sea level to approximately 60 feet. The Piscataqua River is a tidal estuary, which forms the southern boundary between Maine and New Hampshire. PNS is located at the mouth of the Great Bay Estuary. The Great Bay and Piscataqua River estuarine system extends roughly 20 to 25 miles inside New Hampshire.

There has been a long history of shipbuilding in the Portsmouth Harbor dating back to 1690. PNS was first established as a government facility in 1800, and it served as a repair and building facility for ships during the Civil War. The first government-built submarine was designed and constructed at PNS during World War I. Since then, the Shipyard has served as a facility where the construction, design, and servicing of naval submarines is performed. It continues today to service and overhaul naval submarines.

2.1.3 Site Characteristics

The Defense Reutilization and Marketing Office (DRMO) storage yard, which has been in operation for more than 30 years, is approximately two acres. A site map is presented in Figure 2. Located on the south end of Seavey Island, most of the DRMO area is situated on filled land. It serves as a temporary storage

area for used materials prior to off-site recycling or disposal. Materials previously stored at the DRMO include lead and nickel-cadmium battery elements, motors, typewriters, paper products, and scrap metals. Practices that resulted in obvious sources of contamination, such as open storage of batteries which could have leached or otherwise been released by pathways such as infiltration or runoff, ceased in approximately 1983.

Previous visual inspections of DRMO have indicated ponding of precipitation in some areas and direct runoff to the Piscataqua River in other areas. The RCRA Facilities Investigation (RFI) (McLaren/Hart, 1992), indicated that the material below DRMO is highly permeable. Investigations of groundwater flow in the area have shown that groundwater moves under the storage yard to the harbor. In addition, rainfall infiltrating the DRMO flows with the groundwater to the harbor. Groundwater at the site varies in salinity from fresh to brackish to seawater, depending on location, tidal cycle, and seasonal variations.

Information from subsurface investigations has shown that DRMO is composed mainly of fill materials. Subsurface materials encountered include large rock fragments, scrap metal, wood debris, sand, gravel, and sandblasting grit. Based upon core sample results, the bedrock beneath the DRMO site consists of a highly fractured dark gray to greenish gray metamorphic rock. The bedrock generally slopes to the east and south towards the Piscataqua River.

During an inspection of the PNS shoreline in the summer of 1999, erosion was discovered along the shoreline of the Piscataqua River adjacent to the DRMO Salvage Area. The existing embankment rock had sloughed, exposing lead-contaminated soil from the DRMO area to potential erosion from the river. In September 1999, the exposed soil was covered with hydromulch as an interim erosion control measure until the slope stabilization could be conducted. To protect human health and the environment from a release of lead contamination, an emergency removal action under CERCLA was implemented. The interim measure serves to protect the DRMO embankment soil from further erosion.

2.1.4 Release or Potential Release to the Environment of a Hazardous Substance

Soil sampling and chemical analysis activities (LEA, 1986) indicated high levels of cadmium and lead, moderate to high levels of nickel, and moderate levels of chromium. Contamination was highest in the upper few feet of soil profile, but also had infiltrated into the deeper, saturated zone. Elevated levels of lead and nickel were also observed in mussel and algae samples associated with the DRMO site (LEA, 1986). The RFI (McLaren/Hart, 1992) found that metal concentrations in the soil exceeded the proposed Federal Action Levels of the time. In addition, hydraulic conductivity estimates computed for the test wells on the DRMO site have shown the fill materials underlying the site to be highly permeable, particularly along the river. Water level data indicate that the tides influence all DRMO wells, and that the shallow groundwater underlying DRMO is generally flowing southward into the estuary.

Eight surface soil samples were taken in the area of shoreline erosion at DRMO in July 1999. The results of these samples indicate metal contamination, primarily lead. The locations of the soil samples are presented in Figure 3 and the analytical results of the soil samples are presented in Table 1.

The combination of these site conditions indicated a high risk of a release of hazardous substances to the environment. Additional shoreline erosion and migration of harmful constituents into the river ecosystem was highly likely given the high metals concentrations, the flow of groundwater through the highly permeable fill material into the river, and the erosion of the shoreline protection that left highly contaminated soil exposed.

2.1.5 National Priority List (NPL) Status

The Hazardous and Solid Waste Amendments (HSWA) Permit has been issued by the United States Environmental Protection Agency, Region 1. The permit was issued as a result of a RCRA Facility Assessment (RFA) conducted by the USEPA.

Industrial activities at PNS resulted in contamination of certain areas of the facility. Accordingly, PNS was added to the National Priority List (NPL) on May 31, 1994. The facility is now governed by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The DRMO shoreline stabilization project constituted an emergency removal action under the National Contingency Plan (NCP). The slope stabilization is considered consistent with any final action that may be taken under CERCLA at DRMO. However, the Navy is required to prepare a Feasibility Study to evaluate remedial alternatives, and issue a Proposed Plan for public comment prior to selection of a final remedy.

2.2 Other Actions Addressing DRMO

2.2.1 Previous Actions

In 1993, an Interim Corrective Action (ICA) under RCRA (McLaren/Hart, 1992) was conducted at DRMO because of metals contamination in the soil. A portion of the site was paved and another section covered with a Geosynthetic Clay liner cap with twelve inches of crushed stone "choked" with cement. Additional interim corrective actions taken as part of the ICA included installation of storm water controls, and a concrete curb to prevent sheet water runoff.

2.2.2 Current Actions (Stabilization Activities)

2.2.2.1 Tasks Performed

The following major activities were performed:

- Erosion and sedimentation control measures were installed.
- Existing curb was removed and disposed. Existing GCL cap material was used to create a temporary berm.
- Existing fence was removed and disposed.
- Keel blocks and other debris on the slope were removed and disposed.
- Existing embankment rock was regraded to form a level bench.
- Existing soil surface was covered with ASTM C33 size 8 stone.
- Geotextile was laid along slope. Seams were overlapped 12 inches and laid perpendicular to slope.
- ASTM C33 size 357 bedding stone was placed over geotextile.
- Intermediate layer of Class C stone was placed.
- Surface layer of Class B stone was placed.
- Concrete curb was poured.
- Existing GCL was restored by overlapping with replacement GCL behind curb. Joint was sealed with bentonite.
- GCL cap was backfilled behind curb using berm material.
- Fence was replaced.
- Site cleanup was performed. Resources were demobilized.

2.2.2.2 Mobilization

Temporary construction offices and facilities, lay down, and staging and material storage areas were installed and/or established as part of the mobilization task. Temporary facilities included an office in Building 298 and portable toilets. The location of the temporary office facility was coordinated with the Navy through the Resident Officer in Charge of Construction (ROICC). Arrangements were made at the site for mail delivery and solid waste and sewage disposal services. Administrative staff, craft labor and equipment were mobilized to the site as part of this task.

2.2.2.3 Site Preparation

2.2.2.3.1 Documentation

Existing site conditions and job progress was documented with photographs. The Navy was responsible for all photographic documentation. Photographs are included in Appendix A.

2.2.2.3.2 Erosion and Sediment Controls

Prior to commencing the stabilization activities, erosion and sediment control measures were installed around the work area. The following describes the erosion and sediment controls that were installed:

- A temporary diversion berm was constructed on the upgradient side of the slope, using the existing cover material. The existing cover consists of stone and cement with a high content of fines that minimized permeability of the berm.
- All disturbed areas were covered daily with gravel, which was incorporated into the stabilization work.
- Geotextile fabric was installed over each of the catch basins in the capped area to minimize particle runoff.

All of the erosion and sediment controls were inspected and maintained on a daily basis.

2.2.2.3.3 Curb and Fence Removal

The existing fence was removed and disposed. The existing curb, which tied in to the Geosynthetic Clay Liner (GCL) cap, was removed and sent to a concrete recycling facility. The crushed stone aggregate/portland cement material of the existing cap was then used to create a temporary diversion berm over the GCL cap. Care was taken when digging into the cap to minimize damage to the GCL under the stone layer. A section of GCL was installed to replace the GCL that was damaged during the removal of the curb. The replacement GCL overlaps the existing GCL by 12 inches. Granular bentonite was sprinkled along the entire overlap width to seal the existing GCL to the replacement GCL.

2.2.2.4 Shoreline Slope Stabilization

2.2.2.4.1 Removal of Keel Blocks and Debris

The keel blocks that were placed to stabilize the shoreline were removed along with other debris that had accumulated. The excavator was used for this activity. The wood and concrete components of the keel blocks were separated and sent to the appropriate recycling facilities. The additional debris collected was disposed as construction debris. Personnel took care to avoid walking directly on the slope, in order to prevent contact with contaminated soil. In order to contain contaminated soil on the slope, all materials removed from the slope were broomed off to remove any adhering dirt prior to being disposed off site. This was found to be sufficient to remove adhering soil. Debris was broomed prior to removal from the slope area and then placed in polyethylene plastic lined roll-off containers segregated for wood and concrete waste.

2.2.2.4.2 Regrading

Much of the existing embankment rock that had previously provided erosion protection over the shoreline slope had shifted down to the lower portion of the slope. Approximately 250 cubic yards of the rock was consolidated and regraded to form a level bench on the slope to provide a foundation on which the new shoreline stabilization system could be constructed. Minor regrading of the exposed slope was performed in order to level off any surface irregularities. This activity was minimized to limit disturbance of the contaminated soil on the exposed shoreline slope.

The hydromulch that was spread on the soil as an interim erosion control measure was left in place and covered by the embankment rock. The volume of organic material is minimal and will not affect slope stability.

2.2.2.4.3 Shoreline Stabilization

The exposed soil surface at the top of the slope was covered with ASTM C33 size 8 stone (approximately ½"). The thickness of the layer varies but is sufficient to cover the existing soil, with a minimum thickness of 3 inches. This layer provides soil filtering characteristics as well as structural strength to hold the slope. A layer of 16-oz. nonwoven geotextile was then placed along the slope to act as a filter that is permeable to water but prevents lead contaminated soil from migrating out. The geotextile will provide durability and resistance to mechanical damage. The seams of the geotextile sections were overlapped 12 inches and are perpendicular to the slope. A minimum 6-inch layer of ASTM C33 size 357 stone (approximately 1½") bedding was placed over the geotextile. A minimum 6-inch intermediate layer of Class C stone (riprap) was then placed on the shoreline slope. A final layer of Class B surface rock (armor rock) was placed with a maximum slope of 1.5H:1V. The surface rock was keyed into the existing embankment rock to provide slope toe protection. Below the mean high water line, the existing soil will continue to be held in place by the existing embankment rock. The existing embankment rock is variably sized to minimize voids, and provides 5-10 feet of cover, which prevents the soil from piping out. For a schematic cross section of the layers installed for slope stabilization, see Figure 4.

As an addition to the scope included in the work plan, the unpaved area at the west end of the site near the railroad tracks was covered with geotextile and six inches of crushed stone. This measure serves to prevent soil migration from this area.

A concrete curb was poured to replace the curb that was removed during site preparation activities. The concrete is 3500 psi strength. The exposed corners were chamfered. Expansion joints were provided every 100 feet and contraction joints were saw-cut every 10 feet. A curb detail is shown in Figure 5. The temporary berm was removed and the material returned to its original position as backfill against the curb. The geotextile and GCL layers were terminated between the backfill and the curb. In this configuration, the GCL will contain water within the existing DRMO work pad, diverting it away from the slope area to prevent leaching of contaminated soils into the river.

A subcontractor installed a fence. Holes for the fence posts were made in the curb at 8-foot intervals, and the voids were filled with nonshrink grout.

The post-construction slope stabilization site survey is presented as Figure 6. This survey indicates the elevations of various locations along the shoreline slope following completion of the removal action.

2.2.2.5 Waste Disposal

Debris removed from the slope and PPE were not classified as RCRA hazardous because potentially hazardous soils were removed from the debris surface and returned to the slope prior to disposal.

2.2.2.5.1 Concrete and Stone Debris

Concrete and stone were swept or brushed clean of all adhering soil particles prior to removal from the shoreline area, and were visually inspected to ensure that they were clean prior to placement in a polyethylene plastic lined roll-off container. This debris was recycled at Commercial Paving & Recycling, Scarborough, ME.

2.2.2.5.2 Wood Debris

One roll-off container of wood debris was generated during this work. Wood debris was swept clean of all adhering soil particles and placed in a lined roll-off container for recycling at KPI Bio Fuels, Lewiston, ME. Non-hazardous waste labels were placed on the roll-off containers.

2.2.2.5.3 Decontamination Water

No decontamination water was generated during the construction process. Decontamination methods necessary to complete the work did not include the use of water.

2.2.2.5.4 Fencing

Chain link fencing removed from the shoreline area was neatly rolled up and placed in the metal recycling pile at the DRMO.

2.2.2.5.5 Mixed Debris

All debris removed from the slope was characterized as concrete, wood, or steel. There were no containers of mixed debris shipped. There was, however, one container of general construction debris generated from the project.

2.2.2.5.6 Waste Generation

There were no hazardous waste streams generated by this project.

2.2.2.6 Site Restoration

Site restoration involved returning all of the impacted areas of the site to their pre-construction condition. Impacted areas included the shoreline slope area, stockpile areas, site haul roads, and the support zone area. Since these areas were not previously vegetated, replanting was not required.

2.2.2.7 Demobilization

All excavation equipment, office equipment, storage containers, and construction supplies were demobilized upon completion of the stabilization activities. All of the construction equipment was cleaned prior to being demobilized.

2.3 State and Local Authority Roles

2.3.1 State and Local Actions

The DRMO is located on an U.S. Navy Shipyard; therefore, the Navy is the lead agency for the removal action. However, recommendations and comments made by the USEPA, MEDEP, and the Restoration Advisory Board (RAB) were considered prior to performing the removal action.

2.3.2 Potential for Continued State/Local Response

The Navy led the response in a manner consistent with Section 18, Removal and Emergency Actions, of the Federal Facilities Agreement (FFA) for PNS using its lead agency authority under CERCLA and Executive Order 12580. Clean-up criteria, transportation, and disposal of hazardous materials followed state and local regulations, as well as, federal and Navy regulations. Comments were solicited and incorporated into all actions, work plans, and final reports. State agency and public comments were solicited and incorporated if determined to be appropriate by the Navy.

3.0 THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Under the conditions existing in Summer 1999, there was significant risk associated with the DRMO shoreline. Analytical results for soil samples collected during Summer 1999 indicated that there was significant lead contamination in the soil that significantly exceeded levels which would cause risk to human health and the environment.

Over time, the risk associated with DRMO shoreline would significantly increase if not addressed. The saline surface water would continue to jeopardize the integrity of the concrete keel blocks which intensify the shoreline erosion. In the long-term, contact with saline groundwater could result in possible surface water and sediment contamination and possible transport to the Piscataqua River. The risk of exposure would be from direct contact and/or ingestion of contaminated surface water and sediment. If a lead release were to occur, it would most likely migrate into Sullivan's Point Area. As a result nearshore marine organisms could potentially be impacted from contaminated porewater and sediments due to the release.

All of the erosion and sediment controls were inspected and maintained on a daily basis. Due to the preventative measures that were undertaken prior to the removal action (i.e. berms, covering disturbed areas daily with gravel, and geotextile fabric was installed over each of the catch basins in the capped area to minimize particle runoff) there are only two plausible exposure pathways. The only associated exposure pathways for either human or ecological receptors, is from direct contact, inhalation and/or ingestion of impacted soils or contaminated materials during a possible release or spill.

Implementing these removal activities will protect the Piscataqua River from any potential future releases from the DRMO shoreline. No releases occurred during the removal action.

3.1 Applicable or Relevant and Appropriate Requirements

Table 2 presents a summary of Federal and State of Maine Applicable or Relevant and Appropriate Requirements (ARARs) and to be considered (TBCs) for the DRMO shoreline, respectively. In developing and selecting removal action alternatives, the degree of public health or environmental protection afforded by each alternative must be considered. Actions that attain or exceed ARARs are given primary consideration.

4.0 ENDANGERMENT DETERMINATION

Actual or threatened releases of metal contaminants from DRMO would, if not addressed by the stabilization action documented by this Action Memorandum, present an imminent or substantial endangerment to public health and the environment. Implementing this emergency removal action has provided protection of the Piscataqua River from further releases from the DRMO shoreline.

5.0 ACTUAL PROJECT COSTS

The actual project costs (as of 3/30/01) are as follows:

| | | |
|-----------------------------|----------|------------------|
| Professional Services | | \$117,198 |
| Craft Labor | | \$ 21,536 |
| Equipment | | \$ 51,235 |
| Materials | | \$ 93,143 |
| Other Direct Costs | | \$ 23,048 |
| <u>Subcontractors</u> | | \$ 28,171 |
| Laboratory Analysis | \$ 144 | |
| Transportation and Disposal | \$ 5,771 | |
| Fence Installation | \$18,916 | |
| Survey | \$ 3,340 | |
| Total | | \$334,331 |

5.1 Project Schedule

The project schedule is presented in Appendix B.

6.0 OUTSTANDING POLICY ISSUES

There are no outstanding policy issues as a result of this emergency removal action.

7.0 ENFORCEMENT

The Department of the Navy was the lead agency for this removal action and was responsible for funding. Enforcement strategies do not apply as all funds were provided by the Navy.

8.0 RECOMMENDATION

The "Defense Reutilization and Marketing Office Shoreline Stabilization" is the recommended removal action as per 40 CFR 300.415. This decision document represents the selected removal action for Site 6, DRMO, at Portsmouth Naval Shipyard, Kittery, Maine, developed in accordance with CERCLA and not inconsistent with the NCP. This decision is based on the administrative record for Site 6, Defense Reutilization and Marketing Office.

This decision document represents the emergency removal action for the slope stabilization at DRMO at the Portsmouth Naval Shipyard, Kittery, Maine. This decision document was developed in accordance with CERCLA as amended, and is not inconsistent with the NCP.

By: _____

V.T. Williams
Captain, USN
Shipyard Commander

Date: _____

9.0 REFERENCES

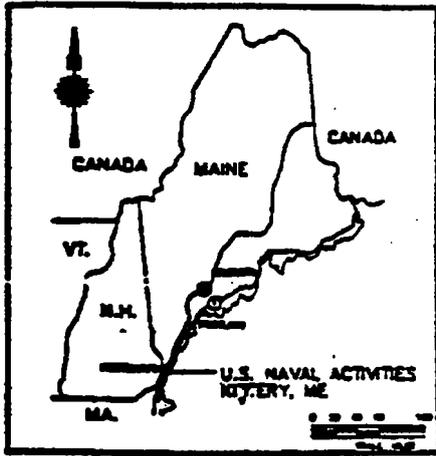
Foster Wheeler Environmental Corporation. *Removal Action Work Plan for DRMO Shoreline Stabilization at Portsmouth Naval Shipyard*. September 1999.

Loureiro Engineering Associates. *Final Confirmation Study Report on Hazardous Waste Sites at Naval Shipyard Portsmouth*. June 1986.

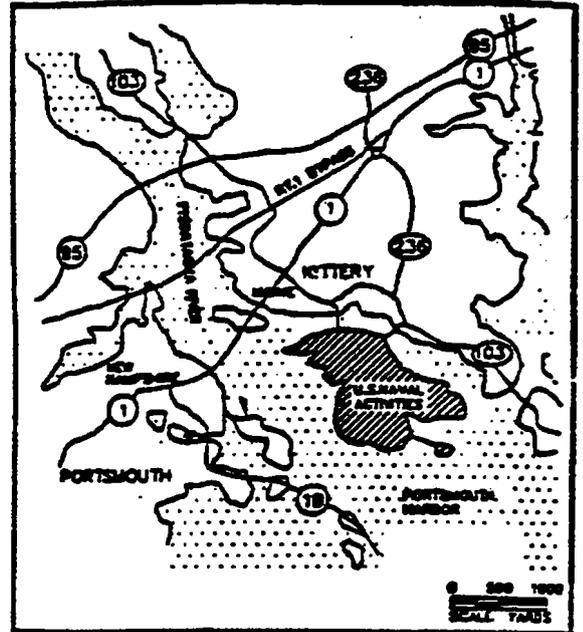
McLaren/Hart, Inc. *Draft RCRA Facilities Investigation (RFI) Report for Portsmouth Naval Shipyard*. July 1992.

McLaren/Hart, Inc. *Interim Corrective Action (ICA), Portsmouth Naval Shipyard, Kittery, Maine*. October 1992.

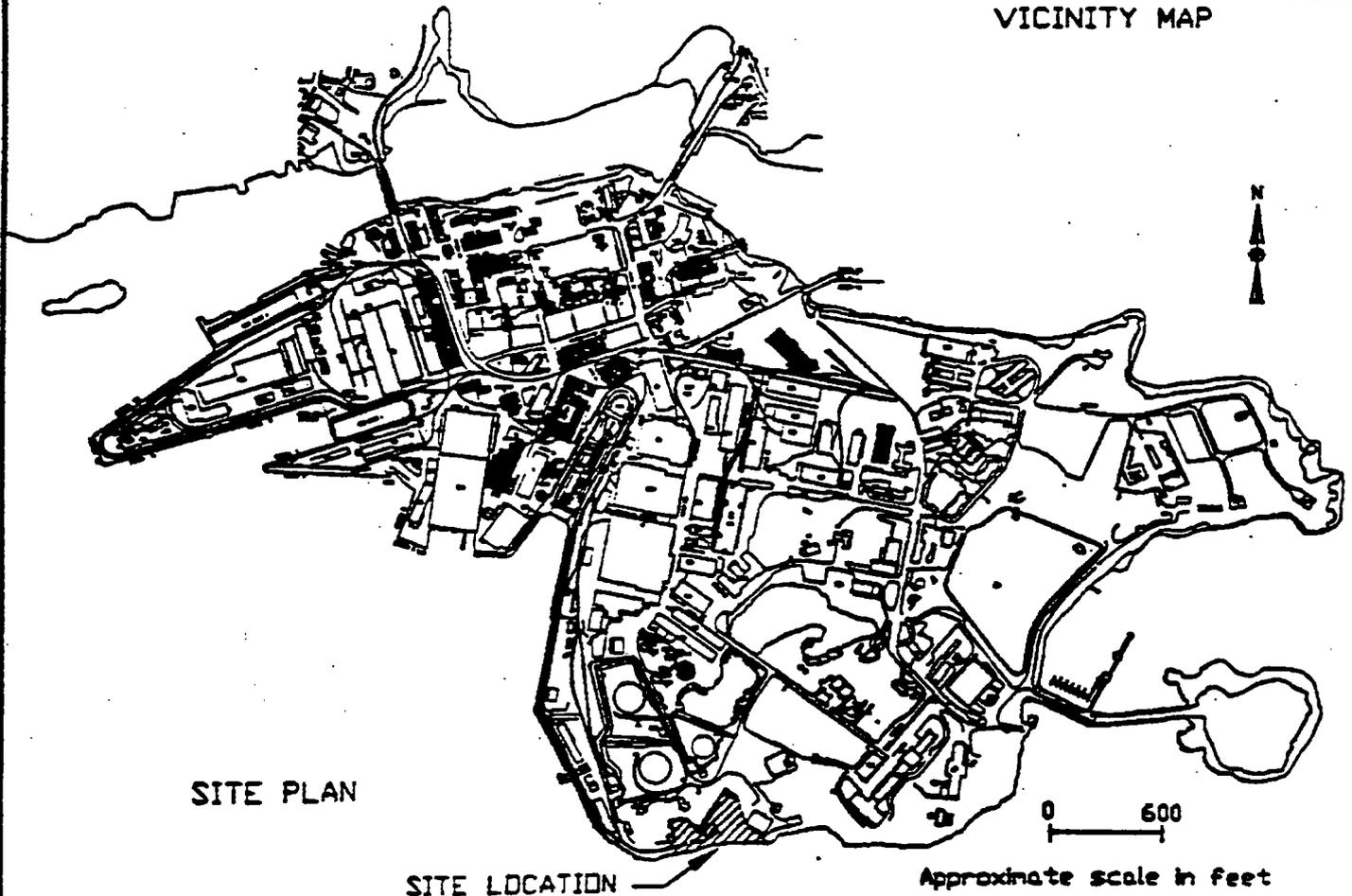
FIGURES



AREA MAP



VICINITY MAP

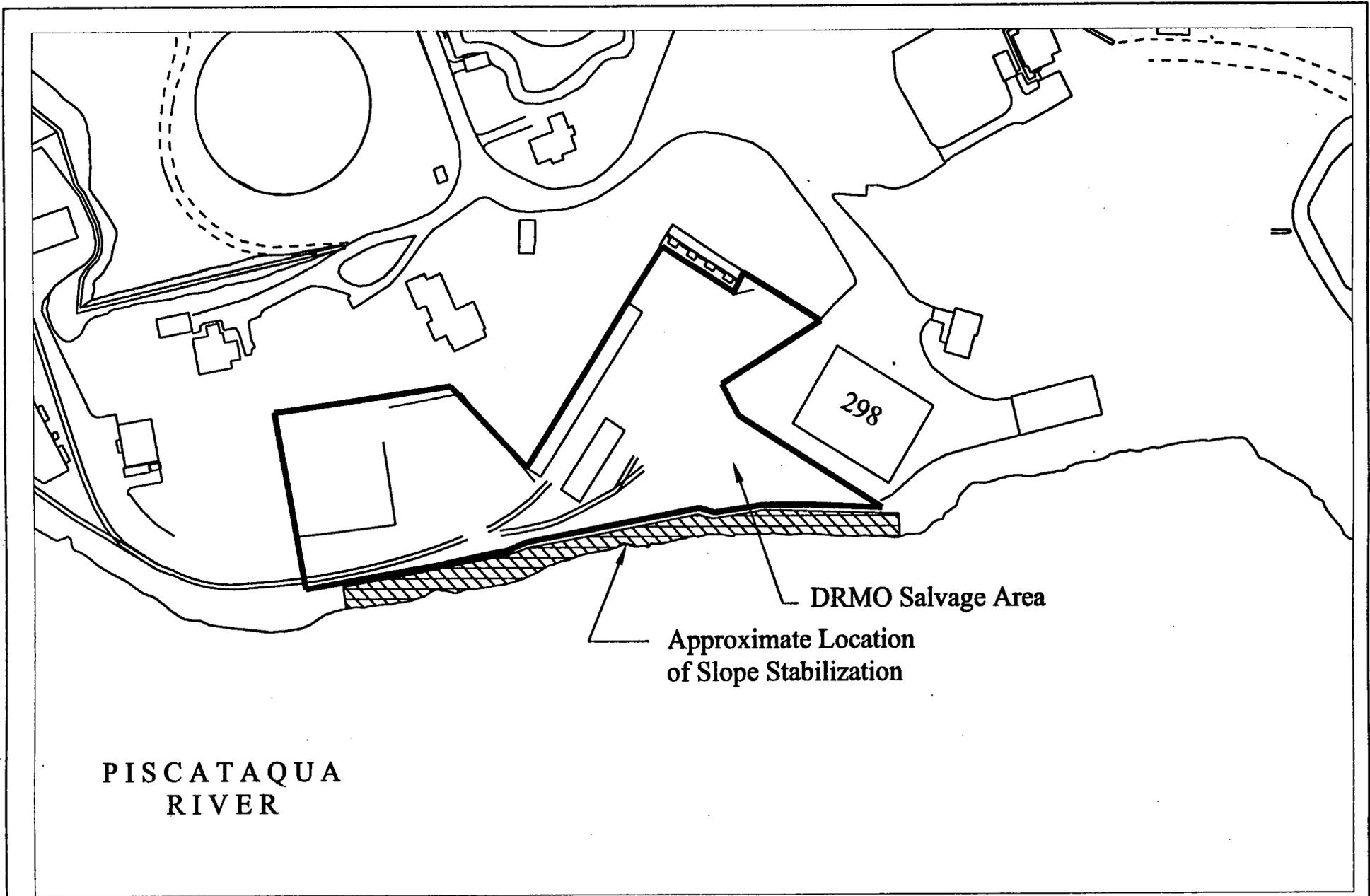


SITE PLAN

SITE LOCATION

Approximate scale in feet

| | |
|---|---|
| U.S. Navy RAC Portsmouth Naval Shipyard Kittery, Maine | |
| Figure 1 Site Location Map | |
| | FOSTER WHEELER ENVIRONMENTAL CORPORATION |



PISCATAQUA
RIVER

DRMO Salvage Area

Approximate Location
of Slope Stabilization

**Portsmouth Naval Shipyard
Kittery, Maine**

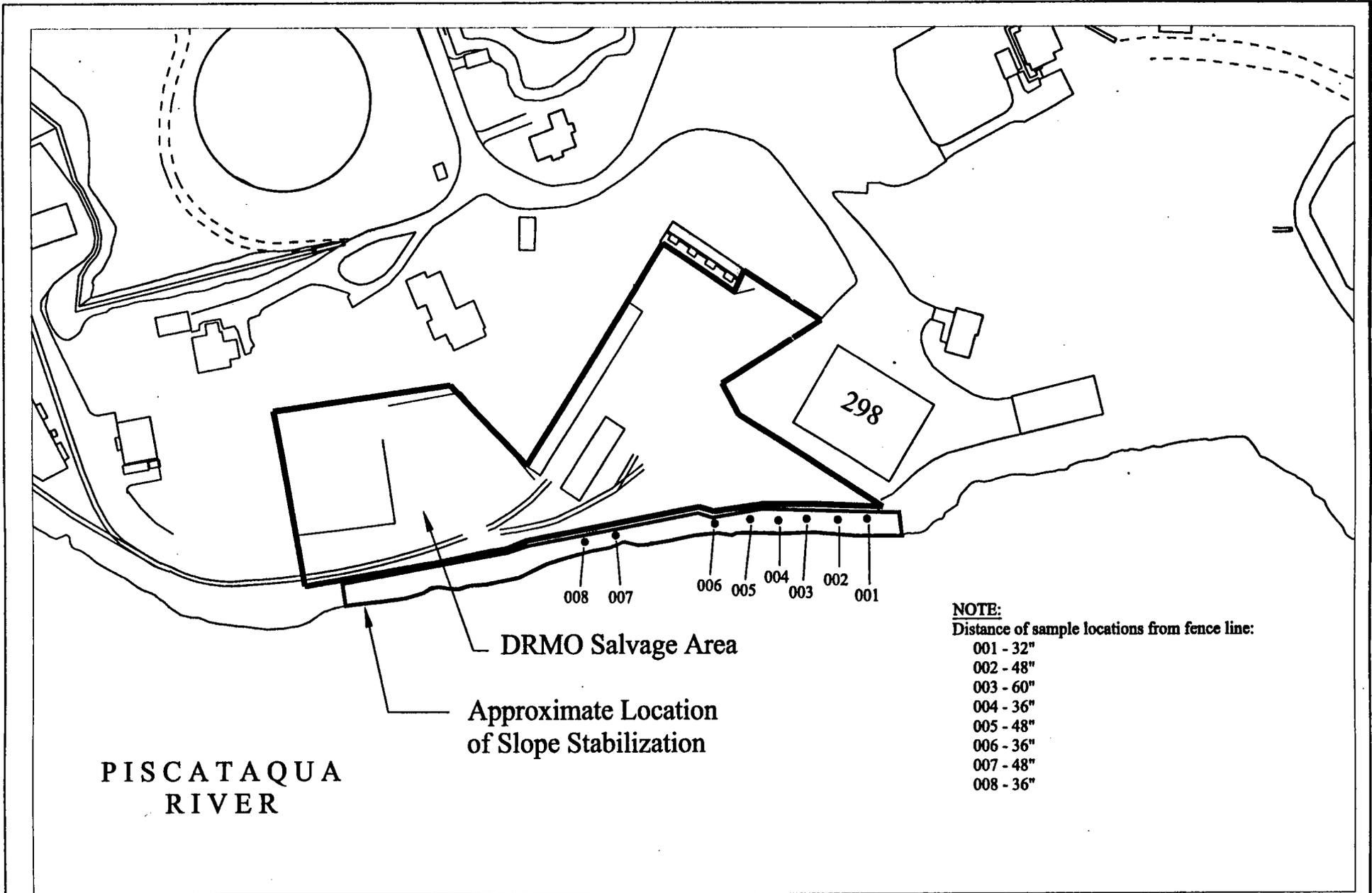
Figure 2

DRMO Shoreline Stabilization
Site Map

Source: Tetra Tech NUS, Inc.,
Figure 2-3, 1/20/00

N.T.S.

 FOSTER WHEELER ENVIRONMENTAL CORPORATION



Source: Tetra Tech NUS, Inc.,
Figure 2-3, 1/20/00

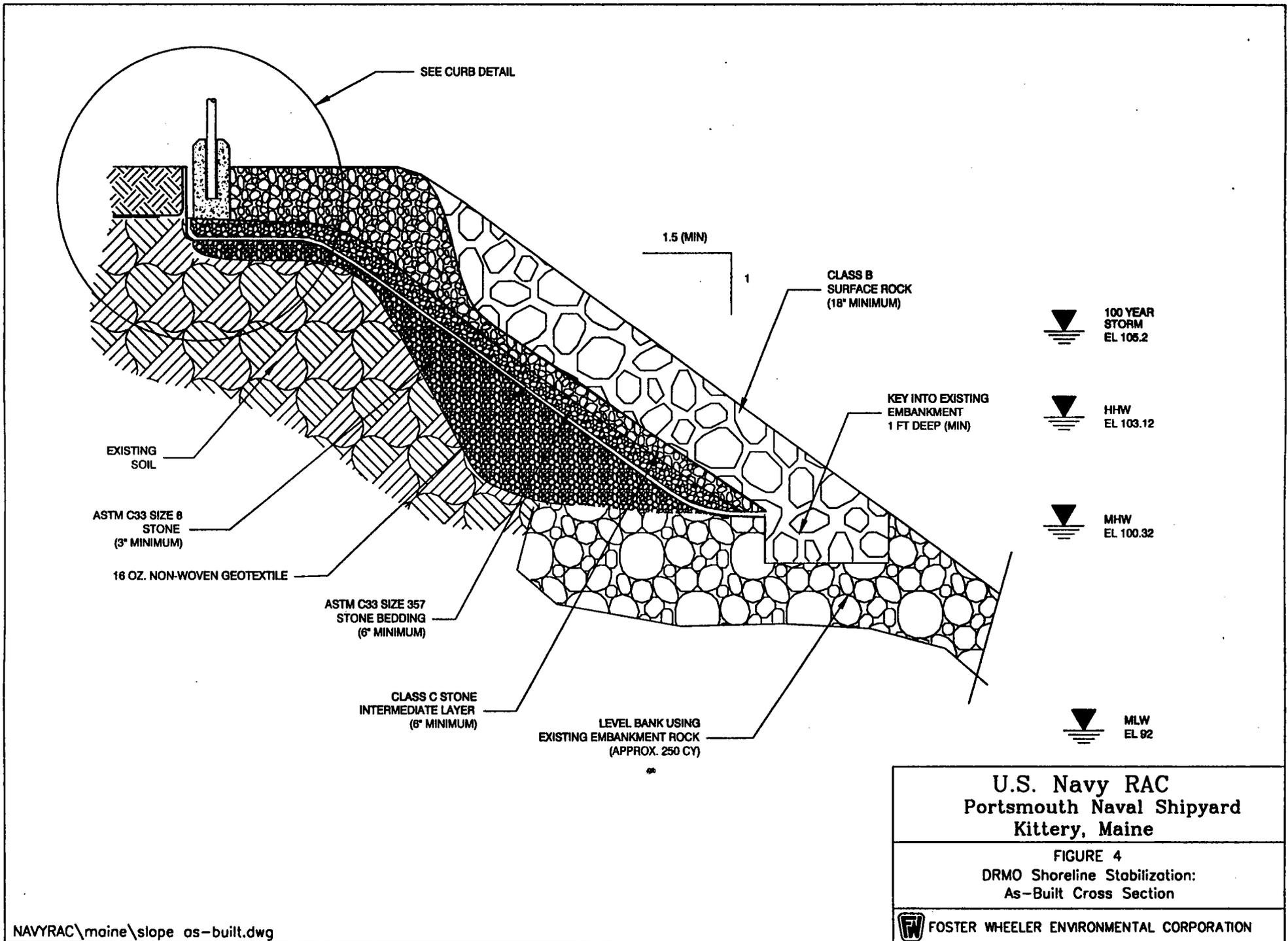
NAVYRAC\Maine\july 99 sampling loc.dwg

N.T.S.

Portsmouth Naval Shipyard
Kittery, Maine

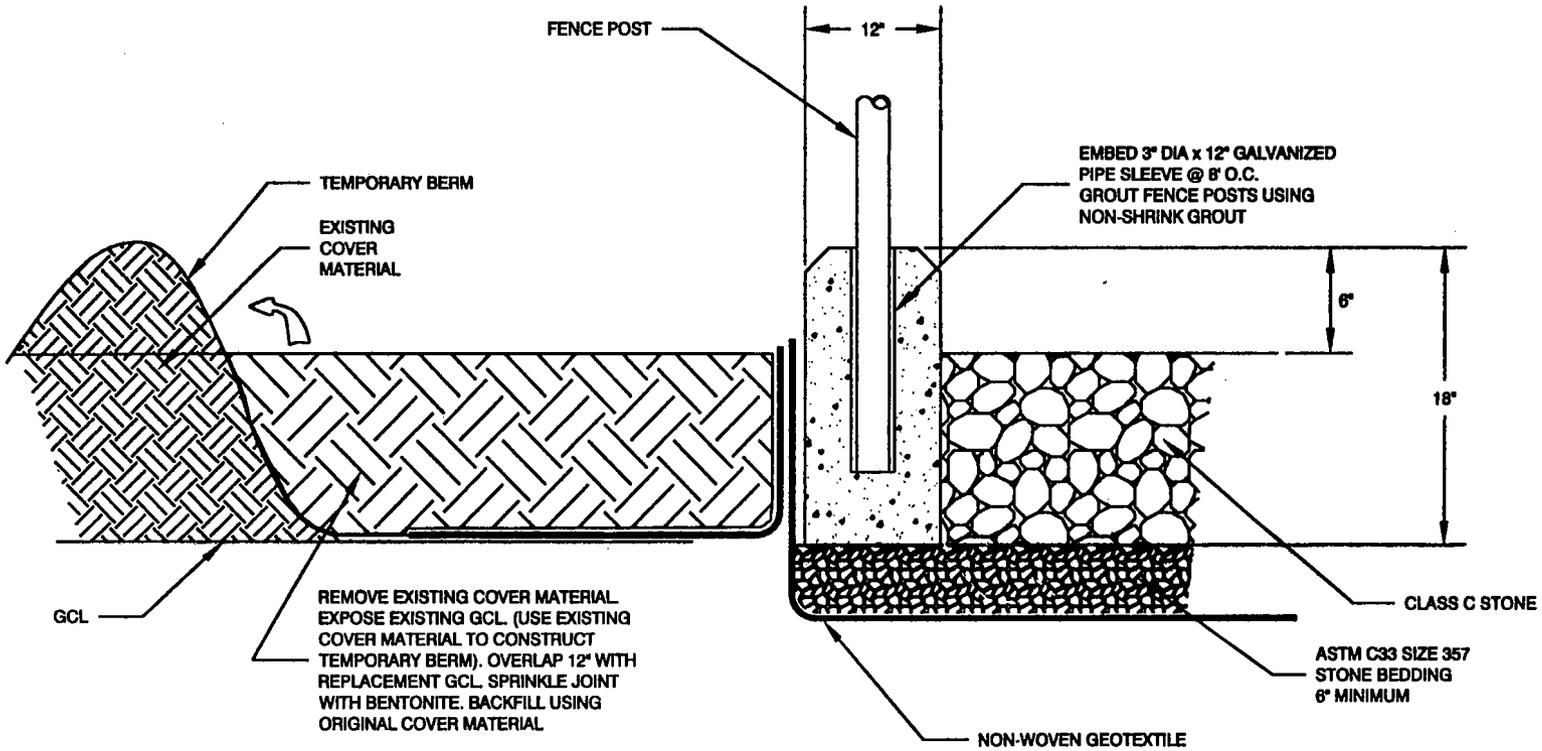
FIGURE 3
DRMO Shoreline Stabilization
Approximate Soil Sampling Locations
July 1999

 FOSTER WHEELER ENVIRONMENTAL CORPORATION



**U.S. Navy RAC
Portsmouth Naval Shipyard
Kittery, Maine**

**FIGURE 4
DRMO Shoreline Stabilization:
As-Built Cross Section**



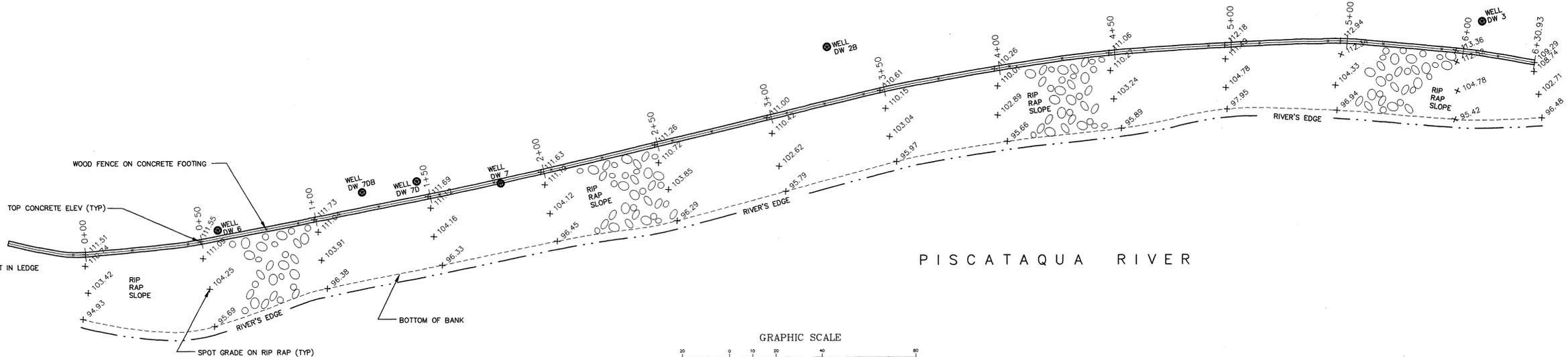
NOTES

1. EXISTING CONCRETE CURB WAS REMOVED AND REPLACED WITH THE ABOVE DETAIL.
2. CONCRETE IS 3500 PSI. EXPANSION JOINTS WERE PROVIDED EVERY 100 FEET. CONTRACTION JOINTS WERE SAW CUT EVERY 10 FEET. TOP CORNERS WERE CHAMFERED.

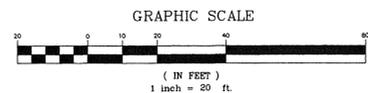
| |
|--|
| <p>U.S. Navy RAC Portsmouth Naval Shipyard Kittery, Maine</p> |
| <p>FIGURE 5 DRMO Shoreline Stabilization: As-Built Curb Detail</p> |
| <p> FOSTER WHEELER ENVIRONMENTAL CORPORATION</p> |



TBM 1
VERTICAL P.K. SET IN LEDGE
ELEV = 111.45



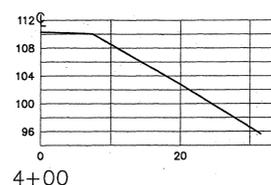
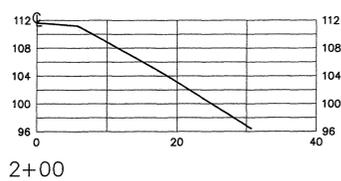
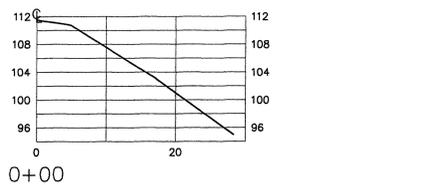
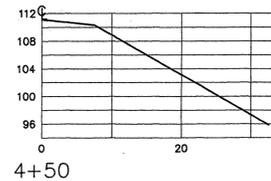
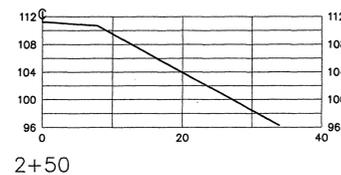
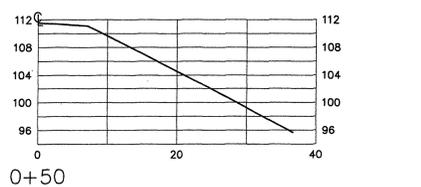
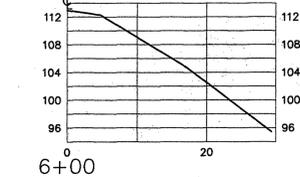
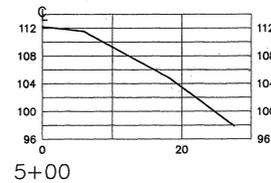
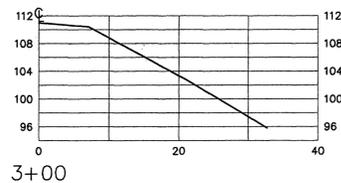
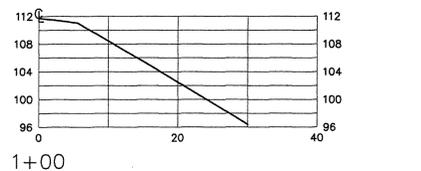
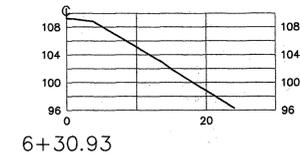
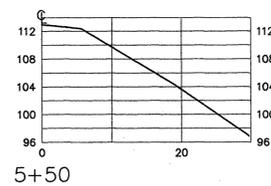
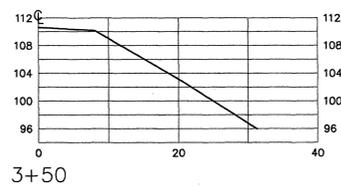
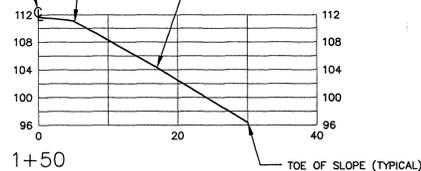
PISCATAQUA RIVER



TOP CENTER OF CONCRETE
RETAINING WALL (TYPICAL)

TOP OF BANK
(TYPICAL)

(SLOPE LINE SHOWN IS BASED ON INTERPOLATION
OF THE ELEVATIONS SHOWN ABOVE.)



CROSS SECTIONS

HORIZONTAL 1" = 10"
VERTICAL 1" = 10"

NOTE
VERTICAL-HORIZONTAL DATUMS ARE BASED ON A PLAN ENTITLED,
"CONTROL MAP", SCALE 1" = 200', PROVIDED BY ENGINEERING
DEPARTMENT OF PORTSMOUTH NAVAL SHIPYARD IN KITTERY, MAINE.

J. B. Watts
JEROME B. WATTS, PLS #1245
1-30-2001

| | | | | | | | |
|---|-------------|-----|------|---|------|--------------------------|-----------------------------|
| | | | | FOSTER WHEELER ENVIRONMENTAL CORP. ONE OXFORD VALLEY, SUITE 200 2300 LINCOLN HIGHWAY LANGHORNE, PA 19047-1829 USA | | | |
| B ADDED NOTE | | | | KYC | JBW | 01/30/01 | |
| A FOR CLIENT REVIEW | | | | KYC | JBW | 5/10/00 | |
| REV. | DESCRIPTION | DR. | CHK. | APP. | DATE | | |
| | | BY | BY | BY | | | |
| OEST Associates, Inc. 343 Gorham Road - South Portland, ME 04106 <small>engineers architects surveyors construction managers</small> | | | | SCALE: 1"=20' DATE: APRIL 27, 2000 DES BY: DDB DWN BY: KYC CHK BY: JBW | | PROJECT NO. 323.01.02 | DRAWING NO. C-100 |
| | | | | SHEET 1 OF 1 | | CADW20002 | |

TABLES

FINAL ACTION MEMORANDUM
 REMEDIAL ACTION CONTRACT N62472-94-D-0398
 DELIVERY ORDER NO. 0010
 DRMO SHORELINE STABILIZATION
 PORTSMOUTH NAVAL SHIPYARD
 KITTERY, MAINE

Table 1
Analytical Results of Soil Samples

| order | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
|------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| nsample | 99PT01071-001 | 99PT01071-002 | 99PT01071-003 | 99PT01071-004 | 99PT01071-005 | 99PT01071-006 | 99PT01071-007 | 99PT01071-008 |
| sample | 99PT01071-001 | 99PT01071-002 | 99PT01071-003 | 99PT01071-004 | 99PT01071-005 | 99PT01071-006 | 99PT01071-007 | 99PT01071-008 |
| sacode | NORMAL |
| depth | 0 - 1' | 0 - 1' | 0 - 1' | 0 - 1' | 0 - 1' | 0 - 1' | 0 - 1' | 0 - 1' |
| sample_dat | 29-Jul-99 |

Inorganics (mg/kg)

| | | | | | | | | |
|-------------|---------|----------|---------|---------|---------|---------|---------|---------|
| ALUMINUM | 12600 | 9980 | 15000 | 15400 | 13300 | 13400 | 16200 | 16500 |
| ANTIMONY | 18.6 | 279 | 72.7 | 47 | 7.5 | 2.8 J | 20.2 | 74 |
| ARSENIC | 19 | 28.3 | 27.6 | 20.7 | 21.5 | 22.6 | 15.5 | 18.2 |
| BARIUM | 84.3 J | 571 J | 367 J | 280 J | 258 J | 114 J | 472 J | 424 J |
| BERYLLIUM | 0.7 J | 1.4 J | 0.66 J | 0.59 J | 0.57 J | 0.54 J | 32.2 J | 28 J |
| CADMIUM | 1.5 J | 8.8 J | 1.6 J | 1.2 J | 2.9 J | 2.1 J | 2 J | 2.2 J |
| CALCIUM | 1550 | 8560 | 17200 | 13900 | 13800 | 16100 | 7680 | 15100 |
| CHROMIUM | 91.7 J | 357 J | 75.6 J | 65 J | 77 J | 79.5 J | 204 J | 120 J |
| COBALT | 12.8 J | 30 J | 18.8 J | 14.8 J | 17.7 J | 19.2 J | 122 J | 92.4 J |
| COPPER | 167 J | 1220 J | 9480 J | 716 J | 604 J | 123 J | 2960 J | 2490 J |
| CYANIDE | | | | | | | | |
| IRON | 29800 | 70800 | 31300 | 26700 | 37200 | 26900 | 90600 | 76800 |
| LEAD | 11600 J | 110000 J | 55200 J | 18900 J | 4630 J | 560 J | 6860 J | 4450 J |
| MAGNESIUM | 7350 | 5910 | 11100 | 10300 | 9210 | 11000 | 9190 | 11600 |
| MANGANESE | 574 | 920 | 612 | 450 | 1020 | 710 | 1020 | 985 |
| MERCURY | | | | | | | | |
| NICKEL | 215 | 1340 | 138 | 86.8 | 147 | 266 | 638 | 367 |
| POTASSIUM | 1740 J | 2120 J | 4420 J | 4400 J | 3570 J | 3740 J | 2660 J | 3800 J |
| SELENIUM | 1.1 J | 0.75 J | 4.2 J | 0.41 UJ | 0.44 UJ | 0.52 J | 3.2 J | 1.3 J |
| SILVER | 0.22 J | 1.9 J | 0.71 J | 0.11 U | 0.4 J | 0.12 U | 1.7 J | 0.59 J |
| SODIUM | 216 | 330 | 304 | 425 | 368 | 307 | 1360 | 1230 |
| SULFIDE | | | | | | | | |
| THALLIUM | 0.64 UJ | 2.3 J | 2 J | 0.72 UJ | 0.77 UJ | 0.79 UJ | 2 UJ | 1.8 UJ |
| THALLIUM-GF | 0.16 J | 0.46 | 0.2 J | 0.28 J | 0.26 J | 0.18 UJ | 0.16 U | 0.17 U |
| TIN | | | | | | | | |
| VANADIUM | 32.7 J | 36.2 J | 40.3 J | 40.8 J | 41 J | 37.5 J | 46 J | 42.4 J |
| ZINC | 366 J | 4930 J | 2060 J | 1820 J | 2750 J | 754 J | 19900 J | 15800 J |

Source: Appendix A of Revised OU2 Risk Assessment for Portsmouth Naval Shipyard, Kittery, Maine, Tetra Tech NUS, Inc., King of Prussia, PA, November 2000.

Modified from table from site06allso_sam.dbf; from site06allso_res.dbf
 from site06allso_res.xls; from p:\

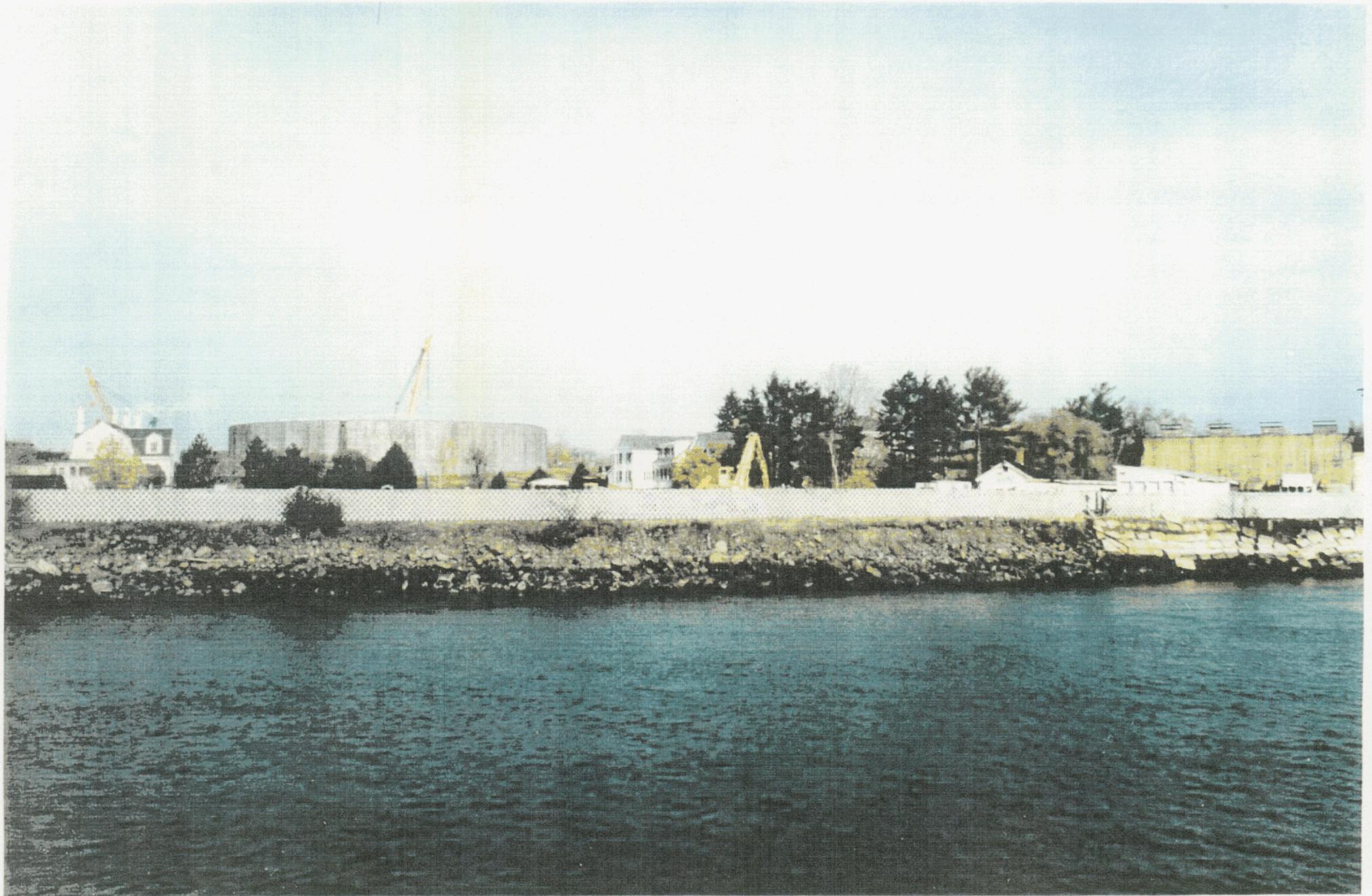
FINAL ACTION MEMORANDUM
 REMEDIAL ACTION CONTRACT N62472-94-D-0398
 DELIVERY ORDER NO. 0010
 DRMO SHORELINE STABILIZATION
 PORTSMOUTH NAVAL SHIPYARD
 KITTERY, MAINE

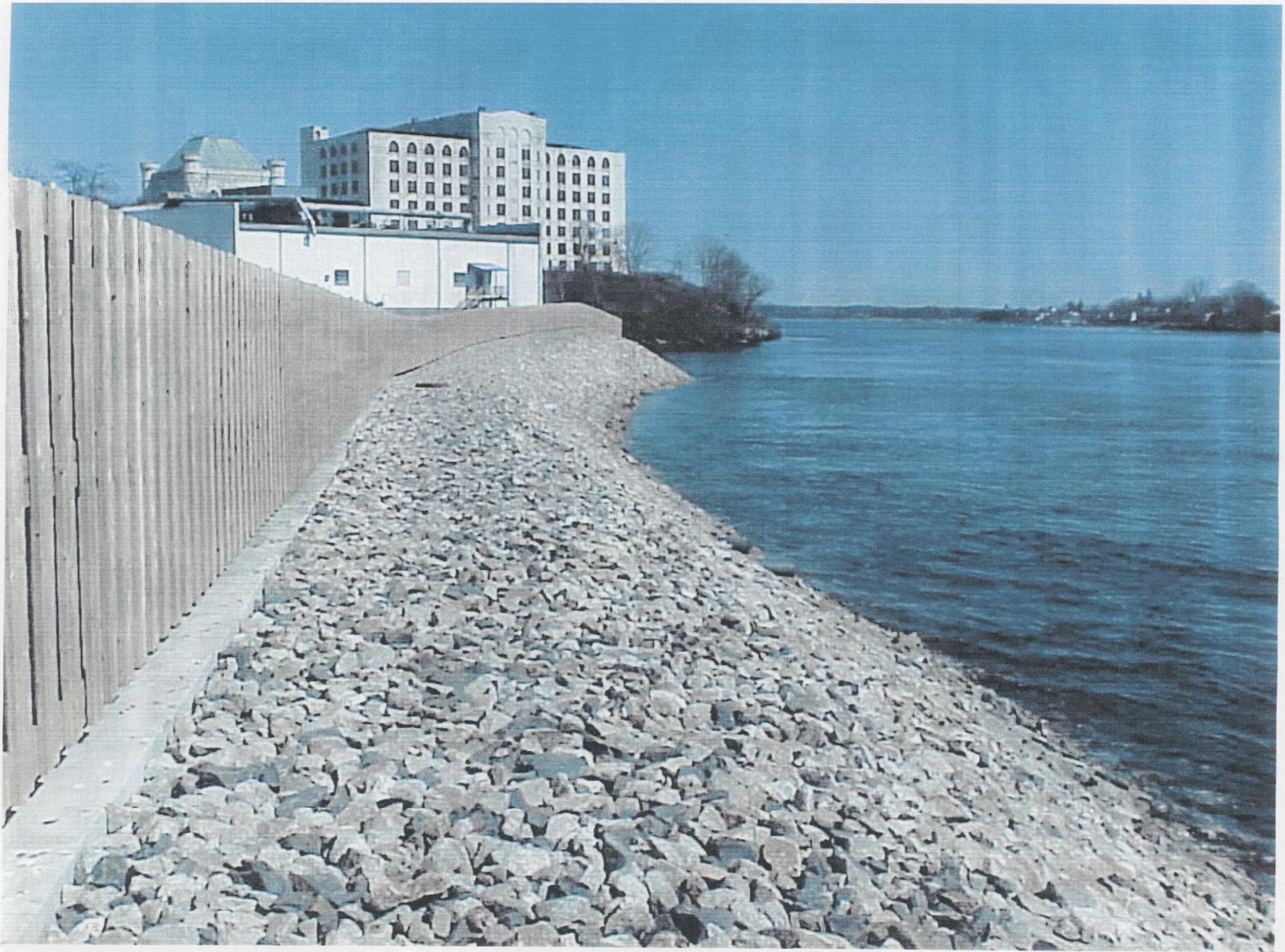
Table 2

Applicable or Relevant and Appropriate Requirements

| Media or Activity | Requirement | Status | Requirement Synopsis | Action to be Taken to Attain Requirement |
|------------------------------------|--|------------|--|--|
| LOCATION - SPECIFIC - STATE | | | | |
| Air Emissions | Maine Ambient Air Quality Standards (06-096 CMR 110) | Applicable | Regulations established ambient air quality standards that are maximum levels that can be emitted to the ambient air, including particulate matter and lead. Ambient air quality standards are established for particulate matter, sulfur dioxide, carbon monoxide, ozone, hydrocarbon, nitrogen dioxide, lead, and total chromium. Ambient increments which define the maximum ambient increase of a particular pollutant that can be permitted for a given area are defined. | Volatile emissions from soil removal remedial activities are not expected to present a concern. Fugitive emissions of particulates are the most significant concern. Air monitoring, dust suppression, and other control measures would be implemented as necessary to ensure removal remedial activities do not result in emissions of unacceptable levels. |
| ACTION - SPECIFIC - FEDERAL | | | | |
| All Remedial Activities | OSHA Requirements (29 CFR Parts 1910, 1226, and 1904) | Applicable | These requirements regulate occupational safety and health requirements applicable to workers engaged in field activities. | Required for site workers during construction and operation of removal activities. Requirements would be followed during all removal activities. |
| ACTION - SPECIFIC - STATE | | | | |
| Air Emissions | Maine Air Pollution Control Law (38 MRS 581 et seq) and Regulations (06-096 CMR 100-136) | Applicable | Air quality regions and classification of each region and ambient air quality and emission standards are established. Ambient air quality in ambient air of 150 µg/m ³ (24-hour avg.) Chapter 11.5 requires new sources of air emissions to demonstrate that its emissions do not violate ambient air quality standards. New sources must meet pre-construction monitoring and post-construction monitoring requirements. | Volatile emissions from soil removal activities are not expected to be a concern. Fugitive emissions of particulates are the most significant concern. Air monitoring, dust suppression, and other control measures would be implemented as necessary to ensure removal activities do not result in emissions of unacceptable levels. |

APPENDIX A
PHOTOGRAPHS







APPENDIX B
PROJECT SCHEDULE

| Early Start | Early Finish | Percent Complete | 1999 | | | | | 2000 | | | | | | 2001 | | | | | | | | | | |
|---|--------------|------------------|------|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY |
| PRE-CONSTRUCTION SUBMITTALS | | | | | | | | | | | | | | | | | | | | | | | | |
| 16AUG99A | 09SEP99A | 100 | | ■ | | | | | | | | | | | | | | | | | | | | |
| | | | | ■ | | | | | | | | | | | | | | | | | | | | |
| 27SEP99A | 01OCT99A | 100 | | | ■ | | | | | | | | | | | | | | | | | | | |
| | | | | | ■ | | | | | | | | | | | | | | | | | | | |
| SITE SETUP & MOBILIZATION | | | | | | | | | | | | | | | | | | | | | | | | |
| 04OCT99A | 04OCT99A | 100 | | | ■ | | | | | | | | | | | | | | | | | | | |
| | | | | | ■ | | | | | | | | | | | | | | | | | | | |
| 04OCT99A | 08OCT99A | 100 | | | ■ | | | | | | | | | | | | | | | | | | | |
| | | | | | ■ | | | | | | | | | | | | | | | | | | | |
| 04OCT99A | 06OCT99A | 100 | | | ■ | | | | | | | | | | | | | | | | | | | |
| | | | | | ■ | | | | | | | | | | | | | | | | | | | |
| 12OCT99A | 14OCT99A | 100 | | | ■ | | | | | | | | | | | | | | | | | | | |
| | | | | | ■ | | | | | | | | | | | | | | | | | | | |
| BANK CLEANUP & SUBGRADE PREP | | | | | | | | | | | | | | | | | | | | | | | | |
| 05OCT99A | 12OCT99A | 100 | | | ■ | | | | | | | | | | | | | | | | | | | |
| | | | | | ■ | | | | | | | | | | | | | | | | | | | |
| 05OCT99A | 12OCT99A | 100 | | | ■ | | | | | | | | | | | | | | | | | | | |
| | | | | | ■ | | | | | | | | | | | | | | | | | | | |
| PROTECT SYSTEM CONSTRUCTION | | | | | | | | | | | | | | | | | | | | | | | | |
| 05OCT99A | 12OCT99A | 100 | | | ■ | | | | | | | | | | | | | | | | | | | |
| | | | | | ■ | | | | | | | | | | | | | | | | | | | |
| 07OCT99A | 29OCT99A | 100 | | | ■ | | | | | | | | | | | | | | | | | | | |
| | | | | | ■ | | | | | | | | | | | | | | | | | | | |
| 07OCT99A | 29OCT99A | 100 | | | ■ | | | | | | | | | | | | | | | | | | | |
| | | | | | ■ | | | | | | | | | | | | | | | | | | | |
| 08OCT99A | 05NOV99A | 100 | | | ■ | | | | | | | | | | | | | | | | | | | |
| | | | | | ■ | | | | | | | | | | | | | | | | | | | |
| 15OCT99A | 12NOV99A | 100 | | | ■ | | | | | | | | | | | | | | | | | | | |
| | | | | | ■ | | | | | | | | | | | | | | | | | | | |

| | | | | | |
|---------------------------|---------------|---|--------------|--|--------------|
| Start Date | 30SEP99 | ■ | Early Start | 1001 | Sheet 1 of 3 |
| Finish Date | 15MAY01 | ■ | Target Bar | DELIVERY ORDER 10 DRMO SHORELINE REHABILITATION KITTERY, ME | |
| Data Date | 30MAR01 | ■ | Progress Bar | | |
| Run Date | 20APR01 09:51 | ■ | | | |
| © Primavera Systems, Inc. | | | | | |

| Early Start | Early Finish | Percent Complete | 1999 | | | | | 2000 | | | | | | 2001 | | | | | | | | | | |
|---|--------------|------------------|------|-----|-----|-------------------------------|-----|------|-----|-----|--|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY |
| RESTORATION & DEMOBILIZATION | | | | | | | | | | | | | | | | | | | | | | | | |
| 03NOV99A | 12NOV99A | 100 | | | ■ | REPLACE GCL & BACKFILL | | | | | | | | | | | | | | | | | | |
| 04NOV99A | 11NOV99A | 100 | | | ■ | REPLACE CONCRETE CURB | | | | | | | | | | | | | | | | | | |
| 10NOV99A | 19NOV99A | 100 | | | ■ | REPLACE FENCE | | | | | | | | | | | | | | | | | | |
| 17NOV99A | 19NOV99A | 100 | | | ■ | SITE CLEANUP & DEMOBILIZATION | | | | | | | | | | | | | | | | | | |
| UST INVESTIGATION | | | | | | | | | | | | | | | | | | | | | | | | |
| 21MAR00A | 21MAR00A | 100 | | | | | | | | ■ | AWARD | | | | | | | | | | | | | |
| 10APR00A | 12APR00A | 100 | | | | | | | | ■ | ENGINEERING REVIEW | | | | | | | | | | | | | |
| 13APR00A | 01MAY00A | 100 | | | | | | | | ■ | ENGINEERING REPORT / INVESTIGATION WORK PLAN | | | | | | | | | | | | | |
| 24APR00A | 27APR00A | 100 | | | | | | | | ■ | DRMO TOPSOIL | | | | | | | | | | | | | |
| 01MAY00A | 08MAY00A | 100 | | | | | | | | ■ | DRMO HYDROSEED / ASPHALT | | | | | | | | | | | | | |
| 07AUG00A | 08AUG00A | 100 | | | | | | | | | | | | | | | | | | | | | | |
| 14AUG00A | 18AUG00A | 100 | | | | | | | | | | | | | | | | | | | | | | |
| USTS REMOVAL | | | | | | | | | | | | | | | | | | | | | | | | |
| 19JUL00A | 28JUL00A | 100 | | | | | | | | | | | | | | | | | | | | | | |
| 07AUG00A | 17AUG00A | 100 | | | | | | | | | | | | | | | | | | | | | | |
| 09AUG00A | 10AUG00A | 100 | | | | | | | | | | | | | | | | | | | | | | |

Start Date 30SEP99
 Finish Date 15MAY01
 Data Date 30MAR01
 Run Date 20APR01 09:51

 Early Start
 Target Bar
 Progress Bar

1001 Sheet 2 of 3

DELIVERY ORDER 10

DRMO SHORELINE REHABILITATION

KITTERY, ME

| Early Start | Early Finish | Percent Complete | 1999 | | | | | 2000 | | | | | | 2001 | | | | | | | | | | | | | |
|------------------------|--------------|------------------|------|-----|-----|-----|-----|-------------------|-----|-----|-----|-----|-----|------|-----|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| | | | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | | |
| 09AUG00A | 15AUG00A | 100 | | | | | | | | | | | | | ■ | BUILDING 161 UST | | | | | | | | | | | |
| 10AUG00A | 16AUG00A | 100 | | | | | | | | | | | | | ■ | BUILDING 26 UST | | | | | | | | | | | |
| 17AUG00A | 17AUG00A | 100 | | | | | | | | | | | | | ■ | BUILDING 26 UST | | | | | | | | | | | |
| DRMO REPORT | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22NOV99A | 09DEC99A | 100 | | | | | ■ | DRMO DRAFT REPORT | | | | | | | | | | ■ | | | | | | | | | |
| 10DEC99A | 12OCT00A | 100 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13OCT00A | 05FEB01A | 100 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 05FEB01A | 16APR01 | 77 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17APR01 | 30APR01 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 01MAY01 | 14MAY01 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15MAY01 | 15MAY01 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| MERCURY VAULT I REPORT | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30JAN01A | 16APR01 | 79 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17APR01 | 30APR01 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 01MAY01 | 14MAY01 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15MAY01 | 15MAY01 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |

Start Date 30SEP99
 Finish Date 15MAY01
 Data Date 30MAR01
 Run Date 20APR01 09:51

■ Early Start
 ■ Target Bar
 ■ Progress Bar

1001 Sheet 3 of 3

DELIVERY ORDER 10
 DRMO SHORELINE REHABILITATION
 KITTERY, ME