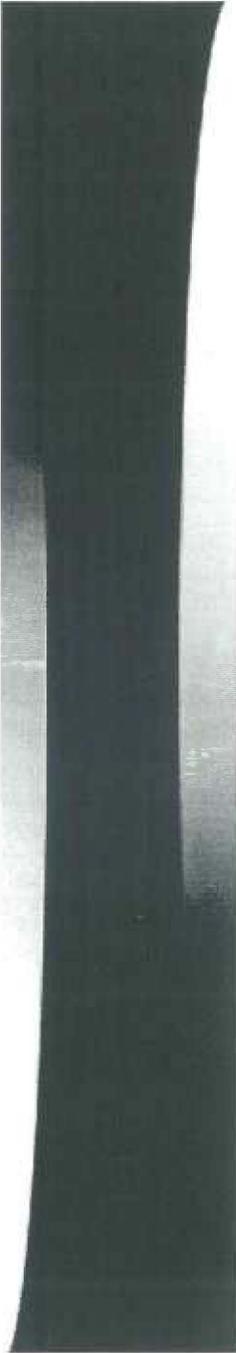
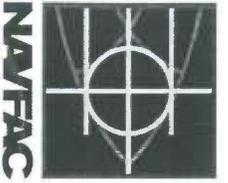


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NCBC DAVISVILLE
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PUBLIC MEETING AND HEARING HELD ON 24 OCTOBER 2013 REGARDING THE PROSED
PLAN FOR SITE 16 NCBC DAVISVILLE RI
10/24/2013
TETRA TECH



SITE 16

PROPOSED PLAN

PUBLIC MEETING: OCTOBER 24, 2013



Objectives of Tonight's Public Meeting



- Review site background information
- Summarize investigations performed at the Site
- Describe the Remedial Investigation (RI) components and results
- Summarize the Human Health (HHRA) and Ecological Risk Assessments (ERA)
- Review the Feasibility Study (FS) remedial action objectives and remedial alternatives
- Present the Preferred Remedy



Site 16 Background



- Irregularly shaped area bounded to the west by Thompson Road, to the south by railroad area; and extending north to Allen Harbor and east to Narragansett Bay.
- The northern area (referred to as the north central area [NCA]) is forest and shrub land.
- Allen Harbor is immediately north of the NCA; utilized by the Allen Harbor Boating Association.
- The area south of Davisville Road is mostly paved areas used for storage of cars, pending delivery to automotive dealers.



Site 16 Background (continued)



- ***Creosote dipping operations (for preserving wood pilings):*** Northwestern portion of the NCA.
- ***Fire-fighting training exercises:*** Central portion of the NCA.
- ***Fill materials and subsurface debris:*** Throughout a significant portion of the NCA. This portion of Site 16 will be designated a "waste management area".
- ***Former Building 41:*** Equipment preservation/packing shop (with trichloroethene [TCE] solvent recovery tank).



Investigation History



- ***1992 Soil Removal Action:*** Polycyclic aromatic hydrocarbon (PAH)-contaminated soils removed from upended creosote dip-tank area.
- ***1995 – 1998 Environmental Baseline Survey Activities:*** Three sampling events. Soil removal action near Bldg E-107.
- ***1999 – 2001 Phase I Remedial Investigation (RI):*** Geophysics, volatile organic chemicals (VOCs) screening, environmental sampling, and tidal study.
- ***2002 Phase II RI:*** Focused on groundwater contamination.
- ***2004 Screening Level Ecological Risk Assessment (SLERA):*** Focused on Allen Harbor sediments (including environmental forensics investigation).
- ***2004 -2006: 1,4-Dioxane Groundwater Study***



Investigation History (continued)



- ***2004 Supplemental Phase II Hydrogeologic Investigation and HRC® Pilot Study:*** Focused on groundwater contamination and potential remediation approach (Pilot Study not completed).
- ***2007-2008 Phase III RI:*** Chlorinated VOC screening, environmental sampling (including soil gas sampling and sampling of the groundwater underlying Allen Harbor), and environmental forensics (Allen Harbor).
- ***2010 FS Support Field Investigation:*** Focused primarily on the delineation of soils/extent of subsurface debris in the NCA, extent of plume underlying Allen Harbor, additional soil gas investigations (particularly in the eastern arm of the VOC plume), and additional characterization of soils in the Building 41 area.
- ***2011 Perfluorooctanic Acid (PFOA)/Perfluorooctane Sulfonate (PFOS) Groundwater Study***

The size of Site 16 has expanded over the course of time!



Components of Remedial Investigation

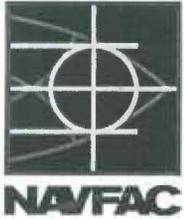


Geophysics/Volatile Organic Chemical (VOC) Profiling

- Seismic refraction profiling to investigate upper bedrock surface.
- VOC profiling using membrane interface probe (MIP) technology.
- VOC profiling using Color Tec© technology.
- Geophysical logging of wells.

Soil and Bedrock Borings

- Over 150 soil borings advanced and 74 test pits excavated to evaluate nature and extent of soils contamination.
- Soil samples collected for evaluation of geology and chemical analysis.
- Coring to confirm bedrock depth and characteristics.
- Soil gas samples collected at over 40 locations to evaluate the vapor intrusion pathway.

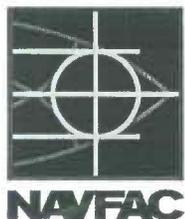


Components of Remedial Investigation (continued)



Groundwater Investigation

- Over 200 groundwater monitoring wells installed and sampled (shallow water-table, intermediate, and deep overburden wells; and shallow and deep bedrock wells).
- Multiple rounds of groundwater sampling/analysis to characterize nature and extent of contamination.
- Water table samples collected to evaluate vapor intrusion pathway.
- Samples also collected to evaluate potential for monitored natural attenuation (MNA) of VOCs.
- Slug tests/pumping tests conducted to determine aquifer characteristics (e.g., conductivity, flow between units).



Components of Remedial Investigation (continued)



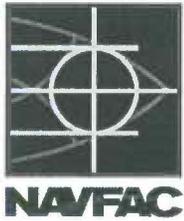
Allen Harbor Sampling

- Sediment (>60), deep surface water (>10), and groundwater (underlying Harbor) (>30) samples collected from the Harbor. Seep samples collected.
- Two environmental forensics evaluations conducted to evaluate sources of PAHs in Harbor sediments.

Staff Gauge Installation

- To evaluate groundwater/surface water interaction.

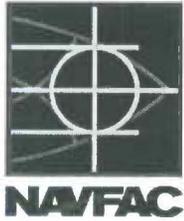
Human Health and Ecological Risk Assessments Conducted to Estimate Risks to Human and Ecological Receptors



Objectives of Investigations



- Identify/confirm sources of contamination.
- Define the nature and extent of contamination in soil, groundwater, surface water, sediment, and soil gas.
- Assess contaminant migration pathways (e.g., from source area soils to downgradient groundwater, surface water, and sediment.)
- Collect sufficient data to conduct human and ecological risk assessments, and support decision making for Site 16.



Data Analyses and Evaluation



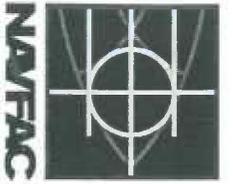
- Analyzed soil, groundwater, surface water, sediment samples for: VOCs, SVOCs, pesticides, PCBs and metals.
 - Select soil samples also analyzed for dioxins/furans.
- Soil gas analyzed for VOCs.
- Select sediment/soil samples analyzed for environmental forensics parameters.
- Validated all data.
- Evaluated and screened data against risk-based screening criteria, RIDEM regulatory benchmarks, drinking water MCLs.



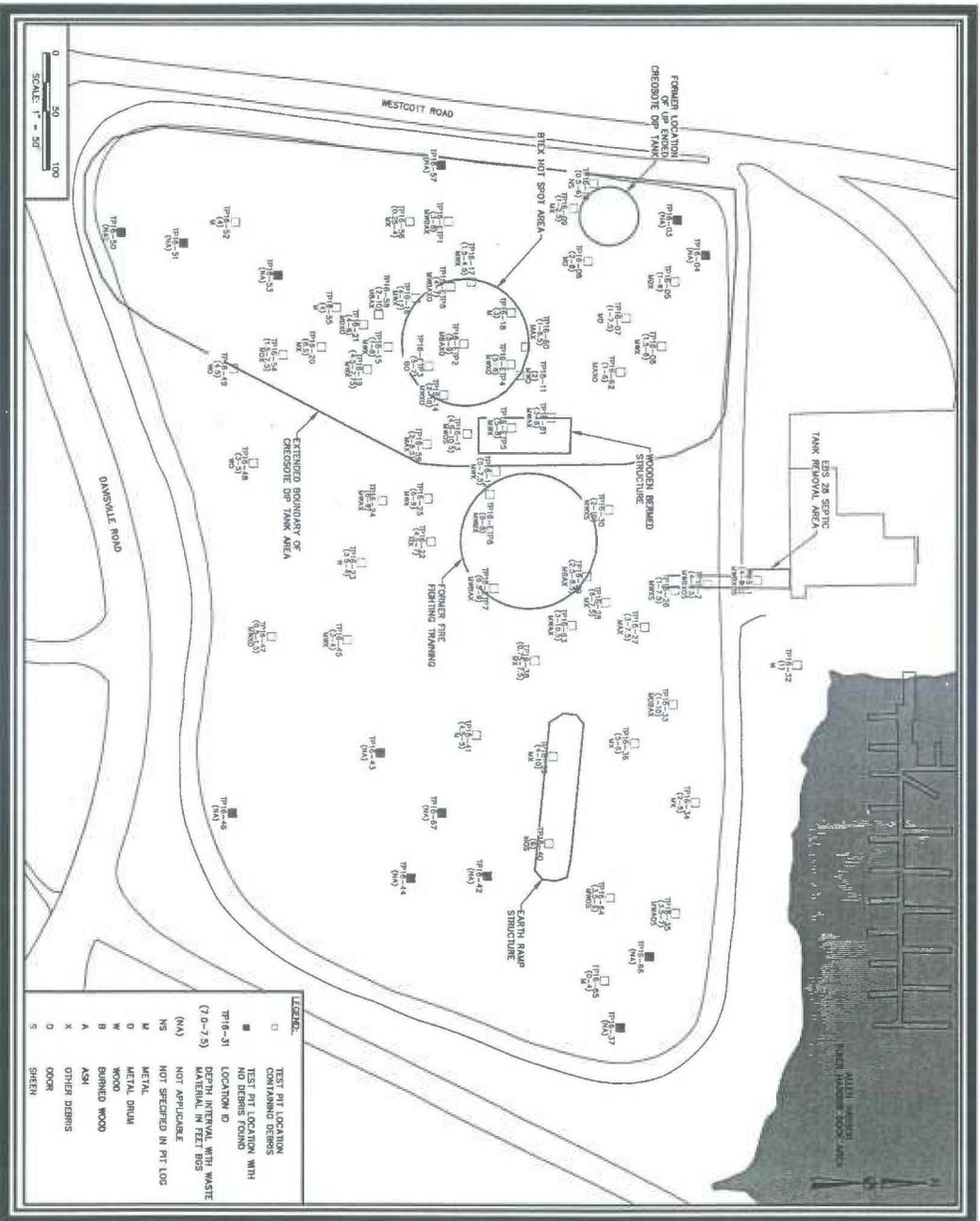
Contaminant Presence

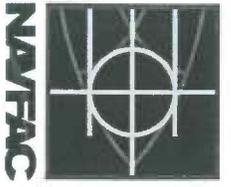


- VOCs – Predominant contaminants in GW, deep (saturated zone) soil, and soil gas. Generally, infrequent detections and low concentrations in shallow (unsaturated zone) soil, sediment (SD), and SW.
- SVOCs (mainly PAHs) – Detected in shallow soil and sediment; few detections in SW and GW.
- Pesticides – Generally infrequent, low-level detections in soil, sediment, GW, and SW.
- PCBs – Generally infrequent, low-level detections in soils and SD.
- Dioxins/furans – Generally low-level detections in soil (NCA).
- Metals – Frequently detected. Most significant concentrations in shallow subsurface soil (NCA). GW detections reflect, in part, background conditions.
- Site 16 is not primary source of contaminants in SD.

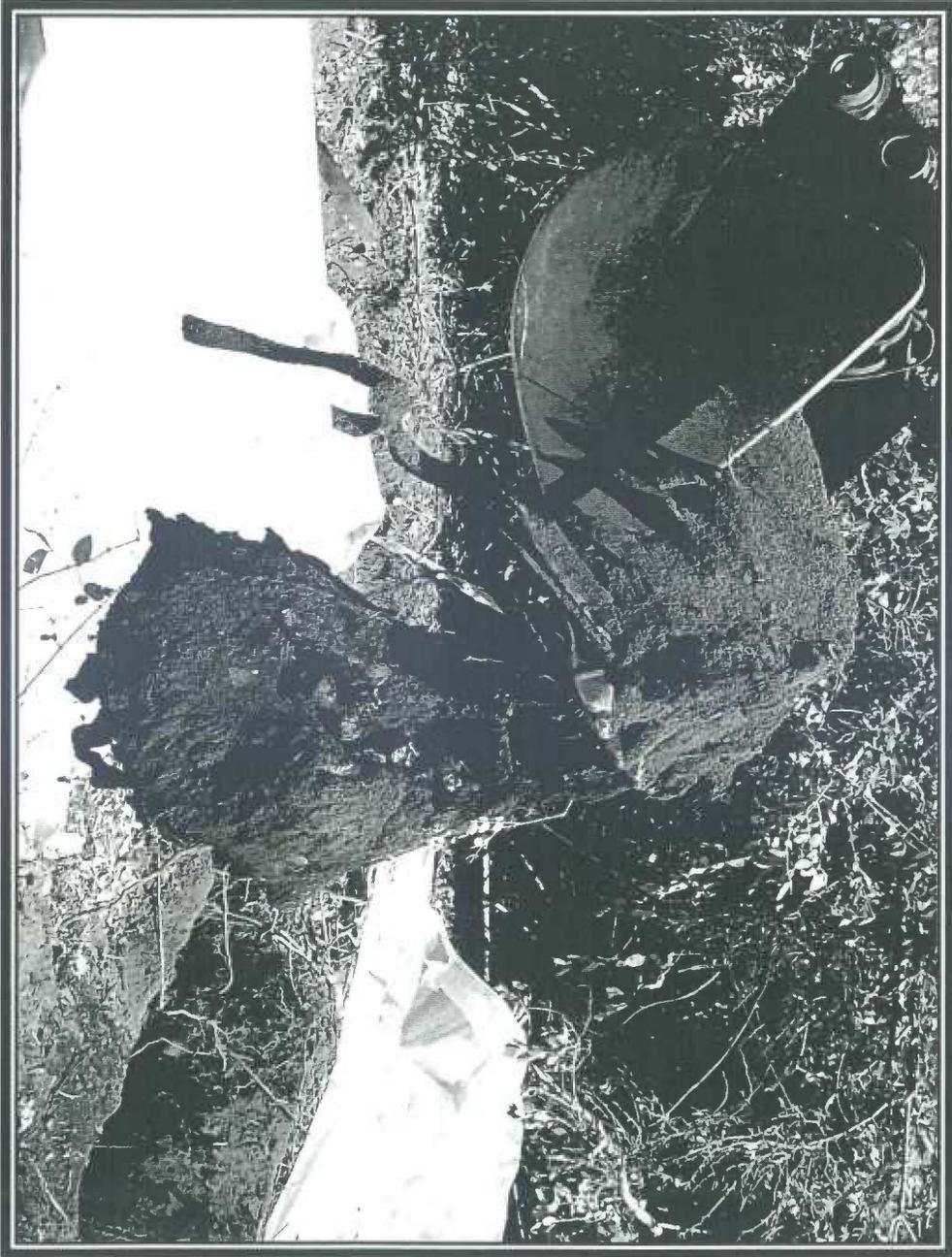


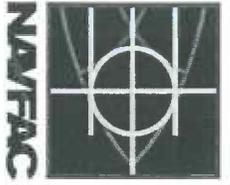
Debris in North Central Area



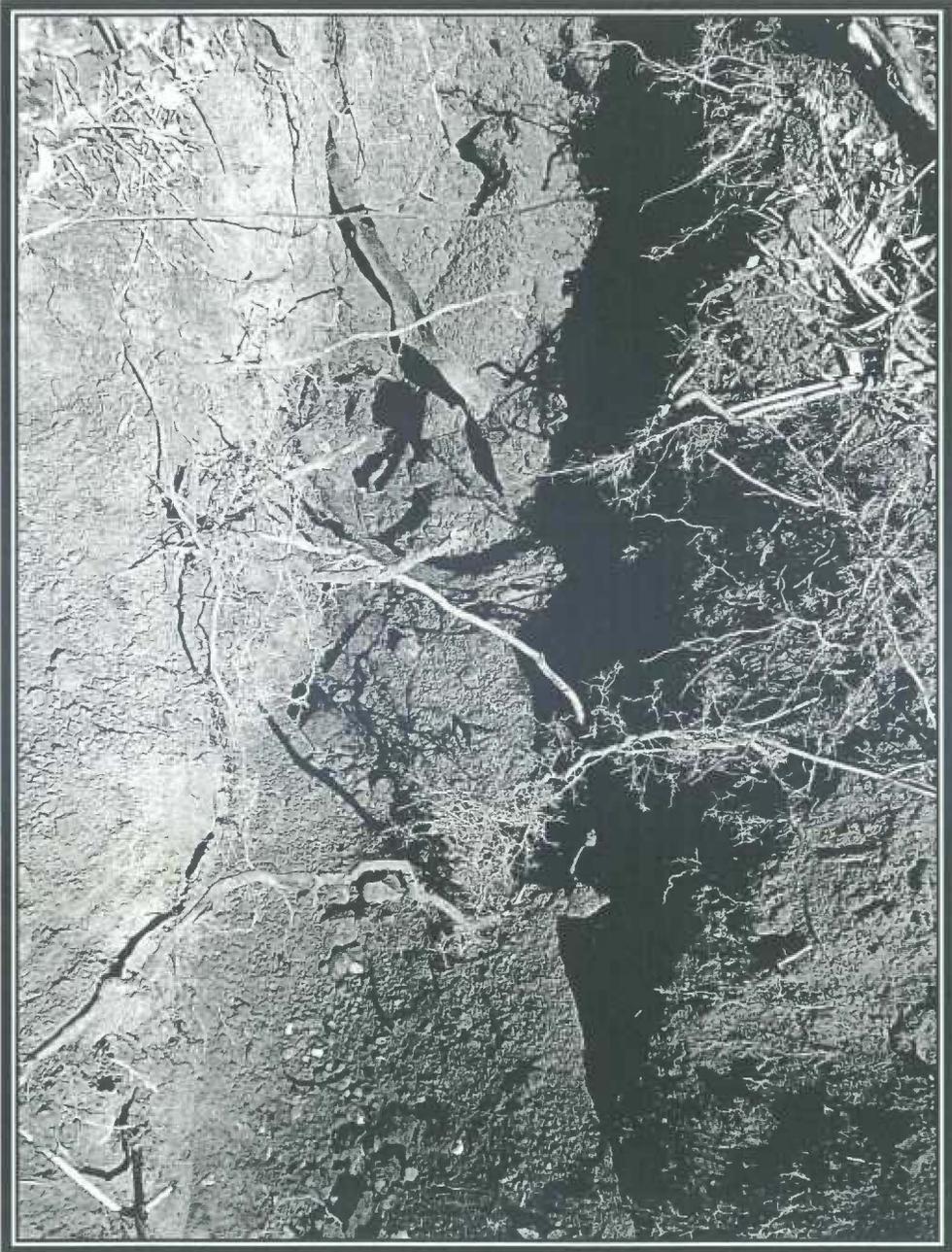


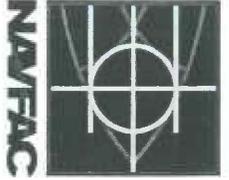
Debris in NCA - Photos



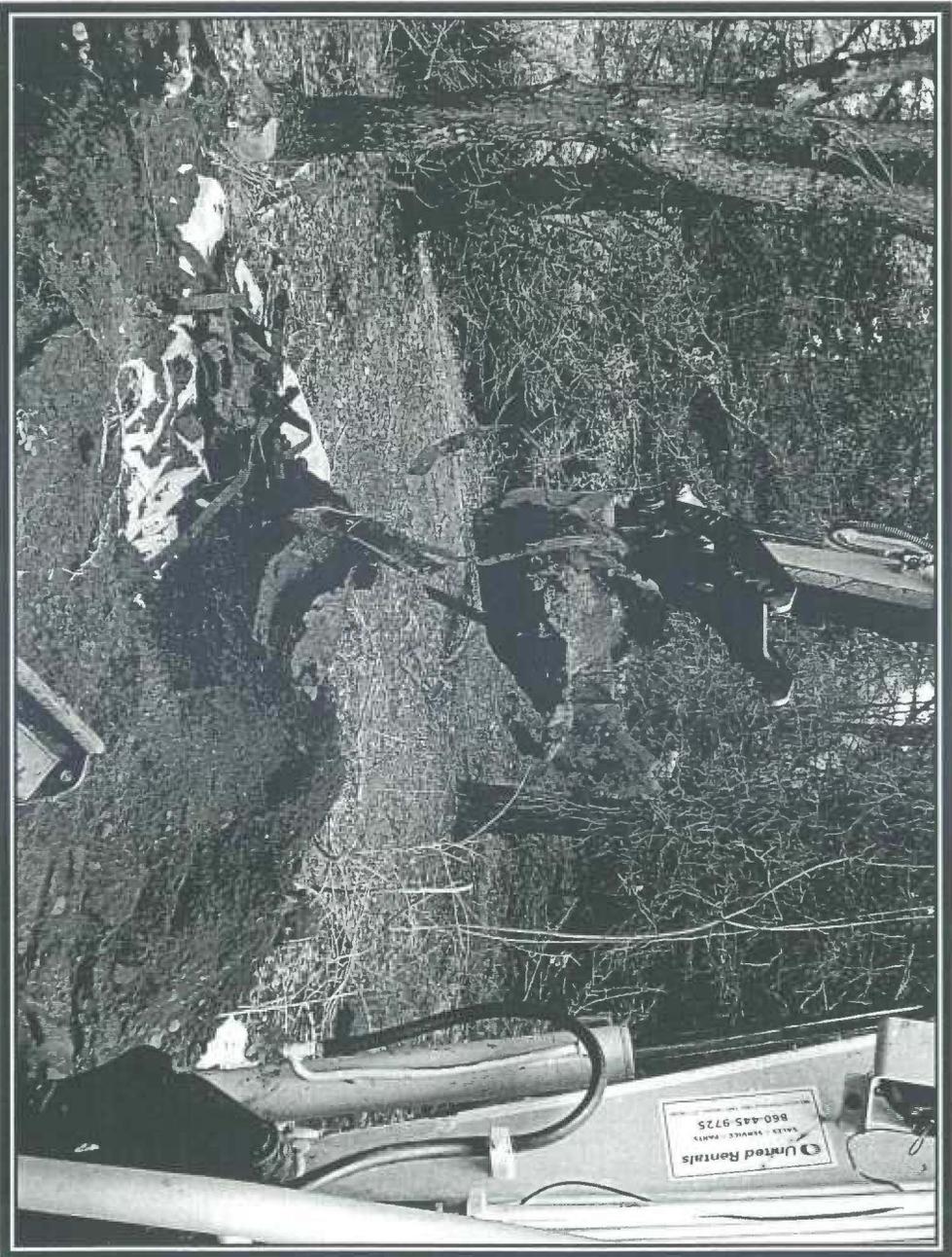


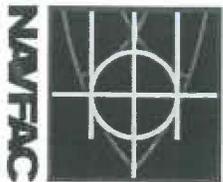
Debris in NCA - Photos





Debris in NCA - Photos

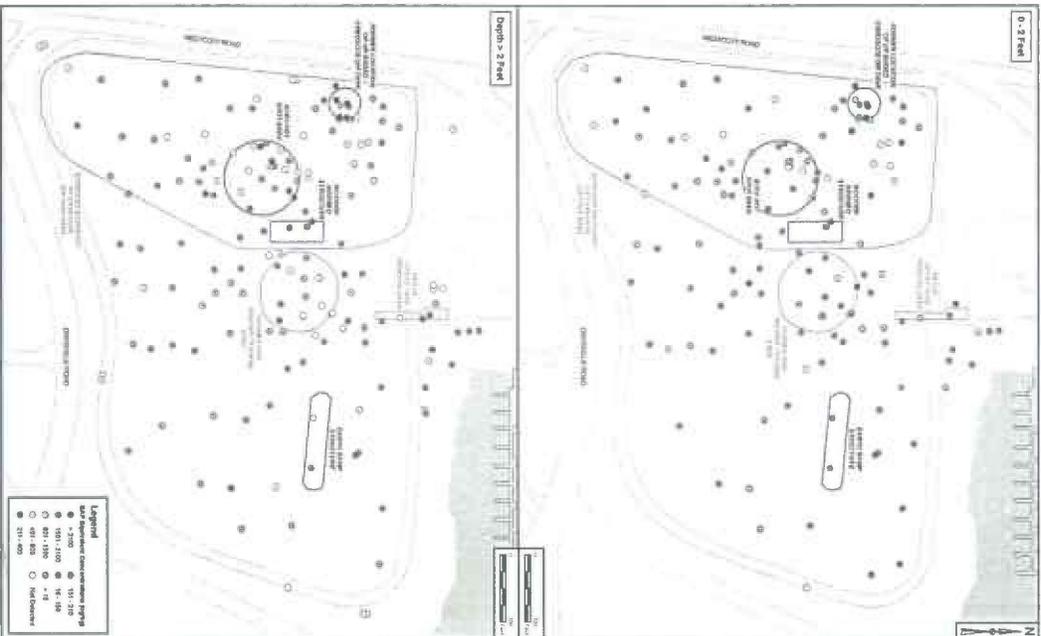


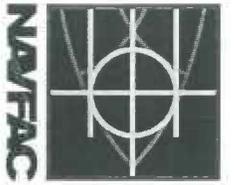


Debris in NCA - Photos

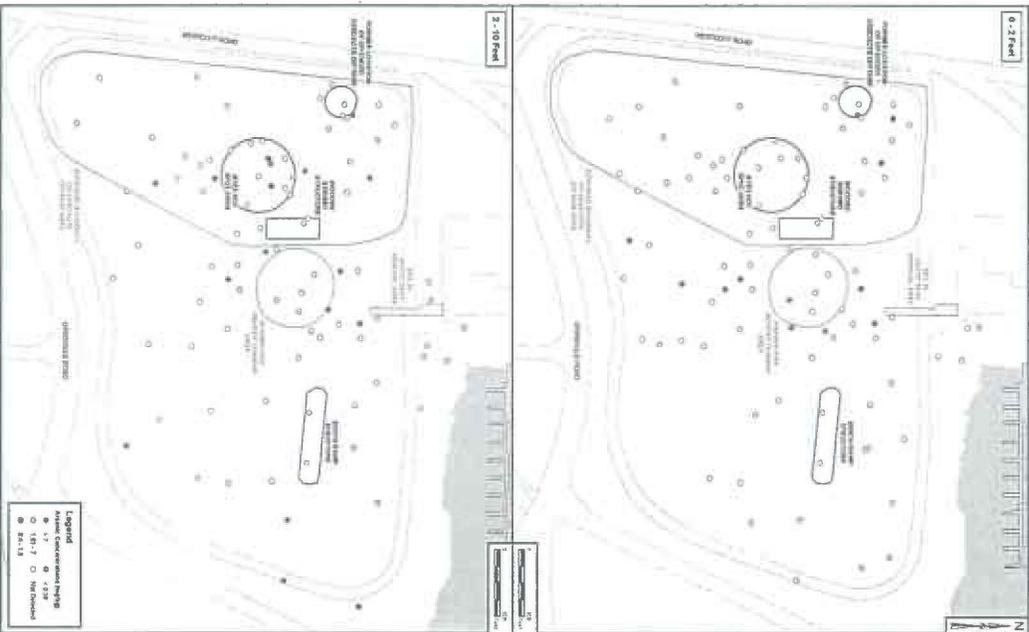


Benzo(a)pyrene Equivalent Concentrations in NCA Soils





Arsenic Concentrations in NCA Soils





HHRA – Were Risks Identified?



| Receptors Evaluated | Did Risks Exceed EPA/RIDEM Regulatory Thresholds? | |
|----------------------------|---|-------------------|
| | Cancer Risks | Non-Cancer Risks |
| Current Site Use Scenarios | | |
| Adolescent Trespasser | No | No |
| Future Site Use Scenarios | | |
| Resident | Yes | Yes |
| Adolescent Trespasser | No | No |
| Recreational User | Yes | No |
| Construction Worker | No | Yes (Lead) |
| Industrial Worker | Yes | Yes (Lead) |



ERA – Were Risks Identified?



| Receptors Evaluated | Did Risks Exceed Regulatory Thresholds? |
|--|--|
| Terrestrial Receptors (NCA soils) | |
| Invertebrates | No |
| Plants | No |
| Wildlife | No |
| Aquatic Receptors (in seep/surface water and sediment) | |
| Invertebrates | Generally low risk to receptors. <i>(* Site 16 does not appear to be the primary source of sediment contamination.)</i> |
| Aquatic Organisms | No |



Media of Concern in RI



- Soils/Groundwater:
Contaminants may pose unacceptable human health risks ➡ **media of concern**
- Sediment and Surface Water:
No site-related unacceptable human health or ecological risks ➡ **not media of concern**



Contaminants of Concern (COCs) Feasibility Study - Soils



Risk-based:

| | | |
|-------------|----------------|-----------|
| PAHs | Arsenic (As) | Lead (Pb) |
| Naphthalene | Dioxins/Furans | Benzene |

Based on Exceedances of RIDEM Regulatory Benchmarks:

| | | |
|-------------------------|-----------------------|------------------------------|
| Antimony | Manganese | 1,1-Dichloroethene (1,1-DCE) |
| Vinyl chloride (VC) | Trichloroethene (TCE) | |
| Tetrachloroethene (PCE) | | |



Contaminants of Concern (COCs) Feasibility Study - Groundwater



Risk-based:

Trichloroethene (TCE) Tetrachloroethene (PCE)
cis-1,2-Dichloroethene (DCE) Vinyl chloride (VC)
Benzene

Based on Exceedances of Federal Safe Drinking Water Act Maximum Contaminant Levels:

| | | | |
|-------------------------------------|-----------------------------|----------|----------|
| 1,1-Dichloroethene (DCE) | 1,1,2-Trichloroethane (TCA) | | |
| Bis (2-ethylhexyl) phthalate (BEHP) | Naphthalene | | |
| Methylene chloride (MC) | Antimony | Arsenic | |
| Barium | Beryllium | Cadmium | Chromium |
| Lead | Nickel | Selenium | Thallium |
| Nitrate/nitrite | | | |



FS Remedial Action Objectives (Soil RAOs – NCA and Marina Area)



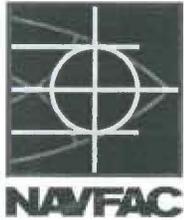
- **RAO No. 1 and 4*:** Prevent worker exposure to soil containing concentrations of chemicals of concern (COCs) that cause unacceptable risk.
 - **RAO No. 2 and 5*:** Ensure/verify that soil contaminants do not migrate to groundwater causing groundwater, sediment, and surface water to have associated unacceptable risk.
 - **RAO No. 3 and 6*:** Prevent future resident exposure to soil COCs that cause unacceptable risk.
 - **RAO No. 7:** Prevent recreational user exposure to soil in the vicinity of the Marina Building containing concentrations of COCs that cause unacceptable risk.
- * *Two RAOs presented because COCs in NCA (as a whole) differ slightly from those in the benzene subarea.*



FS Remedial Action Objectives (GW RAOs – Throughout Site 16)



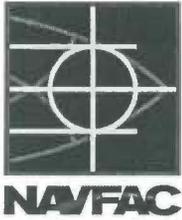
- **RAO No. 1:** Prevent human exposure to groundwater containing concentrations of COCs that cause unacceptable risk and that do not meet the selected cleanup levels.
- **RAO No. 2:** Verify that groundwater discharging to Allen Harbor and Narragansett Bay continues to pose no unacceptable risk.
- **RAO No. 3:** Prevent unacceptable risks to industrial workers/future residents that could result from exposure to volatile organic vapors migrating into buildings.
- **RAO No. 4:** Restore groundwater quality to its beneficial use.



Preliminary Remediation Goals (PRGs)



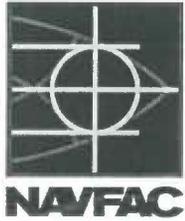
- PRGs are target cleanup goals for remedial actions to reduce COC concentrations and mitigate unacceptable risks.
- PRGs were developed or selected for the following exposure scenarios based on the RAOs:
 - Residential/industrial exposure to soils.
 - Residential exposure to groundwater.
- PRGs will also allow for the continued use of marina building (Bldg E-107) for marina purposes.



FS Alternatives Evaluation Criteria



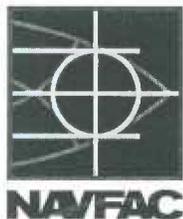
| Threshold Criteria |
|--|
| <ul style="list-style-type: none">• Protects human health and the environment• Meets federal and state regulations |
| Primary Balancing Criteria |
| <ul style="list-style-type: none">• Long-term effectiveness and permanence• Reduction of mobility, toxicity, and volume of contaminants through treatment• Short-term effects and time to complete remediation• Ease of implementation• Cost |
| Modifying Criteria |
| <ul style="list-style-type: none">• State Agency Acceptance• Community Acceptance |



FS Remedial Alternatives (Soil - NCA and Marina Area)



- Alternative S-1: No action
- Alternative S-2: Soil Cover and/or Cap, Monitoring, and Land Use Controls (LUCs)
- Alternative S-3: Excavation, Off-site Disposal, and LUCs
- Alternative S-3A: Shallow Excavation, Off-site Disposal, Cover, and LUCs
- Alternative S-4: Soil Cover, Selected Excavation and Disposal, and LUCs
- Alternative S-5: Excavation and Off-Site Disposal – Unrestricted Use
- Alternative S-6: Full Soil Cover, Monitoring, and LUCs



Alternatives Analysis - Soils



| ALTERNATIVES ANALYSIS - SOILS | | | | | | | |
|---|----------|----------|----------|-----------|----------|----------|----------|
| EVALUATION CRITERIA | ALT. S-1 | ALT. S-2 | ALT. S-3 | ALT. S-3A | ALT. S-4 | ALT. S-5 | ALT. S-6 |
| Overall Protection of Human Health and the Environment | ∅ | ●- | ● | ● | ● | ●+ | ●- |
| Compliance with Federal/State Requirements | ∅ | ● | ● | ● | ● | ● | ● |
| Long-Term Effectiveness and Permanence | ∅ | ●- | ● | ● | ● | ●+ | ●- |
| Reduction of Toxicity, Mobility, and Volume Through Treatment | ∅ | ∅ | ∅ | ∅ | ∅ | ∅ | ∅ |
| Short-Term Effectiveness | ∅ | ●+ | ● | ● | ● | ●- | ●+ |
| Implementability | ● | ●+ | ●+ | ●+ | ●+ | ○ | ● |

NOTES:

● Meets or Exceeds Criterion ○ Partially or Potentially Meets Criterion (some uncertainty) ∅ Does NOT Meet Criterion
 Modifying criteria (state and community acceptance) will be determined after public comment period.



Alternatives Analysis - Soils



ALTERNATIVES ANALYSIS - SOILS (CONTINUED)

| EVALUATION CRITERIA | ALT. S-1 | ALT. S-2 | ALT. S-3 | ALT. S-3A | ALT. S-4 | ALT. S-5 | ALT. S-6 |
|---|----------|----------|----------|-----------|----------|----------|----------|
| Capital Costs, \$ | 7K | 2.1M | 5.1M | 1.9M | 5.2M | 29.1M | 3M |
| Net Present Value, \$ | 120K | 2.5M | 5.3M | 2.1M | 5.4M | 29.1M | 3.1M |
| Assumed Duration of Alternative (Years) | 30 | 30 | 30 | 30 | 30 | 1 | 30 |



Preferred Soil Alternative: S-3A Rationale for Selection



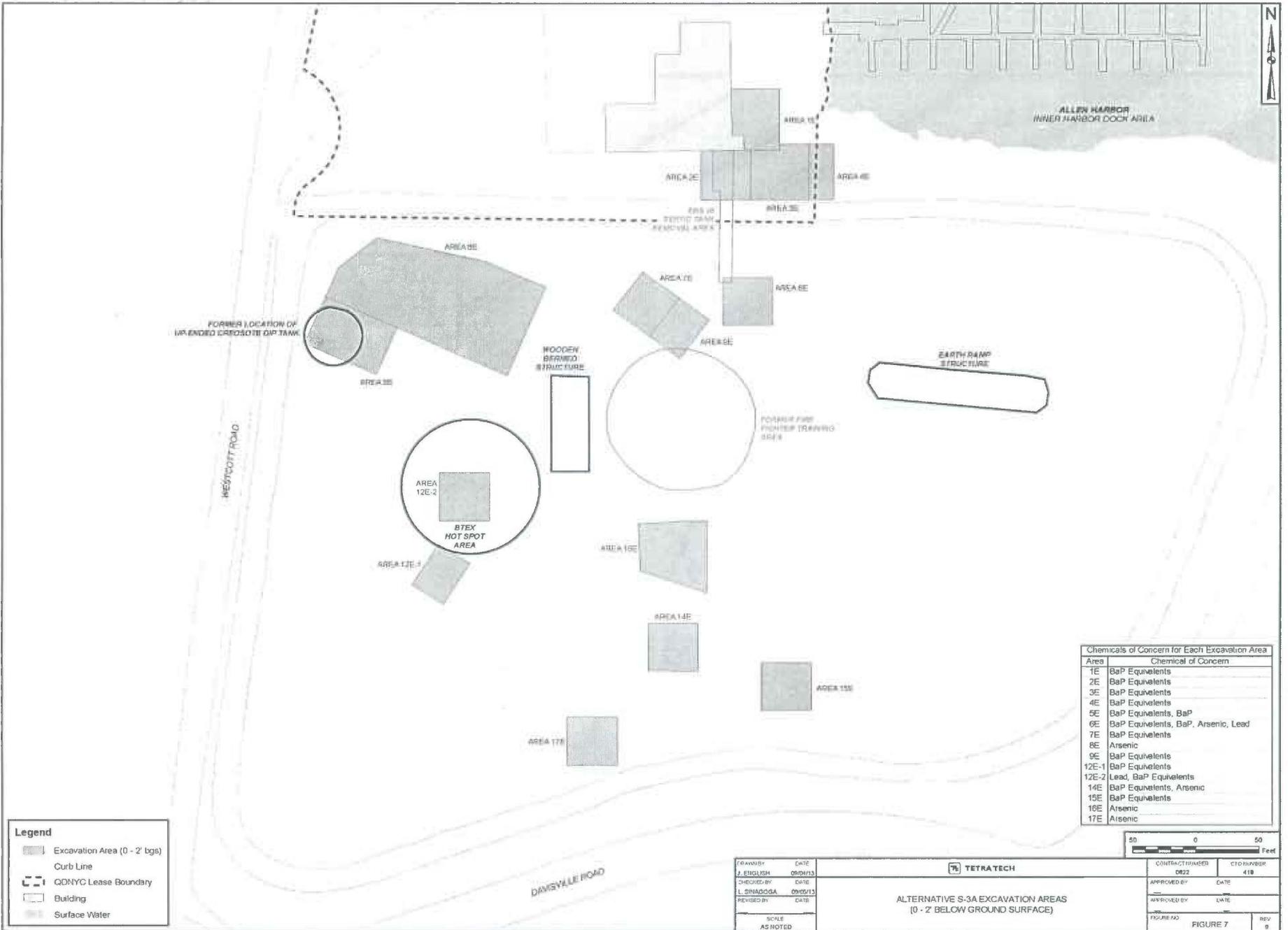
- COC concentrations exceeding soil cleanup levels for industrial land use occur at *limited* surface soil locations only. Locations are easily accessible for remediation.
- LUCs, monitoring, and 5-Year reviews will prevent residential use and exposure to subsurface soils.
- Will meet the RAOs.
- The remedy is consistent with the future uses of the Site, including recreational use in the Marina Area.

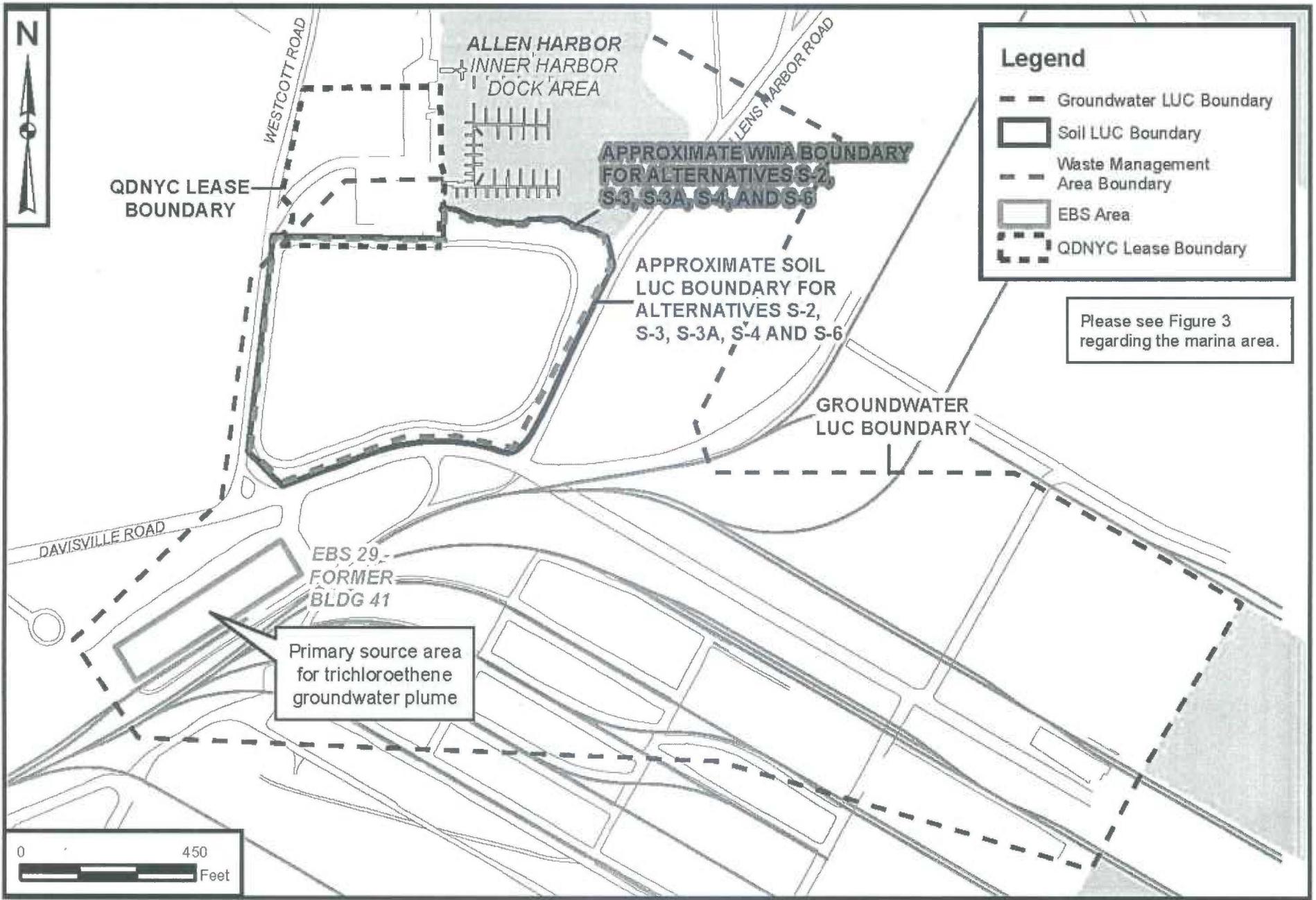


Components of Preferred Soil Alternative



- Excavation (2,740 cubic yards) and off-site disposal of shallow-zone (0 to 2' bgs) soils at locations exceeding industrial exposure-based soil cleanup levels. Backfill excavated areas with clean soil cover; restore to existing grade (410 truckloads).
- Excavation (460 cubic yards) and off-site disposal of shallow-zone soils near marina building that exceed RIDEM residential cleanup levels. Backfill excavated areas with clean soil cover; restore to existing grade (36 truckloads).
- LUCs would be implemented to:
 - Prevent residential land use.
 - Prevent disturbance of the cover and other components of the remedy.
 - Prevent unauthorized excavation and disposal of contaminated soils.
- Long-term monitoring/maintenance/inspections required.
- GW/surface water/sediment monitoring conducted, as necessary, to assure COCs are not migrating to Allen Harbor/Narragansett Bay at unacceptable levels.
- 5-Year Reviews (as needed).



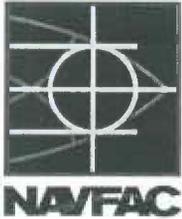




FS Remedial Alternatives (Groundwater - Throughout Site 16)



- Alternative G-1: No action
- Alternative G-2: Monitored Natural Attenuation (MNA) and Land Use Controls (LUCs)
- Alternative G-3: In-Situ Chemical Oxidation (High-Concentration Areas), MNA, and LUCs
- Alternative G-3A: In-Situ Chemical Oxidation (Source Area), MNA, and LUCs
- Alternative G-3B: In-Situ Chemical Oxidation (East End of Former Bldg 41), MNA, and LUCs
- Alternative G-4: Enhanced Bioremediation (High-Concentration Areas), MNA, and LUCs
- Alternative G-5: Groundwater Extraction and Treatment (High-Concentration Areas), MNA, and LUCs
- Alternative G-6: Enhanced Bioremediation, MNA, and LUCs (Reduced Remediation Times)



Alternatives Analysis - GW



| ALTERNATIVES ANALYSIS - GROUNDWATER | | | | | | | | |
|---|----------|----------|----------|-----------|-----------|----------|----------|----------|
| EVALUATION CRITERIA | ALT. G-1 | ALT. G-2 | ALT. G-3 | ALT. G-3A | ALT. G-3B | ALT. G-4 | ALT. G-5 | ALT. G-6 |
| Overall Protection of Human Health and the Environment | ∅ | ●- | ● | ● | ● | ● | ● | ●+ |
| Compliance with Federal/State Requirements | ∅ | ● | ● | ● | ● | ● | ● | ● |
| Long-Term Effectiveness and Permanence | ∅ | ●- | ● | ● | ● | ● | ● | ● |
| Reduces Toxicity, Mobility, and Volume Through Treatment | ∅ | ∅ | ○ | ○ | ○ | ○ | ○ | ○+ |
| Short-Term Effectiveness | ∅ | ○ | ● | ● | ● | ● | ● | ●+ |
| Implementability | ● | ●+ | ○ | ○ | ○ | ○ | ○- | ○- |
| NOTES: | | | | | | | | |
| ● Meets or Exceeds Criterion ○ Partially or Potentially Meets Criterion (some uncertainty) ∅ Does NOT Meet Criterion Modifying criteria (state and community acceptance) will be determined after public comment period. | | | | | | | | |

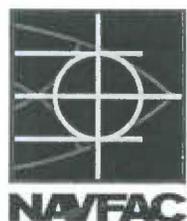


Alternatives Analysis - GW



ALTERNATIVES ANALYSIS - GROUNDWATER (CONTINUED)

| EVALUATION CRITERIA | ALT. G-1 | ALT. G-2 | ALT. G-3 | ALT. G-3A | ALT. G-3B | ALT. G-4 | ALT. G-5 | ALT. G-6 |
|---|----------|----------|----------|-----------|-----------|----------|----------|----------|
| Capital Costs, \$ | 7K | 44K | 7.9M | 4.3M | 600K | 6.2M | 4.9M | 17.6M |
| Net Present Value, \$ | 120K | 1.1M | 9.4M | 5.6M | 1.8M | 9.7M | 9.9M | 24M |
| Duration of alternative cleanup (Years) | NA | 300 | 100 | 100 | 100 | 100 | 100 | 50 |



Preferred GW Alternative: G-3B Rationale for Selection



- In-situ chemical oxidation would permanently and irreversibly destroy an estimated 48 pounds of COCs in groundwater.
- Human health and the environment (including Allen Harbor and Narragansett Bay) will be adequately protected through LUCs, monitoring, and 5-Year reviews.
- More aggressive, active remediation would not be cost effective (i.e., would not result in shorter cleanup times.)
- The remedy is consistent with the future land and groundwater uses at the Site (industrial/commercial). Public water supply is available.
- Will meet the RAOs.



Components of Preferred GW Alternative



- Injection of a chemical oxidant in existing injection wells at the eastern end of the former Bldg 41 (to destroy COCs). Progress of degradation by natural attenuation (outside of waste management area boundary) will be monitored.
- LUCs would be implemented to:
 - Prevent GW use.
 - Require building design and construction methods (such as a vapor barrier) to control unacceptable vapor intrusion into buildings.
- Long-term monitoring/inspections required.
- GW/surface water/sediment monitoring conducted, as necessary, to assure COCs are not migrating to Allen Harbor/Narragansett Bay at unacceptable levels. Evaluate need for "contingency remedy" (e.g., bio-barrier) based on monitoring results.
- 5-Year Reviews (as needed).



Next Steps



- Public hearing tonight
- Comment period ends November 15, 2013
- Navy will address written and verbal comments in a Responsiveness Summary in Record of Decision (ROD)
- Final remedy selection will be documented in the ROD, with EPA concurrence
- Complete and sign the ROD
- Begin the remedial design phase of work

Proposed Plan

Site 16 - Creosote Dip Tank Area, Fire-Fighting
Training Area, and Former Building 41 Area (OU 9)
Former Naval Construction Battalion Center
Davisville, Rhode Island

PUBLIC MEETING

8:00 P.M.

October 24, 2013

Quonset Development Corporation
Conference Center
95 Cripe Street
North Kingston, Rhode Island

Leavitt Reporting, Inc.

119 Broad Street
Weymouth, MA 02188
www.leavittreporting.com

LEAVITT REPORTING, INC.

Tel. 781-335-6791
Fax: 781-335-7911
leavittreporting@comcast.net

Hearings ♦ Conferences ♦ Legal Proceedings

P R O C E E D I N G S

06:56:53 1
08:22:57 2 MR. BARNEY: Welcome. My name is Dave
08:23:00 3 Barney. I'm the BRAC Environmental Coordinator for
08:23:02 4 the Navy for this site being located at the Battalion
08:23:04 5 Center, Davisville.

08:23:09 6 Tonight we are here to receive comments
08:23:11 7 on the Navy's proposed remedial action plan for Site
08:23:15 8 16. As we heard earlier, this plan has been prepared
08:23:22 9 in accordance with the federal laws to present the
08:23:26 10 Navy's proposed cleanup approach for Site 16, the
08:23:31 11 creosote dip tank area, the fire-fighting training
08:23:31 12 area and former Building 41 at the former NCBC site.

08:23:37 13 This proposed remedy for the site
08:23:40 14 consists of the following elements: Excavation of
15 the surface soils where necessary in the
16 north-central portion of the site including surface
17 soils by Building E-107, focused treatment of
18 groundwater at the eastern end of the former Building
19 41 area, natural attenuation and long-term monitoring
20 of groundwater after the active groundwater treatment
21 until groundwater standards are achieved and
22 implementation of land use controls to prevent
08:24:08 23 exposure to contaminants in soil and groundwater.

08:24:08 1 This plan provides information on the remedial
08:24:08 2 alternatives evaluated.

08:24:14 3 At this point I will ask if there are
08:24:16 4 any comments to be made. With that, not seeing any
08:24:27 5 comments to be heard, we'll close the hearing.

6 (Whereupon, the hearing was adjourned
7 at 8:24 P.M.)

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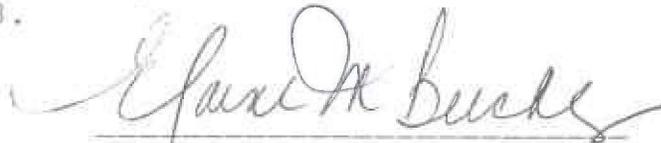
C E R T I F I C A T E
COMMONWEALTH OF MASSACHUSETTS:
PLYMOUTH, SS.:

I, ELAINE M. BUCKLEY, a Notary Public in and for
the Commonwealth Massachusetts, do hereby certify:

That the said proceeding was taken before me as a
Notary Public at the said time and place and was
taken down in shorthand writing by me;

That I am a Registered Professional Reporter, that
the said proceeding was thereafter under my direction
transcribed into computer-assisted transcription, and
that the foregoing transcript constitutes a full,
true, and correct report of the proceedings which
then and there took place;

IN WITNESS WHEREOF, I have hereunto subscribed my
hand and affixed my official seal this 28th day of
October 2013.


ELAINE M. BUCKLEY

My commission expires:
November 19, 2015