



**DEPARTMENT OF THE NAVY**  
PORTSMOUTH NAVAL SHIPYARD  
PORTSMOUTH, N. H. 03804-5000

IN REPLY REFER TO:

September 12, 2005

**MEMORANDUM**

**FOR THE MEMBERS OF THE RESTORATION ADVISORY BOARD (RAB) CERCLA  
REMEDIAL ACTION PROGRAM, PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE**

The next RAB meeting will be held on Tuesday September 27, 2005 beginning at 7 p.m. at the Rodeway Inn (formerly the Kittery Outlet Inn) on the Route 1 Bypass in Kittery, ME. The presentation will be on the Site 30 Engineering Evaluation and Cost Analysis (EE/CA) for Site 30 (building 184, former galvanizing plant) and the EE/CA for Site 34 (building 62, the former oil gasification plant).

Your participation is greatly appreciated. If you are unable to attend the meeting, please contact me at (207) 438-3830. I look forward to seeing you at the RAB meeting.

Sincerely,

A handwritten signature in black ink, appearing to read "Ken Plaisted".

Ken Plaisted  
Navy Co-Chairman  
Restoration Advisory Board

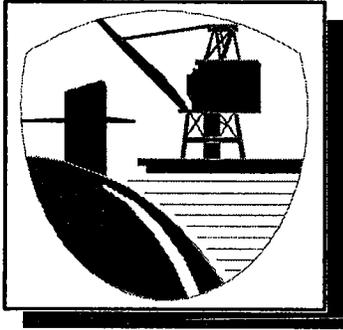
Distribution:

Doug Bogen  
Michele Dionne  
Alan Davis  
Roger Wells

Jeff Clifford  
Mary Marshall  
Jack McKenna  
Carolyn Lepage

Onil Roy  
James Horrigan  
Diana McNabb  
Peter Britz

EPA Region I (M. Audet)  
MEDEP (I. McLeod)  
NOAA (K. Finkelstein)  
MEDMR (D. Card)  
NHFG (C. McBane)  
USFWS (K. Munney)  
EFANE (F. Evans)  
COMSUBGRU TWO (A. Stackpole)



# **Portsmouth Naval Shipyard Installation Restoration Program Agenda**

**Date – September 27, 2005**

**Place – Rodeway Inn, Kittery, ME**

**Time – 7 p.m.- 9 p.m.**

- **Introductions**
- **Status of Work**
- **Regulator Updates**
- **Engineering Evaluation/Cost Analysis for Site 34**
- **Engineering Evaluation/Cost Analysis for Site 30**
- 
- **Other Issues as Required**

PORTSMOUTH NAVAL SHIPYARD  
INSTALLATION RESTORATION PROGRAM  
STATUS OF WORK  
September 27, 2005

**SITE STATUS**

**OU 1** (Sites 10, Battery Acid Tank, & 21, Acid/Alkaline Tank #28)

Additional Remedial Investigation	2006
Remedial Investigation Report (including risk assessment)	2006/2007
Feasibility Study	2007/2008
Proposed Plan and Record of Decision	2008/2009

**OU 2** (Sites 6, DRMO, & 29, Incinerator Site)

Supplemental RI	2006/2007
Revised Feasibility Study	2007
Proposed Plan	2007/2008
Record of Decision	2008

**OU 3** (Sites 8, Jamaica Island Landfill, 9, Mercury Burial Vaults, & 11, Waste Oil Tanks)

Draft Final Operations/Maintenance and Monitoring Plan	March 2005
Draft Remedial Action Report	April 2005
Explanation of Significance Difference to OU3 ROD	September/October 2005

**OU 4** (Areas off-shore that were potentially impacted by on-shore IRP sites and Site 5)

Feasibility Study	2012
Proposed Plan/Record of Decision	2013

**OU 7** (Site 32) Topeka Pier

Phase II Remedial Investigation	2007/2008
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**OU 8** (Site 31) West Timber Basin

Remedial Investigation Work Plan	2012
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**OU 9** (Site 34) Oil Gasification Plant (Building 62)

Final Engineering Evaluation/Cost Analysis	September 2005
Public Comment Period	October/November 2005
Action Memorandum	2005/2006

**Site Screening Area:**

Site 30, Galvanizing Plant (Building 184)

Final EE/CA	August 2005
Public Comment Period	September/October 2005
Action Memorandum	2005/2006

## DOCUMENT SCHEDULE

### Amended Site Management Plan

Submitted draft FY06 SMP	June 15, 2005
Received comments on draft SMP	July/August 2005
Respond to comments on draft report	September 2005

### Operable Unit 1 (Site 10, Building 238)

Submitted draft QAPP for additional investigation	April 30, 2004
Technical meeting	April 14, 2005
Received follow up comments	May 2005

### Operable Unit 2 (Sites 6, DRMO, and 29, Teepee Incinerator)

Treatability Study	
Field work completed	December 2004
Submit draft Treatability Study Report	October 2005

#### Feasibility Study

Submitted draft FS	November 15, 2004
Comments received	March 30, 2005
Respond to comments	July 21, 2005
Follow up comments due	August 22, 2005

### Operable Unit 3 (Sites 8, 9 and 11)

Former CDC Investigation Report	
Submit No Further Action Decision Document	TBD

#### Post Remedial Operations, Maintenance and Monitoring Plan

Submitted draft final OM&M plan	March 3, 2005
Comments received on draft final report	May/June 2005
Finalize report	October 2005

#### Land Use Control Plan

Submit draft LUC plan	May 2, 2005
Received comments on draft plan	June 2005

#### OU3 remedial Action Report

Submitted draft report	May 11, 2005
Comments received on draft report	July 2005

Explanation of Significant Difference to the OU3 ROD	Sept/Oct 2005
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### Operable Unit 4 Interim Monitoring

Submitted draft Additional Scrutiny QAPP	April 4, 2005
Comments due on draft QAPP	May 19, 2005
Submitted final QAPP	August 2005
Conducted field work	August 2005

Operable Unit 9 (Site 34) Oil Gasification Plant (Building 62)

Draft Engineering Evaluation/Cost Analysis  
Received comments  
Submit final report  
Submit draft Action Memorandum

July 29, 2005  
September 2005  
September 2005  
December 2005

Site 30, Building 184, former Galvanizing Plant

Final Engineering Evaluation/Cost Analysis  
Draft Action Memorandum

August 30, 2005  
November 18, 2005

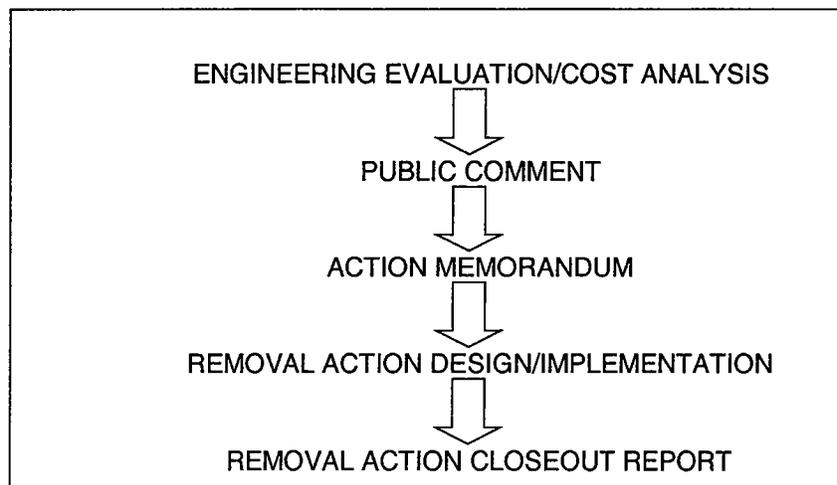
**SITE 34 ENGINEERING  
EVALUATION/COST ANALYSIS (EE/CA)**

Portsmouth Naval Shipyard  
Restoration Advisory Board Meeting  
September 27, 2005

## **PRESENTATION OBJECTIVES**

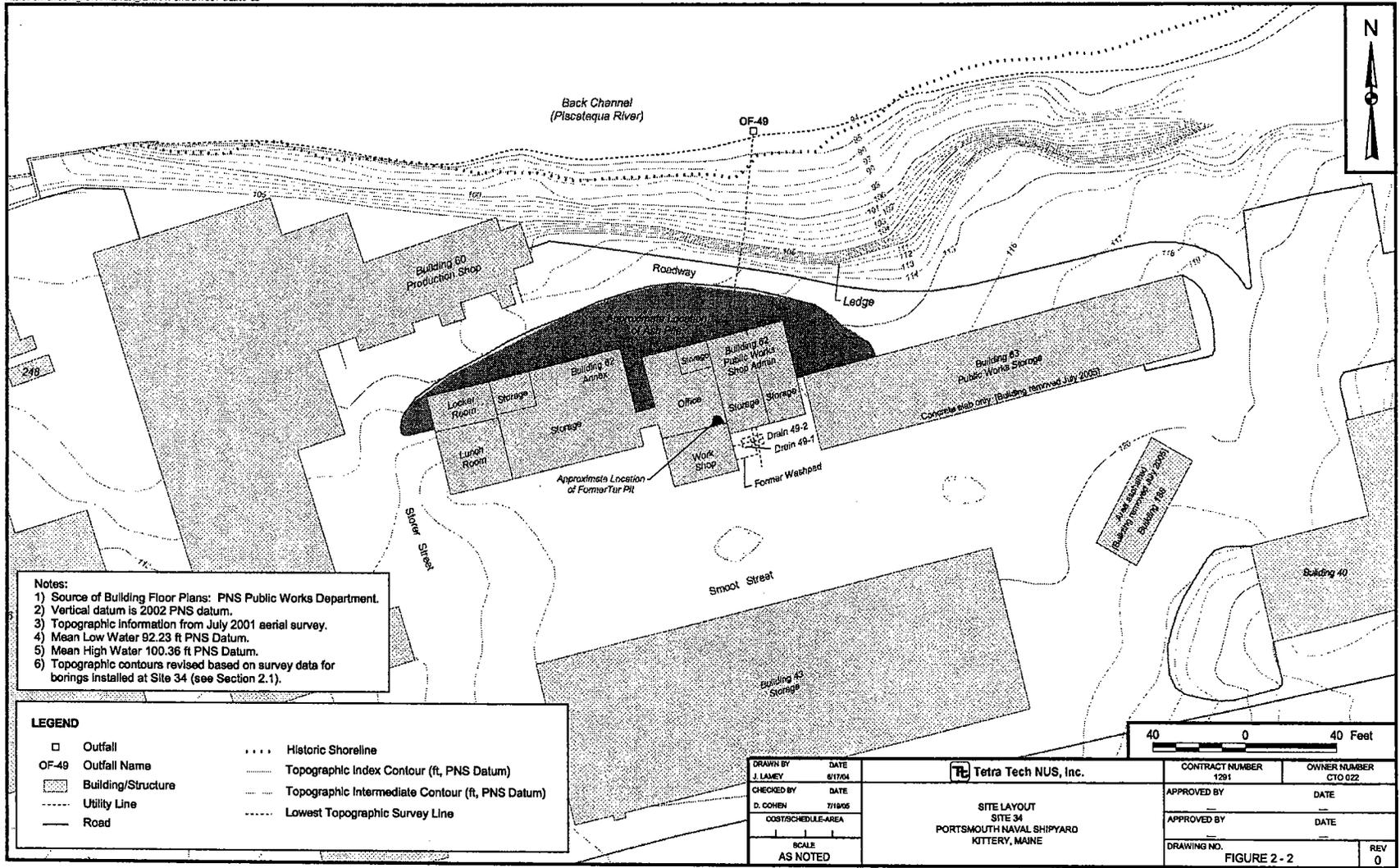
- Provide an overview of the non-time critical removal action process
- Discuss removal action objectives and alternatives
- Discuss details of recommended removal action alternative
- Identify upcoming activities for the site

## **OVERVIEW OF THE NON-TIME CRITICAL REMOVAL ACTION PROCESS**



# SITE 34 LOCATION

P:\GIS\SPORTSMOUTH\_NSVAPR\SITES\_ASH.APR SITE LAYOUT 9/20/05 CS



- Notes:**
- 1) Source of Building Floor Plans: PNS Public Works Department.
  - 2) Vertical datum is 2002 PNS datum.
  - 3) Topographic information from July 2001 aerial survey.
  - 4) Mean Low Water 92.23 ft PNS Datum.
  - 5) Mean High Water 100.36 ft PNS Datum.
  - 6) Topographic contours revised based on survey data for borings installed at Site 34 (see Section 2.1).

LEGEND	
□	Outfall
OF-49	Outfall Name
▨	Building/Structure
---	Utility Line
—	Road
.....	Historic Shoreline
.....	Topographic Index Contour (ft, PNS Datum)
.....	Topographic Intermediate Contour (ft, PNS Datum)
.....	Lowest Topographic Survey Line

DRAWN BY J. LAMEY	DATE 6/17/04
CHECKED BY D. COHEN	DATE 7/19/05
COST/SCHEDULE AREA	
SCALE AS NOTED	

**Tetra Tech NUS, Inc.**  
  
SITE LAYOUT  
SITE 34  
PORTSMOUTH NAVAL SHIPYARD  
KITTEEY, MAINE

CONTRACT NUMBER 1291	OWNER NUMBER CTO 022
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 2 - 2	REV 0

### **SITE BACKGROUND**

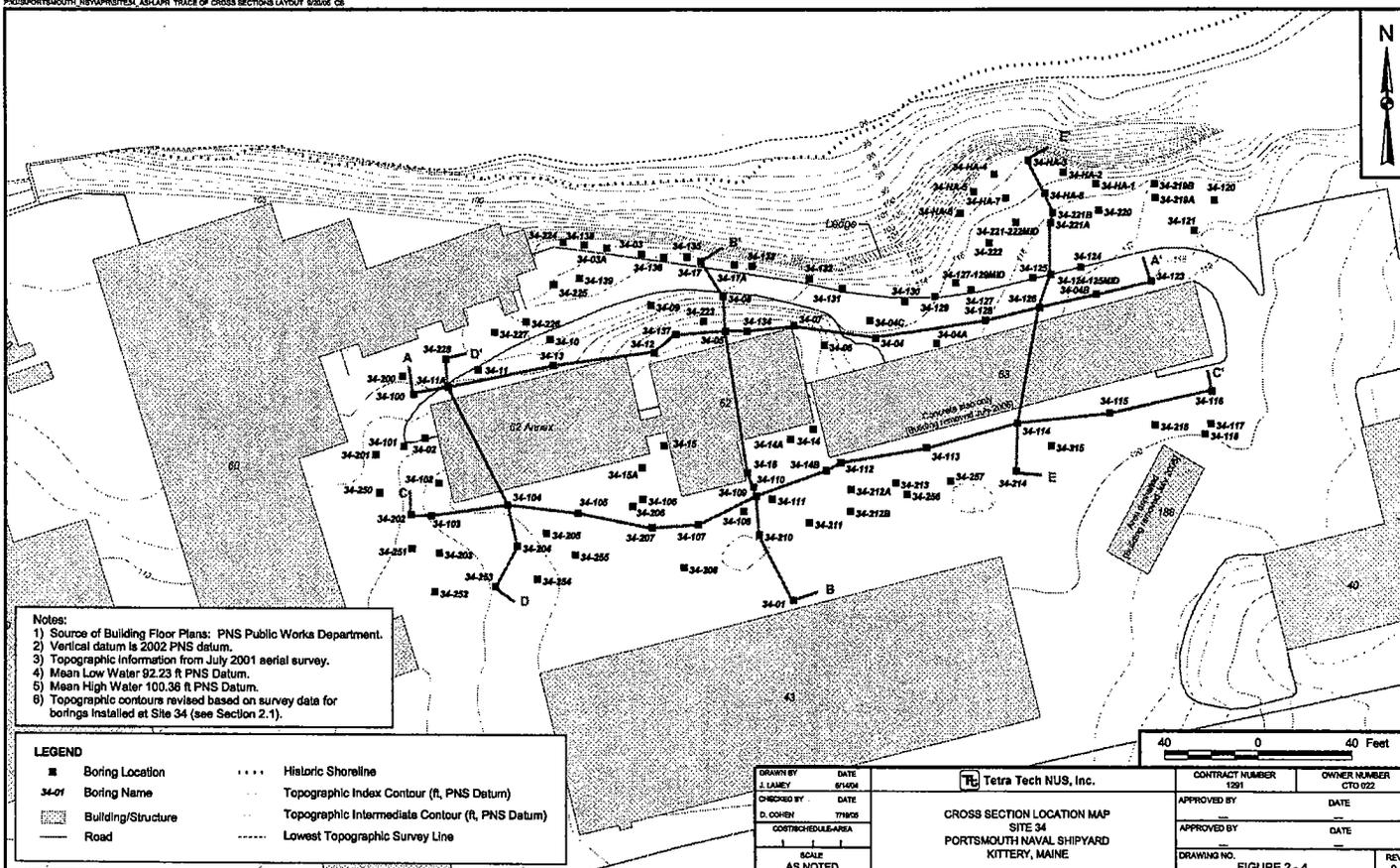
- Site 34 is associated with Building 62 which housed a former oil gasification plant from 1870s to early 1900s
- Blacksmith shop operated during 1915 to 1930
- Focus is the ash from coal burning during oil gasification and from a fire that gutted the building in 1919
- Ash was deposited outside the building primarily in a 100 foot x 30 foot heap to its north
- Ash has also been found at various locations around the building

### **PREVIOUS ACTIVITIES/INVESTIGATIONS**

- Limited removal of ash and covering of exposed ash
- Site Screening Investigation (early phase of investigations) was conducted
  - Soil/ash and sediment sampling in 1998
  - Soil/ash sampling in 2003
- Investigation of the extent of ash in 2004

# EXTENT OF INVESTIGATION FOR ASH

FIG:PORTSMOUTH, NEWHAMPSHIRE, ASHLAPR TRACE OF CROSS SECTIONS LAYOUT 02/06 CS

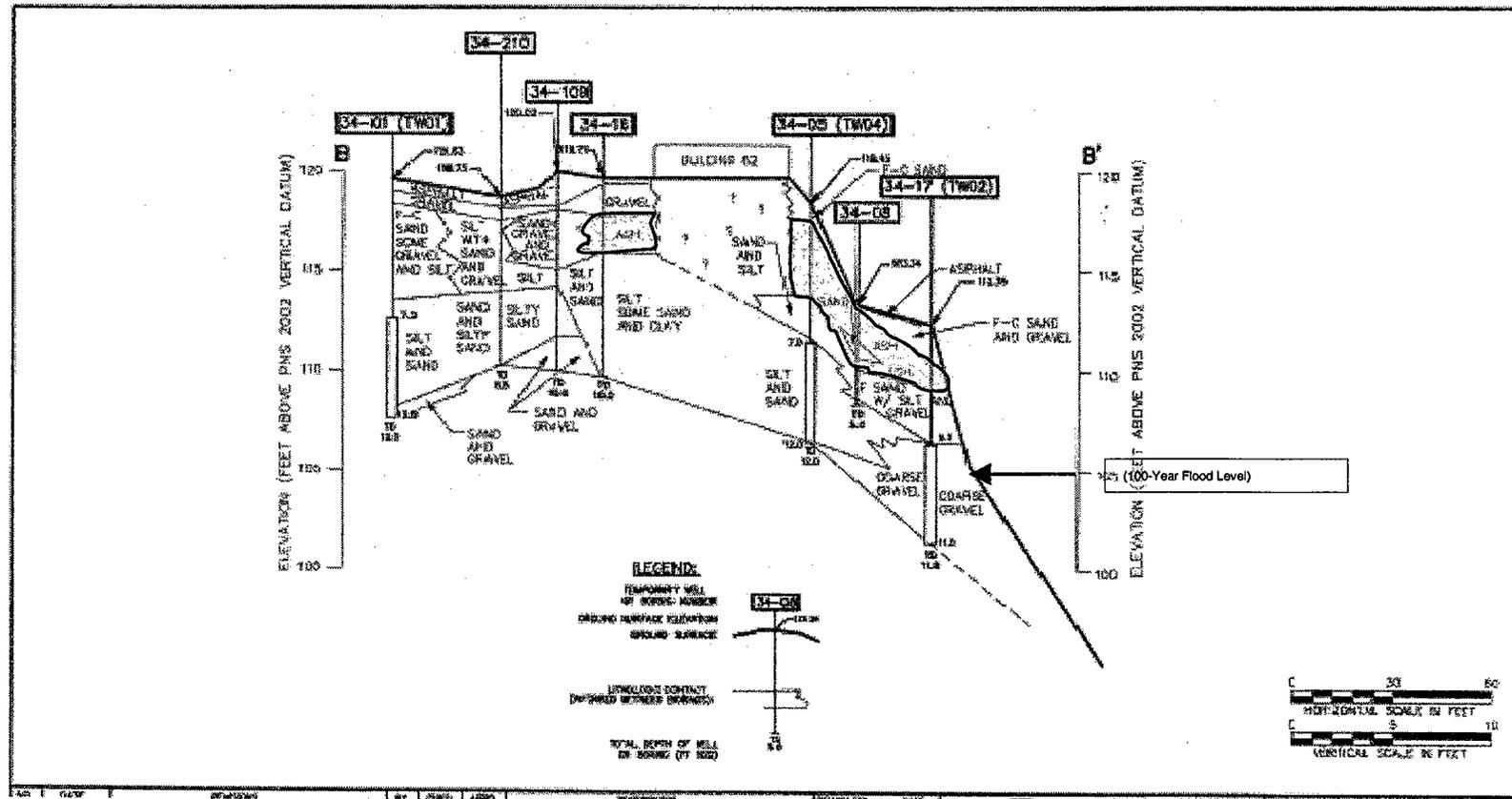


Notes:  
 1) Source of Building Floor Plans: PNS Public Works Department.  
 2) Vertical datum is 2002 PNS datum.  
 3) Topographic information from July 2001 aerial survey.  
 4) Mean Low Water 82.23 ft PNS Datum.  
 5) Mean High Water 100.36 ft PNS Datum.  
 6) Topographic contours revised based on survey data for borings installed at Site 34 (see Section 2.1).

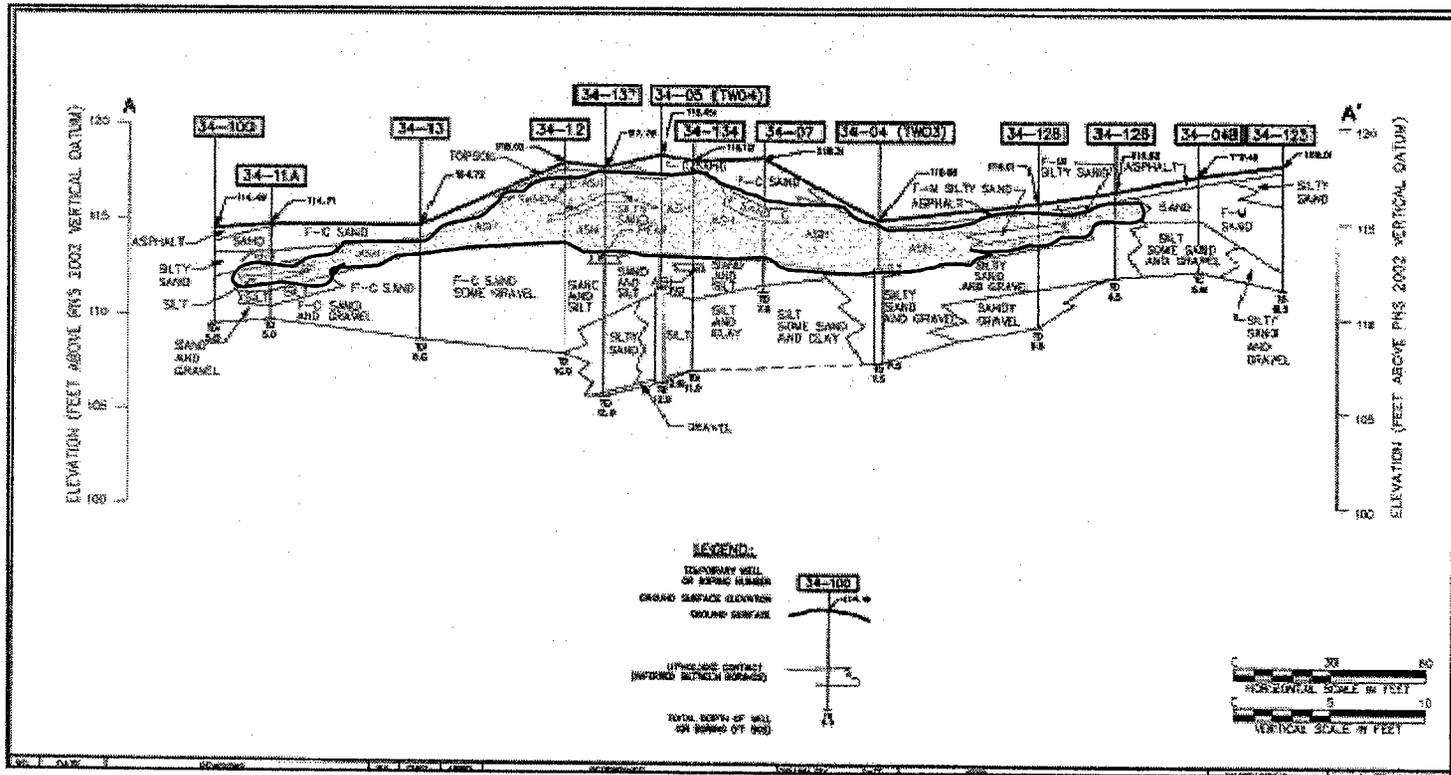
LEGEND	
■	Boring Location
34-01	Boring Name
▨	Building/Structure
—	Road
.....	Historic Shoreline
---	Topographic Index Contour (ft, PNS Datum)
---	Topographic Intermediate Contour (ft, PNS Datum)
---	Lowest Topographic Survey Line

DRAWN BY J. LANEY	DATE 8/14/06	Tetra Tech NUS, Inc.	CONTRACT NUMBER 1291	OWNER NUMBER C70122
CHECKED BY D. COHEN	DATE 7/18/05		APPROVED BY ---	DATE ---
CONTRACT/DRAWING AREA		CROSS SECTION LOCATION MAP SITE 34 PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE	APPROVED BY ---	DATE ---
SCALE AS NOTED			DRAWING NO. FIGURE 2 - 4	REV 0

# ASH THICKNESS IN CROSS-SECTION (NORTH-SOUTH)



# ASH THICKNESS IN CROSS-SECTION (EAST-WEST)



## **CONCEPTUAL SITE MODEL**

- Exposure to Human Receptors
  - Potential exposure to ash could occur to a depth of about 5 feet bgs for a construction worker
  - Potential exposure to all other receptors would be limited to a depth of 2 feet bgs
  - Asphalt or vegetated top soil minimizes exposure
- Exposure to Environmental Receptors
  - Erosion of ash is minimized by the presence of asphalt or vegetated soil layer
  - Ash is exposed at the vertical face of site ledge
  - Exposed ash is above the 100 year flood elevation

## **REMOVAL ACTION OBJECTIVES (RAOs)**

1. Reduce potential risks to human health from exposure to ash
  
2. Reduce potential for future erosion of ash

### **REMOVAL ACTION ALTERNATIVES**

- Alternative 1: No Action
- Alternative 2: Excavation and Offsite Recycling of All Ash
  - Removal of 3,800 tons of ash wherever visually delineated
  - Disposal of the ash at an offsite recycling facility
  - Backfill with clean soil and restoration of surface
- Alternative 3: Excavation and Offsite Recycling of Ash Pile and Ledge
  - Removal of 2,000 tons of ash present in the pile and at the ledge areas
  - Disposal of the ash at an offsite recycling facility
  - Backfill with clean soil and restoration of surface

### **REMOVAL ACTION ALTERNATIVES (Contd.)**

- Alternative 4: Excavation and Offsite Landfilling of All Ash
  - Removal of 3,800 tons of ash wherever visually delineated
  - Disposal of the ash at an offsite landfill (nonhazardous or hazardous waste depending on RCRA nature)
  - Backfill with clean soil and restoration of surface
- Alternative 5: Excavation and Offsite Landfilling of Ash Pile and Ledge
  - Removal of 2,000 tons of ash present in the pile and at the ledge areas
  - Disposal of the ash at an offsite landfill (nonhazardous or hazardous waste depending on RCRA nature)
  - Backfill with clean soil and restoration of surface

## COMPARATIVE ANALYSIS OF ALTERNATIVES

Criterion	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Effectiveness	Low	High	Medium	High	Medium
Implementability	Readily implementable	More volume than 3. Concerns regarding offsite facility. Material has to be nonhazardous and recyclable.	Smaller volume than 2. Concerns regarding offsite facility. Material has to be nonhazardous and recyclable.	More volume than Alternative 5. Fewer concerns regarding offsite facility than 2 and 3	Smaller volume than 4. Fewer concerns regarding offsite facility compared to 2 and 3
Cost	No cost	More expensive than 3.	Least expensive if material is nonhazardous	Similar to 2 if material is nonhazardous.	Least expensive if material is hazardous or nonrecyclable.

### RECOMMENDED ALTERNATIVE

- Alternative 5 is recommended as the most cost effective with least implementability concerns
- Alternative 5- Excavation and Offsite Landfilling of the Ash Pile and Ash Exposed at Site Ledge Areas
  - Removal of surface layers
  - Excavation of 2000 tons of soil beneath the surface layers
  - Testing and disposal of soil at nonhazardous waste landfill or hazardous waste landfill depending on RCRA leachability characteristics
  - Backfilling of excavated areas
  - Paving or topsoil/seedling of surface

### **WHAT IS NEXT?**

- A final EE/CA will be submitted by September 30, 2005.
- A 30-day public comment period on the final EE/CA will be held from October 13 to November 11, 2005.
- A draft action memorandum will be submitted 30 days after the public comment period.

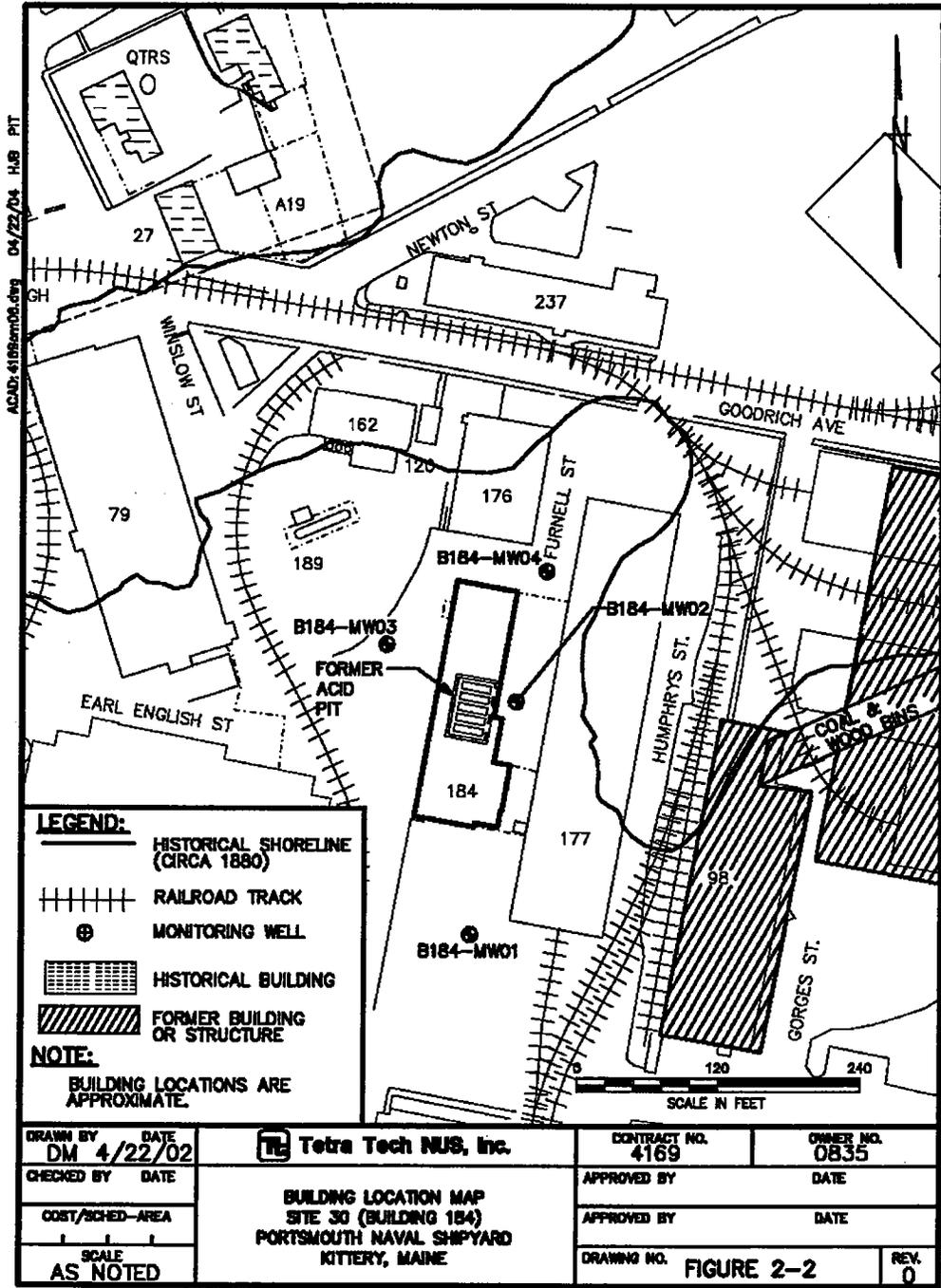
**SITE 30 (BUILDING 184)  
ENGINEERING EVALUATION/COST  
ANALYSIS-REVISION 1  
(EE/CA)**

Portsmouth Naval Shipyard  
Restoration Advisory Board Meeting  
September 27, 2005

## **PRESENTATION OBJECTIVES**

- Discuss removal action objectives and alternatives
- Discuss details of recommended removal action alternative
- Identify upcoming activities for the site

# SITE 30 LOCATION



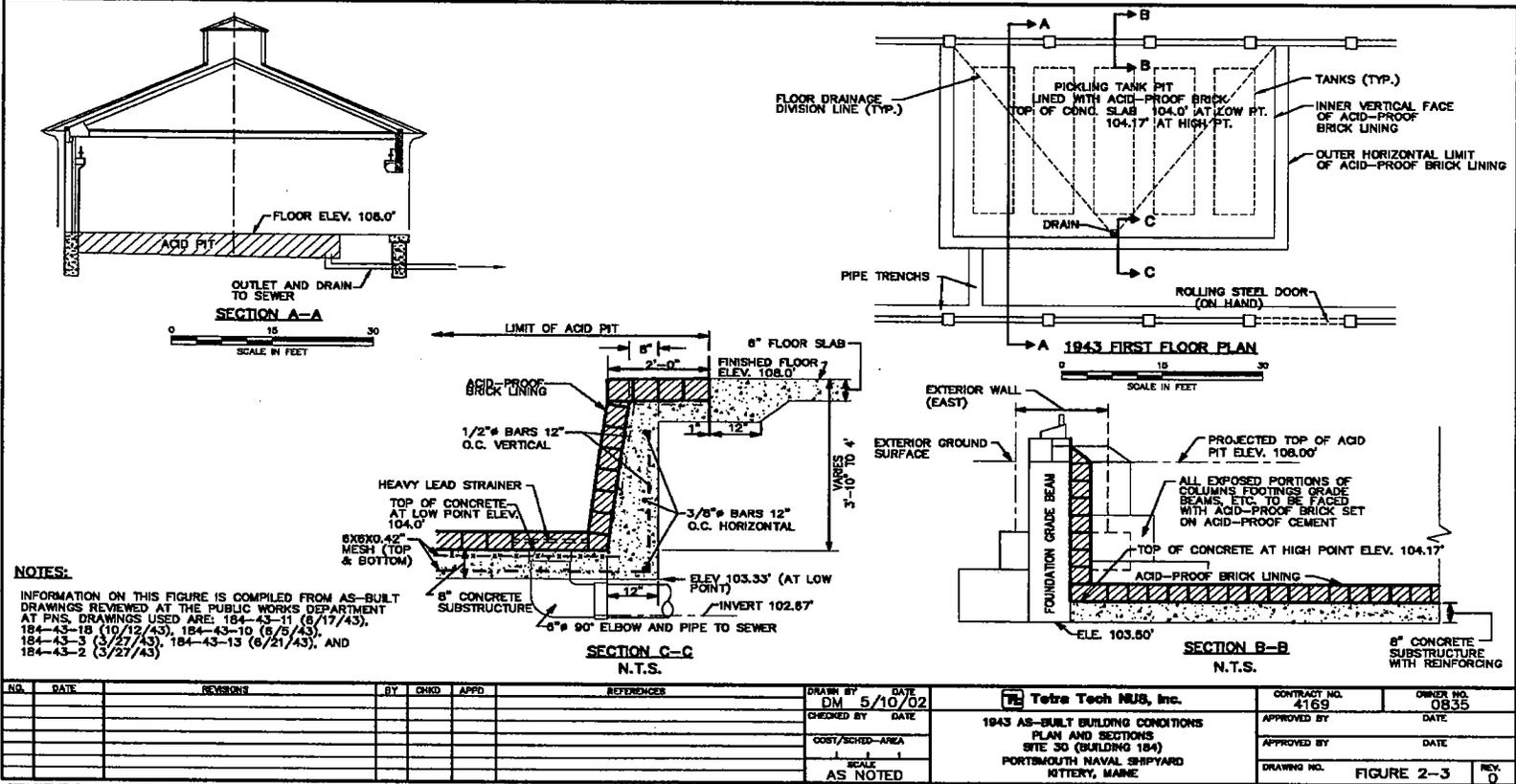
FORM CA9D NO. TNUUS\_AV.EVG - REV 0 - 1/22/98

## **SITE BACKGROUND**

- Site 30 (Building 184) is a former galvanizing plant constructed in 1943
- Former acid pit (52 feet x 35 feet x 4 feet deep) in the approximate center of building is the focus
- Pit was constructed of concrete with acid-proof brick lining and acid-proof cement
- Pit was a containment for acid, flux, water, and base tanks used in industrial cleaning operations
- Pit was filled in and covered over in the 1960s
- Building has been used as a welding school since the 1960s

# FORMER ACID PIT DESIGN DETAILS

ACAD:4189CP08.dwg 03/23/04 HJB PT



FORM CAD AND TYPING, BRUSH - REV 0 - 1/25/99

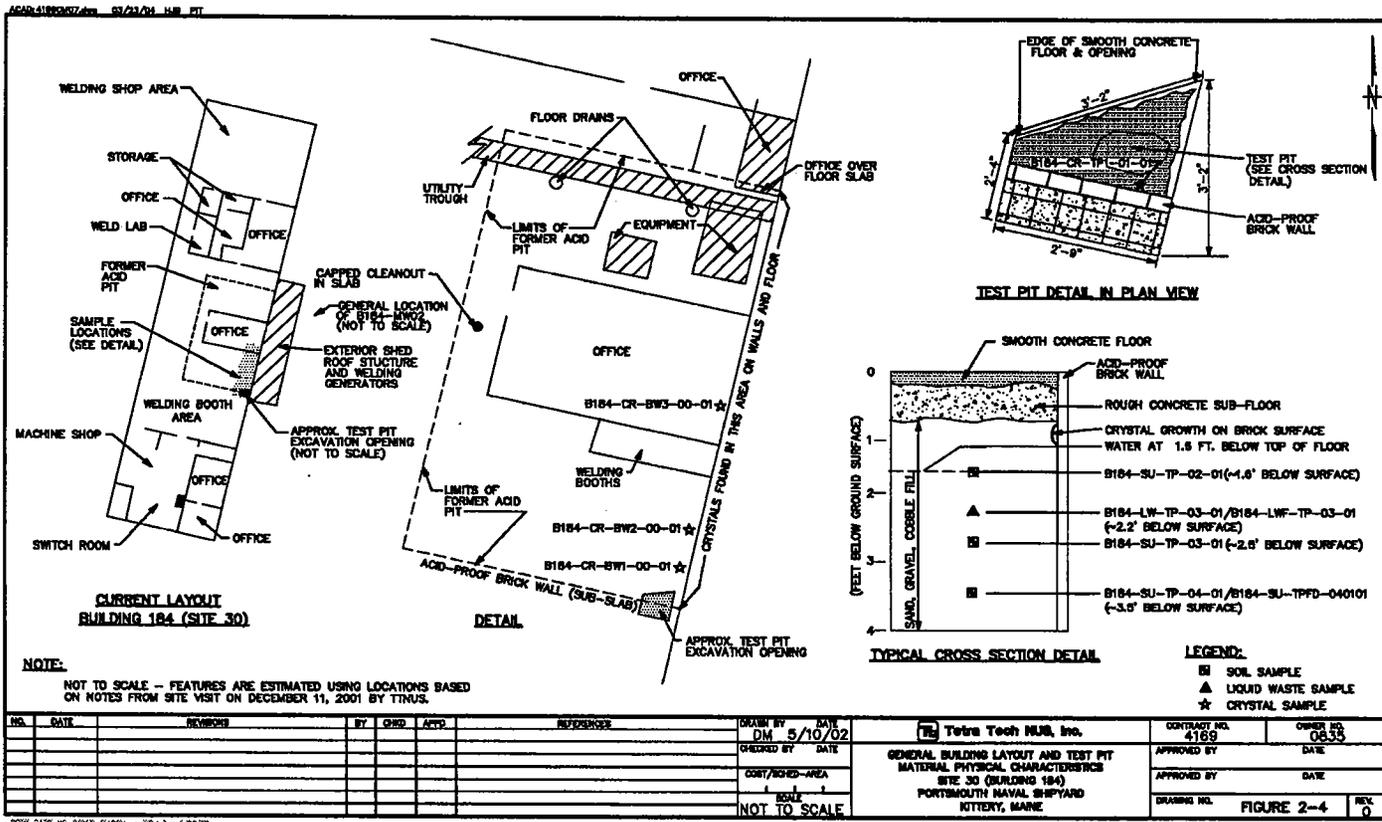
## **PREVIOUS INVESTIGATIONS**

- Historical observations of crystal growth
- Testing of crystals in 1994
  - Acidic pH of 1.0, low levels of TCLP metals, higher levels of other metals
  - Testing for anionic and metal constituents in 1997
  - Sulfates of aluminum, magnesium, iron, and manganese
- Site Screening Investigation in 1998
  - Surface soil, subsurface soil, and groundwater outside the building
  - Findings did not suggest need for further investigation outside the building

## **PREVIOUS INVESTIGATIONS (CONTINUED)**

- Test Pitting Investigation in 2001 for indication of chemical nature of former acid pit contents
  - Sulfates and concentrations of aluminum, iron, and magnesium were present at high levels in crystals, pit fill material and pit water
  - Risk screening indicated that only pH of crystals posed a potential concern
  - Pit water is not expected to be hydraulically connected to groundwater at the site
  - Recommended a non-time critical removal action for pit

# BUILDING LAYOUT AND TEST PIT SAMPLE LOCATION



## **REMOVAL ACTION OBJECTIVES (RAOs)**

- Primary RAOs
  - To minimize potential unacceptable risk to current and future site users from exposure to crystal growth with low pH
  - To minimize the potential for future release of pit contaminants to the groundwater beneath the pit
- Secondary Objective
  - To select a removal action that will attain primary RAOs while minimizing the interruption of mission-critical activities within Building 184

## **REMOVAL ACTION ALTERNATIVES**

- Alternative 1: No Action
  
- Alternative 2: In-situ Flushing
  - Removal of crystals
  - Water and caustic flushing/neutralization of the pit contents in place
  - Monitoring of groundwater under the building

## **REMOVAL ACTION ALTERNATIVES (Contd.)**

- Alternative 3: Interim Periodic Crystal Removal and Pit Dewatering followed by Excavation and Off-site Disposal
  - Periodic removal of crystals from the floor and water from the pit beneath the floor
  - Removal of crystals, concrete floor, and pit contents after Building 184 is vacated
  - Testing and off-site disposal at an approved facility
  - Visual inspection of condition of pit and recommendation of a course of action to address pit
  - Backfilling and site restoration

## **REMOVAL ACTION ALTERNATIVES (Contd.)**

- Alternative 4: Long-Term Periodic Crystal Removal, Minimization of Water Entering Pit, and Pit Dewatering
  - Periodic removal of crystals and dewatering of the pit until a CERCLA decision is made for the site
  - Plugging of building floor drains, former pit drain, and water proofing surfaces adjacent to Building 184

# COMPARATIVE ANALYSIS OF ALTERNATIVES

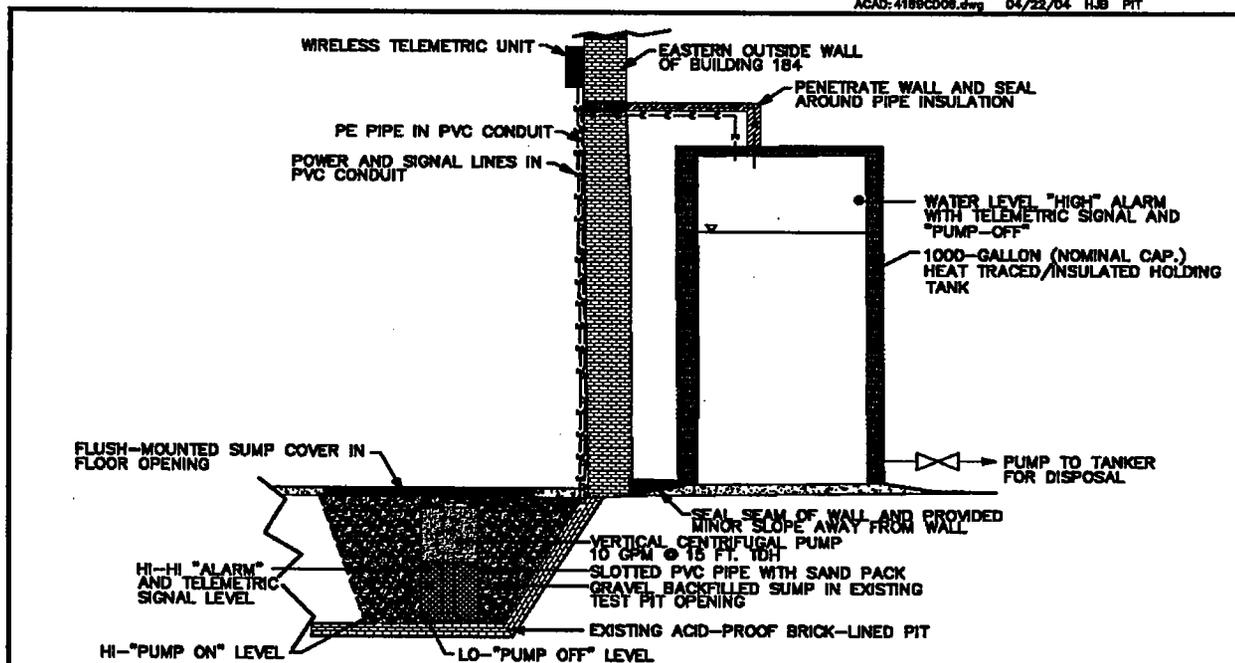
<b>Criterion</b>	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>
<b>Effectiveness</b>	Low	Medium	High	Medium
<b>Implementability</b>	Readily Implementable	More difficult to implement than 3 and 4.	More difficult to implement than 4.	Most easily implementable. Does not require vacating the building.
<b>Cost</b>	No cost	More expensive than 3 and 4.	Similar or marginally more expensive than 4 over the assumed duration of O&M.	Similar or marginally less expensive than 3 over the assumed duration of O&M.

## **RECOMMENDED ALTERNATIVE**

- Alternative 4 is the recommended alternative as the most protective until the building is vacated
- Alternative 4 (Long-term Periodic Crystal Removal, Minimization of Water Entering Pit, and Pit Dewatering)
  - Survey of building drains and blocking of appropriate portions to minimize water from entering the pit through drains.
  - Providing a surface sealant and grade to the parking area outside the building to minimize storm water outside the building wall adjacent to the pit from leaking into the pit.
  - Removal of crystals and dewatering of the pit (assumed to be 6 years for costing purposes).
  - Preparation of a Removal Action report.

# PIT DEWATERING SCHEMATIC FOR RECOMMENDED ALTERNATIVE

ACAD:4189C008.dwg D4/22/04 HJB PIT



DRAWN BY HJB	DATE 3/23/04	Tetra Tech HJB, Inc.	CONTRACT NO. 4169	OWNER NO. 0835
CHECKED BY	DATE		APPROVED BY	DATE
COST/SCHED-AREA		GENERAL ARRANGEMENT OF PIT DEWATERING PROCESS ALTERNATIVES 3 AND 4 BUILDING 184 EE/CA PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE	APPROVED BY	DATE
SCALE NOT TO SCALE			DRAWING NO. FIGURE 4-3	REV. 0

FORM CADD NO. T1000LALONG - REV 0 - 1/22/98

## WHAT IS NEXT?

- Final revised EE/CA was submitted on August 30, 2005
- A 30-day public comment period on the final revised EE/CA is being held between September 20 and October 19, 2005
- A draft action memorandum will be submitted 30 days after the public comment period.



**DEPARTMENT OF THE NAVY**  
PORTSMOUTH NAVAL SHIPYARD  
PORTSMOUTH, N. H. 03804-5000

IN REPLY REFER TO:  
November 7, 2005

**MEMORANDUM**

**FOR THE MEMBERS OF THE RESTORATION ADVISORY BOARD (RAB), INSTALLATION  
RESTORATION PROGRAM, PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE**

Enclosed please find the draft minutes from the September 27, 2005 Restoration Advisory Board meeting for your review and comment.

Comments are requested by November 30, 2005. You may provide your comments to me at (207) 438-3830.

Sincerely,

A handwritten signature in black ink that reads "Marty Raymond for".

Ken Plaisted  
Navy Co-Chairman  
Restoration Advisory Board

Distribution:

D. Bogen  
P. Britz  
J. Carter  
J. Clifford  
A. Davis  
M. Dionne  
J. Horrigan  
Carolyn Lepage  
M. Marshall  
J. McKenna  
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NHF&G (C. McBane)  
NOAA (K. Finkelstein)  
EFANE (F. Evans)  
COMSUBGRU TWO (A. Stackpole)  
TTNUS (D. Cohen)

**RESTORATION ADVISORY BOARD MEETING  
PORTSMOUTH NAVAL SHIPYARD  
RODEWAY INN, KITTERY, MAINE  
September 27, 2005**

Restoration Advisory Board (RAB) members at the meeting included the following:

- RAB community members – Doug Bogen, Jon Carter, Alan Davis, Michele Dionne, and Diana McNabb.
- Navy RAB members- Fred Evans and Ken Plaisted
- Regulatory representatives- Iver McLeod (MEDEP)

Community members Peter Britz, Jeff Clifford, Jim Horrigan, Mary Marshall, Jack McKenna, Onil Roy, and Roger Wells and regulatory representative Matt Audet (USEPA) were absent.

Guests at the RAB included:

- Marty Raymond and Dennis Dubois from Portsmouth Naval Shipyard
- Mary Ann Simmons from Naval Environmental Health Center (NEHC)
- Amanda Kittelson from EFANE
- Chris Evans from MEDEP
- Debbie Cohen and JP Kumar from Tetra Tech NUS, Inc. (TtNUS)

## **INTRODUCTION**

Doug Bogen, Community RAB Co-chair, welcomed the RAB and introduced the newest RAB member, Jon Carter. Jon is the Kittery Town Manager. Ken Plaisted indicated that the Navy was pleased to have a Kittery Town official on the RAB and he thanked Jon for volunteering his time. Jon has lived in Kittery since 1987, is married with two daughters, and was formerly the Town Manager in Wells.

The primary topic of the evening was the Engineering Evaluation and Cost Analysis (EE/CA) reports for Site 34 (former Oil Gasification Plant, Building 62) and for Site 30 (former Galvanizing Plant, Building 184).

## **STATUS OF WORK**

Fred Evans highlighted several of the status items for the Installation Restoration Program (IRP) sites at PNS. Fred indicated the following major items:

- Finalizing the Site 30 EE/CA (August 2005) and the Site 34 EE/CA (September 2005)
- Discussing and finalizing the Site 29 shoreline work plan. A conference call on the draft work plan was held last week and issues were resolved. The final work plan is expected soon. [Post-meeting note: The final work plan was submitted in October 2005.]
- Preparing the draft Screening-Level Treatability Study Report for OU2. Submittal of the draft report is scheduled for October 2005
- Finalizing the OU3 Operation, Maintenance, and Monitoring Plan. Submittal of the final plan is scheduled for October 2005.

## **REGULATOR UPDATES**

**USEPA** --- Matt Audet was absent.

**MEDEP** --- Iver McLeod mentioned that MEDEP has provided comments on the draft Site 30 and Site 34 EE/CA reports and MEDEP is reviewing the responses to comments on the OU2 Feasibility Study. MEDEP provided the Navy with their concurrence letter for the Explanation of Significant Difference (ESD) for the OU3 Record of Decisions (ROD). Also, Chris Evans began working as the MEDEP project geologist for Portsmouth projects.

## **RAB PRESENTATION: ENGINEERING EVALUATION AND COST ANALYSIS FOR SITES 34 AND 30**

JP Kumar of TtNUS gave a presentation on the EE/CA documents for Sites 34 and 30. The final (revision 1) EE/CA for Site 30 was submitted on August 30, 2005 and the public comment period began on September 20, 2005. The final EE/CA for Site 34 will be submitted by September 30, 2005 and the public comment period is scheduled to begin on October 13, 2005. The purpose of an EE/CA is to identify and evaluate non-time-critical removal action alternatives to reduce or remove risks at a site before a final remedy is determined for the site. A removal action is conducted to mitigate potential or actual risks through treatment, containment, and/or physical removal of contaminated material. An immediate impact that needs to be addressed would be considered a time-critical removal action. The EE/CA, which is similar to a Feasibility Study, is prepared to identify and evaluate removal action alternatives and recommend an alternative. After the EE/CA is finalized, the next step in the removal action process is a 30-day public comment period on the final EE/CA, and then preparation of an Action Memorandum (which is similar to a decision document) to document the selected removal action alternative. After the Action Memorandum is prepared, removal action design/implementation occurs and a removal action report is prepared.

JP discussed Site 34 background information, removal action objectives and alternatives, and the recommended removal action. He indicated that the focus of the removal action for Site 34 is ash from coal burning during oil gasification and blacksmith operations and ash from a fire that gutted the building in 1919.

### **Background Information – Site 34**

Site 34 is in the north-western portion of the Shipyard. Most of the site is covered by buildings and asphalt. A pile of ash, located north of the buildings on site, is covered by vegetation. There is a steep slope from the northern edge of the site to the edge of the back channel of the Piscataqua River.

Building 62, located on Site 34, was used as an oil (kerosene) gasification plant from the 1870s to the early 1900s. The building was used as a blacksmith shop (from 1915 to 1930) and for storage activities (1930 to present). The annex to Building 62 was built in the 1940s. Oil gasification and blacksmith operations produced ash from the burning of coal. The pile on the northern side of Building 62 is the major area where ash was deposited. During the 2003 and 2004 investigations at the site, ash was found under paved areas around the building. It is not known whether ash is under the building foundations; however, Building 63 was built at the same time as Building 62 and ash is not expected under the foundations of these two buildings. The annex to Building 62 may have ash under the foundation and Marty Raymond noted that the Navy would need to investigate under the building if there were plans to remove the

foundation. Also, Marty indicated that Buildings 62 and annex are currently active; however, there are plans to remove the annex building (but not the foundation). Building 63 was removed in July 2005, but the foundation for the building remains.

The Navy discovered the site after noticing and attempting to remove some ash behind Building 62. More ash than expected was found (6 drums were removed); therefore, the Navy stopped the excavation and began investigation of the site. During the 2003 site screening investigation, the ash was found to be characterized by high concentrations of polycyclic aromatic hydrocarbons (PAHs) and metals (greater than residential and industrial human health screening levels). Based on the site screening information, it was determined that exposure to the ash at the site represented a potential human health risk. Soil boring information from the 2003 and 2004 investigations showed that the ash was thickest in the pile north of Building 62 (about 5 feet thick) and thinner outside of the pile. Thin layers (0.5 to 2 inches) of ash were found on the southern side of the building under asphalt/road base. The ash was generally found near the ground surface and no deeper than 5 feet below ground surface. Some ash was noticed near the top of the slope along the site shoreline; this ash was above the mean high-tide and 100-year flood elevations.

#### Removal Action Objectives- Site 34

Removal action objectives (RAOs) are developed to address potential risks, which are identified through development of the conceptual site model. The conceptual site model is based on the potential land uses, exposure mechanisms, and characteristics of the contaminants at the site. Although a risk assessment has not been conducted for Site 34, the chemical concentrations found in the ash were sufficiently above the risk screening levels to indicate a potential risk if people are exposed to the ash. Also, erosion of the ash to the off shore from surface water runoff is a potential, especially along the vertical face of the shoreline slope (site ledge). The majority of the ash is covered by asphalt or vegetated soil layer; so exposure to the ash or erosion of the ash is not an imminent concern. A non-time-critical removal action for the ash is expected to address the majority of the risk at the site. Based on the potential concerns for people exposed to ash and for erosion of the ash (especially if the ash was uncovered), the removal action objectives for Site 34 were determined to be as follows:

- Reduce potential risks to human health from exposure to ash.
- Reduce potential for future erosion of ash.

#### Removal Action Alternatives- Site 34

Four alternatives meeting the removal action objectives were developed for evaluation in the EE/CA. As required by CERCLA, a no-action alternative was also included as a baseline for comparison to the other alternatives. The four alternatives were developed based on the following:

- Two volumes of ash material (ash mixed with soil) were evaluated based on removing all ash found at the site (in the pile north of building, along ledge areas, and under asphalt on south of building) and based on removing the ash more vulnerable to erosion/exposure (in the pile and along ledge areas). The estimated volumes of excavated material for these two scenarios were 3,800 tons and 2,000 tons.
- Two disposal methods for the excavated material were evaluated. The excavated material would be brought to a recycling facility if the material is acceptable (i.e., nonhazardous and meets any recycling criteria) for recycling or to an offsite landfill (nonhazardous or hazardous depending on RCRA characteristics of excavated material). Onsite treatment (if hazardous) was not evaluated because of the limited space at the site for onsite treatment.

The removal action alternatives evaluated were:

- Alternative 1: No Action
- Alternative 2: Excavation and Offsite Recycling of All Ash
- Alternative 3: Excavation and Offsite Recycling of Ash Pile and Ledge
- Alternative 4: Excavation and Offsite Landfilling of All Ash
- Alternative 5: Excavation and Offsite Landfilling of Ash Pile and Ledge

The alternatives were compared using the three criteria required by USEPA guidance: **effectiveness** (how well the alternative meets the RAOs), **implementability** (concerns or troubles with carrying out the alternative), and **cost** (including any operation and maintenance costs). Alternative 1 would not meet the RAOs and was not discussed further. Alternatives 2 through 5 would be effective in meeting the RAOs, although removal of all of the ash (in Alternatives 2 and 4) would be more effective than removing the more vulnerable portion of the ash (in Alternatives 3 and 5). Excavation and disposal of the material should be implementable; however, the availability of a recycling facility that can accept the excavated material could be a concern (in Alternatives 2 and 3). Costs would be less for the alternatives with less volume of excavated material (Alternatives 3 and 5) and costs would be less for alternatives which include recycling (Alternatives 2 and 3). JP explained that the relative magnitude of costs for disposal was determined based on typical costs for disposal; a specific disposal facility has not been selected.

The Navy is recommending Alternative 5 because this alternative would have fewer implementability concerns while addressing the majority of the risk at the site. The alternative includes excavation of the ash in the pile and at the site ledge areas and disposal off site. As part of the removal action, the Navy wants to remove the more vulnerable ash (which includes the ash on the northern side of Building 62). However, depending on the contractor costs, the Navy will try to address the maximum amount of ash at the site as possible with the available funding without disrupting shipyard activities in the area. The visual presence of ash will be used to determine the extent of excavation as part of the removal action. A Remedial Investigation (RI) will be conducted after the removal action to determine risks at the site. The logistics of excavation, transportation, and offsite disposal (with treatment as needed) would be provided as part of the removal action design. Iver indicated that a removal action was a good way to remove the bulk of contamination at the site before conducting the RI (and subsequent FS).

JP explained that the final EE/CA would be submitted soon (submitted on September 30, 2005) and the 30-day public comment period would be held. The draft Action Memorandum would be submitted 30 days after the end of the comment period.

Several questions asked regarding Site 34 and the removal action are summarized as follows:

- What does the ash look like? It is black with pieces of coal and cinders.
- Does this type of ash tend to be hazardous? The Navy indicated that because the ash tends to be more alkaline, the material tends to provide a buffer in the acid leaching tests (TCLP). However, because of the amphoteric nature (soluble in both acidic and basic solutions) of lead, it is likely that higher levels of lead may be leachable at highly alkaline conditions. The two samples of the 6 drums of material previously excavated from Site 34 failed TCLP for lead (6 and 70 mg/L compared to TCLP standard of 5 mg/L) and the material was disposed as hazardous material. This material was from the ash pile and likely was mostly ash. Areas of the site with thinner layers of ash and with ash under thicker layers of soil will likely have more soil mixed in the excavated material. It is

expected that the more soil mixed with ash in the excavated material will be less likely to fail TCLP. So some portions of the excavated material may not fail TCLP and could then be disposed as nonhazardous material.

- Is groundwater migration a concern for this site? JP explained that temporary wells were installed at the site; however, overburden groundwater was not found at the site. Also, the overburden material is not in the tidal zone, so there is very little potential for tidal water to enter the overburden. The chemicals in the soil a few feet below the ash were not at concentrations of concern and the chemicals of concern at the site are not highly mobile in water. So, the groundwater migration pathway is not a concern for the site.
- What is the recyclability of ash? JP explained that vendors seem to think that the material could be recyclable based on the description of the material. As part of recycling, the excavated material would be used as part of the asphalt road base. The contaminants would be bound in the asphalt material. Many of the contaminants in the ash at the site (PAHs) are also in asphalt material. The recycling would make it so that the contaminants would not be in a form that could be ingested or an exposure concern to people. If the material is hazardous because of metals it would not be recyclable without treatment. The Navy would need to pay to have the material recycled and the Navy would be liable for the material (under CERCLA) as the generator of the waste.

Post meeting note: The public comment period for the Site 34 EE/CA began on October 19 and will end on November 21, 2005.

Before beginning the presentation on Site 30, Fred indicated that Site 30 EE/CA was put out for public comment once previously; however, while putting together the Site 30 Action Memorandum, the Navy found that there was mission critical activities that would need to be moved (using clean up funds). This was not possible so the Navy needed to look at an alternative that would not disturb mission critical activities. The Navy developed a new alternative and prepared a revised EE/CA (revision 1). The new alternative considered removing crystals and reducing water that entered the pit. The presentation for this RAB was on the revised EE/CA. Fred noted that because we are in the public comment period for the revised Site 30 EE/CA, people at the meeting could provide written comments at the meeting (oral comments could not be accepted because a stenographer was not available at the meeting).

JP discussed Site 30 background information, removal action objectives and alternatives, and the recommended removal action. He indicated that the focus of the removal action was the former acid pit located within Building 184.

#### Background Information – Site 30

Building 184 was constructed in 1943 as a galvanizing plant. The acid pit was constructed to hold the chemical tanks that were used as part of the industrial cleaning operations in the galvanizing plant. The pit was constructed of concrete with acid-proof brick lining and acid-proof cement grouting. The pit was closed in 1960s. At that time the pit was filled in and covered over with a concrete floor. The building has been used as a welding school since that time. The eastern wall of the pit is also the building foundation wall.

Crystalline growth found along the seam of the floor slab and the inside wall of the building has been sampled several times. The crystals have a low pH (1 to 2), low levels of leachable metals, and higher levels of some of the less toxic metals (sulfates of aluminum, iron, magnesium, and manganese). During the 1998 site screening investigation, soil and

groundwater samples were collected outside of the building and the findings showed that contaminants had not migrated to this area outside the building. In 2001, a test pit was excavated in the former pit at one location to give an indication of the nature of the former acid pit contents and the possible source of crystal growth on the wall of the building. It was found that the pit material, water found in the pit, and crystals all had sulfate as the predominant anion and also contained high concentrations of aluminum, iron, and magnesium, suggesting that the pit material is the likely source of the crystalline growth. The risk evaluation showed that because of the acidic nature (low pH) of the crystals, there is a concern for people working in the building who could come in direct contact with the crystals. In addition, there is concern that if there would be a release from the pit, the high metals concentrations in the pit water could potentially adversely impact groundwater under the site. The water in the pit does not currently appear to be hydraulically connected to the groundwater under the site; therefore, this is only a potential future concern. The source of the water in the pit is not known; however, it appears to be rainfall/surface water run off that is seeping into the building and then into the pit. JP indicated that documentation was not available on what materials were used to fill the pit; however, sand and gravel were noted in the pit during the 2001 test pitting.

#### Removal Action Objectives- Site 30

The pit materials represent a potential future risk; however, the Navy wants to minimize the potential risks to the extent possible now. Based on the potential risks for exposure to the acidic crystals and future potential for a release of metals from the pit to groundwater, two primary RAOs were identified for Site 30:

- Minimize the potential for people to be exposed to the crystals.
- Minimize potential for a release of contaminants to groundwater.

A secondary objective was also developed recognizing that the Navy needs to select an alternative that minimizes the interruption of current activities in building. Therefore, the following secondary objective was identified:

- Select a removal action that will attain the primary RAOs while minimizing the interruption of mission-critical activities within Building 184.

#### Removal Action Alternatives- Site 30

Three alternatives meeting the RAOs were developed for evaluation in the EE/CA. As required by CERCLA, a no-action alternative was also included as a baseline for comparison to the other alternatives.

Four removal action alternatives were developed for evaluation in the EE/CA:

- Alternative 1, no action, which is required and used as a point of comparison to other alternatives
- Alternative 2, in-situ flushing, to remove the risks by neutralizing the acid and flushing. This alternative includes removal of crystals and monitoring of groundwater under the building while conducting in-situ treatment.
- Alternative 3, interim crystal and water removal and excavation and offsite disposal. Excavation would be dependent on the operations being moved out of Building 184 and the building being vacated.
- Alternative 4, long-term (assumed to be 6 years) crystal and water removal and activities to reduce the water from entering the pit. (A remedy would need to be identified for the pit material after the building is vacated.)

The four alternatives were compared using the three criteria required by USEPA guidance: **effectiveness** (how well the alternative meets the RAOs), **implementability** (concerns or troubles with carrying out the alternative), and **cost** (including any operation and maintenance costs). Alternative 1 would not meet the RAOs and was not discussed further in the presentation. Alternatives 2 to 4 would be effective; however, Alternative 3 provides a greater certainty of a permanent solution because the material would be physically removed. Alternative 4 would be the most implementable because it would have the least impact on building operations. Costs overall would be similar; although, Alternative 2 would be the most expensive.

The Navy is recommending Alternative 4 because it would be the most protective without relying on the building being vacated. Removal of crystals and water (especially the source of water that enters the pit) would remove the potential risks until the building is vacated and removal of the water would minimize potential migration concerns. JP indicated that the available information does not indicate that the pit water is entering groundwater and there are no immediate concerns associated with Site 30. [Post-meeting note: As discussed at the September 2004 RAB, Site 30 has a low priority compared to the other sites at PNS.]

JP explained that the final EE/CA was submitted on August 30 and a 30-day public comment period started on September 20, 2005. The draft Action Memorandum would then be submitted 30 days after the end of the comment period.

There were several RAB questions and subsequent discussion related to the presentation and recommended alternative, summarized as follows:

- How much water does the Navy expect to remove? For the EE/CA, the amount of water was estimated to be 1,000 gallons for the first month. The Navy hopes that the water proofing and other activities would quickly reduce the amount of water entering the pit so that less water would be need to be removed. Details for the removal action would be provided in the removal action design documents; however, JP indicated that some type of pumping test would probably be needed to better determine the amount of water.
- What would be done with the water removed? The water would be disposed off site. The water would not likely be discharged to the sanitary sewer because the water would not likely be acceptable (because of low pH) for discharge to the sewer. If this was a possibility, the water would need to be tested before discharge.
- Why not relocate the operations and remove the pit now? Relocating the welding school requires both funding and finding a suitable facility for the operations. The facility would need to be properly outfitted for the school operations. Welders need regular training to meet the requirements for working on the submarines, so operations at the school can not be disrupted.
- Will the pit material eventually be removed? Fred explained that there are current plans for 2009 to consolidate several activities into another building and for relocation of activities to occur in 2011. After relocation, there are plans to demolish the building and the Navy would like to remove the pit at that time. However, Fred indicated that the schedule could change and there may be some trouble with demolishing the building because it is a historical building.

## FUTURE MEETINGS

Marty Raymond indicated that a date has not been set for the next RAB. The Navy would like to have the next RAB mid-November and Fred will check with Matt and Iver to determine the specific date. The presentation would be on the draft OU2 Treatability Study Report that provides the results of the screening-level, bench-scale, soil washing study that was conducted this year.

Marty showed photographs of the regrowth in the wetlands in Jamaica Cove. She noted that there was a lot of reseeded and that the wetlands seem to be flourishing. There are some good stands of wetlands plants. The Navy found *Salicornia* (turns red towards the fall) that came in naturally to the area and this plant commonly will grow in disturbed areas with high salinity. Michele Dionne indicated that the algae mats that were seen in the wetlands are typically the first sign of regrowth and likely these mats help the soil/sediment so that other plants can start to grow in the area. Michele indicated that as sedimentation occurs in the wetlands there may be more high marsh species in the wetlands. She indicated that as vegetation traps sediment the elevation in the wetlands increases and other plants will naturally come into the area.

**Post meeting note: The next RAB will be held at the Holiday Inn Portsmouth on November 17, 2005 starting at 7 pm. The presentation will be on the draft OU2 Treatability Study Report.**