



# FINAL NAVAL AIR STATION ALAMEDA Restoration Advisory Board (RAB) Meeting Minutes

[www.bracpmo.navy.mil](http://www.bracpmo.navy.mil)

Building 1, Suite 140, Community Conference Center  
Alameda Point  
Alameda, California

August 5, 2010

The following participants attended the meeting:

Co-Chairs:

Derek Robinson	Base Realignment and Closure (BRAC) Program Management Office (PMO) West, BRAC Environmental Coordinator (BEC), Navy Co-chair
Dale Smith	Restoration Advisory Board (RAB) Community Co-chair

Attendees:

**RAB Members**

George Humphreys	Joan Konrad	James Leach
Jean Sweeney	Jim Sweeney	Michael John Torrey

**Community Members**

Richard Bangert	Nancy Gormley	Gretchen Lipow
Doug Biggs (Alameda Point Collaborative)		

**Navy Members**

Frances Fadullon	Navy Project Manager (PM)
Bill McGinnis	Navy Lead Remedial Project Manager (LRPM)
Curtis Moss	Navy PM

**City of Alameda Representatives**

Frank Matarrese                      City of Alameda  
Peter Russell                         Alameda Reuse and Redevelopment Authority (ARRA)

**Regulatory Agencies**

James Fyfe                             California Environmental Protection Agency Department  
   of Toxic Substances Control (DTSC)  
Melinda Garvey                       U.S. Environmental Protection Agency (EPA)  
John West                               San Francisco Bay Regional Water Quality Control Board  
   (Regional Water Board)

**Contractors**

John McGuire                         Shaw Environmental, Inc. (Shaw)  
Michael Quillin                       Oneida Total Integrated Enterprises (OTIE)  
Radhika Sreenivasan                ChaduxTt  
Tommie Jean Valmassy               ChaduxTt

The meeting agenda is provided as Attachment A.

**MEETING SUMMARY**

Derek Robinson (Navy Co-chair) called the August 2010 former Naval Air Station Alameda (Alameda Point) Restoration Advisory Board (RAB) meeting to order at 6:30 p.m.

I.        Approval of June 2010 RAB Meeting Minutes

Dale Smith (RAB Co-chair) asked for comments on the June 2010 RAB meeting minutes. RAB members provided comments, which will be incorporated into the final set of minutes for June 2010.

Ms. Smith indicated that the action item for providing a marsh crust map for Alameda Point has been dropped from the list. Peter Russell (ARRA) said that a map attached to the marsh crust ordinance shows the location of the marsh crust at Alameda Point. He added that the Bayport marsh crust is an extension to this map. Ms. Smith said that she would like to see a marsh crust map overlaid with the site map showing the buildings and roads with respect to the location of the marsh crust. She added the current map is difficult to read. Mr. Russell said that the purpose of the current map is to allow Navy contractors or the city to accurately implement the marsh crust ordinance when they work in the area. He added he does not feel the need to develop a

satellite imagery map at this time. No conclusion was reached on preparation of the marsh crust map.

The June 2010 RAB meeting minutes were approved with the requested modifications.

## II. Co-Chair Announcements

Mr. Robinson said that the Site 34 Proposed Plan (PP) public meeting was held on July 27, 2010 at the Alameda Free Library. The comment period for the document is July 15 to August 13, 2010. He requested that the RAB and community review the PP and provide comments before August 13. He noted that the PP and comment form are available at the back of the meeting room.

Mr. Robinson said that EPA representatives Anna Marie Cook and Xuan-Mai Tran are not able to attend this meeting and will be present for the next RAB meeting.

Mr. Robinson said that the investigation and characterization of the trichloroethene (TCE) dense nonaqueous phase liquid (DNAPL) at Plume 4-1, the Strategic Environmental Research and Development Program (SERDP) project for plume 4-1 at operable unit (OU)-2B, has been under way for 3 months and that currently a “push-pull” tracer test is being conducted at the site. He added that James Fyfe (DTSC) will provide an update during the Base Realignment and Closure Cleanup Team (BCT) briefing.

Mr. Robinson provided a summary on *Building 163 Zero Valent Iron (ZVI) Treatability Study* (Attachment B-1). He said that the summary demonstrates results and recommendations from the study. Mr. Robinson asked the RAB to review the summary and contact him with questions. Ms. Smith said that she reviewed the treatability study report and was disappointed. She said that much money was devoted to the study, but ZVI did not work. She added that she feels the work should have stopped rather than switching to smaller-gauge drilling bits. Ms. Smith added she feels that the methodology forced the contamination deeper into the ground. She said she feels that lack of characterization was a contributing factor for the failure of ZVI. Curtis Moss (Navy PM) said the Navy was disappointed with the results as well. He added that the lessons learned will help develop better designs in the future.

## III. Groundwater Remediation Technologies: OU-2A and Beyond

Mr. Robinson introduced Mr. Moss and Bill McGinnis (Navy LRPM) to begin the presentation on *Groundwater Remediation Technologies: OU-2A and Beyond* (Attachment B-2). Mr. Robinson explained that the presentation will enable a better understanding of the various groundwater technologies developed in the OU-2A, 2B, and 2C feasibility study (FS) and will detail the rationale behind choosing them.

Mr. McGinnis began the presentation and said that groundwater technologies are selected under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to protect human health and the environment.

During the review of slide 2, Ms. Smith asked if benzene was considered a petroleum product. Mr. McGinnis said that it could be considered a petroleum product, depending on its use. Fingerprinting can be used for fuels and the other contaminants present in the analysis, and the site history also will indicate whether benzene is a petroleum product.

During the review of slide 6, Ms. Smith asked why the Navy was considering physical removal technologies when EPA indicated a year ago that they are not appropriate for, and will not be used at, Alameda Point. Mr. Moss said that the physical removal technologies considered are thermal remediation and multi-phase extraction. He explained that it is more efficient to extract most of the mass for light non-aqueous phase liquids (LNAPL) at 5 feet in groundwater. He added that the choice of the technology would depend on the parameters outlined in slide 2. Ms. Smith asked if it was possible to use aggressive treatment technologies for groundwater. Mr. Moss said it is possible.

During the review of slide 7, Mr. Moss said that a hot spot was present before the in situ chemical oxidation (ISCO) began. Jean Sweeney (RAB member) asked when ISCO was implemented. Mr. Moss said that the first ISCO injection was in 2004. He added that the groundwater considered in the OU-2A FS contained a dissolved-phase plume and that no source zone is present.

George Humphreys (RAB member) asked how arsenic will be treated. Mr. Moss said that arsenic is naturally occurring in soils and becomes more soluble under reducing conditions in groundwater. There are no arsenic releases at OU-2A, and it is considered a transient condition in groundwater. He added that the arsenic will bind with iron minerals and precipitate out once VOCs are removed from the groundwater. Mr. Robinson said that the arsenic is passing from a reduced to a normal environment, oxidized back to its original state in the absence of VOCs. Mr. Humphreys stated that a number of metals have been associated with groundwater contamination and it is necessary to identify which technology will be used to remove metals in the report.

During the review of slide 8, Ms. Sweeney asked if the Navy has estimated costs associated with the alternatives. Mr. Moss said that costs for the alternatives were evaluated in the FS and are presented in tables. Monitored natural attenuation (MNA) is \$3.5 million, ISCO and MNA are \$4.5 million, and in situ bioremediation (ISB) and MNA are \$7 million. Ms. Sweeney asked if implementation of ISB and MNA is quicker than ISCO and MNA. Mr. Moss said that MNA was estimated to require 15 years, ISCO and MNA implementation would take 5 years, and ISB and MNA would also take 5 years. Mr. Robinson noted that ISCO is less expensive than ISB because ISCO has been accomplished at this site six times and an additional round would not incur much additional cost. He said the ISCO will provide diminishing returns for future injections. The cost for ISB includes a pilot test before a full-scale remediation.

Ms. Smith asked if the 5-year timetable for remediation would hamper the city's development at Alameda Point. Mr. Robinson said that the schedule for remediation of groundwater is factored in during planning future development. Development can proceed since the contamination is in groundwater and not the surface soil. Mr. Moss said that 5-year reviews are intended to verify that the selected remedy is protective of human health and the environment. Ms. Sweeney asked about the depth of contamination. Mr. Moss replied that contamination is 30 to 40 feet deep and does not pose a vapor intrusion risk. He added that there is some shallow contamination but at low levels. Mr. Robinson said that the Navy and the regulatory agencies would never select a remedy that is not safe for human health or the environment. Ms. Smith asked what would happen to the residents if the remedy fails 10 years in the future. Mr. Robinson said that the Navy will monitor the plume on a regular basis apart from the 5-year review and would devise a plan if the remedy fails in the future. He noted that the Navy and the agencies are making well-informed decisions and the possibility that a remedy would fail and the future residents would be endangered is highly unlikely.

Ms. Smith asked how monitoring is scheduled for MNA. Mr. Moss said that monitoring for MNA is normally twice a year with a major review every 5 years. Ms. Smith asked if monitoring is discontinued after 30 years. Mr. McGinnis said that there is no limit of 30 years for monitoring. Monitoring timeframes depend on the risk and take place until the remedy meets the remedial action objectives (RAO) or remedial goals (RG). He added that the Navy needs to demonstrate to the Water Board that there is no future risk to human health and the environment before monitoring can stop.

#### IV. Site 35 Remedial Design and Remedial Action

Mr. Robinson introduced Frances Fadullon (Navy RPM) to begin the presentation on the *Installation Restoration (IR) Site 35 Remedial Design and Remedial Action Work Plan (RD/RA WP)* (Attachment B-3). Mr. Robinson noted that the document will be submitted for review later in August and urged the RAB to provide detailed comments on the RD/RA WP. Ms. Fadullon introduced Michael Quillin (OTIE) as the Navy contractor performing the work and began the presentation.

During the review of slide 4, Ms. Smith asked if the drains were inspected after the structures were removed. Ms. Fadullon said that they were sampled during the Remedial Investigation and that the Navy detected lead in storm drain 3G catch basin sediment. The sediment was removed from the storm drain as part of another removal action in spring 2009. Ms. Smith said that there were major storms before last spring and that she was concerned about the contaminants flowing to the Seaplane Lagoon. She asked if the removal action at the corner of the Seaplane Lagoon will address the probable contaminants transported by the storm. Mr. Robinson said that the Navy is addressing this as well under the Seaplane Lagoon remediation project.

Mr. Humphreys said two storm drains discharged into the estuary and one storm drain discharged into the northeast corner of the Seaplane Lagoon. He asked if the Navy has surveyed

for radium in the storm drain. Mr. Robinson said that storm drain line G has been sampled for analysis of radium and cesium.

During review of slide 7, Mr. Quillin said that only one sample in area of concern (AOC) 3 exceeded the screening level for heptachlor; thus, the Navy has proposed contingency sampling locations, including re-sampling at the original location (A03SB02).

During review of slide 8, Ms. Sweeney asked if samples from inside the buildings were analyzed for lead. Ms. Fadullon responded that the lead abatement program was implemented to address lead in the buildings in the 1990's. Ms. Smith said that EPA standards for lead are continually dropping, and EPA has issued a new requirement for contractors involved in remediation in housing areas. She asked if the Navy plans any further assessments in the housing given that the standards have changed. Mr. McGinnis said that lead in housing is not a CERCLA issue; hence, the Navy's cleanup for lead is limited to the soil. He added that the Navy completed a hazard evaluation for lead-based paint in the north housing area, which was submitted to DTSC recently. He said that the city is responsible for managing the lead program.

Ms. Smith asked if the Navy will be working in the street. Mr. Quillin stated that some work in the street is possible and that the Navy will replace any hardscape, including the sidewalk, after the dirt is removed. Doug Biggs (Alameda Point Collaborative) asked if the plan is to close the entire street during the remedial work and asked about the timeframe for the work. Mr. Quillin said analytical results for the soil samples will be expedited and the street may need to be closed for approximately 2 weeks. He said that he is not sure about the traffic plan, but it will be addressed. Frank Matarrese (Alameda City Council member) asked if the Navy will coordinate with Public Works on this issue. Mr. Quillin said that the Navy will coordinate with Public Works to address traffic control. Ms. Fadullon said that the limiting factor is the analytical sample turnaround time since the excavation areas are limited in size and therefore will not require a lot of time.

Mr. Biggs asked if there were any institutional controls (ICs) at IR Site 35. Ms. Fadullon said that no ICs are associated with Site 35, except Marsh Crust requirements. James Leach (RAB member) suggested posting the street names on the figures in the WP. Ms. Fadullon stated that the street names would be posted on the figures within the work plan itself. .

## V. BCT Update

Mr. Fyfe distributed a handout on *Investigation and Characterization of TCE DNAPL at Plume 4-1* (Attachment B-4). He said that the site is at the entrance of Alameda Point at Atlantic Avenue and is a part of OU-2B.

Mr. Fyfe said that the previous investigations identified the DNAPL source area. He said that the original source area, the blue dashed line in the figure, has been narrowed to the red-lined area. The source area is 8 by 10 feet, 18 or 19 feet below ground surface (bgs), and about a foot thick. Mr. Fyfe stated that membrane interface probe (MIP) and the ultraviolet optical screening

tool (UVOST) were used to identify the source zone location. He added that additional study is in progress and a “push-pull” tracer test is ongoing. Mr. Fyfe indicated that there are three injection wells where a combination of alcohols and bromide will be injected with the intent that the alcohols will react differently with the TCE DNAPL. The groundwater plus tracer reaction mixture is then withdrawn through extraction wells at different rates and analyzed for the concentration of tracer. The amount of tracer that remains indicates the amount of DNAPL in the groundwater plume. Mr. Fyfe stated that this tracer test will help by better characterizing the plume.

Ms. Smith asked about the depth of the DNAPL contamination. Mr. Fyfe said it is at 19 feet bgs. Mr. Humphreys asked about the contents of the tracer. Mr. Fyfe stated that the tracer is a mixture of three alcohols and bromide.

Ms. Smith said it does not appear that the old rail line below Building 14 that goes to the wharf area has been investigated. Mr. Robinson said he was not sure whether the rail line was investigated but thinks that the area was investigated if there were any suspected environmental concerns.

## VI. Community and RAB Comment Period

Mr. Robinson asked if there were any community comments. Richard Bangert (community member) asked if all groundwater remediation technologies follow the protocol of a monitoring plan and 5-year reviews. Mr. Robinson said that each site is evaluated independently. He said that all the sites that are in progress and have not achieved RGs will have a 5-year review if there is risk for future potential exposure. The monitoring plan is specific to the site and the types of contamination at the site.

Joan Konrad (RAB member) distributed an article that appeared in the *Alameda Sun* (Attachment B-5) announcing the RAB meeting agenda and timing. She thought that the article is a good idea and would like to see it appear often. Mr. Matarrese noted that a college graduate named Sam Felsing wrote the article and the editor of *Alameda Sun*, who was present at the July site tour, approved it. Ms. Konrad asked if this article could continue to be published. Mr. Humphreys suggested Ms. Konrad call the *Alameda Sun*, provide positive feedback on the article, and ask if it could be continued. Ms. Konrad asked if Mr. Felsing could be provided more information about the cleanup so that he can write these articles. Tommie Jean Valmassy (ChaduxTt) said that she will add Mr. Felsing to her e-mail list to make sure he receives the latest cleanup information.

Gretchen Lipow (community member) also said that the second article in Attachment B-5 was written by a group of citizens to help educate the community on the cleanup work at Alameda Point. She said that the group will sponsor a community meeting and Mr. Humphreys will be presenting at the meeting. She distributed the meeting invitation (Attachment B-6).

Ms. Smith distributed the *List of Documents Received in May-July 2010* (Attachment B-7).

Ms. Smith said that she has reviewed and provided comments on the *Revised Draft Final Feasibility Study for OU-2B and Draft Final Feasibility Study for OU-2A* (Attachment B-8 and Attachment B-9). Ms. Smith shared her comments as written in the letter with the RAB.

Regarding the site tour arranged by the Navy in July, Mr. Humphreys commended the Navy for arranging the tour. However, he thought that the tour seemed to be geared toward public relations for the Navy. He felt that the Navy did not discuss the site problems in detail. Mr. Humphreys said that Mary Parker (Navy PM) mentioned that the benzene and naphthalene at the OU-5 plume were petroleum in origin, which is incorrect. The source of the benzene and naphthalene was a gasification plant that used coal. Mr. Humphreys said that Shinsei Gardens and Fleet and Industrial Supply Center Oakland, Alameda facility/Alameda Annex (FISCA) contamination and cleanup work were also not mentioned. He indicated that a participant asked if the shoreline at Site 1 will be affected and the Navy said it would not be affected. Mr. Humphreys thought it was an incorrect statement because the beach will be covered with rip-rap and the shoreline will be sloped back. Mr. Humphreys suggested to show arrows pointing the waste pits toward the shoreline in the Site 1 tour handout figure Mr. Robinson thanked everyone for their participation in the tour.

## VII. Meeting Adjournment

The meeting was adjourned at 8:50 p.m. The next RAB meeting will occur on September 2, 2010, at 6:30 p.m. at 950 W. Mall Square, Alameda.

### Action Items

<b>Action Items:</b>	<b>Previous Item #/ Action Item Status/ Action Item Due Date:</b>	<b>Initiated by:</b>	<b>Responsible Person:</b>
1. Request for Presentations: a. Bayport sewer systems and change in the plumes over time. b. Site 26 cleanup.	1./ Pending/ To Be Determined	RAB	Mr. Robinson
2. Provide as-built specifications on the Site 5 and 10 storm drain replacement to Mr. Matarrese.	2./ Pending/ September 2, 2010	Mr. Matarrese	Mr. Robinson
3. Provide the RAB with a presentation about zero-valent iron treatability study. Extend the comment period on the document past the August RAB meeting date.	3./ Completed/ Attachment B-1	Ms. Smith	Mr. Robinson

**ATTACHMENT A**

**NAVAL AIR STATION ALAMEDA  
RESTORATION ADVISORY BOARD MEETING AGENDA**

**August 5, 2010**

**(1-page)**

# ***RESTORATION ADVISORY BOARD***

***NAVAL AIR STATION, ALAMEDA***

## ***AGENDA***

**AUGUST 5, 2010, 6:30 PM**

**ALAMEDA POINT – BUILDING 1 – SUITE 140**

**COMMUNITY CONFERENCE ROOM**

**(FROM PARKING LOT ON W MIDWAY AVE, ENTER THROUGH MIDDLE WING)**

<b><u>TIME</u></b>	<b><u>SUBJECT</u></b>	<b><u>PRESENTER</u></b>
6:30 – 6:45	Approval of Minutes	Dale Smith
6:45 – 7:00	Co-Chair Announcements	Co-Chairs
7:00 – 7:30	Groundwater Treatment; OU-2A and beyond!!	Bill McGinnis/ Curtis Moss
7:30 – 7:50	Site 35 Remedial Design and Remedial Action	Frances Fadullon
7:50 – 8:00	BCT Update	
8:00– 8:15	Misc. Updates	Derek Robinson
8:15– 8:30	Community & RAB Comment Period	Community & RAB
8:30	RAB Meeting Adjournment	

## **ATTACHMENT B**

### **NAVAL AIR STATION ALAMEDA RESTORATION ADVISORY BOARD MEETING HANDOUT MATERIALS**

- B-1 Building 163 Zero Valent Ion Treatability Study Summary. Distributed by Derek Robinson, Navy Co-Chair (2 pages)
- B-2 “Groundwater Remediation Technologies: OU-2A and Beyond” Presentation Handout. Distributed by Curtis Moss, Navy RPM (5 pages)
- B-3 Installation Restoration (IR) Site 35 Remedial Design and Remedial Action. Distributed by Frances Fadullon, Navy RPM (6 pages)
- B-4 Investigation and Characterization of TCE DNAPL at Plume 4-1. Distributed by James Fyfe, DTSC (2 pages)
- B-5 Copy of articles published in the *Alameda Sun*. Distributed by Joan Konrad, RAB member (2 pages)
- B-6 Community meeting invitation. Distributed by Gretchen Lipow, Community member (1 page)
- B-7 List of Documents Received in May-July 2010. Distributed by Dale Smith, RAB Community Co-chair (1 page)
- B-8 Comments on Revised Draft Final Feasibility Study for OU-2B. Distributed by Dale Smith, RAB Community Co-chair (2 pages)
- B-9 Comments on Draft Final Feasibility Study for OU-2A. Distributed by Dale Smith, RAB Community Co-chair (2 pages)

**ATTACHMENT B-1**

**BUILDING 163 ZERO VALENT ION TREATABILITY STUDY SUMMARY**

**(2 pages)**

### **Building 163 Zero Valent Iron Treatability Study Summary Operable Unit 2B, IR Site 4, Alameda Point, Alameda, California**

In November 2009, injection of over 500 gallons of nano-scale zero valent iron (nZVI) was completed at three injection locations immediately west of Building 163 at IR Site 4, located in OU-2B, at Alameda Point. ZVI injection was conducted by ARS Technologies, Inc. with oversight by Tetra Tech EC. ARS has a patented ZVI delivery method using a nitrogen pneumatic fracturing process followed by a liquid atomization or a hydraulic injection process. This process uses pressurized nitrogen to “fracture” the formation laterally, immediately followed by injecting the nZVI slurry into these lateral fractures.

#### **Treatability Study Summary**

The target starting depth for nZVI injection was 50 feet below the ground surface (bgs). Injection attempts proceeded from the bottom up. The formation failed to fracture at very high pressures at depth intervals from 50 feet to approximately 28 feet bgs. As a result, no lateral fractures were created to inject the nZVI slurry into. During each injection attempt, vertical or near-vertical pathways to the surface were observed. Consequently, the only direction the nZVI slurry could go was upward into the vertical preferential pathways.

ZVI destroys TCE by creating a highly ‘reduced’ oxidation/reduction (REDOX) condition. This reduced effect of nZVI was observed in the shallow zone (< 20 feet bgs) where nZVI was successfully emplaced, however, in the deeper interval, failing to fracture the formation and deliver the nZVI resulted in little to no ‘reduced’ effect or TCE destruction.

The limiting factor for this study was failure to fracture the formation, and the resulting creation of sub-vertical to vertical pathways to the surface. Without lateral fracturing, the nZVI has no place to go but up. The low permeability and the weight of the bay mud (Bay Sediment Unit) and the densely packed silty sands of the Merritt Sand did not yield to extremely high fracturing pressures. As a comparison, ARS pneumatically fractured the subsurface at Hunters Point Shipyard (HPS) at pressures averaging 150 psi; pressures of greater than 700 psi did not fracture the subsurface at Alameda.

#### **Impact on Chlorinated Volatile Organic Compounds**

- The most significant evidence for effective ZVI influences (reduction in Oxidation-Reduction Potential (ORP), TCE removal, etc.) was observed in the 10- to 20-foot bgs zone within 11 feet of each injection point.
- Net increases were observed in other chlorinated volatile organic compounds (cVOC) concentrations (notably cis-1,2- DCE and vinyl chloride, which are TCE breakdown products). When ZVI is effective, its effect does not create these TCE breakdown products. The creation of the breakdown products is likely a result of microbial biodegradation, which does create TCE breakdown products.
- Observed changes in dissolved iron in conjunction with changes in other key geochemical parameters indicate that ZVI was not distributed evenly nor in quantities sufficient to initiate abiotic reductive dechlorination reactions.

### **Field Adaptations during Injection**

As a result of the problems encountered in the field at Alameda, the following measures were implemented to attempt to successfully fracture the subsurface and deliver the nZVI:

- An additional pneumatic packer was added to the assembly to seal the formation at the top of each injection interval to prevent vertical displacement of ZVI slurry around the borehole casing.
- The injection nozzle was replaced with a nozzle designed for use in sandy soils to prevent clogging.
- Slurry injection flow rate was decreased to minimize surfacing and maximize nZVI emplacement within the formation.
- In shallower intervals, hydraulic injection and, in some cases, gravity injection was used rather than atomized injection to further limit emplacement pressures and flow rates.

### **Comparison with Hunters Point ZVI Injection Performance**

Hunters Point Shipyard (HPS) also had ARS perform ZVI injections. Like at Alameda, the injections also used pneumatic fracturing followed by injection of water based ZVI slurry. Unlike the study at Alameda, the pneumatic fracturing was successful at HPS and resulted in successful ZVI distribution and reduction in TCE concentrations with no increases in breakdown products like 1,2- DCE and vinyl chloride.

The following is a summary of comparison between the two installations:

- All of the HPS studies used micro-scale instead of nano-scale ZVI. nZVI was selected at Alameda based on results of a bench-scale study and its potential for better mobility for delivery due to its smaller particle size.
- In the three study areas at HPS, the soil profile is 20 to 25 feet of fill material overlying bedrock. The targeted depth at HPS was 5 to 25 feet (in the parcel G field scale study; studies at parcels B and C used injections down to 28 feet) as opposed to 10 to 50 feet bgs at Alameda.
- At HPS, shallower depths with presumably less consolidation and more permeability allowed use of both lower fracture initiation pressures and lower injection flow rates to distribute ZVI
- Successful lateral fracturing at HPS at lower fracture initiation pressures (150 psi at HPS vs. 700 psi at Alameda) prevented creation of vertical preferential pathways to the surface.
- At HPS, the target interval for ZVI emplacement was within the fill above the bedrock. Successful fracturing and high ZVI injection flow rates achieved at HPS indicate that the fill sediments have significant capacity to accept ZVI.
- The deeper interval at Alameda (> 25 feet bgs) did not have this capacity to fracture and accept ZVI due to a combination of low permeability silt and clay of the Bay Sediment Unit, densely packed sediments, and the weight of the overburden.

### **Lesson Learned**

At Alameda Point, the pneumatic fracturing and injection process is not technically feasible at intervals deeper than 25 feet due to the densely packed and low permeability nature of native sediments.

**ATTACHMENT B-2**

**“GROUNDWATER REMEDIATION TECHNOLOGIES: OU-2A AND BEYOND”  
PRESENTATION HANDOUT**

**(5 pages)**



**WELCOME**



# **Groundwater Remediation Technologies: OU-2A & BEYOND!**

RAB Presentation  
August 5<sup>th</sup> 2010

Navy BRAC PMO West  
Bill McGinnis, PE  
Curtis Moss, PG

1



## **Groundwater Remediation Technology Selection**



**Groundwater remedies are selected to protect human health & the environment.**

### **Parameters considered when selecting a remedy:**

- **Chemical properties:**
  - Chemical types (VOCs, metals, PAHs, PCBs, fuels)
- **Contaminant Location:** physical properties determine fate & transport
  - Above the water table (vadose zone/unsaturated zone)
  - On top of the water table (LNAPL – such as fuels)
  - Below the water table (DNAPL – such as chlorinated solvents)
- **Geology/hydrogeology**
  - Hard rock or unconsolidated sediments/soil
  - Soil permeability: soil's ability to transmit water (sands, silts/clays)

2



# Groundwater Contamination



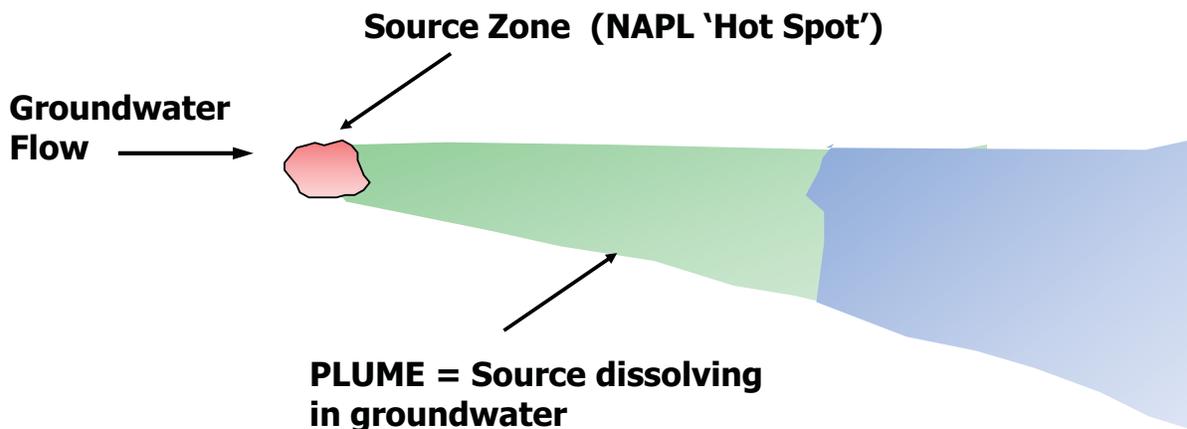
Groundwater contamination generally exists two ways:

1. **'Source Zone'**: Product itself and the area which has been in contact with product (i.e., chlorinated solvent)
  - Non-Aqueous Phase Liquid (NAPL)
2. **'Plume'**: generated from the source which dissolves as groundwater moves by
  - Dissolved phase (aqueous phase)

3



# Contaminant Sources and Plumes



4



# AGGRESSIVE vs. PASSIVE REMEDIATION



HIGH ←	chemical concentrations	→ LOW
<b>SOURCE ZONE REMEDIATION</b>	<b>MODERATE</b>	<b>PLUME REMEDIATION</b>
<b>AGGRESSIVE TREATMENT</b>	<b>MODERATE</b>	<b>PASSIVE TREATMENT</b>
<b>Highest Cost Highest Resource Use Faster Cleanup Time</b>	<b>MODERATE</b>	<b>Lowest Cost Lowest Resource Use Relies on natural processes Slower Cleanup Time</b>



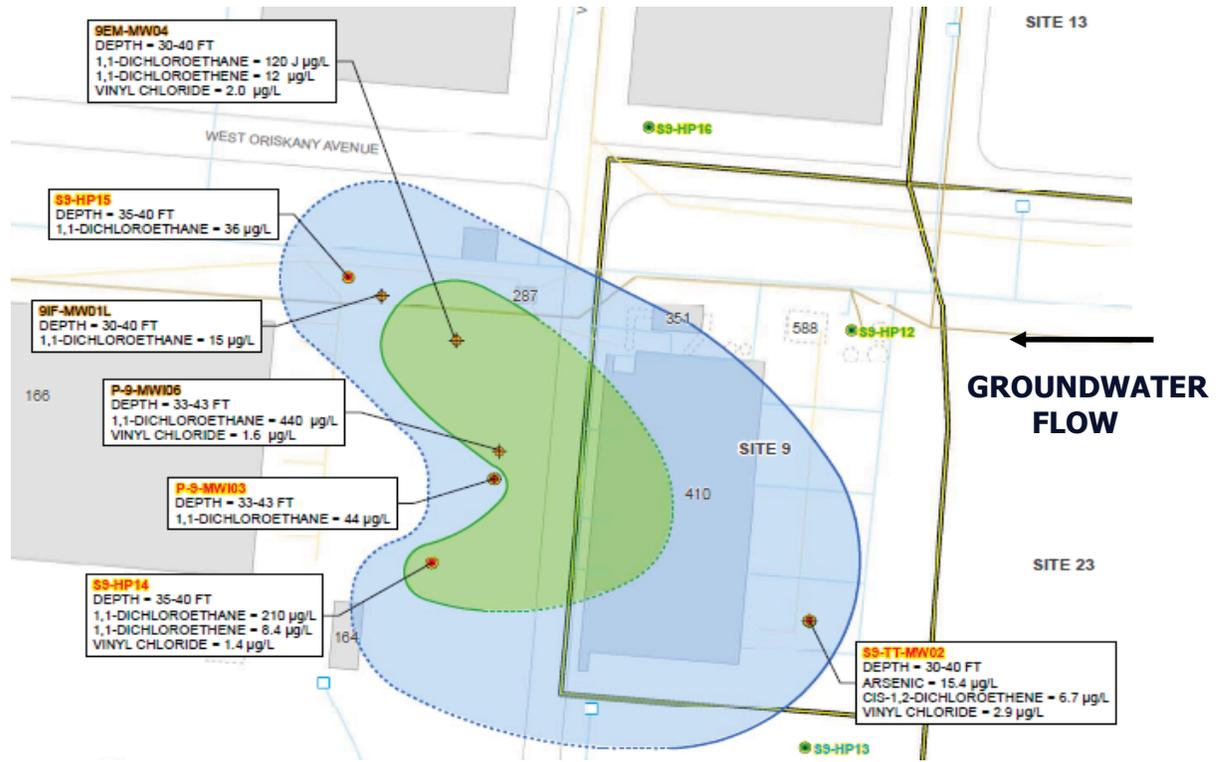
# Groundwater Remediation Technologies



HIGH ←	chemical concentrations	→ LOW
<b>Aggressive Source Zone Treatment</b>	<b>chemical concentrations</b>	<b>Passive Plume Treatment</b>
<b>Multi Phase Extraction (Physical Removal)</b>	<b>Zero Valent Iron (ZVI) (Chemical Destruction)</b>	<b>Monitored Natural Attenuation (MNA) (Natural Processes)</b>
<b>Thermal Remediation (Physical Removal)</b>	<b>In Situ Bioremediation (ISB) (Natural Processes)</b>	<b>In Situ Bioremediation (ISB) (Natural Processes)</b>
<b>In Situ Chemical Oxidation (ISCO) (Chemical Destruction)</b>	<b>In Situ Chemical Oxidation (Chemical Destruction)</b>	<b>Permeable Reactive Barrier (Chemical Destruction &amp; Natural Processes)</b>



# OU-2A Groundwater Impacted by Chlorinated Solvents



# OU-2A Feasibility Study: Groundwater Cleanup



Cleanup goals are U.S. EPA drinking water standards (MCLs).

The following groundwater remedial alternatives are presented in the OU-2A FS:

MODERATE ←	chemical	concentrations →	LOW
Alternative 1:	MNA		
Alternative 2:	ISCO &	MNA	
Alternative 3:	ISB &	MNA	



**Thank You!**



**Comments?**

**Questions?**

**For more information on remediation technologies go to:**

**<http://clu-in.org/remediation/>**

**<http://www.itrcweb.org>**

**ATTACHMENT B-3**

**INSTALLATION RESTORATION (IR) SITE 35  
REMEDIAL DESIGN AND REMEDIAL ACTION**

**(6 pages)**



# WELCOME



## IR Site 35

# Overview of the Remedial Design/Remedial Action Work Plan Alameda Point, California

Prepared by

Frances Fadullon, BRAC PMO West

5 August 2010

1



## RD/RAWP IR Site 35



### Primary Work Plan Elements

- Brief Site History
- Remedial Action Design
- Remedial Action Implementation Procedures
- Construction Quality Assurance/Construction Quality Control Plan
- Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan)

2



## Site Description



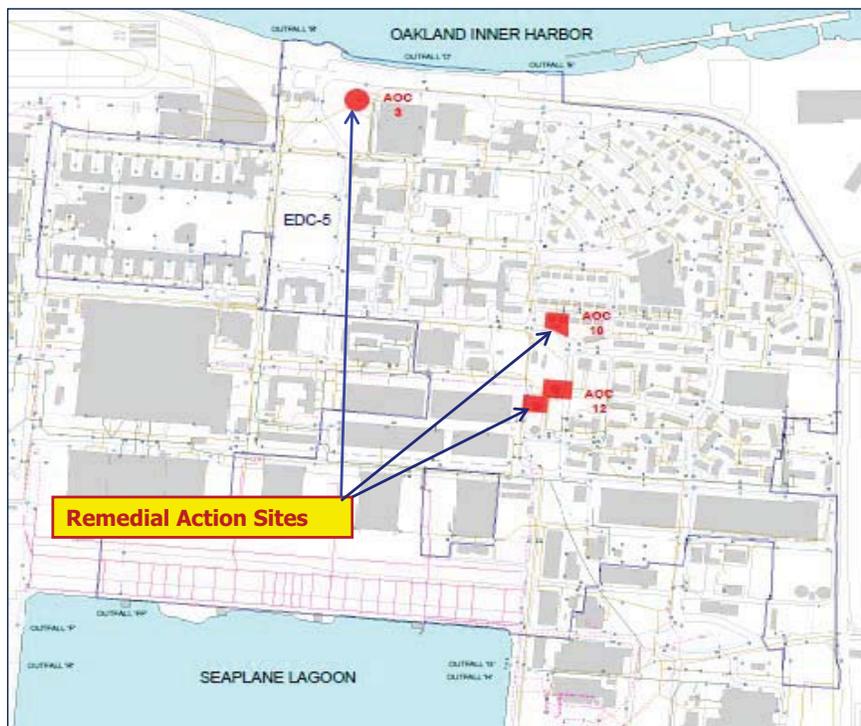
### IR Site 35

- Approximately 75 acres in size and consists of open space
- Consists of 23 study areas, including 19 small areas referred to as AOCs (including AOCs 3, 10, and 12).
- Historical DON uses of IR Site 35 were industrial, residential, and recreational uses.
- Previous investigations resulted in a recommendation for a Remedial Action to address the excess human-health risk posed by the constituents of concern (COCs) at AOCs 3, 10, and 12.

3



## Soil Remedial Action Sites at IR Site 35



4



## Remedial Action Design at IR Site 35



### Remedial Action Objectives

- Protect human health by preventing unacceptable exposure to soil with heptachlor or lead concentrations above the remediation goals (RGs).

Remediation goals are as follows:

- Heptachlor at AOC 3: 0.11 mg/kg,
- Lead at AOCs 10 and 12: 184 mg/kg

5



## Remedial Action at IR Site 35



### Remedial Action Scope

- Excavation of soil impacted with heptachlor at AOC 3 and lead at AOCs 10 and 12
- Disposal at an appropriate off-Station disposal facility or on-site use of the excavated soil if it meets reuse criteria
- Confirmation Sampling
- Backfilling using clean fill material from either an on-Station or off-Station source and restoring site conditions and Site Restoration

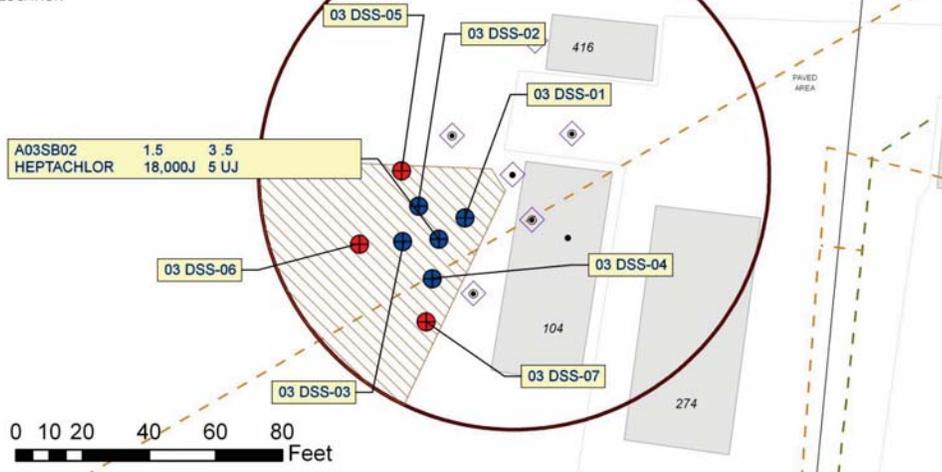
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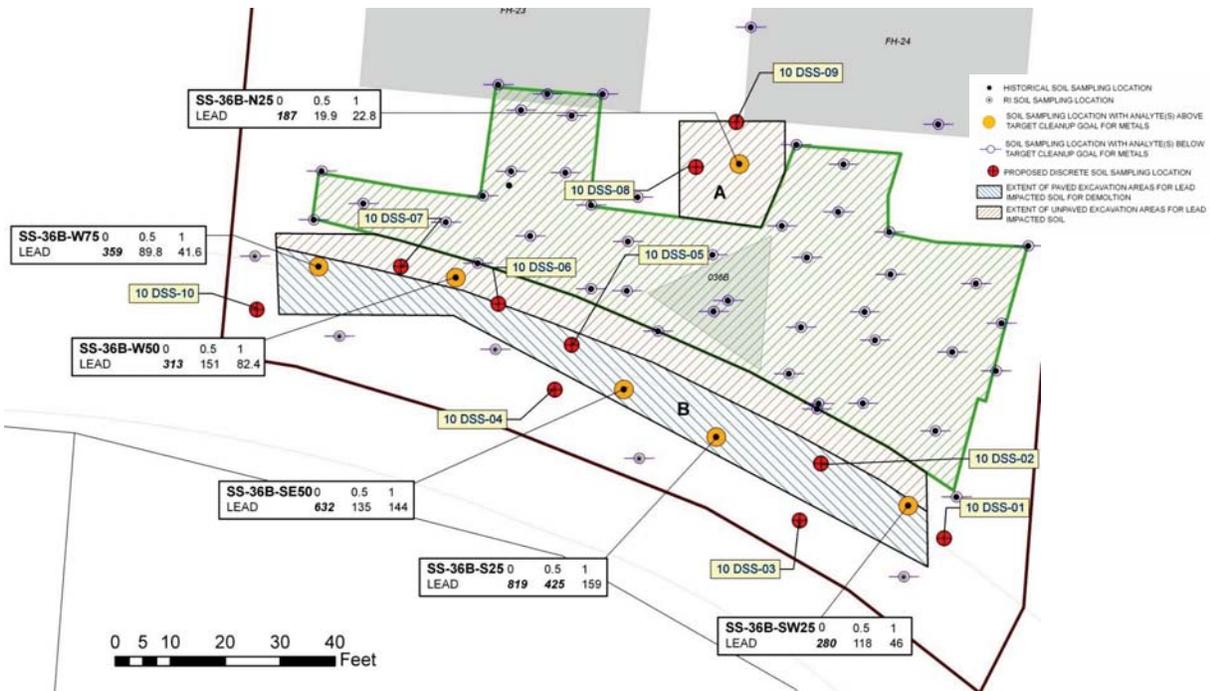
# AOC 3 - Excavation Plan



- HISTORICAL SOIL SAMPLING LOCATION
- RI SOIL SAMPLING LOCATION
- ◇ SOIL SAMPLING LOCATION WITH ANALYTE(S) BELOW TARGET CLEANUP GOAL FOR PESTICIDES/PCBs
- ▨ APPROXIMATE EXTENT OF EXCAVATION FOR HEPTACHLOR IMPACTED SOIL
- PROPOSED DISCRETE SOIL SAMPLING LOCATION
- PROPOSED CONTINGENCY DISCRETE SOIL SAMPLING LOCATION

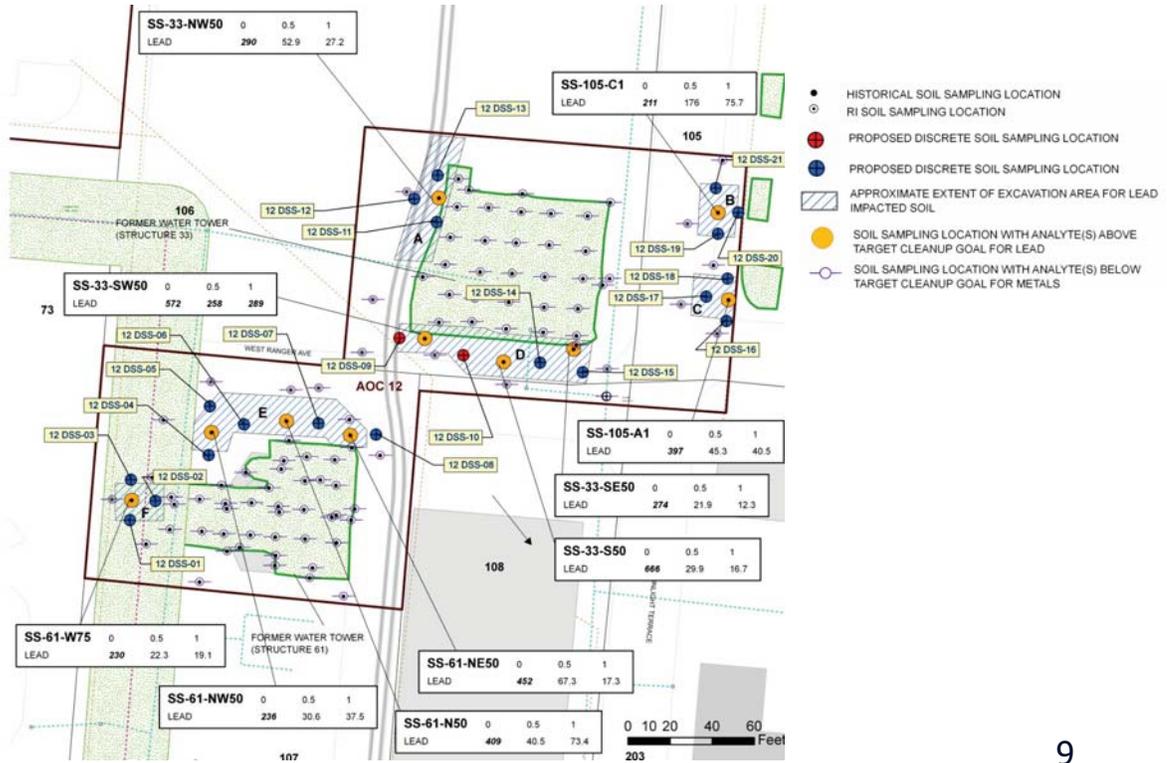


# AOC 10 - Excavation Plan





# AOC 12 - Excavation Plan



# Schedule



Draft Work Plan comment period – August – September 2010

Finalize Final Work Plan - October 2010 – December 2010

Initiate Remedial Action - January 2011



# Questions?



**ATTACHMENT B-4**

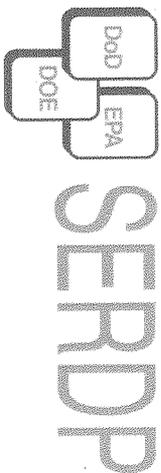
**INVESTIGATION AND CHARACTERIZATION OF TCE DNAPL AT PLUME 4-1**

**(2 pages)**



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## Investigation and Characterization of TCE DNAPL at Plume 4-1, Alameda Point, Alameda, California

Michelle Yeh, John McGuire, David A. Caccatore, Daniel P. Leigh, Charles E. Schaefer, and Tim Ault (The Shaw Group);  
Curtis M. Moss and Derek Robinson (US Department of the Navy, San Diego, California); and Michael D. Amabile (University of Florida, Gainesville, Florida)

### Introduction & Study Objectives

A field treatability study is being conducted at Plume 4-1 located in Alameda, California within the former Naval Air Station Alameda along the eastern margin of the San Francisco Bay. Elevated groundwater trichloroethene (TCE) concentrations up to 200 mg/L have been measured within fine-grained materials that overlie a sandy zone, suggesting that a DNAPL source likely is present. The treatability study is being conducted primarily to refine the characterization of the DNAPL sources (and the dissolved flux emanating from these sources) at Plume 4-1 to aid in its future full-scale remediation.

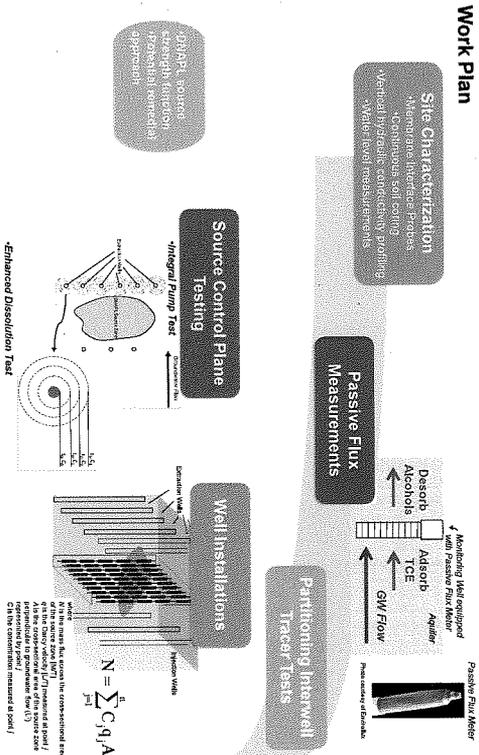


Characterization will include:

- Identification of DNAPL sources and extent
- Estimates of DNAPL mass
- Assessment of the DNAPL architecture
- Characterization of the flow field

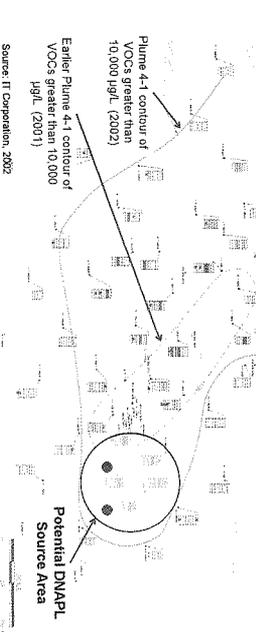
The treatability study will consist of multiple phases to successively refine the estimation of these parameters. Ultimately the data will lead to a determination of the DNAPL source strength function – which defines the relationship between DNAPL mass removal and decreases in dissolved concentration – and dissolution kinetics.

### Work Plan



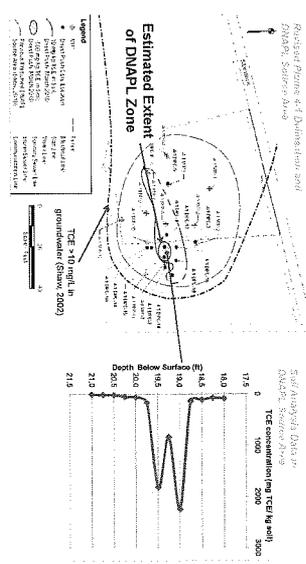
### Past Characterization of Plume 4-1

Exact timing and mechanism of release is unknown, but it is thought to be from a release from a rail car spill in the late 1950s to early 1960s.



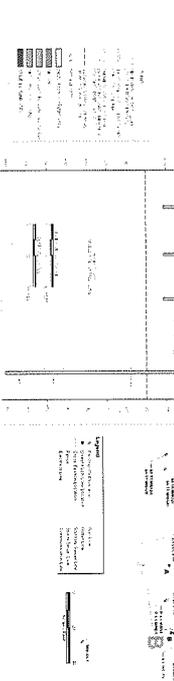
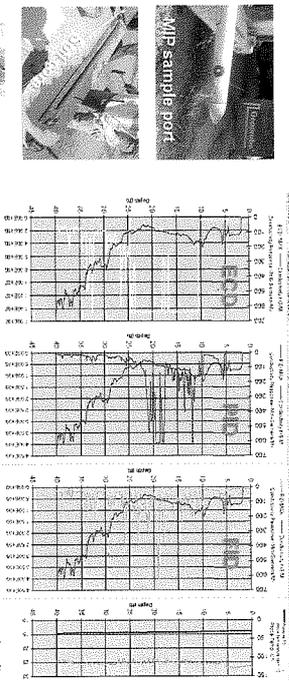
### Preliminary Findings

- DNAPL presence confirmed by soil sample analyses and Sudan IV dye testing
- Extent of DNAPL source area is approximately 8 x 10 feet, from 18.75 to 19.75 feet below ground surface



### Data Collected to Date

- MIP data
- Soil core samples



### What's Next

- Design Partitioning Interwell Tracer Test based on data collected from Passive Flux Meters
- Estimate amount of DNAPL at site
- Install new wells
- Conduct Source Control Plane Testing

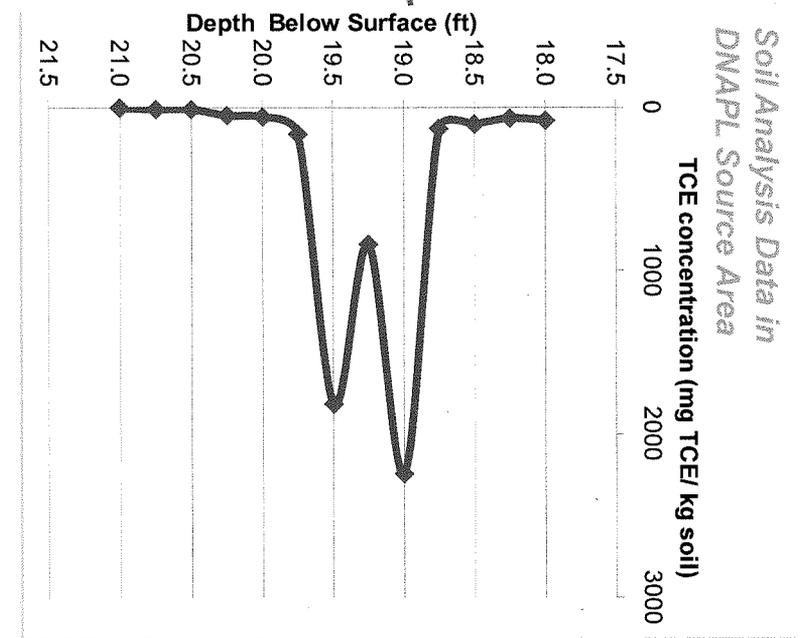
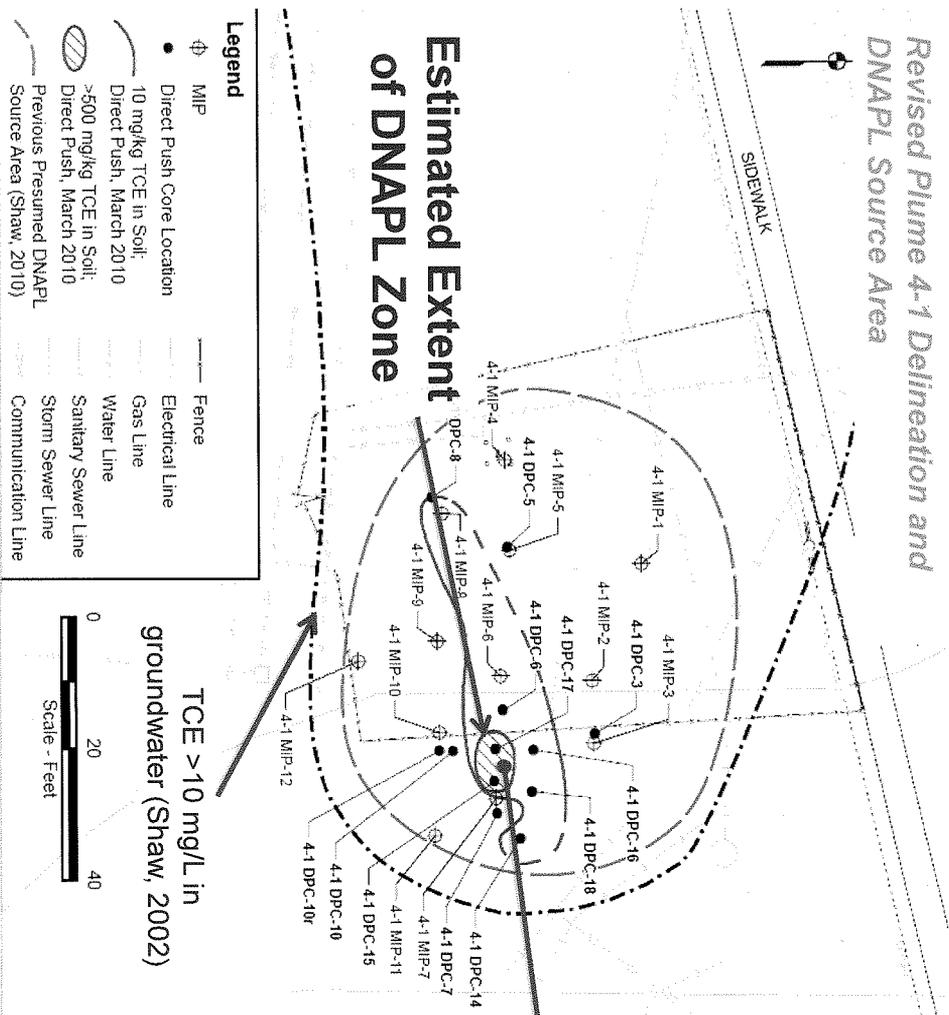
Study anticipated to be completed in January 2011.

### Acknowledgements

Funding for this work is being provided by the U.S. Department of the Navy Base Realignment and Closure (BRAC) Program Management Office (PMO) West under contract number N6247-2009-2-0001. This work is being conducted in conjunction with the U.S. Department of the Navy's Environmental Research and Development Program (SERDP).  
Navy Remedial Project Manager: Curtis M. Moss  
For additional information, please contact Michelle Yeh: myeh@shaw.com or (415) 512-2248

# Preliminary Findings

- DNAPL presence confirmed by soil sample analyses and Sudan IV dye testing
- Extent of DNAPL source area is approximately 8 x 10 feet, from 18.75 to 19.75 feet below ground surface



**ATTACHMENT B-5**

**COPY OF ARTICLES PUBLISHED IN THE *ALAMEDA SUN***

**(2 pages)**



Dava Howes

## Flipping Out

Councilwoman Marie Gilmore, left, and Councilwoman Lena Tam, far right, have their spatulas at the ready as Alameda Police Department Interim Chief Mike Noonan pours pancake batter onto the griddle at the Alameda Fire Department's 14th Annual Pancake Breakfast on Sunday, July 25. Event coordinator AFD Captain Rick Murray said the breakfast raised some \$4,000 for the event's beneficiary, the Alisa Ann Ruch Burn Foundation. "The entire Alameda Fire Department would like to extend its most sincere thanks to everyone who attended the breakfast," Murray said.

## Point Process Proceeds

*Sam Felsing*

The Alameda Restoration and Advisory Board (RAB) will meet tonight at Alameda Point. The Navy/civilian-led organization primarily focuses on the clean-up process at Alameda Point.

Tonight's meeting, the first since the city rescinded its exclusive negotiating agreement with SunCal will cover the announcement of co-chairs for the group, offer an update on groundwater treatment at the Point, and review the remedial design and action for Site 35 on the base.

The Navy is also seeking public input on its plan to clean up installation Restoration (IR) Site 34 on the north shore of Alameda Point. The site once housed painting and sandblasting activities. The Navy also uses Site 34 for storage.

Though the completion of the Alameda Point remedial cleanup is expected to happen some time in

the next six years, much has already been done. The former Seaplane Lagoon has had 45,000 tons of debris and soil excavated from its boundaries. Sites 5 and 10, areas close to the old runways, have also seen progress; the Navy has removed nearly 10,000 feet of pipe, treated some 1.5 million gallons of groundwater and removed nearly 3,500 tons of contaminant at these two sites.

Site 14, the former firefighter training area on the base, no longer needs soil cleanup.

The meeting will be held at 950 West Mall Square, Building 1 on Alameda Point. The meeting will begin at 6:30 p.m. RAB will be holding its regular meeting at the same location the first Thursday of every month. To find out more about the cleanup on Alameda Point, Alameda residents can request environmental documents in Room 240 in Building One, 950 West Mall Square.

## Body Found at Crown Beach

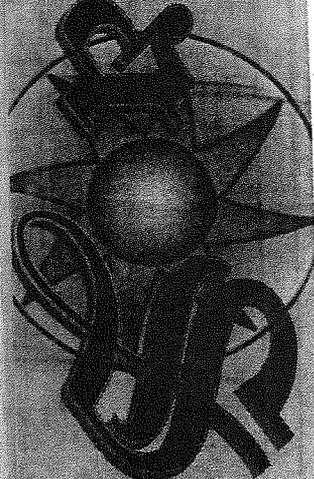
*Sam Felsing*

On Thursday, July 29 the body of 25-year-old Alameda resident Cuong Tran was found floating 25 yards off Robert Crown Memorial State Beach. The cause of death was not immediately known.

Tran was spotted at around 1:58 p.m. Paramedics arrived and attempted to revive him.

He was pronounced dead at the scene. The Alameda County coroner performed an autopsy on Tuesday and had not announced the results by press time.

The Alameda Police and the East Bay Regional Park District Police departments are holding a concurrent investigation into the death. They ask anyone on the beach last Thursday who may have seen something related to Tran's death to call 690-6549 or leave an anonymous tip at 690-6521.

**Alameda Press**  
  
**Locally Owned. Co**

During the trio's two-day Scottish Highlands tour, they visited this castle, which was rebuilt after naval cannons destroyed it in 1769.

"The Sun Shines Everywhere" attempts to show the Alameda Sun in every state of the Union and every country in the world. Submit a small descriptive paragraph along with your photo to the Alameda Sun, 3215J Encinal Ave., Alameda, CA 94501. Submissions may also be e-mailed to editor@alamedasun.com. The Sun Shines Everywhere is published on a completely random basis.

## Alameda Meeting Calendar

**Thursday, Aug. 5**

■ 6:30 to 8:30 p.m. Alameda Point Restoration Advisory Board: Meeting. Free to the public. 950 West Mall Square, Building 1, Suite 140, Alameda Point.

■ 7 p.m. Historical Advisory Board: Meeting. Council Chambers, City Hall, 2263 Santa Clara Ave.

**Monday, Aug. 9**

■ 7 p.m. Planning Board:

Meeting. Council Chambers, City Hall, 2263 Santa Clara Ave.

**Tuesday, Aug. 10**

■ 6:30 p.m. Board of Education: Meeting. Council Chambers, City Hall, 2263 Santa Clara Ave.

**Thursday, Aug. 12**

■ 7 p.m. Recreation and Park Commission: Meeting. Room 360, City Hall, 2263 Santa Clara Ave.

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A Guide to Alameda History and Architecture

## Moving the Point Forward

### Sun Staff Reports

A group of Alameda residents will be sponsoring a series of community meetings to discuss the future development of Alameda Point. The theme of the series is "Moving Forward at Alameda Point." The first meeting will be held from 7 to 9 p.m., Wednesday, Aug. 11, at the Alameda Naval Air Museum, 2151 Ferry Point #77 at Alameda Point.

The first meeting will review what has taken place since the Navy closed the air station with special focus on discussing the community reuse plans and preliminary development concept developed by the citizens of Alameda. There will also be a panel discussion with current commercial tenants of Alameda Point, an overview of what has been done and an update on the status with the Navy.

Future meetings will include looking at some suggested alternative uses, discussion on other base reuse developments and some of the challenges we face.

"There are many creative, talented and intelligent people in Alameda. We hope that they will attend these meetings and share their ideas," Gretchen Lipow, who is helping to organize the meeting said.

Speakers will include:

- Doug DeHaan, Vice Mayor
- Nancy Hird, president of Alameda Preservation Society
- George Humphreys, past chair of Restoration Advisory Board
- Todd Roloff, National Response Center, CEO
- Speakers from the Alameda Point Business Community

To learn more, contact Gretchen Lipow at GretchenLipow@comcast.net or call 846-5465.

calls for assistance Monday, July 19.

■ **Tuesday, July 20**

**Never mind**

Firefighters from Fire Station No. 1 were called at 6:20 a.m. to Regulus Court but the call was canceled en route.

**Never mind reprise**

At 10:06 a.m. Fire Station No. 1 was dispatched to the 1500 block of Buena Vista Avenue to investigate an alarm. The call was canceled en route.

⊕ In their roles as paramedics AFD firefighters responded to nine calls for assistance Tuesday, July 20.

■ **Wednesday, July 21**

**Leaking gas**

At 1:45 p.m. firefighters from Fire Station No. 1 were dispatched to the 1100 block of Broadway to help control a leaking gas line. Crewmembers established a safe zone and waited for PG&E to arrive. The scene was cleared at 3:27 p.m.

**Pass the salt**

Firefighters from Fire Station No.



Alameda Welfare Council board silent auction items at the council's Pavilion. The auction raised \$3,500.

**ATTACHMENT B-6**

**COMMUNITY MEETING INVITATION**

**(1 page)**

# Moving Forward at Alameda Point

## *A Community Meeting: All Invited*

A group of Alameda residents will be sponsoring a series of community meetings to discuss the future development of Alameda Point.

The first meeting will be held on Wednesday, August 11, 2010 at the Alameda Naval Air Museum, 2151 Ferry Point #77 at Alameda Point. 7 - 9 pm

The purpose of the first meeting will be to review what has taken place since the Navy base closed with special focus on discussing the **Community Reuse Plans and Preliminary Development Concept** that were developed by the citizens of Alameda. There will also be a panel discussion with current commercial tenants of Alameda Point as well as an overview of what has been done and an update on the status with the Navy.

“We do not have to start from scratch to develop a good plan for Alameda Point”, said current Vice Mayor Doug deHaan. “There is a master plan that was developed by the community and approved by the City Council and Alameda Reuse and Redevelopment Authority (ARRA). It is time to re-visit the plans to see which elements are viable for moving forward and what other elements the community would like to see included. The experiences of the last three years have increased the number of Alamedans who want to be part of this process going forward. Now is the time to bring all interested Alamedans together”.

Future meetings will include looking at some of the alternative uses that have been suggested; discussions on other base reuse developments; and some of the challenges we face.

There are many creative, talented, and intelligent people in Alameda. We hope that they will attend these meetings and share their ideas.

Speakers will include:

- **Vice Mayor Doug deHaan, Past Chair, ARRA/BRAC Reuse Subcommittee**
- **Nancy Hird , President of Alameda Preservation Society**
- **George Humphreys, Past Chair of Restoration Advisory Board**
- **Todd Roloff, CEO of National Response Center**
- **Other Speakers from the Alameda Point Business Community**

*For further information please contact Gretchen Lipow at  
[GretchenLipow@comcast.net](mailto:GretchenLipow@comcast.net) or (510) 846-5465*

**ATTACHMENT B-7**

**LIST OF DOCUMENTS RECEIVED IN MAY-JULY 2010**

**(1 page)**

**Documents Received**  
May – July 2010

**Navy Communication**

1. *Final Record of Decision for IR Site 35*, Department of Defense, US Navy, May 5, 2010
2. *Final Record of Decision for IR Site 24*, Department of Defense, US Navy, May 21, 2010
3. *Draft Zero-Valent Iron Treatability Study Report, IR Site 4, OU 2B*, TetraTech, May 28, 2010
4. *Updated Final Work Plan for Pre-Design Sampling and Investigation, IR Site 1*, AMEC Earth & Environmental, June 2010
5. *Draft Final Revision 1 Radiological Work Plan for Remedial Design and Remedial Action, IR Site 1*, AMEC Earth & Environmental, June 3, 2010
6. *Final Work Plan for Monitoring Well Installation and Sampling, IR Site 32*, Trevet, June 3, 2010
7. *Revised Draft Feasibility Study Report, OU 2B, Sits 3, 4, 11 and 21*, Oneida Total Integrated Enterprises, June 4, 2010
8. *Draft Supplemental Data Gap Investigation at OU 2A and 2B*, TetraTech, June 4, 2010
9. *Draft Final Work Plan for Basewide Radiological Surveys*, Chadux TetraTech, June 9, 2010
10. *Revised Draft Proposed Plan, IR Site 34*, Department of Defense, US Navy, June 4, 2010
11. *Draft Final Alameda Basewide Annual Groundwater Monitoring Report*, AMEC Earth & Environmental, June 18, 2010
12. *Draft Final Feasibility Study Report, OU 2A, IR Sites 9, 13, 19, 22 and 23*, Oneida Total Integrated Enterprises, July 7, 2010
13. *Final Work Plan for Basewide Radiological Surveys and the Sampling and Analysis Plan for Basewide Radiological Surveys*, TetraTech, July 8, 2010
14. *Final Proposed Plan, IR Site 34*, Department of Defense, US Navy, July 12, 2010
15. *Draft Completion Report for Time-Critical Removal Action, IR Site 17 Construction Debris Piles*, Weston Solutions, July 21, 2010

**Agency Communication**

1. *Memorandum, Draft Indoor Air, Outdoor Air and Soil Gas Sampling Report, Buildings 163 and 163A*, California Environmental Protection Agency, Department of Toxic Substances Control, April 8, 2010
2. *Notice, Change in Department of Toxic Substances Control Lead Project Manager*, California Environmental Protection Agency, Department of Toxic Substances Control, April 30, 2010
3. *Comments on the Draft Indoor Air, Outdoor Air and Soil Gas Sampling Report, Buildings 163 and 163A*, California Environmental Protection Agency, Department of Toxic Substances Control, June 10, 2010
4. *Review of the Draft Final Sample and Analysis Plan (Field Sampling and Quality Assurance Project Plan) Basewide Groundwater Monitoring Program*, California Environmental Protection Agency, Department of Toxic Substances Control, July 7, 2010

**ATTACHMENT B-8**

**COMMENTS ON REVISED DRAFT FINAL FEASIBILITY STUDY FOR OU-2B**

**(2 pages)**

Mr. Derek Robinson  
Department of the Navy  
Base Realignment and Closure, Program Management Office West  
1455 Frazee Road  
San Diego 92108

August 4, 2010

Re: Comments on the Revised Draft Final Feasibility Study for OU2-B

Dear Mr. Robinson,

Thank you for the opportunity to comment on the above document. Several concerns raised in my comments on the Draft Final Feasibility Study for OU2-A are pertinent here as well.

The lack of certainty of the nature and extent of contamination cannot logically lead to a knowledgeable cleanup strategy, nor a reliable cost estimate. At many sites remediation attempts fail because of poor characterization. Throughout the site's history this has been an industrial site. Characterization is needed before an effective remedy can be chosen and cost estimates can be reliable. It appears that by not evaluating site conditions adequately, cost estimates are being skewed to the desired remediation strategy, rather than the most beneficial. Therefore, cost estimates should not carry as much weight in evaluating options as a result of this bias.

Throughout the document the DON repeatedly uses unusual computations to reach a decision of no further action or limited remediation.

The Navy appears to be using a novel interpretation of guidelines in the US EPA's RI/FS Guidelines to avoid a thorough evaluation of alternatives that might result in a longer or more costly process. As a result a full discussion of options is not possible. As at OU2-A few soil samples have been taken forcing the regulators and the community to choose from a limited option set that may not be most protective of the environment, just expeditious to quick completion. Additionally, this option set includes a failed technology, limiting choices even further.

It appears that the Navy without clearly identifying the protocol is averaging concentrations over large areas to reduce the risk levels to below  $10^{-6}$  and HIs to 1 or below. However, this is not justifiable in all cases, especially lead. Lead should be analyzed at the 99<sup>th</sup> percentile based on risks to children and not diluted through sampling over a large area to decrease exposure levels and appear to minimize risk. Additionally, arsenic in soil AND water, mercury, manganese, cadmium, cobalt, chromium and Aroclor 1016 and 1060 are above screening levels and should be remediated.

According to Mr. George Humphreys (private communication) arsenic is at high levels at Site 4 because it is adsorbing onto the bentonite at the dump area of the Pacific Borax Works. Unless the bentonite is removed this will continue and over time lead to very high concentrations of arsenic there. As I have

Dale Smith  
Naval Air Station Alameda Restoration Advisory Board  
2935 Otis Street, Berkeley, CA 94703  
510 841 2115 dale2smith@yahoo.com

commented elsewhere (Site 28) arsenic may be mobilized through the process of remediating other contaminants and should not be ignored. The increase in arsenic levels is caused by the Navy's actions.

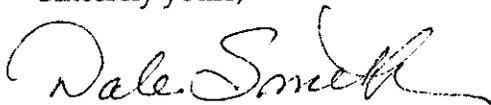
Contaminants are eliminated or deemed not needing further action that may have significant impacts on birds and fish. The document defines exposure of fish to lead as brief. However, the fish are not pelagic and they return to spots where feeding is plentiful. They are thus being repeatedly exposed to lead. The Ecological Risk Assessment did not consider this. Birds, particularly breeding birds that feed on fish, are likely to feed on these contaminated fish. The impact of the lead ingestion and transfer to young was not analysed in the Ecological Risk Assessment and could actually have a significant impact on juvenile birds. A revised evaluation of risk exposure to fisherfolk should be performed given they may be catching and consuming these contaminated fish as well.

This document appears to ignore the results of several recent studies conducted to clarify conditions and site characteristics. These studies were required because a meaningful feasibility study could not be developed without more data. Why perform the studies if the results are not to be included? One of the studies, *Zero (sic) Valent Iron Treatability Study*, found that use of nano valent iron was unlikely to be effective in remediating groundwater at OU2-A; yet it is included in a preponderance of the remediation options. The other options are much less aggressive in remediating the impacts on soil and groundwater.

The Abbreviations List appears to have been taken from another document without concern for the abbreviations used in this document. Many of those used are not included. This makes reading the document very difficult, beyond the difficulty of the technical concepts, for the community reader.

Again, thank you for the opportunity to comment.

Sincerely yours,



Dale Smith

*James D. Leach, RAB member*

*Michael John Torrey - 14701 (5)*

*George B. Humphreys, P.E.*

*Jim Tracy RAB member*

*John Lincum RAB member*

Dale Smith

Naval Air Station Alameda Restoration Advisory Board  
2935 Olis Street, Berkeley, CA 94703  
510 841 2115 dale2smith@yahoo.com

**ATTACHMENT B-9**

**COMMENTS ON DRAFT FINAL FEASIBILITY STUDY FOR OU-2A**

**(2 pages)**

Mr. Derek Robinson  
Department of the Navy  
Base Realignment and Closure, Program Management Office West  
1455 Frazee Road  
San Diego 92108

August 4, 2010

Re: Comments on the Draft Final Feasibility Study for OU2-A

Dear Mr. Robinson,

Thank you for the opportunity to comment on the above document.

The lack of certainty of the nature and extent of contamination is an issue I have raised many times. It cannot logically lead to a knowledgeable cleanup strategy, nor a reliable cost estimate. At many sites remediation attempts fail because of poor characterization. Throughout the site's history this has been an industrial site, characterization is needed before an effective remedy can be chosen and cost estimates cannot be reliable.

It is confusing to me how benzene can be addressed in some situations under CERCLA but not in others. In some situations it is commingled with VOCs and TPHs and addressed as in Plume 4-3 as a VOC. Here at Site 9 the Department of Navy (DON) claims it is a petroleum product and will not be remediated. From a cost benefit perspective I don't see what is gained by not remediating benzene.

Throughout the document the DON repeatedly uses unusual computations to reach a decision of no further action or limited remediation. It is unconscionable to refuse to use the latest permitted screening levels with the offhand statement that "it is unlikely that risk estimates would change significantly".

It was stated at a Naval presentation in response to questioning by the RAB that remediation was preferable to offsite disposal. Yet at Sites 9 and 22 offsite disposal is selected, not because of safety or cost, but expediency.

The Navy appears to be using a novel interpretation of guidelines in the US EPA's RI/FS Guidelines to avoid a thorough evaluation of alternatives that might result in a longer or more costly process. As a result a full discussion of options is not possible and regulators and the community are obligated to select from an artificially defined set of options.

It is acknowledged that there are high concentrations of lead in the soil at Site 13 currently proposed as a housing area. The DTSC screening level for lead in soil was reduced from 150 mg/kg to 80 mg/kg in 2008. The Navy is using 315 mg/kg and identifies 6 out of 215 soil samples as exceeding this screening level. Using updated screening levels may result in more exceedances. Assuming that only a few more are identified (see Navy comment in third paragraph above) it is not clear why the new levels are not used. This is of concern as children are exceedingly sensitive to lead exposure.

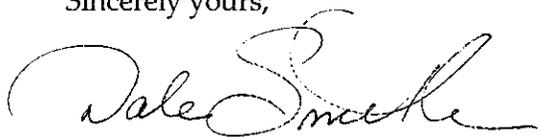
Dale Smith  
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510 841 2115 dale2smith@yahoo.com

It appears that the Navy without clearly identifying the protocol is averaging concentrations over large areas to reduce the risk levels to below  $10^{-6}$  and HIs to 1 or below. The HI for Site 9 is actually 6. It is unfortunate but understandable that this rationale is used in the cases of arsenic and asbestos, as the Bay Area has unusually high concentrations of both and the EPAs have allowed concentrations to be higher in spite of the risk.

However, this is not justifiable in all cases, especially lead. Lead should be analysed at the 99<sup>th</sup> percentile based on risks to children and not diluted through sampling over a large area to decrease exposure levels and appear to minimize risk.

Again, thank you for the opportunity to comment.

Sincerely yours,



Dale Smith

*James D. Leach, RAB Member*

*Michael John Loney - 14701 (5)*

*John Spence, RAB member*

*Jim Sperry, RAB member*

*George B. Humphreys, P.E.*

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