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NSY PORTSMOUTH  
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MINUTES, AGENDA AND PRESENTATION FOR THE RESTORATION ADVISORY BOARD  
(RAB) MEETING HELD ON 27 OCTOBER 2015 AT THE KITTELY TOWN HALL NSY  
PORTSMOUTH ME  
10/27/2015  
RESOLUTION CONSULTANTS

**Portsmouth Naval Shipyard  
Restoration Advisory Board Meeting  
Kittery Town Hall, Kittery, Maine  
October 27, 2015**

**Attendees**

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

- RAB Community Members:
  - Doug Bogen
  - Mary Marshall
  - Diana McNabb
- Navy Representatives:
  - Lisa Joy, Portsmouth Naval Shipyard (PNSY)
  - Linda Cole, Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic Remedial Project Manager (RPM) (Attended by phone)
- Regulatory Representatives:
  - Iver McLeod, Maine Department of Environmental Protection (MEDEP)
  - Chris Evans, MEDEP
- Other Participants:
  - Paul Dombrowski, Resolution Consultants
  - Sandy Amborn, Resolution Consultants
  - Deborah Cohen, Tetra Tech
  - William Hughes, AGVIQ Environmental
  - Tim Stone, Stone Hill Environmental, Inc.; Technical Assistance Grant (TAG), technical advisor to Seacoast Anti-Pollution League (SAPL)
  - Dick Berry, Rye, New Hampshire resident and former PNSY employee

The following RAB members were not in attendance:

- RAB Community Members:
  - Jack McKenna
  - Roger Wells
  - Peter Britz
- Regulatory Representatives:
  - Matt Audet, United States Environmental Protection Agency (USEPA)

**Opening Statements:**

Lisa Joy, Navy RAB Co-Chair, opened the meeting by welcoming all attendees and led introductions. Ms. Joy welcomed open dialogue during the meeting and stated that there has been great progress in the program at the Shipyard since the last RAB in June 2015. Doug Bogen, Community RAB Co-Chair, also extended a welcome to attendees.

## Environmental Restoration Program Status and Updates:

Paul Dombrowski, Resolution Consultants, led the presentation on the status and updates on the Environmental Restoration (ER) program at PNSY for each Operable Unit (OU) with input from Linda Cole, Navy RPM, who was in attendance via telephone. The following update highlights were presented:

- *OU1 (Site 10: Former Battery Acid Tank No. 24):* This OU is in the Long Term Management (LTMgt) phase, with Land Use Controls (LUCs) in place. LUC inspections are conducted annually, at which time a LUC Checklist is completed and submitted to USEPA and MEDEP. The LUC inspection was conducted in June 2015. The next LUC inspection will be conducted in 2016. LUC inspections will be conducted annually until the OU is released for Unrestricted Use/Unlimited Exposure (UU/UE).
- *OU2 (Site 6: Defense Reutilization and Marketing Office (DRMO) Storage Yard, Site 29: Former Teepee Incinerator Site, and DRMO Impact Area):* Remedial Action (RA) was completed in 2014, which included excavation and off-site disposal. The Construction Completion Reports (CCR) were finalized in spring 2015. This OU is also in LTMgt phase, and LUCs are in place. The Draft LTMgt Plan was submitted in June 2015, and regulatory comments are being resolved. The LTMgt Plan includes procedures for groundwater monitoring, sediment accumulation monitoring, and inspections. The annual LUC inspection was completed on October 27, 2015, with no issues noted. The Shipyard will be relocating office trailers for contractors working at the Shipyard back to OU2, which were moved off OU2 during remediation. The Navy is preparing the draft Remedial Action Completion Report (RACR), which will be submitted once the LTMgt Plan is finalized.
- *OU3 (Site 8: Jamaica Island Landfill [JILF], Site 9: Former Mercury Burial Sites, and Site 11: Former Waste Oil Tanks Nos. 6 and 7):* This was the first OU to undergo Remedial Action at the Shipyard and is in the LTMgt phase with an engineered cap in place. Landfill and LUC inspections (Round 14) were completed in May 2015. Minor housekeeping items were identified during the LUC inspection, but the landfill cap is in good shape with LUCs operational and effective. The draft inspection report was submitted on October 15, 2015. Currently groundwater sampling is conducted once every five years in support of the Five-Year Review report. Landfill and LUC inspections (Round 15) will be conducted in 2016, which will support the third Five-Year Review report to be submitted in 2017. Five-Year Reviews are required for sites that have not attained UU/UE. Five-Year Reviews will also include other OUs in the LTMgt phase and for all CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) OUs at the Shipyard where RA is complete.
- *OU4 (Site 5: Former Industrial Waste Outfalls and Off-shore Areas Potentially Impacted by PNSY Onshore ER Program Sites):* OU4 consists of offshore Areas of Concern (AOCs) associated with potential terrestrial sources of contamination. Dredging of sediment was

conducted from December 2014 through April 2015 in the vicinity of four monitoring stations (MS-01, MS-03, MS-04, and MS-12). Additional shoreline removal was conducted in September 2015 to address petroleum-coated timbers observed in the intertidal zone during remediation at MS-01 (additional discussion presented during the RAB meeting). The Navy is preparing the CCR, which will summarize the Remedial Action dredging and the shoreline removal action at MS-01. Since there was a potential to impact eelgrass beds during the dredging at monitoring station MS-12A, the Navy will monitor eelgrass conditions after the dredging. Tetra Tech performed a survey of the eelgrass beds at low tide in September 2015. Eelgrass was observed in these locations and appeared to be viable and healthy. A plan is being prepared to evaluate the viability of the eelgrass bed at MS-12A following Remedial Action.

- *OU7 (Site 32: Topeka Pier Site)*: RA excavation was conducted from July to September 2015 and included offsite disposal of the soil (OU7 RA was presented in more detail at the RAB meeting). The Navy is preparing the CCR for this excavation work. The LUC inspection was completed on October 27, 2015 with no issues noted. Much of the OU7 Site has been recently paved. The Draft LTMgt Plan was submitted in 2014 and will be finalized once the CCR is completed.
- *OU8 (Site 31) Former West Timber Basin*: This is the last remaining OU without a Record of Decision (ROD) in place. OU8 is in the Remedial Investigation (RI) phase. RI field activities were completed in June 2015, which included soil sampling, groundwater monitoring well installation, and groundwater sampling (additional discussion presented during the RAB meeting). The Navy is preparing a combined RI and Feasibility Study (FS) report, which will be submitted in 2016.
- *OU9 (Site 34: Former Oil Gasification Plant, Building 62)*: OU9 is in the LTMgt phase with LUCs in place. A Removal Action was completed several years ago, during which soil impacted with polycyclic aromatic hydrocarbons (PAHs) and ash was excavated. The annual LUC inspection was completed in June 2015 and the LUC inspection checklist was submitted in August 2015. The Draft RACR was submitted in August 2014. Regulatory comments were resolved, and the schedule to finalize the RACR will be dependent on the OU4 MS-01 shoreline efforts, adjacent to OU9.

### **Regulator Updates:**

Iver McLeod, MEDEP, provided a summary of recent regulatory activities. McLeod noted that there have been very few reports for the Shipyard submitted for review recently due to the progress of the ER program and field work at OU4, OU7, and OU8 this past summer. Currently MEDEP is reviewing the Navy's response to comments (RTCs) on the Draft OU2 LTMgt Plan RTCs. MEDEP continues to participate in weekly conference calls with the Navy and USEPA, so MEDEP is always up to date on the ER Program.

#### **OU4 Remedial Action Updates (AGVIQ):**

William Hughes of AGVIQ Environmental presented the recent RA activities at OU4. During dredging at MS-01, wood timbers coated with petroleum hydrocarbons were observed in a two to four-foot-thick zone at the base of the embankment along the shoreline, near OU9. In addition, sheen was observed at low tide. Absorbent booms were deployed in the area after observing the sheen to capture any petroleum sheen mobilized when the river rises with the tides. On behalf of the Navy, AGVIQ performed a Removal Action in September 2015 to remove the timbers and any contaminated soils, and to place an impermeable clay layer as a barrier.

The first step of this Removal Action was to place composite mats in grass-covered area at the top of the slope to protect the >100 year-old water main constructed of cast iron pipe. A pre-removal survey was conducted to document the slope for restoration purposes. Rip rap and armor stone (12" and larger in diameter) were removed from the embankment. Soil and wood were excavated from this area. The objective was to completely remove the timbers and any contaminated soil from the embankment, but the extent of the contamination was greater than expected. The visible impacts were observed to extend approximately 15 feet back into the hillside, to the 18-inch-diameter historically significant bollard at the top of the embankment. Excavation was performed as far into the hillside without installing shoring to protect buildings along the shoreline. Visibly contaminated soil remains in place at a thickness that is less than that observed before completing the Removal Action; however, it is difficult to accurately determine the remaining volume of impacted soil. Analytical samples collected from three locations along the embankment indicated that PAHs were present in the soil. The impacted soil was observed to be black in color with a coal-tar-like odor. The excavated soil was saturated and was placed into roll-off containers for disposal. The Shipyard's cultural resources manager noted that the timbers appeared to be old barrel staves and other debris. Analytical results for composite waste characterization samples indicated that the material could be disposed as non-hazardous waste. A total of 313.3 tons of material were disposed off-site at the Turnkey Landfill in Rochester, NH.

As part of the Removal Action, a reactive core material (RCM) mat was installed in the area to temporarily address contamination left in place. The RCM is a 0.5-inch thick multi-layered and engineered geocomposite mat that consists of three layers of polypropylene non-woven geotextile with activated carbon bound between the layers. The activated carbon physically adsorbs to the organic contaminants (like PAHs and petroleum hydrocarbons) and prevents migration into the surrounding environment. Prior to installing the RCM, a layer of 6 to 8-inch diameter rock was placed in the excavation area to provide a stable base for the RCM. Next, a six-inch-thick layer of clay was applied, followed by the RCM mat. The RCM mat was installed with 3 feet of overlap between sections and keyed into the slope to prevent water intrusion. Drainage rock (2 inches in diameter) was placed on top of the RCM, and armor stone (12 to 16 inches in diameter) was placed as the final layer to protect the shoreline from erosion. No further sheen was observed following installation of the RCM. The embankment slope was restored to the original grade, and the top of the slope was hydroseeded in the disturbed areas.

The CCR is being prepared for OU4 dredging and the removal at MS-01. The extent of contamination that remains will be further investigated by the Navy who will work with the USEPA and MEDEP to determine a path forward to remediate the residual contamination.

**OU7 Remedial Action Updates (AGVIQ):** William Hughes of AGVIQ Environmental presented the RA at OU7 that was completed during the summer of 2015. The selected remedy for OU7 included excavation of soil with potentially unacceptable risks to industrial workers and offsite disposal with LUCs. OU7 was the location of a former timber basin, and where fill material was deposited. Excavation was conducted in two areas adjacent to Buildings 158 and 129. Area 1 is located on the north side of Building 129, and the primary contaminants at Area 1 were dioxins and furans. Area 2 is located at the northwest corner of Building 158, and the excavation was performed to address total polychlorinated biphenyls (PCBs). Pre-excavation soil sampling was conducted in May 2015 in Areas 1 and 2 to delineated excavation extents.

Approximately 75 tons of soil to a depth of 5 feet was excavated from Area 1. Excavated soil was disposed as non-hazardous waste at the Turnkey Landfill in Rochester, NH. The area was backfilled, compacted, and the pavement was replaced. Excavation in Area 2 was completed in three separate areas to a depth of 9 feet. Approximately 42 tons of soil were excavated from the northern area in Area 2 and disposed as non-hazardous waste at the Turnkey Landfill. Approximately 127 tons were excavated from the central and southern areas in Area 2. Since samples collected from the central and southern areas contained PCBs in concentrations greater than 50 parts per million (ppm), the material was disposed as TSCA (Toxic Substances Control Act) waste at the Wayne Disposal, Inc. facility in Belleville, Michigan.

During excavation in Area 2, an 18-inch-diameter terra cotta pipe was discovered. Inside this terra cotta pipe were pipes wrapped in asbestos-containing insulation. A licensed asbestos abatement contractor was brought on site to properly dispose of portions of the asbestos-wrapped pipes that were located within the footprint of the excavation. It is believed that the pipes were steam lines at one time. A final post-remedial survey was conducted at OU 7 to record the location of the excavation areas and the 18-inch terracotta pipe. The Navy is preparing the CCR, which will include documentation of the 18-inch terracotta pipe.

**OU8 Remedial Investigation Updates (Tetra Tech):** Deborah Cohen of Tetra Tech presented RI updates at OU8. OU8 is the location of the Former West Timber Basin. Currently the area is located within the Controlled Industrial Area. The timber basin was in operation from the late 1800s until 1913. The area was completely filled in between 1917 and 1940 with various debris, including rocks, soil, slag, cinders, ash metal, brick, and wood. The site was later the location of a metal washing plant and a metal plate yard, both of which included pickling tanks, from 1940 to 1960. The source of the ash and slag is likely from foundry waste which was a result of processes used for extracting non-ferrous metals for re-use. The area is bound by historic quay walls to the east, west, and south. The historic shoreline bounds the site to the north.

A Site Screening Investigation (SSI) was conducted in 1998 to investigate surface soil, subsurface soil, and groundwater. The results of the SSI showed exceedances of PAHs and several metals in

soil and several metals in groundwater. RI field sampling was conducted in summer 2015 with additional surface soil, subsurface soil, and groundwater sampling. Soil was collected from 17 borings. Groundwater was sampled from 4 existing monitoring wells and two monitoring wells installed in June 2015. All soil and groundwater samples were analyzed for PAHs and Target Analyte List (TAL) metals. At the request of MEDEP, soil and groundwater samples were also analyzed for Extractable Petroleum Hydrocarbons (EPH) to provide additional data on the potential for petroleum hydrocarbon impacts at the site as there were historic fuel tanks at the site. Project screening levels (PSLs) used during the RI were based on current industrial and future hypothetical residential exposure.

A tidal study was conducted, which concluded that most of the wells were tidally influenced with high salinity. Therefore groundwater at OU8 would not be potable. Tidally influenced wells were sampled at low tide so that the sampling would capture groundwater and not incoming tidal water.

Cinders, ash, slag, coal, metal pieces, and other debris were observed at varying depths and thicknesses in almost all of the RI borings. RI soil results indicate that PAHs, specifically benzo(a)pyrene, and metal concentrations were similar to those observed during the SSI. Manganese was the only compound in groundwater that exceeded the risk-based screening level (in only two wells). The highest metal concentrations were observed in the southeastern portion of the site, which correlated with large amounts of slag, and at one boring near the former metal washing plant. There was an elevated concentration of mercury in one boring located within the area of a newly constructed utility corridor at a construction site within OU8, but that soil would have been excavated during construction of this utility corridor. No EPH exceedances were observed, which indicates the PAH impacts are not associated with fuel oil.

The fill material extends below the groundwater table. Off-shore sampling as part of OU4 was performed to evaluate potential impacts due to OU8. Off-shore monitoring was conducted between 1999 and 2008. Initially sediment, mussels, and juvenile lobsters were sampled and analyzed, which were later, reduced to only monitoring sediment. This sampling indicated that impacts from OU8 had not adversely impacted the offshore environment and ecological receptors were not at risk from impacts at OU8.

### **Community Remarks and Open Discussions and Questions:**

Tim Stone, SAPL TAG technical advisor, requested any updates on the risk evaluation for the lead contamination that was not removed during the dredging at monitoring station at MS-12B. Tetra Tech is currently preparing a risk evaluation, which will be included in the RACR for OU4.

Community co-chair Doug Bogen asked about SAPL and SAPL's advisor receiving project documents. Mr. Bogen said that SAPL's advisor had not received project documents and/or email notification of documents. Navy RPM Linda Cole stated that the agreement with the Assistant Secretary of the Navy was that the Navy would provide hard copies of pre-ROD documents to the SAPL TAG Coordinator. The SAPL TAG Coordinator or any member of the public may request copies of any document at any time and that all Final Pre-ROD documents are available for download on the public website. Ms. Cole expressed her apologies for not

sending a copy of the Final OU8 RI SAP since all of the data would be summarized in the Remedial Investigation (RI) report. A hard copy of the Final OU8 RI SAP was provided to the SAPL TAG advisor at the conclusion of the October RAB meeting. Hard copies of the RI, Feasibility Study (FS), and Proposed Remedial Action Plan (PRAP) will be sent out to SAPL and its TAG advisor. Ms. Cole noted that there have been very few documents that have been prepared since the agreement was reached between SAPL and the Navy, because OU8 is the only operable unit that did not have a ROD in place at that time. In addition to the OU8 RI SAP, the only other pre-ROD document that has been finalized is the Accident Prevention Plan, which is prepared by the Contractor and is related to health and safety. The Navy also provided a hard copy of the Accident Prevention Plan to the SAPL TAG during the meeting.

Mr. Bogen also noted that he used to receive copies of the agency comments on draft and draft final documents as well as the Navy's response to comments, but has not recently received those. All regulator comments and Navy response to comments are provided in draft final and final documents. It was clarified that documents are not considered public domain until they are finalized, but that Mr. Bogen can receive copies of any draft documents, including comments/response to comments upon request. Mr. Bogen requested copies of the MS-12B risk evaluation document. The Navy will provide Mr. Bogen with copies of the MS-12B risk evaluation document, but requested that he send a formal request via email to Ms. Cole. Navy stated that Mr. Bogen will be receiving electronic copies of upcoming pre-ROD documents via email and that he can forward documents to the SAPL TAG Advisor.

Mr. Stone noted that the Navy prepared a spreadsheet in the past that included a list of documents in preparation with their current status. The Navy noted that the spreadsheet was a one-time compilation for SAPL and not intended to be a living document. In addition, the RAB status presentation slides and Update Fact Sheets include a summary of which documents are being prepared by the Navy and their current status.

#### **Future Meetings:**

The next RAB meeting is proposed to be held on June 14, 2016. Invitations will be sent by Resolution Consultants with more details including the meeting location. The Navy anticipates that the results from the MS-12B risk evaluation and the complete results from the OU8 RI/FS document will be presented at that time.

Portsmouth Naval Shipyard  
Restoration Advisory Board Meeting  
October 27, 2015

Agenda

- Introductions
- Opening Statements
  - Navy Co-Chair (Lisa Joy, NAVFAC)
  - Community Co-Chair (Doug Bogen)
- Environmental Restoration Program Status and Updates (Linda Cole, NAVFAC)
- Regulator Updates (USEPA and MEDEP)
- OU4 Remedial Action Updates (AGVIO)
- OU7 Remedial Action Updates (AGVIO)
- OU8 Remedial Investigation Updates (Tetra Tech)
- Community Remarks
- Open Discussion and Questions



## Portsmouth Naval Shipyard Environmental Restoration Program Status and Updates

October 2015

### OPERABLE UNIT 1 Site 10 (Former Battery Acid Tank No. 24)



#### • Land Use Controls

- LUC inspection conducted in June 2015
- LUC Inspection Checklist submitted in August 2015
- LUC inspection to be conducted in 2016



## OPERABLE UNIT 2

Site 6 (DRMO Storage Yard) & Site 29 (Former Teepee Incinerator Site)



- **Construction Completion Reports (CCR)**

- DRMO Area finalized in March 2015
- Waste Disposal Area finalized in May 2015

- **Long Term Management (LTMgt) Plan**

- Draft LTMgt Plan submitted in June 2015
- Resolving regulatory comments

- **Land Use Controls**

- LUC inspection to be conducted in Fall 2015

- **Remedial Action Completion Report (RACR)**

- Draft RACR to be submitted after LTMgt Plan finalized



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Portsmouth Naval Shipyard Environmental Restoration Program, October 2015

## OPERABLE UNIT 3

Site 8 (Jamaica Island Landfill)



- **Land Use Controls**

- Landfill and LUC inspection (Round 14) conducted in May 2015

- Draft Landfill Inspection report submitted in October 2015
- Landfill cap in good condition
- Minor maintenance/housekeeping repairs to be performed

- Landfill and LUC Inspection (Round 15) to be conducted in 2016

- Round 15 will include groundwater sampling to support 3<sup>rd</sup> Five-Year Review in 2017



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Portsmouth Naval Shipyard Environmental Restoration Program, October 2015

## OPERABLE UNIT 4

Site 5 (Former Industrial Waste Outfalls) and Offshore Areas of Concern



- **Selected Remedy = Sediment Removal with Off-Yard Disposal at 4 monitoring stations**

- Dredging performed December 20, 2014 through April 20, 2015

- **Removal Action for additional excavation at MS-01 shoreline**

- Excavation performed in September 2015

- **Construction Completion Report (CCR)**

- Draft CCR being prepared for the dredging work and shoreline excavation activities at MS-01

- **Eelgrass monitoring for MS-12A**

- Plan being prepared to evaluate viability of the eelgrass bed after the remedial action.

- In September 2015 the eelgrass bed was photographed to observe current conditions



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Portsmouth Naval Shipyard Environmental Restoration Program, October 2015

## OPERABLE UNIT 7

Site 32 (Topeka Pier Site)



- **Selected Remedy = Excavation with Land Use Controls**

- **Remedial Action**

- Excavation and backfill completed July to September 2015

- Draft CCR being prepared

- **Land Use Controls**

- LUC inspection to be conducted in October 2015

- **Long Term Management Plan (LTMgt)**

- Draft LTMgt Plan submitted in August 2014

- Regulatory review completed: no comments received

- LTMgt Plan to be finalized after CCR submitted



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Portsmouth Naval Shipyard Environmental Restoration Program, October 2015

## OPERABLE UNIT 8 Site 31 (Former West Timber Basin)



### • Remedial Investigation

–Final Sampling and Analysis Plan (SAP) submitted in May 2015

–Remedial Investigation field activities completed in June 2015

- Soil borings
- Groundwater monitoring well installation
- Groundwater sampling

–Draft Remedial Investigation Report/Feasibility Study to be submitted in 2016



<http://seacoastnh.com/postcards/yard1/oh1.html>

Portsmouth Naval Shipyard Environmental Restoration Program, October 2015

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## OPERABLE UNIT 9 Site 34 (Former Oil Gasification Plant, Building 62)



### • Land Use Control

–LUC inspection conducted in June 2015

–LUC Inspection Checklist submitted in August 2015.

### • Remedial Action Completion Report (RACR)

–Draft submitted in August 2014

–All regulatory comments on Draft RACR have been resolved

–Final RACR status to be determined based on MS-01 shoreline



Portsmouth Naval Shipyard Environmental Restoration Program, October 2015

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- Public website link:  
<http://go.usa.gov/DyRH>



**Operable Unit (OU) #4  
Status Update  
Portsmouth Naval Shipyard  
Restoration Advisory Board  
October 27, 2015**

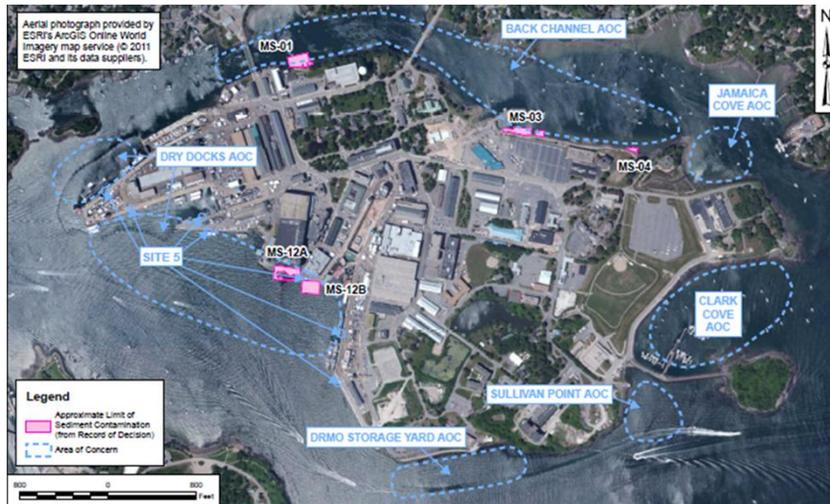


## Outline



- Site Location and Overview
- Background
- Remedial Action Activities Status
- Questions and Comments

## Site Location Map



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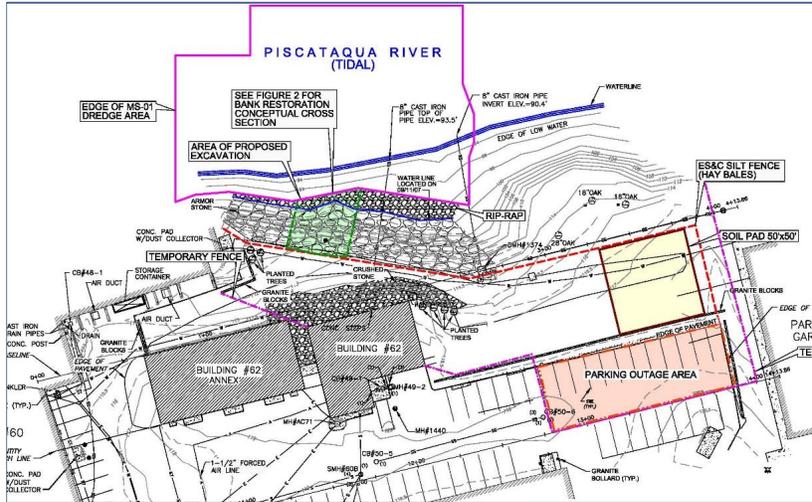
## Background



- **Remedial Action Objectives**
  - Eliminate unacceptable risk to ecological benthic receptors exposed to site-related COCs in suitable sediment habitats.
- **Selected Remedy**
  - Dredge sediments from each monitoring station to depths specified in ROD
  - Dredge depths were determined through pre-confirmation sampling
- **Status Following Dredging**
  - Following the dredging at MS-01 a 2 to 3 foot thick by 35 feet long layer of wood soaked with petroleum hydrocarbons was found protruding from the shoreline
  - When the tide retreats a sheen is visible on the water surface. A floating adsorbent boom was deployed to capture the sheen.
  - The layer of wood lies beneath the armor stone and rip rap that protects the shoreline
- **Path Forward**
  - Remove debris and associated contaminated soil
  - Restore slope and mitigate the sheen that forms on the water
  - Compare any soil sample analytical results to OU4 and OU9 chemicals of concern

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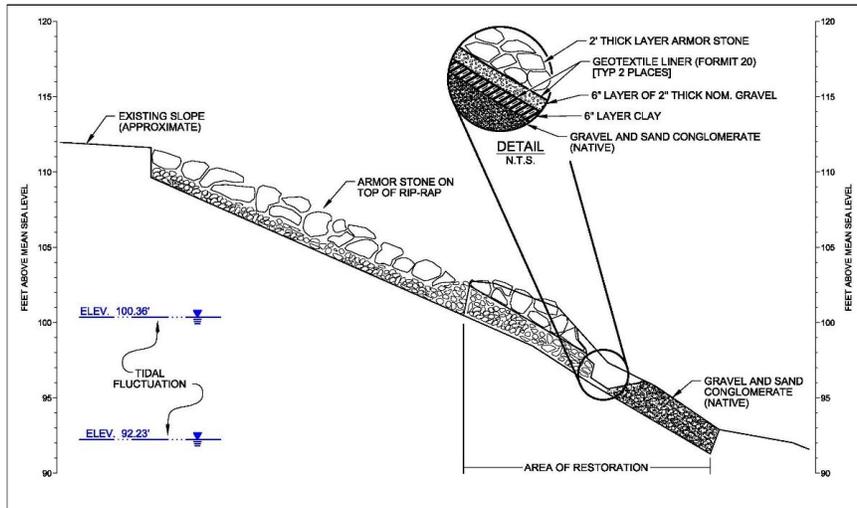
# Site Plan



# Slope at Monitoring Station MS-01



## Planned MS-01 Slope Restoration



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## Remedial Action Activities Status



- Mobilized equipment and personnel to site
- Installed fence
- Performed pre-removal survey
- Placed composite matting down to protect a buried 100 year old water line supplying the water tower to the east
- Stripped armor stone from the slope
- Excavated impacted wood and soil
  - Found that contamination extended into the overlying rip rap
  - Waste wet from water in the pore space of the rock
  - Rather stage on plastic sheeting the waste was placed in roll-off containers
- Collected a composite sample to characterize the waste
  - Classified as non-hazardous
- Collected 3 discrete samples from the slope to evaluate the contamination during the excavation

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## Waste Evaluation Samples



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## Summary of Evaluation Sample Results



Analyte	WE08-SS-01-092115 (40X)	WE08-SS-02-092115 (100X)	WE08-SS-03-092115 (20X)
ACENAPHTHENE	14 U	48	7 U
ACENAPHTHYLENE	14 U	55	2.6 J
ANTHRACENE	14 U	120	3.4 J
BENZO(A)ANTHRACENE	49	77	32
BENZO(A)PYRENE	62	74	68
BENZO(B)FLUORANTHENE	47	52	56
BENZO(K)FLUORANTHENE	16 J	19 J	22
BENZO[G,H,I]PERYLENE	40	30 J	60
CHRYSENE	52	83	51
DIBENZO(A,H)ANTHRACENE	9.7 J	30 U	15
FLUORANTHENE	56	98	18
FLUORENE	14 U	31 J	7 U
INDENO[1,2,3-CD]PYRENE	29	23 J	46
NAPHTHALENE	14 U	120	7 U
PHENANTHRENE	14 U	160	13
PYRENE	140	250	73

All results reported in milligrams per kilogram

U = The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

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## Remedial Action Activities Status (cont.)



- Continued excavation of contaminated material as far as physically possible (approximately 15-feet) without installing shoring to protect structures (funding that was available)
- Visibly contaminated soil left in place
  - Reduced thickness of contamination to approximately 1-foot
- Disposed of 313.3 tons of waste at Turnkey Landfill
- Began slope restoration
  - Followed design with following exceptions:
    - Placed a layer of 6-8 inch diameter rock as a stable base for reactive core material (RCM), 0.5 inch thick multilayered and engineered geocomposite comprised of three layers of polypropylene nonwoven geotextile with activated carbon physically bound within
    - Installed RCM with 3-feet of overlap between sections
    - Secured RCM with rock around the edges
  - Placed drainage rock (2-inch diameter) atop the RCM and armor stone (12-16-inch diameter) as a final layer to protect the shoreline
  - No sheen observed on the water surface after RCM was installed

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## Slope Prior to Placement of Clay (10/14/15)



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## Remedial Action Activities Status (cont.)



- Restored laydown area with the placement of topsoil and application of seed
- Floating boom was removed and disposed
- Demobilized equipment and personnel
- Preparing construction completion report to document both dredging and MS-01 debris/soil removal activities
- Extent of remaining waste to be investigated by the Navy with future remedial actions performed as required

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## Questions and Comments



**Questions?**

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**Operable Unit (OU) #7  
Site 32  
Status Update  
Portsmouth Naval Shipyard  
Restoration Advisory Board  
October 27, 2015**

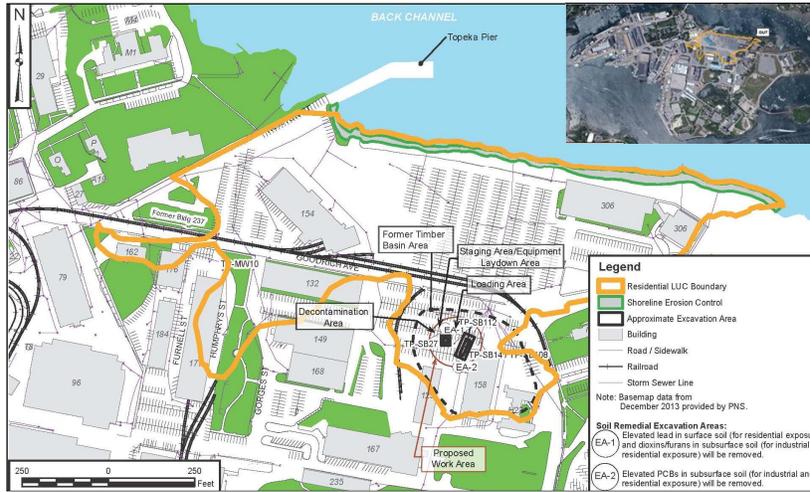


## Outline



- Site Location and Overview
- Background
- Selected Remedy
- Remedial Action Activities
- Questions and Comments

# Site Location & Site Map



# Site Plan



## Background



- **Remedial Action Objectives**

- Prevent residential exposure through ingestion of, dust inhalation of, and dermal contact with surface soil containing lead, and subsurface soil containing antimony, copper, dioxins/furans, iron, lead, carcinogenic polycyclic aromatic hydrocarbons (PAH), and polycyclic biphenyl (PCB) concentrations exceeding residential cleanup levels/preliminary remediation goals (PRGs).
- Prevent industrial worker (construction and occupational) exposure through ingestion of, dust inhalation of, and dermal contact with subsurface soil containing dioxin/furan and PCB concentrations exceeding industrial cleanup levels/PRGs.

- **Selected Remedy**

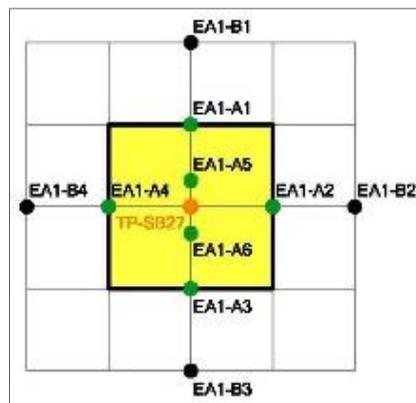
- Excavation of soil associated with potentially unacceptable risks to industrial workers. Soils were excavated to meet industrial cleanup levels.
- Area 1 Cleanup Level - 0.0006 milligrams per kilogram (mg/kg) for dioxins/furans, evaluated based on 2, 3, 7, 8-TCDD Toxic Equivalents (TEQ).
- Area 2 Cleanup Level - 7.4 mg/kg for total PCBs, evaluated based on total Aroclors.
- Disposal of excavated soil and disposed in an offsite landfill and restoration to pre-existing construction conditions.

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## Remedial Action Activities - Area 1 Excavation



- Mobilized to site
- Blocked parking area and installed temporary fence around site
- Surveyed the limits of the excavation and stripped asphalt
- Excavated 75.4 tons of soil to a depth of 5-feet
- Soils were directly loaded into a roll-off containers
- Transported to Turnkey Landfill, a non-hazardous waste facility in Rochester, NH for disposal
- Backfilled and compacted excavation
- Resurfaced pavement



LEGEND  
● SAMPLE LOCATIONS WHERE CONCENTRATIONS WERE LESS THAN PROJECT ACTION LIMITS  
● PREVIOUS SAMPLE LOCATION  
● PLANNED SAMPLE LOCATION

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## Remedial Action Status



- **Finalized Remedial Action Work Plan** (May 2015)
- **Collected In situ Waste Characterization & Confirmation Samples** (Completed May 2015)
- **Presented Analytical Results in a Technical Memorandum**
- **Site Mobilization & Setup**
  - **Surveyed Site & Marked Underground Utilities** (Completed Jul 28, 2015)
  - **Stripped Asphalt, Exposed & Protected Underground Lines** (Completed Aug 4, 2015)
- **Excavated Areas 1 and 2** (Completed Sept 10, 2015)
- **T&D of Contaminated Soil** (Completed Sept 14, 2015)
- **Backfilled and Replaced Pavement** (Completed Sept 10, 2015)
- **Demobilized from Site** (Completed Sep 10, 2015)
- **Preparing Construction Completion Report** (Submittal late Oct)

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## Questions and Comments



**Questions?**

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# Operable Unit 8 Remedial Investigation Update

**Portsmouth Naval Shipyard**

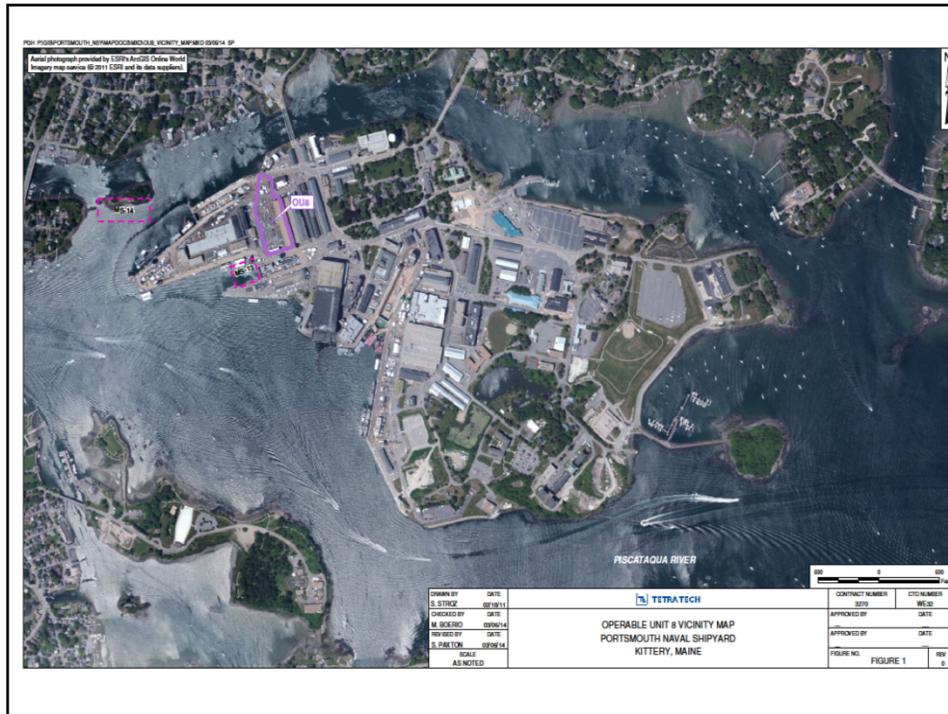
**Date: October 27, 2015**

**Presenter:**

**Deborah Cohen, Tetra Tech**

## Site Description and Background

- Operable Unit 8 (OU8) is located in the Controlled Industrial Area, in the western portion of PNS.
- OU8 consists of Site 31 - Former West Timber Basin.
- The site is an area that was previously filled with various materials and is bounded on the east, west, and south by historical quay walls that bounded the former timber basin.
- Portions of Buildings 92 and 174 extend into the site and extensive utilities run through the site.
- The rest of the area is paved.

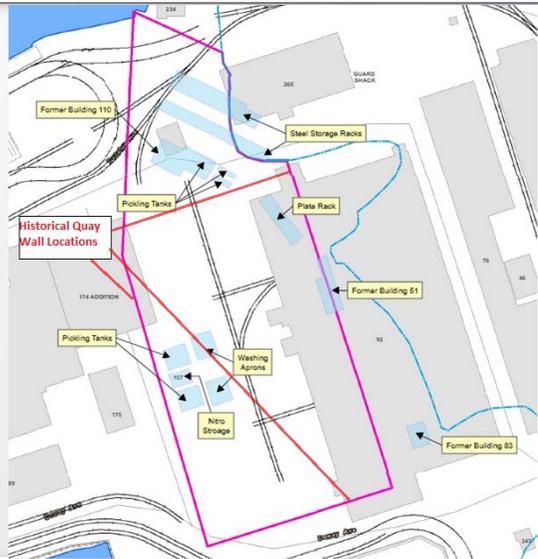


## Site Description and Background (continued)

- The timber basin was used from sometime in the 1800s until 1913 for wood storage and seasoning to support shipbuilding.
- Filling of the site occurred from between approximately 1917 to 1940.
- Activities at the site included:
  - Metal washing plant (~1917 to 1920) and cleaning of steel plates and pickling (~1920 to 1940) in the northern portion of the site.
  - Metal plate yard, including steel storage and pickling tanks, from 1940 to 1960.
  - Currently used as a laydown area and temporary storage.
- A Site Screening Investigation (SSI) was conducted in 1998.

## Site Layout and Historical Use

- The blue line indicates historical shoreline.
- The pink line is the OU8 boundary.
- The eastern, southern, and western boundary lines correspond to the quay walls for the former timber basin.



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## Previous Site Investigation

- Surface soil, subsurface soil, and groundwater sampling conducted at OU8 during the SSI.
- Soil samples were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/polychlorinated biphenyls (PCBs), Target Analyte List (TAL) metals, cyanide, hexavalent chromium, sulfate, total organic carbon (TOC), petroleum hydrocarbons (diesel and gasoline range), and pH. The results showed exceedances of screening levels for polycyclic aromatic hydrocarbons (PAHs) and metals.
- Groundwater samples were analyzed for the same compounds as soils and water quality parameters. The results showed exceedances of screening levels for several metals.
- Investigations of the offshore area (OU4) showed that chemical concentrations in the offshore areas of OU8 are at acceptable levels, indicating migration of site groundwater to the offshore has not adversely impacted the offshore environment.

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## RI Sampling

- Seventeen soil boring locations were sampled, with one surface (0 to 2 feet bgs) and 2 subsurface (2 to 6 and 6 to 10 feet bgs) samples collected from each soil boring.
- Two additional groundwater monitoring wells were installed and sampled along with the four existing monitoring wells and one replacement well.
  - All soil and groundwater samples were analyzed for TAL metals and PAHs.
  - Soil and groundwater samples were also analyzed for extractable petroleum hydrocarbons (EPH) to provide additional data on petroleum hydrocarbon concentrations at the site.
  - A tidal study was conducted, and tidally-influenced wells were sampled at low tide.
- Project screening levels are based on risk-based screening levels for current (industrial) and future hypothetical (residential) exposure.

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## RI Observations

- The majority of wells were found to be tidally-influenced with elevated salinity, therefore the site groundwater is considered brackish/saline and not a potable drinking water source.
- Cinders, slag, ash material, coal and metal pieces, and other debris were found in most borings. The observations were at varying depths and thicknesses within respective bores, and are likely the result of filling operations.

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## RI Observations Continued

- 2015 carcinogenic PAHs (e.g., benzo(a)pyrene) and metals concentrations in soil and groundwater were generally similar to the 1998 SSI concentrations.
- Elevated concentrations are generally in subsurface soil and were found at various locations and depths.
  - The greatest metals detections were in borings in the southwestern portion of the site and at one boring near the former metal washing plan.
  - The greatest PAH concentrations were in borings in the eastern portion of the site.
- Only concentrations of manganese in groundwater exceeded the risk-based screening level (slight exceedance in two wells).

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Questions?

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## 2015 Site Aerial

