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MINUTES AND AGENDA FOR RESTORATION ADVISORY BOARD MEETING HELD 21
SEPTEMBER 2010 NSY PORTSMOUTH ME
12/1/2010
TETRA TECH NUS



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PITT-12-10-003

December 1, 2010

Project Number 112G02103

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Contract Task Order No. WE14

MEMORANDUM

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

On behalf of the U.S. Navy, Tetra Tech NUS, Inc. is pleased to provide the draft minutes from the September 21, 2010 Restoration Advisory Board meeting for your review and comment.

Comments are requested by **December 22, 2010**. You may provide your comments to Lisa Joy at (207) 438-6618.

Sincerely,

Deborah J. Cohen, P.E.
Project Manager

DJC/clm
Enclosure

DISTRIBUTION:

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P. Britz (CD)
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**RESTORATION ADVISORY BOARD MEETING
PORTSMOUTH NAVAL SHIPYARD
KITTERY TOWN HALL, KITTERY, MAINE
September 21, 2010**

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

- RAB Community members – Doug Bogen, Jon Carter, Diana McNabb, and Roger Wells.
- Navy RAB members – Linda Cole, Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic, and Lisa Joy, Portsmouth Naval Shipyard (PNS).
- Regulatory representatives – Matt Audet, United States Environmental Protection Agency (USEPA), and Ted Wolfe (representing Iver McLeod), Maine Department of Environmental Protection (MEDEP).
- RAB Community members Peter Britz, Michele Dionne, Mary Marshall, Jack McKenna, and Onil Roy were absent.

Guests at the RAB included:

- Danna Eddy and Matt Thyng from PNS.
- Debbie Cohen, Martha Gray, and Tim Smith from Tetra Tech.
- Glenn Markwith from the Navy and Marine Corps Public Health Center (NMCPHC).
- Carolyn Lepage, Technical Assistance Grant (TAG) technical advisor to Seacoast Anti-Pollution League (SAPL).
- Carl Baxter and George Lombardo from New Hampshire Department of Environmental Services (NHDES).

INTRODUCTION

The meeting was opened by Doug Bogen (RAB Community Co-Chair). Mr. Bogen welcomed everyone to the RAB meeting and requested that attendees introduce themselves. The attendees introduced themselves and stated the organizations they represented. Mr. Glenn Markwith of NMCPHC indicated that he would be assisting with community interviews for the Community Implementation Plan (CIP).

Lisa Joy (RAB Navy Co-Chair) reported that the Shipyard Commander signed the final Record of Decision (ROD) for Operable Unit 1 (OU1) on Monday. She said completion of the ROD for OU1 in this fiscal year was reflective of everyone's hard work and she appreciated everyone's support for getting to this point in the environmental program.

STATUS OF WORK AND REGULATOR UPDATES

Linda Cole, of NAVFAC Mid-Atlantic, provided an update on the status of work at Operable Unit (OU) 1, OU2, OU3, OU4, OU7, OU9, and Site 30. The presentation is attached to the minutes.

Ms. Cole provided updated funding information. The estimated spending to date is approximately \$60 million. The Fiscal Year 2010 (FY10) spending plan was estimated at \$1 million and included the funding of the Building 184 tank vault removal (at Site 30). The FY11 spending plan is \$3.4 million and includes funding for the remedial action at OU1 (Site 10) and Remedial Investigation (RI) at OU8 (Site 31). The Navy is able to fund the RI for OU8 sooner than originally scheduled. Ms. Cole also indicated that the estimated cost-to-complete is \$31 million, which represents an increase from last year's estimate. This increase is based on escalation of future worth costs and not because additional remedial action work has been identified.

The following are highlights of the update on OUs:

- OU1 – The Navy finalized the Feasibility Study (FS) Report and Proposed Remedial Action Plan (PRAP) in June 2010. The 30-day public comment period on the PRAP was held from June 17 to July 16, 2010. SAPL provided oral and written comments during the public comment period. On September 20, 2010, the final ROD was signed by the Shipyard Commander and the final document was provided to USEPA for signature. Ms. Cole noted that the Remedial Action (RA) Work Plan, Long-term Monitoring Plan, and Land Use Control Remedial Design (LUC RD) have been funded. The remedial action is expected to be conducted in 2011.
- OU2 – The Navy continued resolving regulatory comments on the FS Report. A pre-design investigation is needed for any remedy selected for OU2, and the Navy continued resolution of regulatory comments on the work plan for the investigation. The Defense Reutilization and Marketing Office (DRMO) Impact Area Removal Action work is progressing. The archeological surveys have been completed and the Navy is waiting for the State Historical Preservation Officer (SHPO) final approval to begin excavation activities. Although three potential archeological items of interest were found around Quarters N during the first phase of the archeological survey, further evaluation in the second phase of archeological survey indicated that these were not significant items. The Navy has begun mobilization for the removal action and is beginning to cut

trees and grub the excavation area. The removal action activities are expected to be complete by the end of November 2010.

- **OU3 – The Post-Remedial Operation, Maintenance, and Monitoring (OM&M) program continues.** Round 9 sampling, inspection, and maintenance were completed. The Navy is waiting on USEPA comments on the draft final LUC RD and follow-up comments on the draft OM&M Plan update (Revision 1). Sampling for the next 5-year review will be conducted in spring 2011 so that the data are available to start the 5-year review in 2011 to meet the June 2012 completion date.
- **OU4 – The Interim Offshore Monitoring Program continues.** The draft update to the Interim Offshore Monitoring Plan (Revision 1) was submitted in July 2010 and the Navy is waiting on regulatory review and comment resolution. The Navy submitted the draft FS Report in July and the document is the subject of tonight's RAB presentation.
- **OU7 – The Navy is preparing the draft RI Report for submittal by the end of September or early October.** The draft RI Report is a good presentation item for the next RAB meeting.
- **OU9 – The additional sampling to support the RI was completed last week.** The analytical results are expected in October and an update on the results should be available for the next RAB meeting.
- **Site 30 – The Navy is in the process of receiving and resolving comments on the draft Engineering Evaluation/Cost Analysis (EE/CA) and Action Memorandum for the removal action of the tank vault within Building 184 at Site 30.** A public comment period will be held on the final EE/CA. The removal action work plan and removal action are funded and the Navy hopes to conduct the removal action this winter.

REGULATOR UPDATE

USEPA --- Matt Audet indicated that USEPA's focus since the last RAB has been to complete the ROD for OU1 before the end of the fiscal year. Mr. Audet was pleased to hear that the Shipyard Commander has signed the final ROD and thanked the Navy and MEDEP for their efforts to complete resolution of comments and preparation of the final document before September 30, 2010. USEPA is also reviewing several documents, including the draft OU4 FS Report.

MEDEP --- Ted Wolfe provided the status. Mr. Wolfe indicated that the MEDEP concurrence letter for the ROD for OU1 has been drafted and a signed letter will be provided shortly. MEDEP provided comments on the draft OU4 FS Report.

DRAFT OU4 FEASIBILITY STUDY REPORT

Mr. Tim Smith, of Tetra Tech, provided a presentation on the draft OU4 FS Report. The presentation is attached to the minutes. The draft report is out for review and comment. In addition to MEDEP comments, NOAA and US Fish and Wildlife comments on the draft report have been received.

Mr. Smith explained that the FS Report provides an evaluation of potential alternatives for OU4 that will support the Navy's recommendation for remedial action for OU4; however, the FS Report does not provide the recommended alternatives.

OU4 consists of Site 5, Former Industrial Waste Outfalls, and six Areas of Concern (AOCs). The Navy is conducting an interim remedy for OU4 that consists of monitoring 14 monitoring stations that provide coverage of the offshore area for interim monitoring purposes. As part of the interim remedy, 10 rounds of interim monitoring and two rounds of additional scrutiny have been conducted between September 1999 and December 2008. Offshore data from the interim monitoring program and from onshore OU investigations were used to support the development of the OU4 FS Report. Mr. Smith explained that the draft Revision 1 to the 1999 Interim Offshore Monitoring Plan (Revision 0) was submitted in June 2010. The revision is based on the results of the Rounds 1 to 10 evaluation report. The updated interim offshore monitoring program provided in Revision 1 of the Interim Offshore Monitoring Plan will be conducted until a final remedy for OU4 is in place. The next round, Round 11, will be conducted to support the next five-year sampling and is scheduled for spring 2011.

The draft OU4 FS was developed to address potential unacceptable ecological risk in the offshore area of PNS. The Offshore Human Health Risk Assessment concluded that there were no unacceptable human health risks for exposure to sediment or surface water. In answer to a question about MEDEP's comment on the draft OU4 FS regarding the risk of fish consumption, the Navy indicated that this is being looked into and the Navy will provide a response. Mr. Smith explained that several monitoring stations did not have unacceptable ecological risks; therefore, remedial alternatives were not developed for these stations. The Remedial Action Objective (RAO) in the draft FS Report is to reduce to acceptable levels the ecological risks (to benthic invertebrates) from exposure to chemicals of concern (COCs) in sediment at OU4 monitoring stations. The Preliminary Remediation Goals (PRGs) for the FS were based on the Interim Remediation Goals (IRGs) from the interim offshore monitoring program. The extent of contamination was determined based on the extent of PRG exceedances. Mr. Smith explained that the extent of contamination was not delineated at MS-11, where there is one location with PRG exceedances, because there is little sediment in the vicinity of this location for ecological exposure. Mr. Smith reviewed the figures showing the extent of contamination at MS-01, MS-03/MS-04, and MS-12 (A and B), indicating that the boundary of contamination was extended to the samples that had concentrations less than PRGs. For MS-12A, a boat ramp with contaminated sediment extends into the building and that the

contamination extends to where sediment was found on the portion of the boat ramp within the building. In answer to a question of whether construction around the dry docks has affected sediment concentrations, Mr. Smith indicated that the data do not indicate an impact. In answer to a question of whether data from dredging at Dry Dock 2 (located east of MS-12) was provided to USEPA, the Navy indicated that the data were provided, but these data were not included in the draft OU4 FS Report.

For the development of alternatives for the monitoring stations, a wide range of technologies were identified to screen out technologies that would not be effective (based on contaminants and site conditions) and to retain technologies that may be effective. Mr. Smith explained that the No Action alternative is required in an FS to provide a baseline for comparison to potential remedial technologies. Except for the No Action alternative, alternatives developed in the FS must satisfy the threshold criteria of being protective of human health and the environment and complying with applicable and relevant and appropriate requirements (ARARs). Balancing criteria are evaluated in the FS to identify major tradeoffs of the alternatives, and include reduction of toxicity, mobility, or volume through treatment, short-term effectiveness, long-term effectiveness and permanence, implementability, and cost. Two additional criteria, regulatory acceptance and community acceptance, are evaluated as part of the public comment period on the PRAP, not in the FS. Mr. Smith explained that in developing cost estimates for alternatives in the draft OU4 FS Report, it was assumed that the remedial activities for each monitoring station would be conducted individually and not in conjunction with remedial actions at other monitoring stations. However, it is the Navy's preference to bundle offshore monitoring with onshore monitoring programs to the extent possible. This bundling would provide cost and energy savings for the identified alternatives. Mr. Smith also noted that annual costs differ among stations based on the assumptions regarding number of samples and analytical program for each station. The 5-year annual costs are greater because it also includes the costs associated with a 5-year review for the continued protectiveness of the alternative.

Mr. Smith reviewed the alternatives evaluated for MS-01, MS-03/MS-04, MS-11, MS-12A, and MS-12B. Hydraulic dredging, evaluated as a component of some alternatives, involves pumping sediment, which also removes water. Therefore, dewatering of sediment is necessary for these alternatives. Alternatives that do not include removal of all contaminated sediment include a monitoring component, whereas alternatives that include removal of all contaminated sediment do not include a monitoring component.

During the presentation, there was some discussion on what the 30-year net present worth (NPW) cost estimate represents and whether the assumptions regarding the time-frame for monitoring affected the costs. The 30-year NPW takes any costs that are expected to occur over a 30-year time period beginning with implementation of the remedy and represents these costs on a current worth basis so that cost estimates for each alternative can be compared. The 30-year basis does not mean that a monitoring component of an alternative would stop at 30 years or continue throughout the 30 years if the remedy

indicates that a longer or shorter monitoring duration is needed. In answer to a question of whether the OU4 monitoring costs considered shorter durations than 30 years, it was explained that this was not done for OU4. Costs for the monitoring alternatives would be lower if the Navy assumed shorter monitoring durations, but would not affect the relative costs of the alternatives evaluated.

For MS-01, No Action, Monitored Natural Recovery (MNR), and Sediment Removal via Hydraulic Dredging were the three alternatives evaluated. The sediment at MS-01 would be difficult to remove because of the fast river currents in this area (along the Back Channel of the Piscataqua River). Mechanical dredging was not retained for this monitoring station because it would be difficult to control sediment removal with this technology. The fast current is also why a sediment cover was not retained for this monitoring station. The MNR alternative would also include LUCs. There was some discussion about what offshore LUCs would consist of and how they would be implemented. The LUCs may contain placement of buoys to delineate the area with restricted access or use. In answer to a question on how the Navy would determine that the remedy is complete for monitoring alternatives, it was noted that the monitoring program would specify the decisions that would be made based on the monitoring data. Also, the 5-year reviews would provide an evaluation of whether the remedy remains protective. In answer to a question of why alternatives use the term MNR rather than long-term monitoring, Mr. Smith explained that under MNR (for sediment sites) or Monitored Natural Attenuation (MNA, for groundwater sites), the alternative includes specific monitoring and data evaluation required to evaluate that site risks are reducing to acceptable levels.

The MS-03/MS-04 area is also located in the Back Channel and the same three alternatives as MS-01 were evaluated (No Action, MNR, and Hydraulic Dredging).

For MS-11, two alternatives were evaluated (No Action and MNR). Sediment removal was not evaluated because there is only a small area of sediment and removal was not considered feasible for this small area. In answer to a question of whether sediment was present before the OU2 shoreline stabilization actions were conducted, Ms. Cohen explained that before the 1999 stabilization action there was one other sediment sampling location where a small area of sediment was exposed along the shoreline. After the shoreline stabilization actions, the entire intertidal area along the OU2 shoreline is covered with riprap and there is no longer any exposed sediment. The one location where sediment has been found is in a small intertidal area east of the OU2 shoreline where sediment was found at low tide behind some rocks. A change in sedimentation has not been noticed for this area, which is consistent with the fast currents. The MS-11 area is in the Main Channel of the Piscataqua River and is not in a sedimentation area. Mr. Smith explained that the MNR alternative for MS-11 includes monitoring sediment (sample collection and analysis), whereas OU2 alternatives include a component to monitor whether sediment is accumulating in the offshore area.

The MS-12 area was divided into two areas based on the type of contamination. Alternatives for the area of sediment contamination on and south of the boat ramp for Building 178 (MS-12A area) included No Action, Containment with LUCs and Monitoring, Partial Removal with Containment, LUCs, and Monitoring, and Complete Removal. An alternative for partial removal was developed because some of the contaminated sediment on the boat ramp extends into Building 178, and there are additional health and safety considerations because there are structural concerns (deteriorating building), for conducting any work within the southern portion of the building. This alternative includes partial removal of sediment (outside of the building) with a containment wall to prevent sediment inside the building from migrating outside the building. It was noted that if a containment wall was placed along the ramp, the ramp could not be used in the future unless the wall was removed. Ms. Joy indicated that the Navy will need to consider current and future planned uses of the building in selecting a remedial option for this area. Also, it was explained that if planned land use changes in the future, the remedy could be modified to address the future changes. In review of the alternatives, Mr. Smith explained that contamination outside the building did not extend into the eelgrass area present on a portion of the boat ramp. In answer to a question of whether the eelgrass bed was getting larger, Mr. Audet explained that the portion of the boat ramp where eelgrass is found is at the perfect elevation to allow eelgrass growth so that physical conditions of the area are limiting the eelgrass bed to its current location and size.

The MS-12B area, located south of the seawall by Building 238, is a subtidal area of sediment contamination. The alternatives evaluated are similar to MS-01 and MS-03/MS-04 (No Action, MNR, and Sediment Removal). It was assumed that the barge would be moved to conduct the alternatives.

Mr. Smith indicated that the next step for OU4 is to resolve comments on the draft FS. The Navy is currently soliciting comments on the draft FS and will submit the Draft Final FS after resolution of comments. After resolution of comments on the FS, the Navy will identify the preferred remedy in a PRAP. The draft PRAP will be submitted 90 days after the Draft Final FS is submitted. Ms. Cole indicated that the schedule for receipt of comments and resolution of the comments is uncertain at this time; however, the Navy is hoping to complete the PRAP in 2011. Ms. Cole also mentioned that the Navy will need to coordinate the proposed alternatives with shipyard land use plans and that for some areas the remedy may be implemented sooner than in other areas. The Navy would also like to have the onshore remedy in place before implementing the offshore remedy.

ISSUES

Upon completion of presentations, Mr. Bogen asked if there were any other issues that needed to be discussed. No other issues or topics were raised.

Mr. Bogen mentioned that he will be going to a shipyard in Northern Russia as part of the Portsmouth/Serverodvinski Connection (PSC). The shipyard in Russia has some similar environmental issues as PNS. In early October, Mr. Bogen will provide a presentation on his trip at the Portsmouth Library. The RAB requested that Mr. Bogen provide the presentation at the next RAB meeting.

The Navy mentioned that they are getting a list of names for the community interviews for the CIP update. Ms. Cole will provide Mr. Bogen with the current list to review to see whether there are any additional names that should be added.

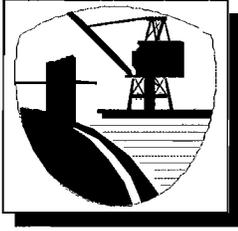
FUTURE MEETINGS

The RAB discussed the date for the next meeting. The Navy proposed December 7, 2010, for the next meeting and the RAB members present agreed.

Post-meeting note: The next RAB meeting is scheduled for December 7, 2010, and will be held in the meeting room at Kittery Town Hall, 200 Rogers Road, Kittery, Maine. Planned agenda items for the next RAB meeting are presentations on the draft OU7 RI Report, field activity updates (OU2, OU3, and/or OU9), and Mr. Bogen's trip to Russia.

ATTACHMENTS

AGENDA AND PRESENTATIONS FROM SEPTEMBER 21, 2010



Portsmouth Naval Shipyard Restoration Advisory Board Meeting Agenda

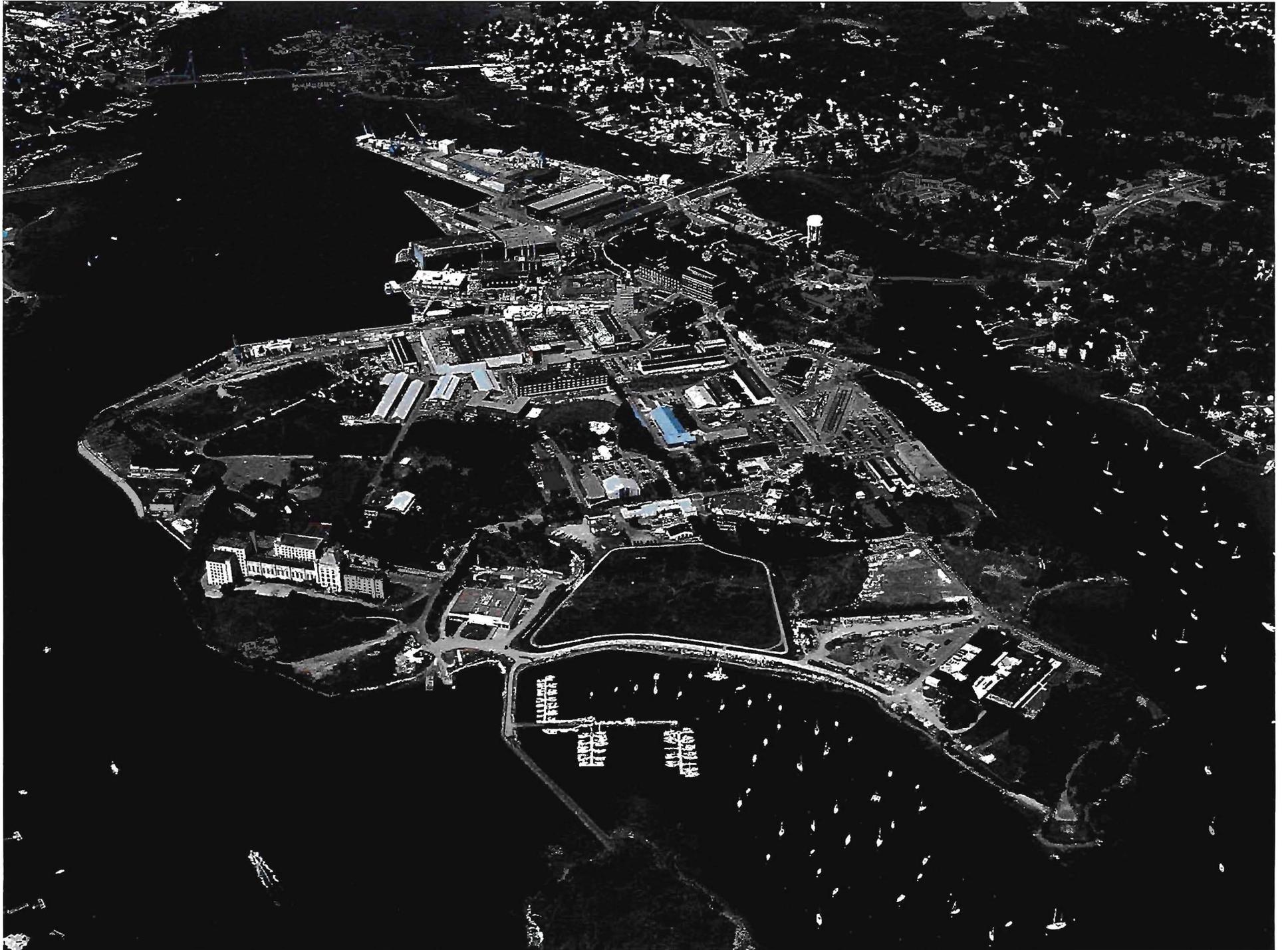


Date – September 21, 2010

Place – Kittery Town Hall, Kittery, ME

Time – 7 p.m. - 9 p.m.

- **Introductions – Mr. Doug Bogen, Community RAB Co-chair**
- **Navy Co-chair Remarks – Ms. Lisa Joy, Navy**
- **Status of Work - Ms. Linda Cole, Navy**
- **Regulator Updates – Mr. Matt Audet, USEPA and Mr. Iver McLeod, MEDEP**
- **Draft OU4 Feasibility Study – Mr. Tim Smith, Tetra Tech**
- **Other Issues as Required**



Installation Restoration Funding History

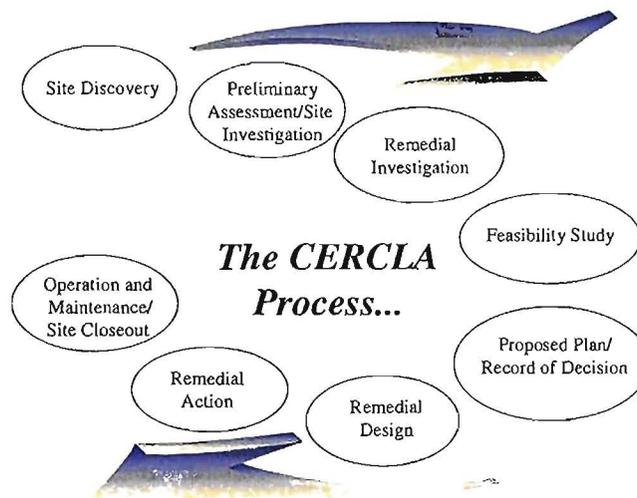


- Approximately \$60 Million spent to date
- FY 2010 spent \$1.0M (funded removal of tank vault in Bldg 184)
- FY 2011 spending plan \$3.4M (will fund removal at OU1 and investigation at OU8)
- Estimated \$31M for Cost-to-Complete

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Portsmouth Naval Shipyard Installation Restoration Program, September 2010

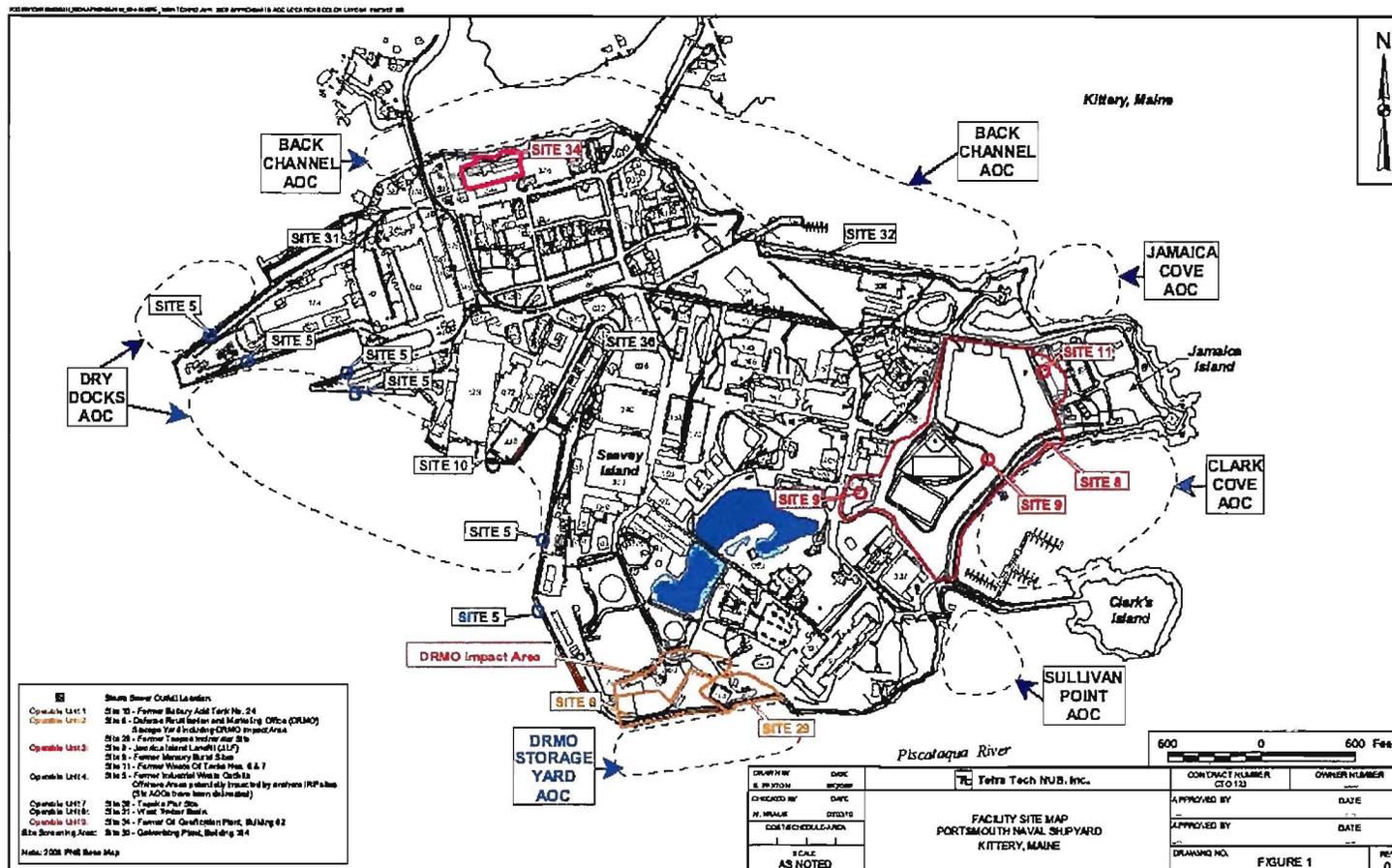
CERCLA Process



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Portsmouth Naval Shipyard Installation Restoration Program, September 2010

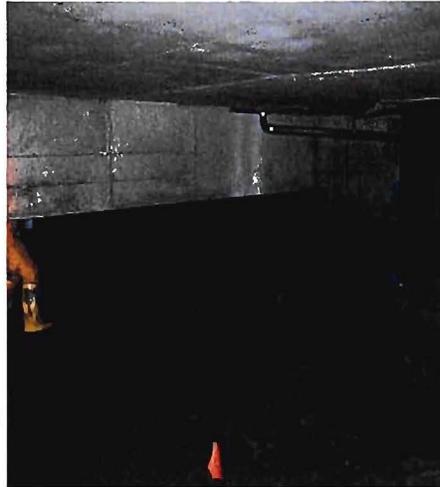
IR Sites As Currently Defined



OPERABLE UNIT 1 (Site 10)



- Feasibility Study (FS) Report and Proposed Remedial Action Plan (PRAP) finalized Jun 10
 - Public comment period on PRAP was held from June 17 to July 16, 2010
- Record of Decision (ROD)
 - Draft Final was issued on September 10, 2010
 - Preparing Final
- Remedial Action Work Plan, Long Term Management Plan, and Land Use Control Remedial Design awarded.



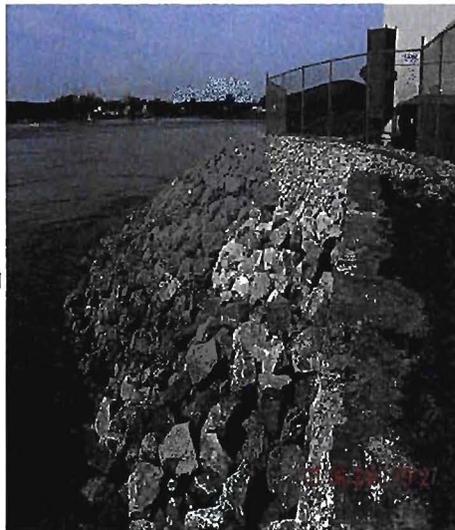
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Portsmouth Naval Shipyard Installation Restoration Program, September 2010

OPERABLE UNIT 2 (Sites 6 and 29 and the DRMO Impact Area)



- Supplemental RI Report finalized March 2010
- FS Report
 - Draft Report issued Nov 08
 - Resolving regulatory comments
- Draft PRAP to be issued within 90 days after Draft Final FS Report
- Draft ROD to be issued 30 days after end of public comment period
- OU2 Pre-design Investigation
 - Draft Work Plan issued June 10
 - Regulatory review/resolving regulatory comments
- Remedial Design Awarded



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Portsmouth Naval Shipyard Installation Restoration Program, September 2010

Removal Action - DRMO Impact Area at Operable Unit 2



• Removal Action

- First phase of archeological survey in Spring 2010
- Second phase of archeological survey in September 2010
- Soil excavation anticipated for October 2010



7 Portsmouth Naval Shipyard Installation Restoration Program, September 2010

OPERABLE UNIT 3 (Site 8)



- Continue with Post-Remedial Action Operation, Maintenance, and Monitoring (OM&M)
- OM&M field work
 - Round 9 conducted in Apr to Jun 10
 - Round 10 awaiting update of OM&M Plan
- Land Use Control Remedial Design (LUCRD)
 - Draft Final issued Mar 10
 - Regulatory review/comment resolution
- OM&M Plan Update
 - Draft Plan issued Apr 09
 - Resolving regulatory comments
- Five Year Review
 - Start Jul/Aug 2011
 - Due Jun 2012



8 Portsmouth Naval Shipyard Installation Restoration Program, September 2010

OPERABLE UNIT 4 (Site 5 and Offshore Areas of Concern)



- FS Report
 - Draft Report issued Jul 10
 - Regulatory review/resolving regulatory comments
- Interim Offshore Monitoring Plan (IOMP) Update
 - Draft Report issued Jun 10
 - Regulatory review/resolving regulatory comments

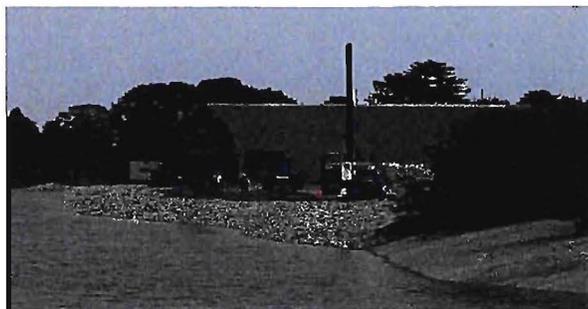
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Portsmouth Naval Shipyard Installation Restoration Program, September 2010

OPERABLE UNIT 7 (Site 32)



- Shoreline Stabilization conducted in 2006
- Final Phase II RI Work Plan (Revision 1) issued in Nov 08
 - Phase II RI field work conducted from Nov 08 to Jan 09
- OU7 RI Report
 - Technical meeting in Mar 10 to discuss site information
 - Draft RI to be issued in September 2010



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Portsmouth Naval Shipyard Installation Restoration Program, September 2010

OPERABLE UNIT 9 (Site 34)



- Removal action completed before RI.
- Approximately 2,300 tons of ash material removed. Of that, 800 tons was disposed of as hazardous material.
- RI UFP SAP finalized Jul 09
- RI field work conducted Aug 09
 - Based on Mar 2010 technical meeting, additional sampling required before preparation of the RI Report
 - Sampling conducted in September 2010



- Draft RI Report to be submitted in Feb 2011

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Portsmouth Naval Shipyard Installation Restoration Program, September 2010

SITE 30 (Former Galvanizing Plant – Building 184)



- Revised EE/CA and Action Memorandum (Revision 2)
 - Draft EE/CA that provides a removal action alternative for complete removal of the tank vault issued in Mar 10
 - *Regulatory review/resolving regulatory comments*
- Removal Action was funded in FY10 and is anticipated for early to mid FY11.

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Portsmouth Naval Shipyard Installation Restoration Program, September 2010

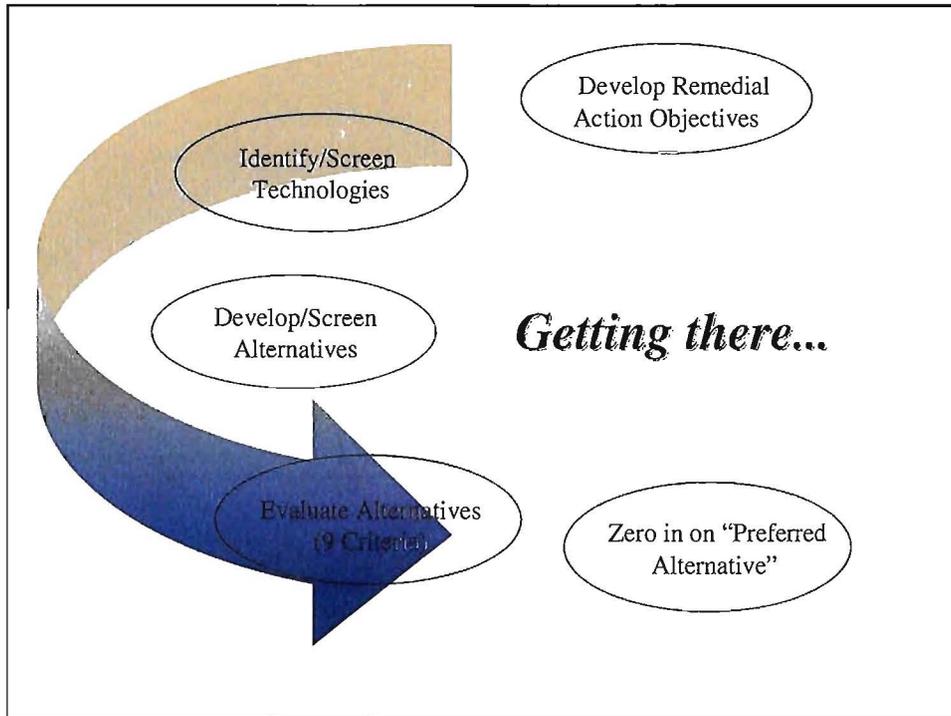
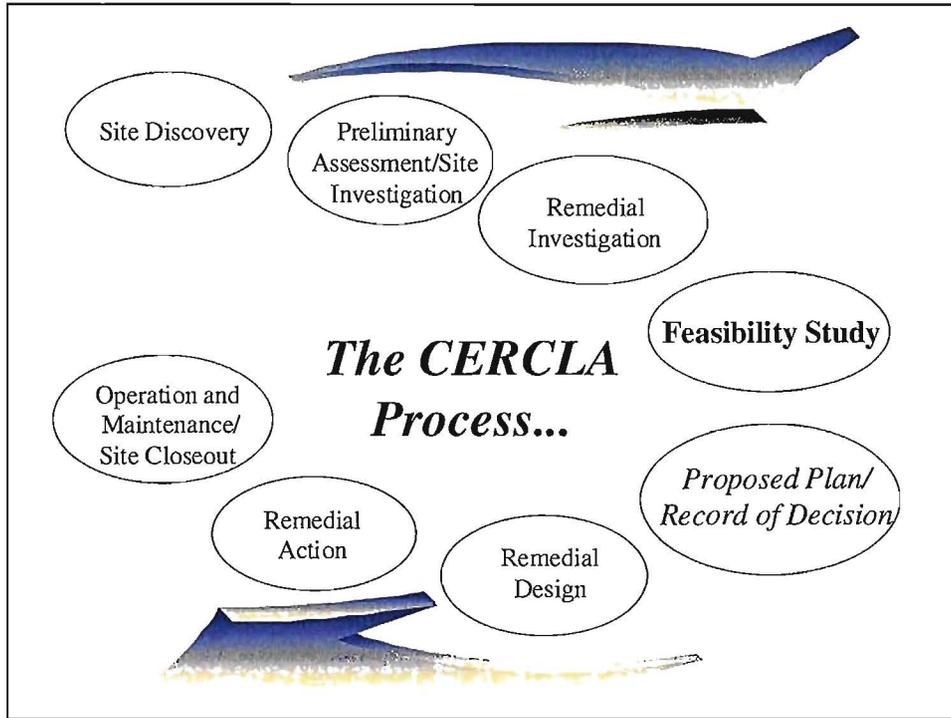
Draft Operable Unit 4 Feasibility Study

Portsmouth Naval Shipyard
Restoration Advisory Board Meeting
September 21, 2010

Presenter
Timothy Smith, P.E., Tetra Tech

Purpose of Presentation

- Provide information on the Draft OU4 Feasibility Study that is currently being reviewed by regulators.
 - Present OU4 background and remedial action objectives.
 - Discuss the assembly of remedial alternatives.
 - Describe the proposed remedial alternatives.



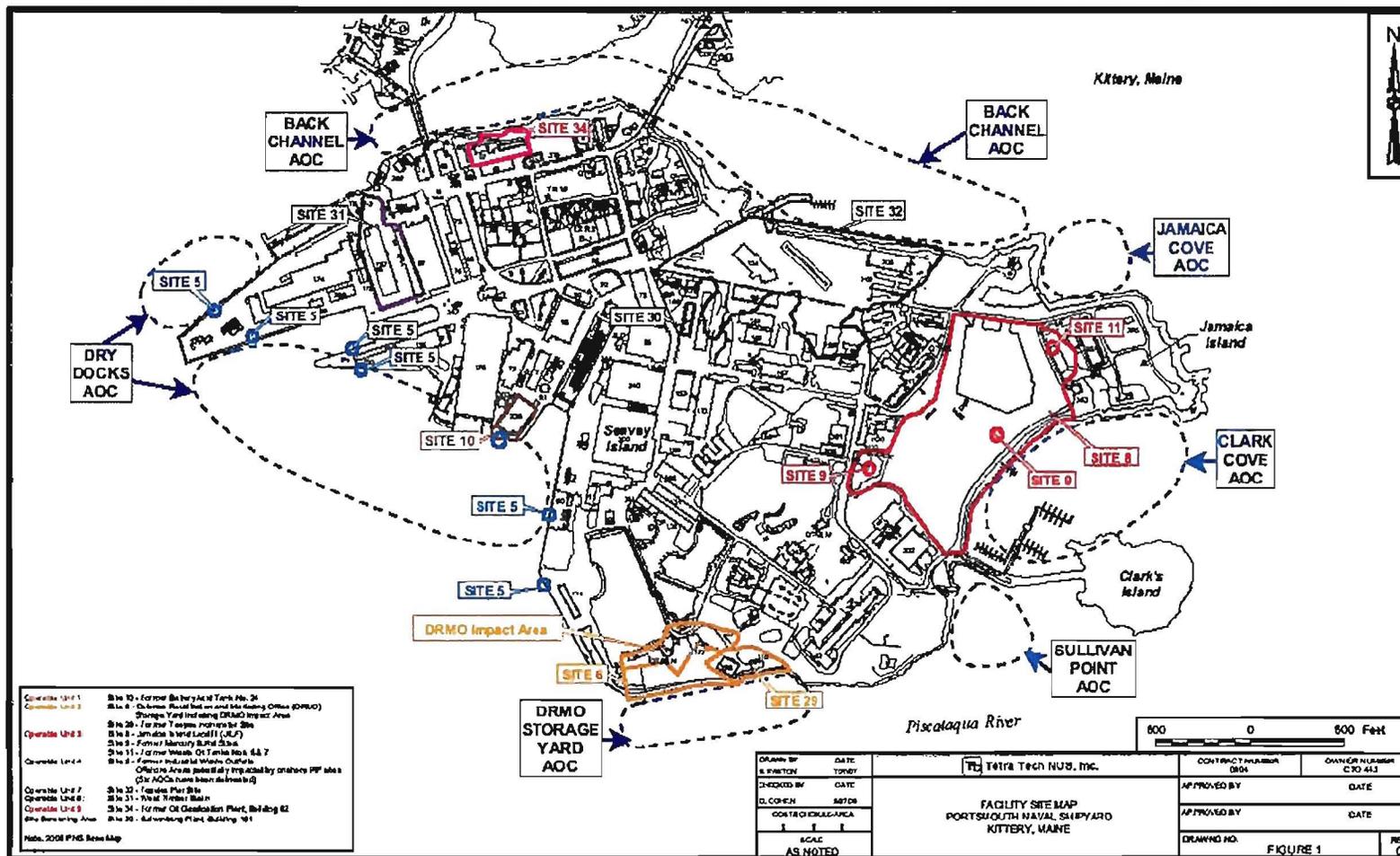
Operable Unit 4 (OU4) Background

- OU4 consists of Site 5, Former Industrial Waste Outfalls, and six Areas of Concern (AOCs).
- 14 monitoring stations were selected to provide coverage of the offshore AOCs for interim monitoring purposes.
- As part of the interim remedy for OU4, ten rounds of interim monitoring and two rounds of additional scrutiny have been conducted between September 1999 and December 2008.
- Some onshore OU investigations included offshore sampling.
- Remedial alternatives were evaluated based on monitoring stations or groups of nearby monitoring stations.

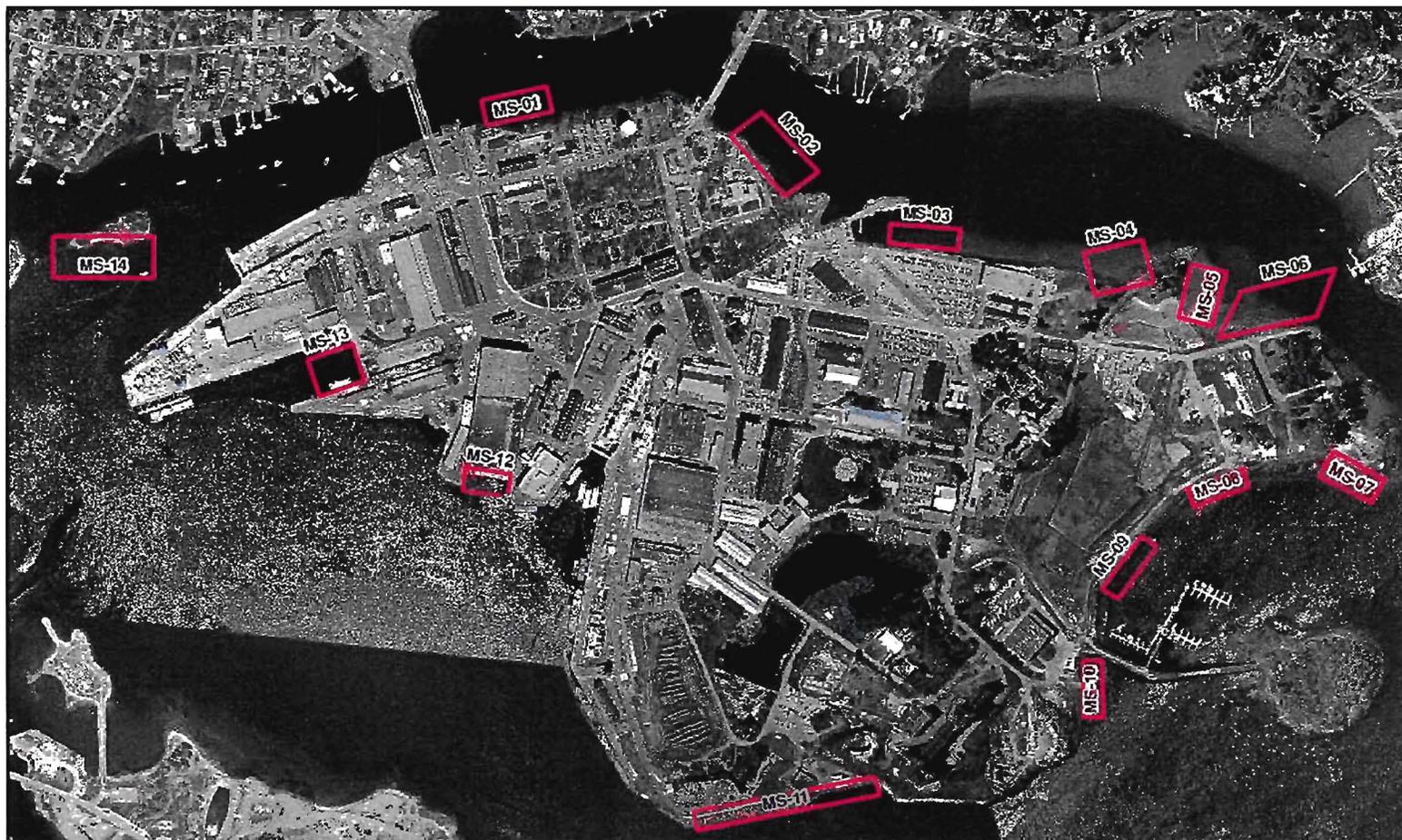
Interim Offshore Monitoring Program Update

- Interim Offshore Monitoring Plan was prepared in 1999 and the draft of Revision 1 to the Plan was submitted in June 2010.
 - Revisions were made based on the results of the Rounds 1 to 10 evaluation report.
 - Interim offshore monitoring will continue at select stations until a final remedy for OU4 is implemented.
 - No further action is recommended for select stations as discussed further in OU4 FS Report.
 - Round 11 will be conducted to support the five-year sampling and is scheduled for spring 2011.

Operable Unit and AOC Locations



Locations of Monitoring Stations



OU4 Risks

- Estuarine Ecological Risk Assessment
Conclusions:
 - Concentrations of COCs in sediment are at levels greater than acceptable ecological risk levels for benthic invertebrates.
 - There were no unacceptable ecological risks for surface water.
- Offshore Human Health Risk Assessment
Conclusions:
 - There were no unacceptable human health risks for exposure to sediment or surface water.

Basis of Preliminary Remediation Goals

- PRGs for OU4 FS were based on Interim Remediation Goals developed for the Interim Offshore Monitoring Program for OU4:
 - Sediment values protective of sediment invertebrates (benthic invertebrates).
 - Chemicals potentially causing the greatest offshore impact.
 - Copper, lead, and nickel.
 - Acenaphthylene, anthracene, fluorene, High Molecular Weight (HMW) Polycyclic Aromatic Hydrocarbons (PAHs).

OU4 Current Conditions

- The development of the FS was based on the conclusions and recommendations from the Interim Offshore Monitoring Program for OU4.
- Alternatives were not developed at MS-02, MS-05 through MS-10, MS-13, and MS-14.
 - No current exceedances of PRGs.
 - No current ecological risks.

OU4 Current Conditions (continued)

Contaminant	OU4 FS PRG	COCs at Retained Monitoring Stations				
		MS-01	MS-03 & MS-04	MS-11	MS-12A	MS-12B
Copper	486 mg/kg		X	X		
Lead	436 mg/kg			X	X	X
Nickel	124 mg/kg			X		
Acenaphthylene	210 µg/kg	X	X		X	
Anthracene	1,236 µg/kg	X	X		X	
Fluorene	500 µg/kg	X	X		X	
HMW PAHs	13,057 µg/kg	X	X		X	

*MS-12 was divided into two areas. MS-12A includes sediment located on the boat ramp that extends from the Piscataqua River into Building 178. MS-12B includes sediment located at the base of the bulk-head wall east of Building 178.

Remedial Action Objective (RAO)

- Reduce risks to benthic invertebrates from exposure to bioavailable/bioaccessible COCs in sediment at OU4 monitoring stations to acceptable levels.

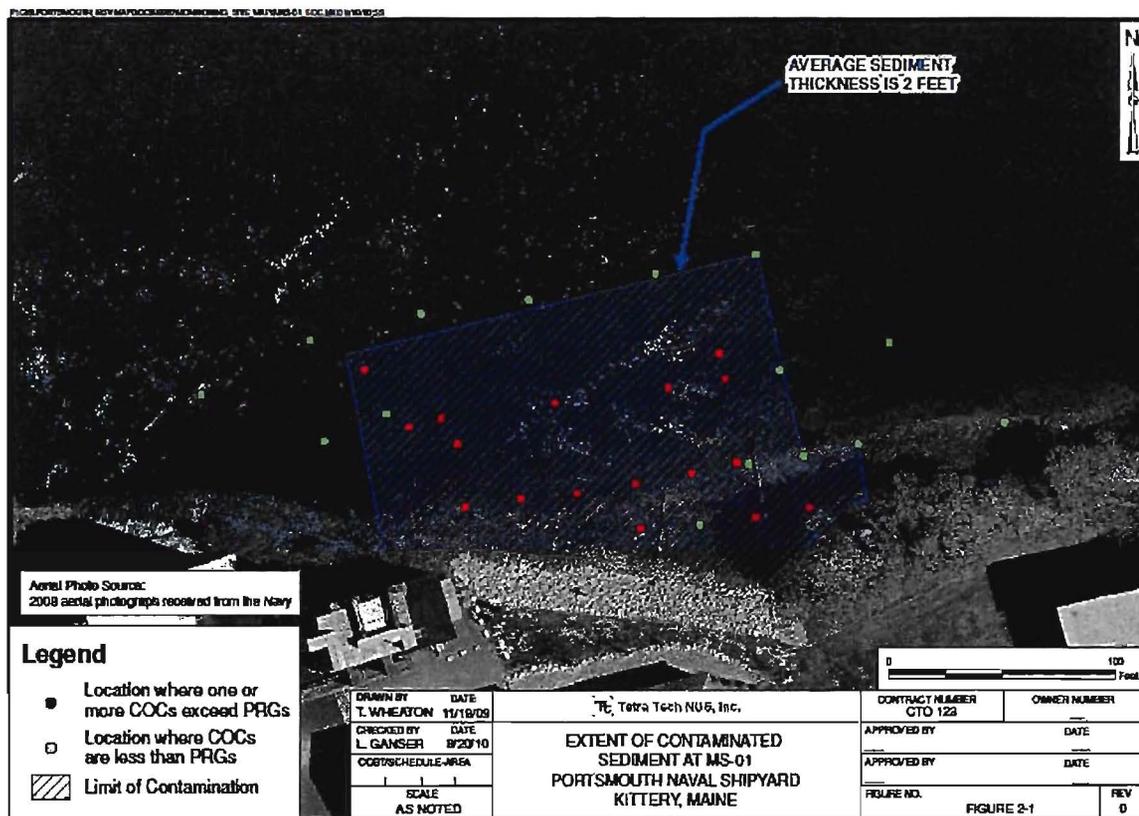
Extent of Contamination

- The extent of contamination was determined at all but one monitoring station retained for evaluation in the FS.
- Extent was based on samples with chemical concentrations that exceeded PRGs.

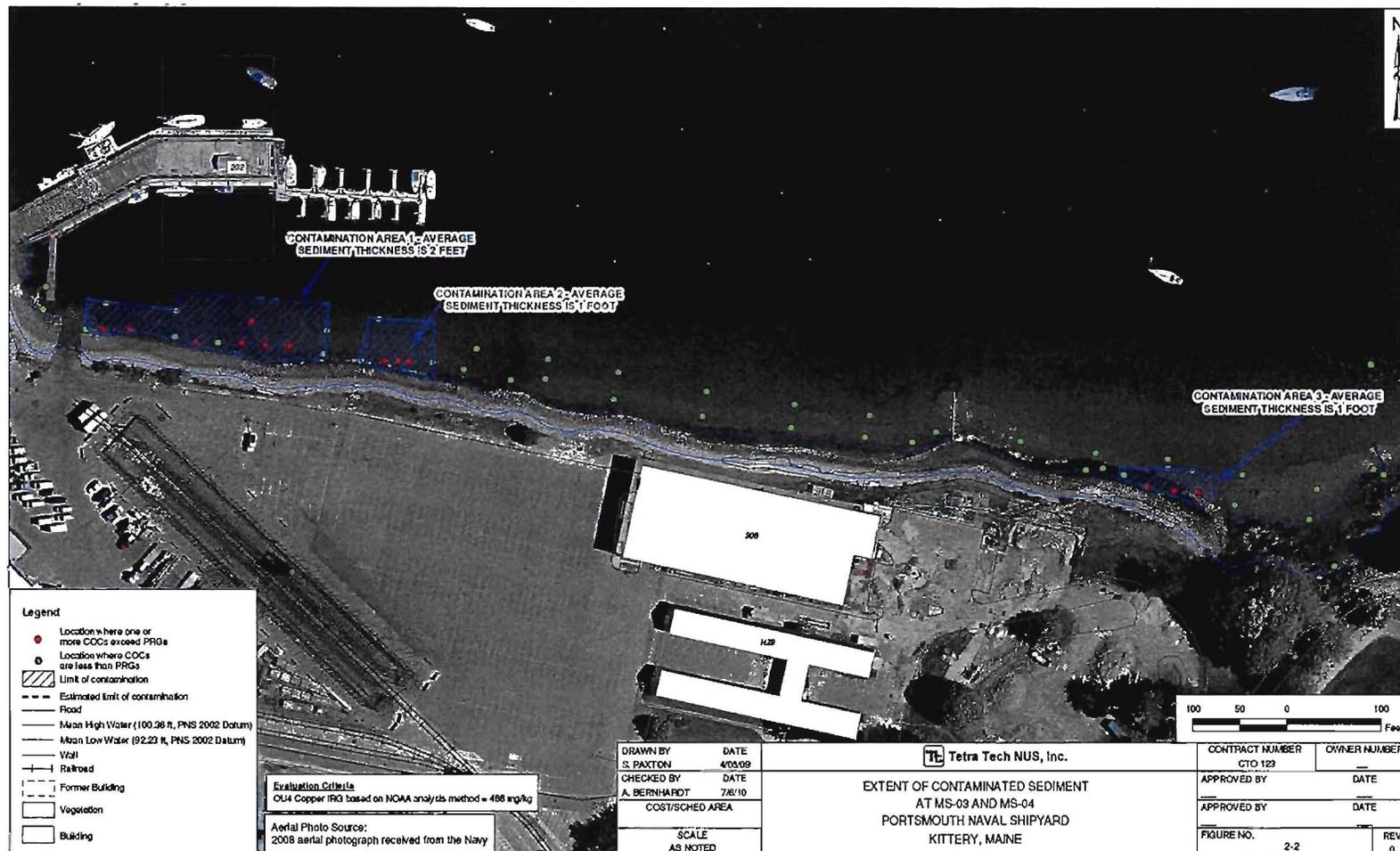
Extent of Contamination

- Extent of contamination not determined at MS-11.
- Sufficient amount of sediment is not present to cause an unacceptable risk to ecological receptors.

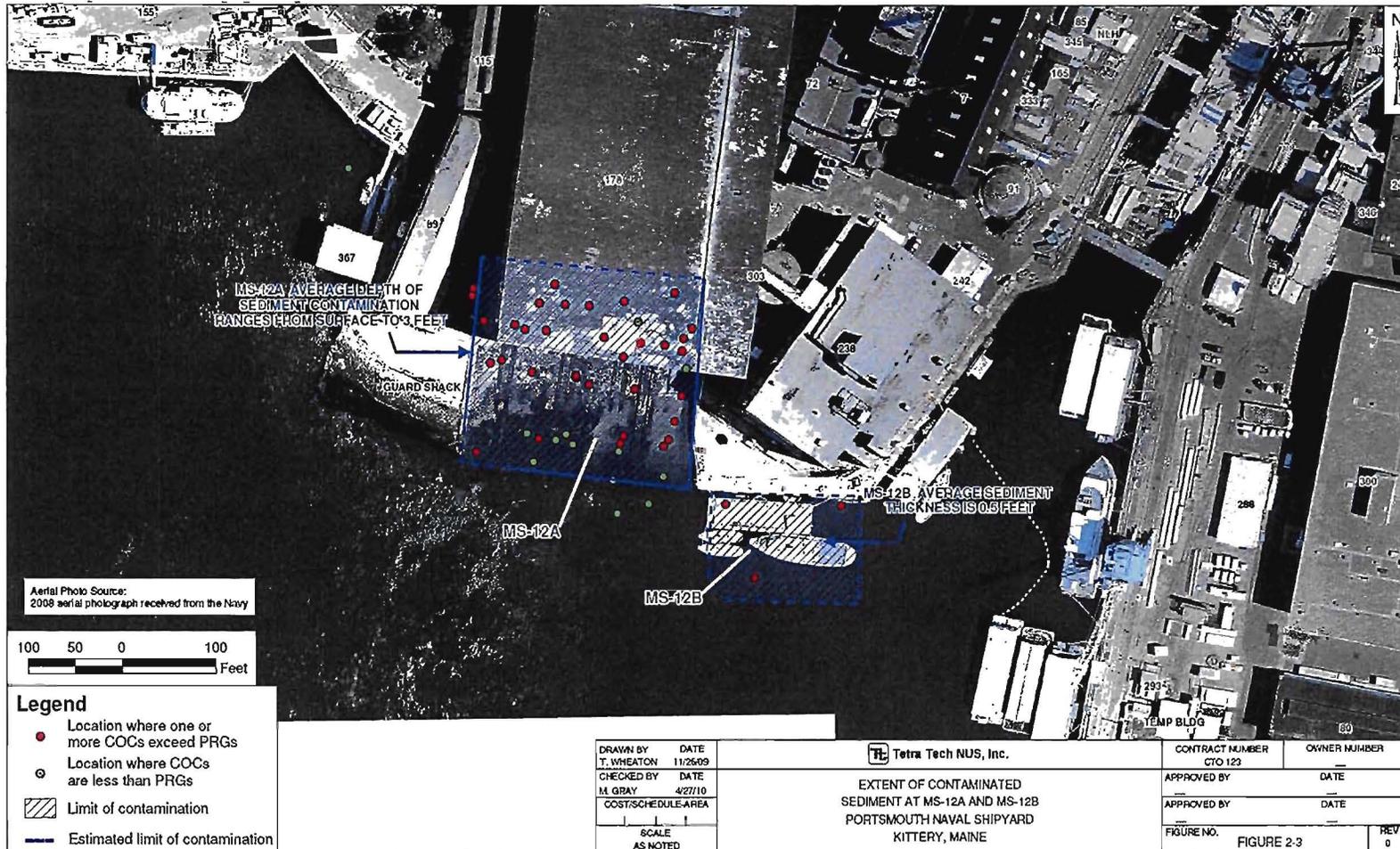
Extent of Contamination MS-01



Extent of Contamination at MS-03 and MS-04



Extent of Contamination at MS-12



Extent of Contamination

Monitoring Station	Area of Contaminated Sediment (ft ²)	Sediment Thickness (ft)	Volume of Contaminated Sediment (yd ³)
MS-01	23,700	2	1,800
MS-03 & MS-04	16,600	1 to 2	1,030
MS-12A	47,600	0.5 to 3	1,750
MS-12B	18,100	0.5	340

Screening of Technologies

- A preliminary screening of available technologies was conducted and retained technologies were further evaluated considering effectiveness, implementability, and relative costs.
- Technologies not retained included:
 - Containment.
 - Ex-situ treatment.
 - Reuse.

Selected Sediment Remediation Technologies and Process Options

- No Action
- Land Use Controls (LUCs)
- Monitored Natural Recovery
- Partial Mechanical Removal
- Hydraulic Dredging
- Dewatering
- Off-yard Disposal

Detailed Analysis Criteria

- **Threshold Criteria**... Must satisfy requirements
 - Overall protection of human health and the environment.
 - Compliance with ARARs.
- **Balancing Criteria**... Used to identify major tradeoffs
 - Reduction of toxicity, mobility, or volume through treatment.
 - Short-term effectiveness.
 - Long-term effectiveness and permanence.
 - Implementability.
 - Cost.

Detailed Analysis Criteria (continued)

- **Modifying Criteria...** Assess after the public comment period as part of the proposed plan.
 - Regulatory Acceptance.
 - Community Acceptance.

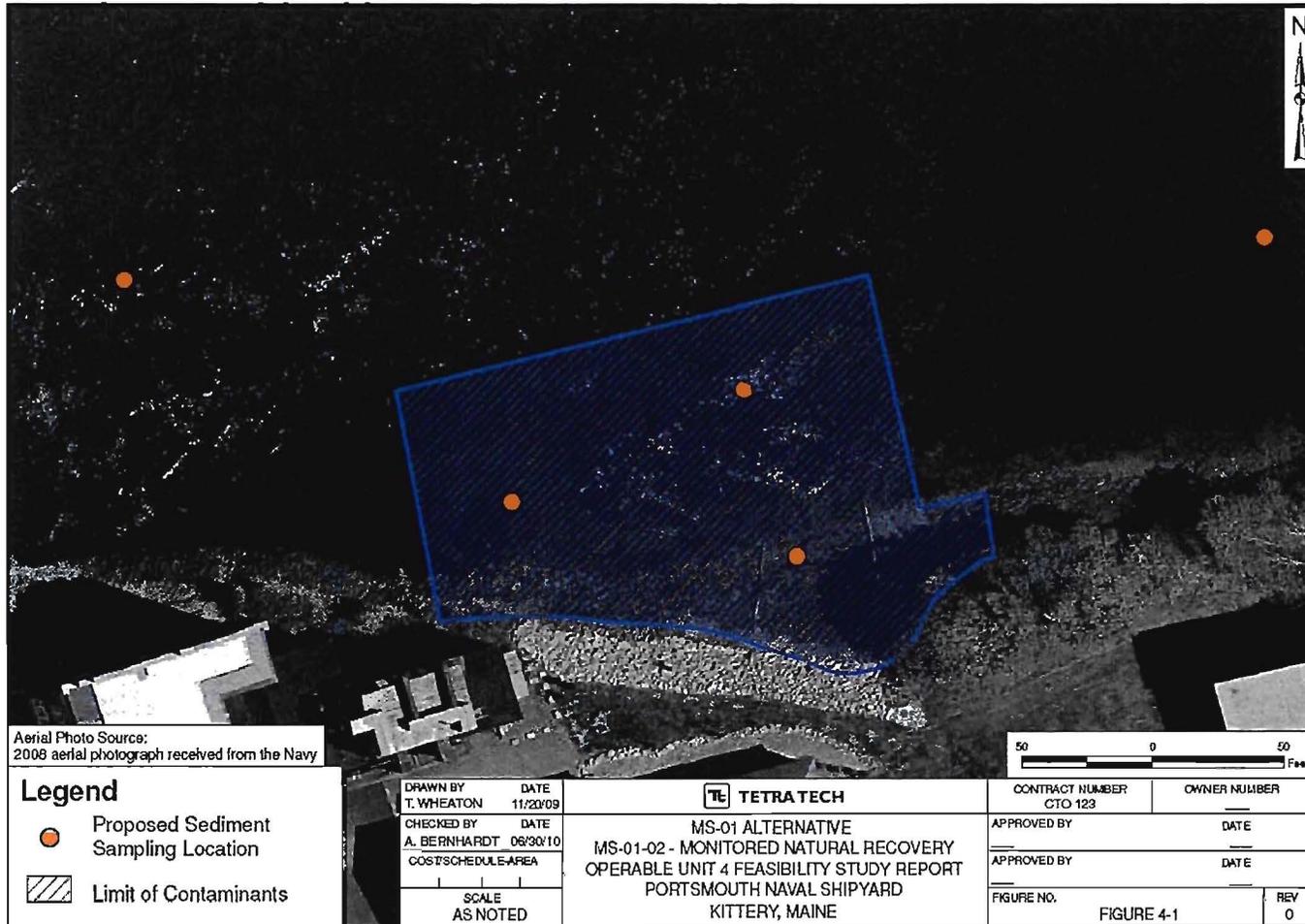
OU4 Costing of Alternatives

- In developing cost estimates for alternatives it was assumed that the remedial activities for each monitoring station would be done individually, and not in conjunction with remedial actions at other monitoring stations.
- It is the Navy's preference to bundle the OU4 offshore monitoring with the onshore monitoring programs. Bundling these monitoring programs would provide cost and energy savings for the identified alternatives.

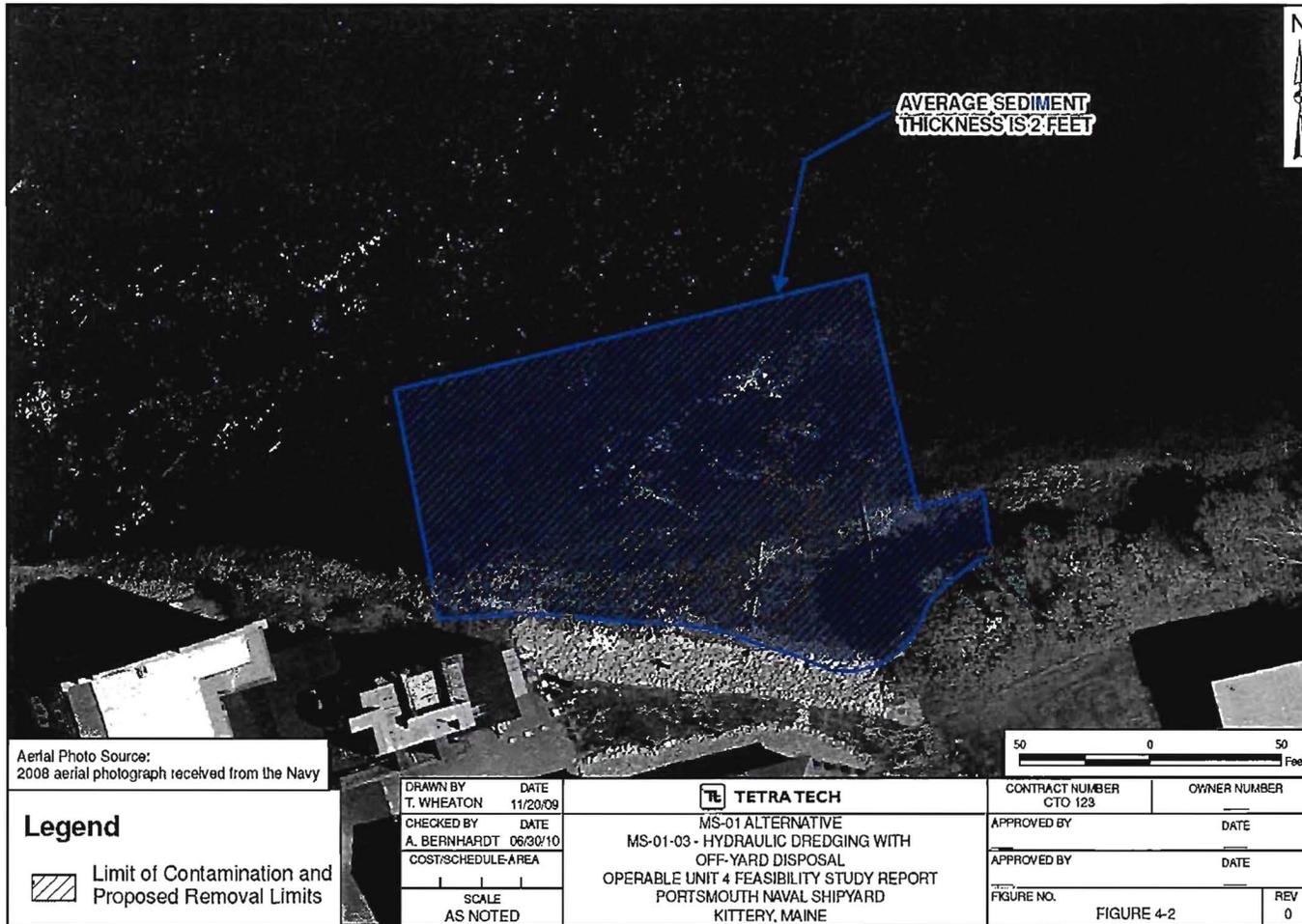
Components of Alternatives for MS-01

MS01-01	No Action <ul style="list-style-type: none">• There are no components to the no action alternative.
MS01-02	Monitored Natural Recovery <ul style="list-style-type: none">• Contaminant reduction left to naturally occurring processes.• Long-term monitoring to evaluate contaminant trends.
MS01-03	Hydraulic Dredging with Off-yard Disposal <ul style="list-style-type: none">• Hydraulic removal of contaminated sediment.• Turbidity curtains to prevent migration of contamination during dredging.• Onshore dewatering area with sediment stabilization using fly-ash.• Disposal of stabilized sediment at approved off-yard TSDF.

Alternative MS01-02: Monitored Natural Recovery



Alternative MS01-03: Hydraulic Dredging with Off-yard Disposal



Comparative Analysis of Alternatives for MS-01

- MS01-01 would not obtain RAOs.
- MS01-02 would depend on naturally occurring processes to obtain RAOs.
- After MS01-01, MS01-02 would be easiest to implement because only a monitoring plan and long-term monitoring would be required.
- MS01-03
 - Uses active remedial processes to eliminate the potential for unacceptable contaminant exposure upon implementation.
 - Most protective of ecological receptors and would provide the most long-term effectiveness and permanence because contaminants would be completely removed from the site.
 - Most difficult to implement.

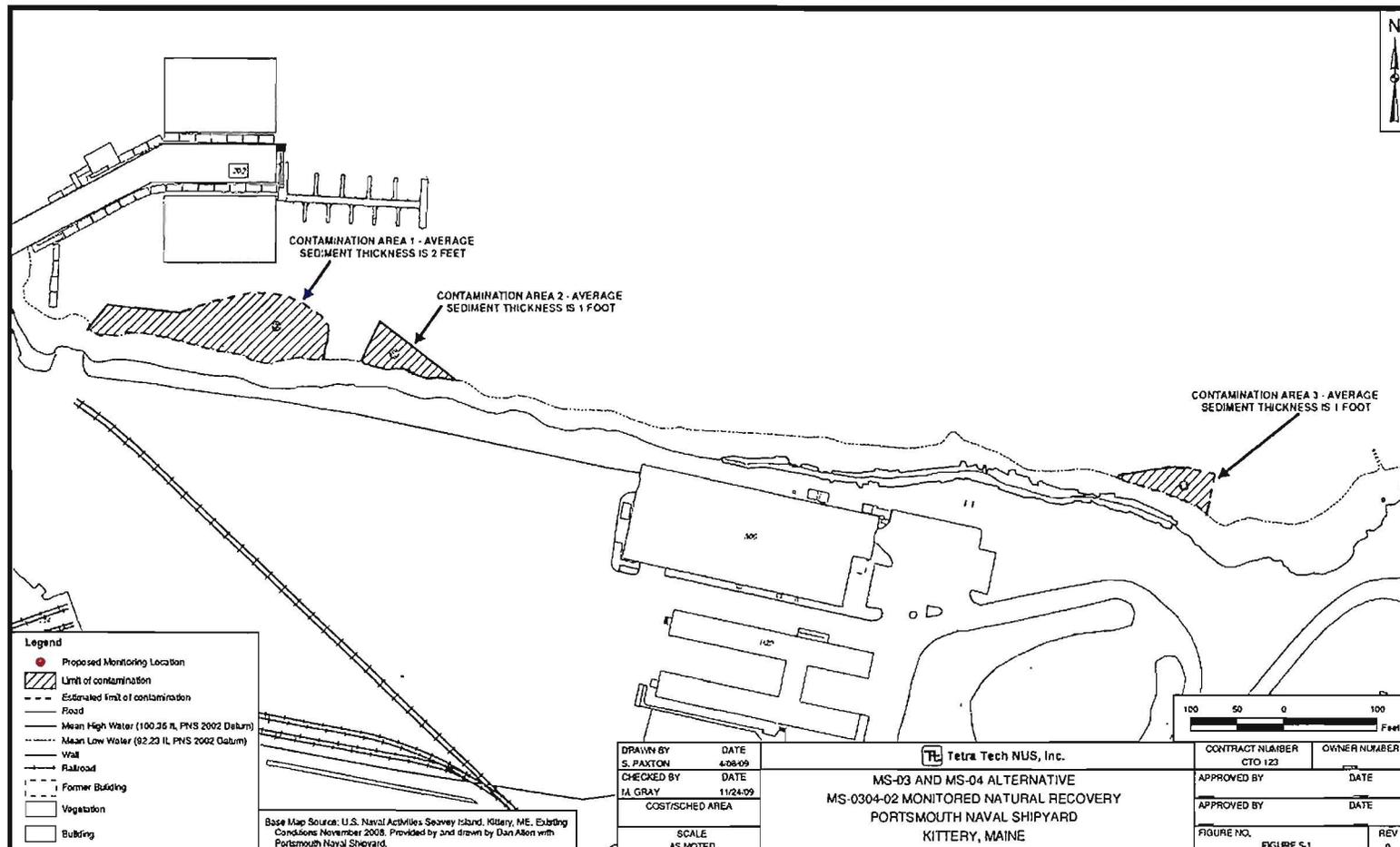
MS-01 Alternatives Costs

<u>Alternatives</u>	<u>Capital</u>	<u>Annual Costs</u>	<u>NPW (30 years)</u>
MS01-01 No Action	\$0	\$0	\$0
MS01-02 Monitored Natural Recovery	\$17,100	\$19,300/yr \$25,300/5 yrs	\$312,000
MS01-03 Hydraulic Dredging with Off-yard Disposal	\$918,000	\$0	\$918,000

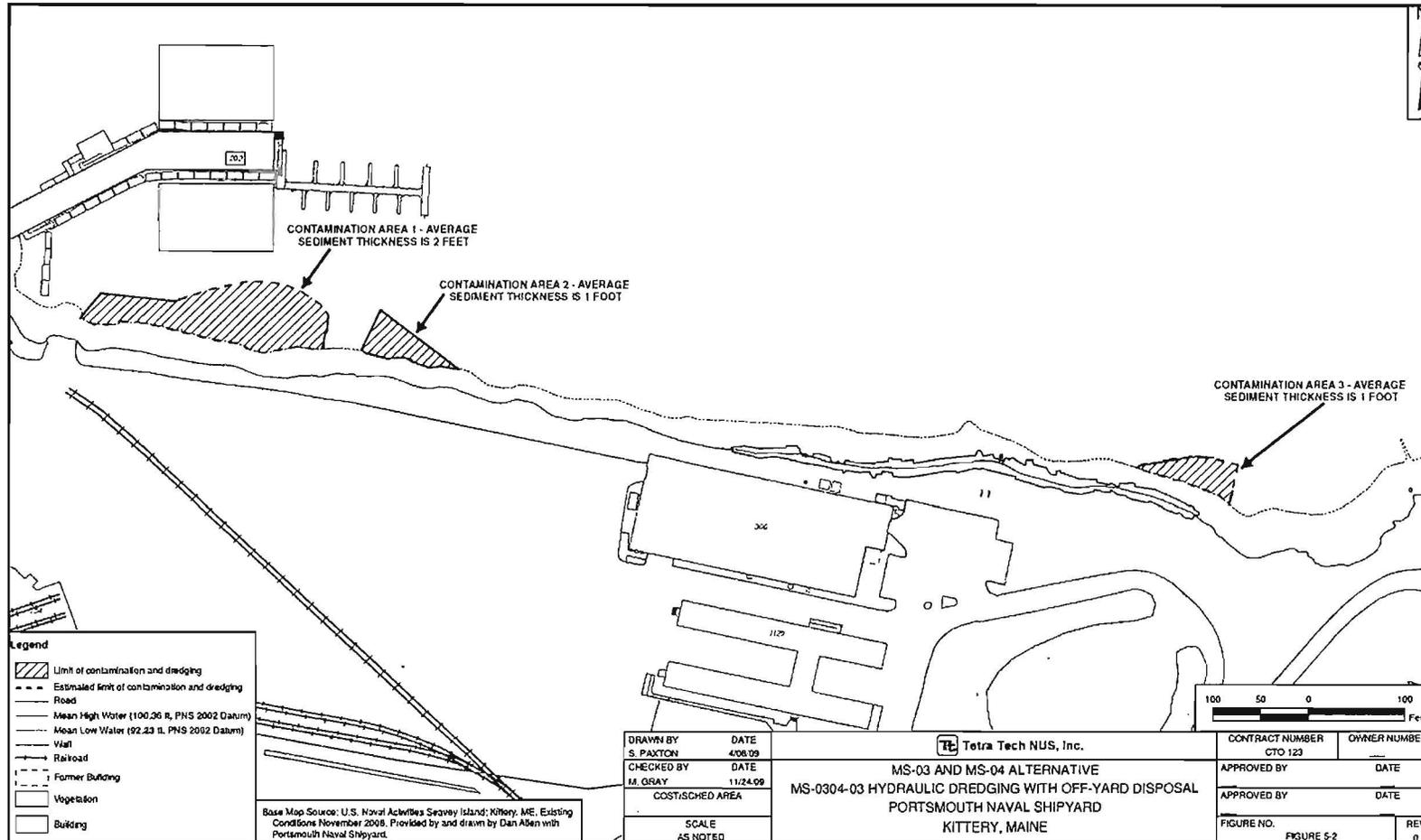
Components of Alternatives for MS-03 and MS-04

MS03/04-01	No Action <ul style="list-style-type: none">• There are no components to the no action alternative.
MS03/04-02	Monitored Natural Recovery <ul style="list-style-type: none">• Contaminant reduction left to naturally occurring processes.• Long-term monitoring to evaluate contaminant trends.
MS03/04-03	Hydraulic Dredging with Off-yard Disposal <ul style="list-style-type: none">• Hydraulic removal of contaminated sediment.• Turbidity curtains to prevent migration of contamination during dredging.• Onshore dewatering area with sediment stabilization using fly-ash.• Disposal of stabilized sediment at approved off-yard TSDF.

MS03/04-02: Monitored Natural Recovery



MS03/04-03: Hydraulic Dredging with Off-Yard Disposal



Comparative Analysis of Alternatives for MS-03 and MS-04

- MS03/04-01 would not obtain RAOs
- MS03/04-02 would depend on natural occurring processes to obtain RAOs.
- After MS03/04-01, MS03/04-02 would be easiest to implement because it only requires creating and implementing a long-term monitoring plan.
- MS03/04-03
 - Uses active remedial processes to eliminate the potential for unacceptable contaminant exposure upon implementation.
 - Most protective of ecological receptors and would provide the most long-term effectiveness and permanence because contaminated sediment would be removed from site.
 - Most difficult to implement.

MS-03 and MS-04 Alternatives Costs

<u>Alternatives</u>	<u>Capital</u>	<u>Annual Costs</u>	<u>NPW (30 years)</u>
MS03/04-01 No Action	\$0	\$0	\$0
MS03/04-02 Monitored Natural Recovery	\$17,100	\$20,300/yr \$25,300/5 yrs	\$323,000
MS03/04-03 Hydraulic Dredging with Off-yard Disposal	\$682,000	\$0	\$682,000

Components of Alternatives for MS-11

MS11-01	<u>No Action</u> <ul style="list-style-type: none">• There are no components to the no action alternative.
MS11-02	<u>Monitored Natural Recovery</u> <ul style="list-style-type: none">• Contaminant reduction left to naturally occurring processes.• Long-term monitoring to evaluate contaminant trends.

MS11-02: Monitored Natural Recovery



Aerial Photo Source:
2008 aerial photograph received from the Navy

Legend

● Proposed Sampling Location

DRAWN BY	DATE
T. WHEATON	11/24/09

CHECKED BY	DATE
A. BERNHARDT	05/30/10
COST/SCHEDULE/AREA	

SCALE
AS NOTED

 TETRA TECH

MS-11 ALTERNATIVE
OPERABLE UNIT 4 FEASIBILITY STUDY REPORT
PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

CONTRACT NUMBER
CTO 123

OWNER NUMBER

APPROVED BY	DATE

APPROVED BY	DATE

DRAWING NO.	FIGURE 6-1
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REV
0

Comparative Analysis of Alternatives for MS-11

- Currently, there is insufficient sediment at MS-11 to pose a risk to ecological receptors (little habitat).
- MS11-01 would not obtain RAOs
- MS11-02 would obtain RAOs under current conditions.
- MS11-01: Easiest to implement because there would be no activities required.
- MS11-02: Would include the sampling of any accumulated sediment.

MS-11 Alternative Costs

<u>Alternatives</u>	<u>Capital</u>	<u>Annual Costs</u>	<u>NPW (30 years)</u>
MS11-01 No Action	\$0	\$0	\$0
MS11-02 Monitored Natural Recovery	\$17,100	\$18,800/yr \$25,300/5 yrs	\$304,000

Components of Alternatives for MS-12A

MS12A-01	<p>No Action</p> <ul style="list-style-type: none"> • There are no components to the no action alternative.
MS12A-02	<p>Containment, LUCs, and Monitoring</p> <ul style="list-style-type: none"> • Concrete containment barrier constructed to prevent water from entering Building 178. • Inspections to verify integrity of containment barrier. • Monitoring to evaluate off-shore sediment contaminant trends.
MS12A-03	<p>Partial Removal, Off-yard Disposal, Containment and LUCs</p> <ul style="list-style-type: none"> • Hydraulic removal of contaminated sediments from the offshore area and tidal zone. • Turbidity curtains to prevent migration of contamination during dredging. • Onshore dewatering area with sediment stabilization using fly-ash. • Disposal of stabilized sediment at approved off-yard TSDF. • Concrete containment barrier constructed to prevent water from entering Building 178. • Inspections to verify integrity of containment barrier.

Components of Alternatives of MS-12A (continued)

MS12A-04	<p>Complete Removal with Off-yard Disposal</p> <ul style="list-style-type: none"> • Hydraulic removal of contaminated sediments from the offshore area and tidal zone. • Turbidity curtains to prevent migration of contamination during dredging. • Onshore dewatering area with sediment stabilization using fly-ash. • Mechanical removal of contaminated sediment from Building 178. • Temporary dam construction to prevent water from entering the building. • Disposal of stabilized sediment at approved off-yard TSDF.
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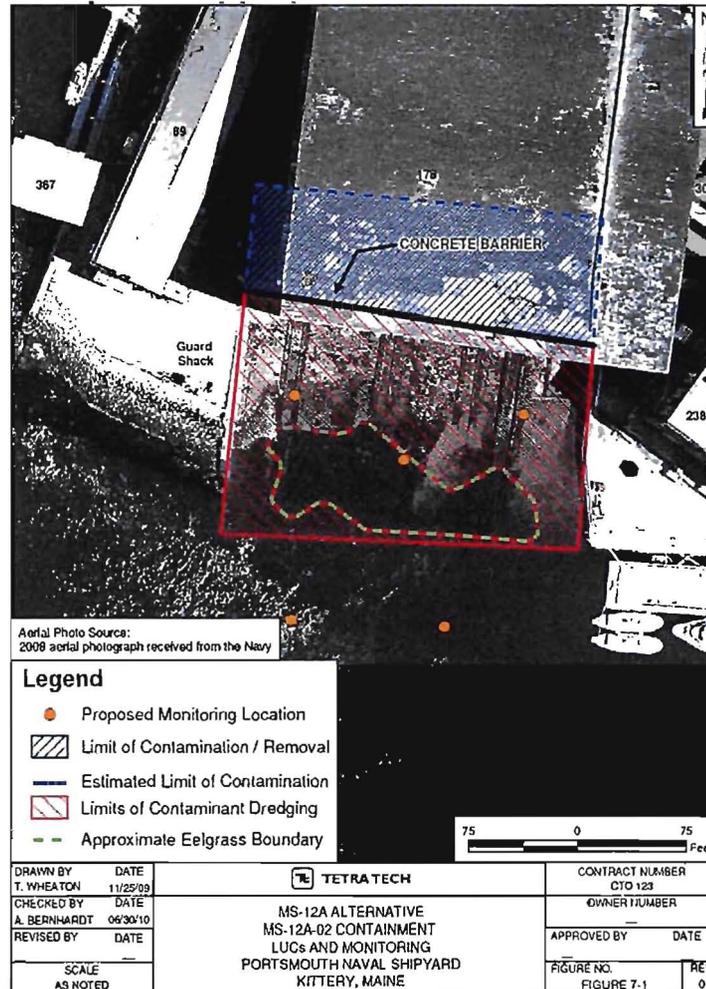
Comparative Analysis of Alternatives for MS-12A

- MS12A-01 would not provide protection of the environment because contaminated sediment would remain in the tidal zone and offshore areas.
- MS12A-02 would control the source of contamination to the offshore and natural processes would eventually reduce COC concentrations to below PRGs.
- MS12A-03 and MS12A-04 would eliminate the exposure pathways between identified receptors and contaminated material.
- MS12A-04 would provide the most protection of ecological receptors because all contaminated sediment would be removed.
- MS12A-03 and MS12A-04 would provide the greatest long-term effectiveness and permanence.
- After MS12A-01, MS12A-02 would be easiest to implement and requires the least amount of energy usage.

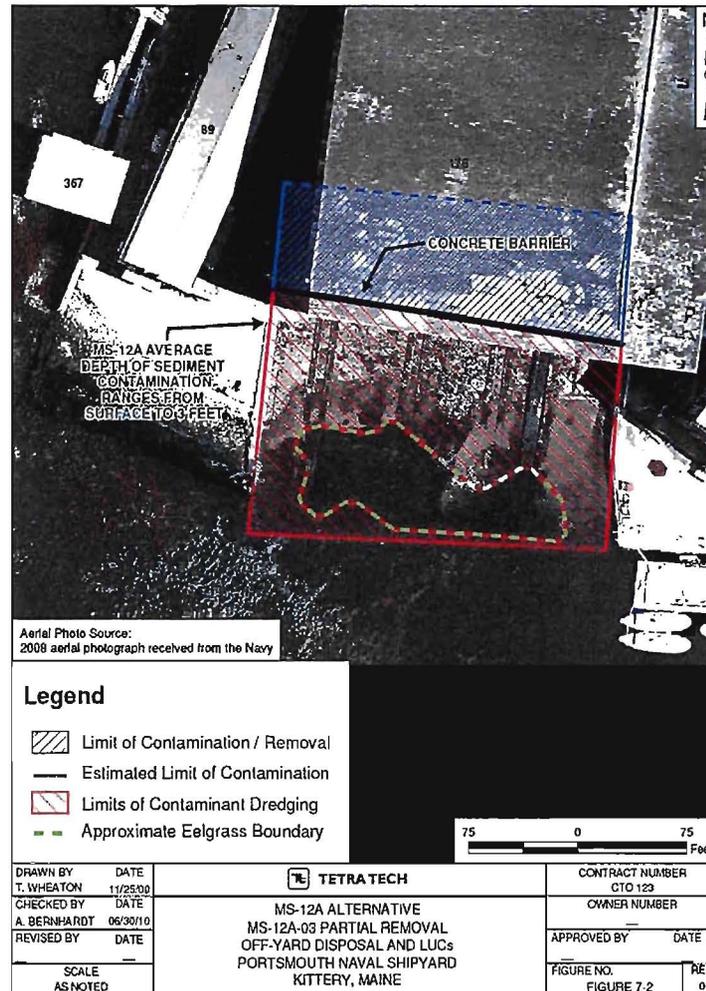
MS-12A Alternative Costs

<u>Alternatives</u>	<u>Capital</u>	<u>Annual Costs</u>	<u>NPW (30 years)</u>
MS12A-01 No Action	\$0	\$0	\$0
MS12A-02 Containment LUCs and Monitoring	\$397,000	\$20,200/yr \$25,900/ 5 yrs	\$676,000
MS12A-03 Partial Removal, Off-yard Disposal, Containment, and LUCs	\$1,340,000	\$19,300/yr \$25,900/ 5 yrs	\$1,630,000
MS12A-04 Complete Removal with Off-yard Disposal	\$1,170,000	\$0	\$1,170,000

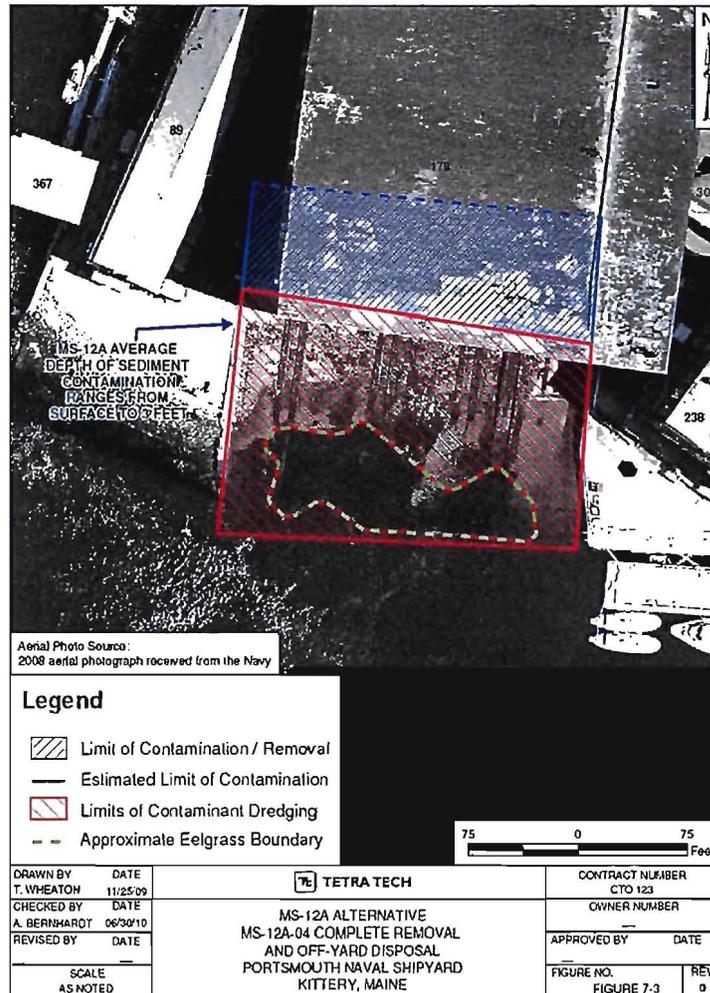
MS12A-02: Containment, LUCs and Monitoring



MS12A-03: Partial Removal, Off-yard Disposal, Containment, and LUCs



MS12A-04: Complete Removal with Off-yard Disposal



Components of Alternatives for MS-12B

MS12B-01	No Action <ul style="list-style-type: none">• There are no components to the no action alternative.
MS12B-02	Monitored Natural Recovery <ul style="list-style-type: none">• Contaminant reduction left to naturally occurring processes.• Long-term monitoring to evaluate contaminant trends.
MS12B-03	Hydraulic Dredging with Off-yard Disposal <ul style="list-style-type: none">• Hydraulic removal of contaminated sediment.• Turbidity curtains to prevent migration of contamination during dredging.• Onshore dewatering area with sediment stabilization using fly-ash.• Disposal of stabilized sediment at approved off-yard TSDF.

MS12B-02: Monitored Natural Recovery



Aerial Photo Source:
2008 aerial photograph received from the Navy

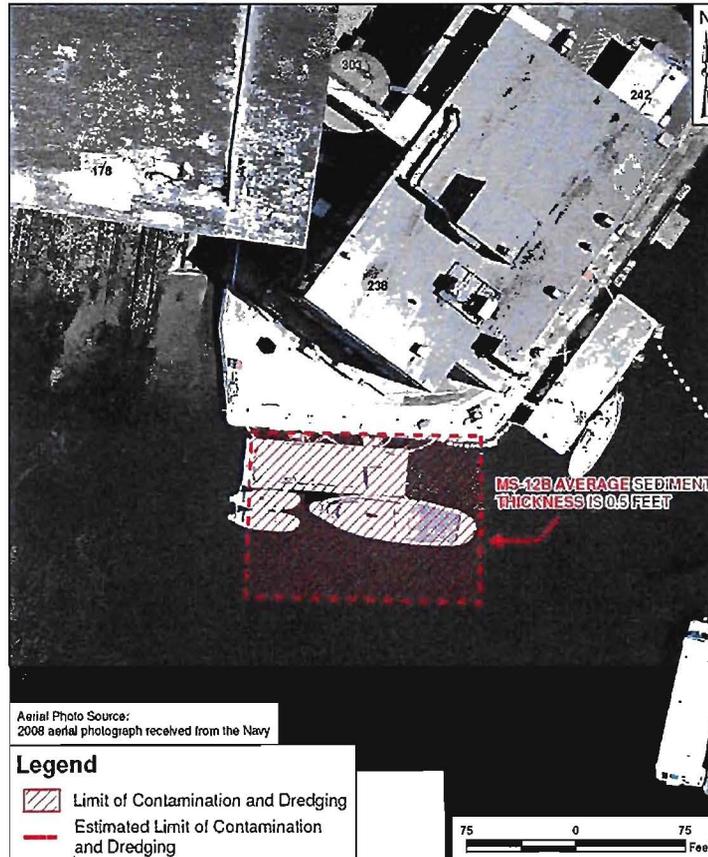
Legend

- Proposed Monitoring Location
- ▨ Limit of Contamination
- Estimated Limit of Contamination



DRAWN BY T. WHEATON	DATE 11/25/09	 TETRA TECH	CONTRACT NUMBER CTO 123
CHECKED BY A. BERNHARDT	DATE 06/30/10		OWNER NUMBER
REVISED BY	DATE		APPROVED BY
			DATE
SCALE AS NOTED		MS-12B ALTERNATIVE MS-12B-02 MONITORED NATURAL RECOVERY PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE	FIGURE NO. FIGURE 7-4
			REV 0

MS12B-03: Hydraulic Dredging with Off-yard Disposal



DRAWN BY T. WHEATON	DATE 11/25/09	TETRA TECH	CONTRACT NUMBER CTO 129
CHECKED BY A. BERNHARDT	DATE 06/30/10		OWNER NUMBER
REVISOR A. BERNHARDT	DATE	APPROVED BY	DATE
SCALE AS NOTED	MS-12B ALTERNATIVE MS-12B-03 DREDGING WITH OFF-YARD DISPOSAL PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE		FIGURE NO. FIGURE 7-5
			REV 0

Comparative Analysis of Alternatives for MS-12B

- MS12B-01 would not obtain RAOs.
- MS12B-02 would depend on naturally occurring processes to obtain RAOs.

- After MS12B-01, MS12B-02 would be easiest to implement because only a monitoring plan and long-term monitoring would be required.

- MS12B-03
 - Uses active remedial processes to eliminate the potential for unacceptable contaminant exposure upon implementation.
 - Most protective of ecological receptors and would provide the most long-term effectiveness and permanence because contaminants would be completely removed from the site.
 - Would be the most difficult to implement.

MS-12B Alternative Costs

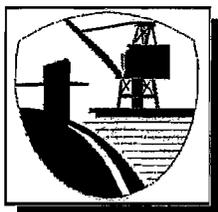
<u>Alternatives</u>	<u>Capital</u>	<u>Annual Costs</u>	<u>NPW (30 years)</u>
MS12B-01 No Action	\$0	\$0	\$0
MS12B-02 Monitored Natural Recovery	\$17,094	\$19,140/ year \$25,300/ 5 years	\$309,149
MS12B-03 Dredging with Off-yard Disposal	\$428,824	\$0	\$428,824

Next Steps

- Resolve comments with Regulators and Finalize the FS.
- Focus in on a preferred remedial alternative for OU4.
- Prepare a Proposed Remedial Action Plan (PRAP) for public review.
- Develop and sign the Record of Decision (ROD).
- Implement the selected/approved Remedial Action.

Questions

Questions?



Portsmouth Naval Shipyard Installation Restoration Program **RAB Update: September 21, 2010**

A meeting of the Portsmouth Naval Shipyard's (PNS) Installation Restoration Advisory Board (RAB) was held on Tuesday, September 21, 2010, at Kittery Town Hall, Kittery, Maine. The agenda included presentations on the status of work and on the draft Feasibility Study Report for Operable Unit (OU) 4.

The Navy began evaluating potential final remedies for OU4.

In July 2010, the Navy submitted the draft FS Report for OU4, which provides the evaluation of possible remedial alternatives to address unacceptable sediment risks in the offshore area of PNS. Since 1999, the Navy has been implementing an interim remediation for OU4, which consists of periodic offshore monitoring at 14 Monitoring Stations in the PNS offshore area. As provided in the draft OU4 FS Report, data from the interim offshore monitoring program indicate that sediment at several monitoring stations do not present an unacceptable risk; therefore, remedial alternatives were not developed for these monitoring stations.

No Action, Monitored Natural Recovery (MNR), and/or sediment removal alternatives were evaluated for monitoring stations with potential unacceptable risks. Evaluation of a No Action alternative is required to provide a baseline for comparison to potential remedial technologies. MNR alternatives include monitoring of sediment concentrations and land use controls to prevent disturbance of the sediment. Partial and/or complete sediment removal alternatives were developed depending on the conditions of the offshore area.

The Navy is currently soliciting regulatory comments on the draft FS and will submit the Draft Final FS after resolution of comments. After resolution of comments on the FS, the Navy will identify the preferred remedy in a Proposed Remedial Action Plan (PRAP). The draft PRAP will be submitted 90 days after the Draft Final FS is submitted.

Shipyard Commander signs the Record of Decision for OU1.

On September 20, 2010, the final ROD for OU1 was signed by the Shipyard Commander and the final document was provided to USEPA for signature. MEDEP will provide a concurrence letter. The Navy, USEPA, and MEDEP appreciated everyone's hard work to get the ROD finalized for signature before the end of the fiscal year (September 30, 2010).

Next meeting announced.

The next regular meeting of the RAB will be held on:

**Tuesday, December 7, 2010, beginning at 7:00 pm
at the Kittery Town Hall, 200 Rogers Road, Kittery, Maine**

Discussion topics will include presentations and updates on Installation Restoration Program activities at Portsmouth Naval Shipyard. As usual, interested members of the public are welcome.

Questions?

To be added to the mailing list, please contact the Shipyard Public Affairs Office at the address or telephone number listed.

If you would like more information on this or other matters relating to the Installation Restoration Program at Portsmouth Naval Shipyard, please contact:

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