



TETRA TECH EM INC.

June 1, 2011

Dear RAB Members,

On behalf of the Navy, enclosed please find the February 2, 2011 final RAB meeting minutes for your information and records.

If there are any questions regarding the enclosed minutes, please contact Carolyn Hunter at (916) 853-4556 or [Carolyn.hunter@tetratech.com](mailto:Carolyn.hunter@tetratech.com).

Sincerely,

Carolyn Hunter  
Community Relations Specialist  
Tetra Tech EMI

**FINAL**  
**MEETING MINUTES**  
**RESTORATION ADVISORY BOARD**  
**INLAND AREA ENVIRONMENTAL RESTORATION PROGRAM**  
**FORMER NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD**  
**CONCORD, CALIFORNIA**  
**FEBRUARY 2, 2011**

These minutes reflect general issues raised, agreements reached, and action items identified at the Restoration Advisory Board (RAB) meeting for the Inland Area Environmental Restoration (ER) Program at the Former Naval Weapons Station Seal Beach Detachment Concord (NAVWPNSTA Concord), California. The meeting was held from 6:00 p.m. to 7:45 p.m. on February 2, 2011, at the Clyde Clubhouse in Clyde, California. Agreements and action items are described by topic under [Sections I](#) through [V](#) and are summarized in [Section VI](#). A list of participants and their affiliations is included as [Attachment A](#), and the meeting agenda is included as [Attachment B](#). Handouts at the meeting also are included as attachments to these minutes.

**I. WELCOME, INTRODUCTIONS, PUBLIC COMMENT, AND AGENDA APPROVAL**

**Welcome and Introductions**

The RAB Community Co-Chair, Mary Lou Williams (Concord resident), called the RAB meeting to order and initiated a round of introductions for attendees.

**Public Comments**

Ms. Williams opened the floor to public comments. No comments were received.

**II. RAB ANNOUNCEMENTS**

Ms. Williams and Scott Anderson (Navy RAB Co-chair) opened the floor to RAB announcements. No RAB announcements were provided. Ms. Williams stated that an applicant to the RAB will be considered at the meeting of April 6, 2011. Mr. Anderson said he will contact the RAB applicant and invite him to the meeting of April 6, 2011.

Mr. Anderson reviewed the outstanding action item from the RAB meeting on October 6, 2010:

**Mr. Anderson will look for information regarding weed abatement around the railroad tracks and provide an update to the RAB:** Mr. Anderson said he had reviewed the Navy's policy on weed abatement. The Navy followed a pest management plan to conduct weed abatement at former NAVWPNSTA Concord. Julie Crosby (Navy Lead Remedial Project Manager [RPM]) said that she had reviewed past requests for proposals (RFP) for pest management services to see what types of chemicals were used for weed abatement. The RFPs did not indicate which chemicals were used. The Navy used weed abatement measures that were

approved at the time. Mr. Anderson said that the Navy has not used weed abatement measures at former NAVWPNSTA Concord in the recent past, and noted the large amount of vegetation along site railways. Paul Choisser (Concord resident) said that atrazine that has been used as an herbicide and has been linked to mutations including feminization of frogs in Californian and the west and may cause death. Mr. Choisser asked when pesticides last had been applied at the site. Ms. Crosby said that review of available RFPs indicated the last application was in 1995; however, not all RFPs were available. Igor Skaredoff (Martinez resident) asked if atrazine is still used in pesticides. Mr. Anderson said that atrazine is still used in pesticides. Edi Birsan (Concord resident) said he remembered being at the site and seeing minimal vegetation near the railroad tracks.

**Mr. Skaredoff will forward the RAB resignation from Greg Glaser to the Navy:** This action item was completed.

**Mr. Anderson will contact the owners of the pipelines that traverse through NAVWPNSTA Concord to see whether these have been testing for leaks:** Mr. Anderson said the Navy had requested information from the three companies to which the pipelines belong. Unocal was the only company that responded to the Navy's request. Unocal said the pipeline is inspected regularly but would not provide the inspection schedule due to security. Mr. Birsan said that the Army has been having a problem on the Military Ocean Terminal Concord (MOTCO) side of the base with a leaking pipeline and has not received any communication from the gas companies. Mr. Choisser said the City of Concord (City) is planning to build two streets that run across the pipeline easement. Mr. Choisser had raised his concern with the pipeline at the last city council meeting, and will continue to follow up and provide updates to the RAB. Mr. Anderson said he will work with the Army to get information on the pipelines. Mr. Skaredoff said the RAB would like to see this issue resolved.

### Action Items

1. Mr. Anderson will contact the RAB applicant and invite him to the meeting of April 6, 2011.
2. Mr. Anderson will work with the Army to address the pipeline issues.

### **RAB Open Comment Period**

Ms. Williams opened the RAB comment period. Mr. Birsan said the City will have a presentation to the Planning Commission on the reuse plan for former NAVWPNSTA Concord on March 8, 2011, at 5:30 p.m. Mr. Choisser said that he is concerned that the Planning Commission will make uninformed decisions on the reuse plan for former NAVWPNSTA Concord. Ms. Williams asked if the Navy plans to attend the Planning Commission meeting. Mr. Anderson said that the City had not invited the Navy to his knowledge, so he did not think the Navy will attend the Planning Commission meeting. Mr. Anderson said the Navy is waiting for some information from the City to complete the California Environmental Quality Act requirements prior to transfer.

## **RAB Meeting Minutes Approval**

Mr. Anderson asked if the RAB had comments on the minutes for the meeting on October 6, 2010. The RAB did not have comments on the minutes from the meeting on October 6, 2010. The Navy will finalize the RAB meeting minutes for October 6, 2010.

### **Action Item**

3. The Navy will finalize the minutes for the RAB meeting on October 6, 2010.

## **III. RPM UPDATE**

### **Navy Update**

Mr. Anderson reviewed the Navy RPM update handout, which is included as [Attachment C](#).

- The Navy issued the Draft Record of Decision for Site 22.
- The Navy issued the Draft Treatability Study Work Plan for Site 29.
- The Navy issued a plan to the U.S. Fish and Wildlife Service for trapping California Tiger Salamander and California Red-legged Frogs. The Navy has trapped three California Tiger Salamanders and relocated them. Mr. Choisser said the Navy needs to consider the burrowing owl during fieldwork. Mr. Anderson said the Navy is preparing a biological assessment that will take the safety of the burrowing owl into consideration. Field work will resume once the trapping is completed at the site.
- The Navy issued the Draft Final Feasibility Study (FS) for Site 22A.
- The Navy issued the Draft Removal Action Completion Summary Report for Site 27.

## **U.S. Environmental Protection Agency (EPA) Update**

Melinda Garvey (EPA RPM) said EPA is working with the Navy on the Site Management Plan and completing documents on schedule. Ms. Garvey said that some of the review times have been accelerated because the Navy is coordinating with the regulatory agencies throughout the process.

## **IV. SITE 29 PILOT STUDY WP PRESENTATION**

Ms. Crosby presented information on the Site 29 Pilot Study WP ([Attachment D](#)), and introduced Dan Leigh (Shaw Environmental) as the technical lead on the project.

Mr. Skaredoff asked how much vinyl chloride will be produced from the bioremediation. Mr. Leigh said that very little vinyl chloride will be produced.

Mr. Birsan asked what happens to the organisms injected into the ground once they have completed their job. Mr. Leigh said the organisms will decompose and cause no problems for human health. Mr. Birsan asked how long it will take to complete the pilot study and determine if it is an acceptable remedy. Ms. Crosby said that the Navy is still in the treatability study phase and unsure of the length of time it will take to determine if the remedy is acceptable. Mr. Birsan asked if reuse or construction will cause an issue with the equipment for the pilot study. Mr. Leigh said that the equipment is below the ground and should not be impacted by any aboveground construction.

Mr. Choisser said that at Hamilton Air Force Base, deed restrictions were in place at a site that was using bioremediation technology; he was concerned this treatment will impact reuse of Site 29. Mr. Leigh said that the size of the groundwater plume determines the length of time needed to treat it. Mr. Anderson stated that the Navy and regulatory agencies will work closely with the City regarding reuse of Site 29. Mr. Leigh said that one concern about groundwater contamination is vapor intrusion, which will not be addressed by bioremediation, but will be addressed by soil vapor extraction.

## **V. SITE 22A DRAFT FINAL FS PRESENTATION**

Valerie Harris (Navy RPM) presented information on the Site 22A Draft Final FS ([Attachment E](#)), and introduced Katie Henry (Tetra Tech) as the technical lead on the project.

Mr. Skaredoff asked why the cost is high to keep the contamination onsite. Ms. Henry said that if the contamination is kept onsite, long-term operation and maintenance costs would result.

Mr. Choisser said that the Site 22A Magazine Area is to be transferred to the East Bay Regional Park District, which should be informed of the Navy's investigations and plans.

Mr. Birsan asked why the short-term effectiveness of a removal action has a low rating. Ms. Henry explained that the short-term impacts of a removal action to the surrounding community and habitat are factors lowering the rating.

Mr. Choisser said that he had provided a letter to the Navy for the Site 22 Proposed Plan inquiring about concern for the community and loss of habitat associated with a removal action. Mr. Anderson said the Navy is conservative in how it addresses impacts to the community when considering a removal action.

Jimm Edgar (Mount Diablo Audubon Society) asked if arsenic ever breaks down, given it is a naturally occurring element in California. Ms. Henry said that arsenic does not break down. It adheres to the soil particles and does not migrate. Arsenic is not a problem for ecological receptors, and Site 22A is currently slated for open space in reuse area maps.

Mr. Birsan said that Group 2 Magazines that stored atomic weapons should be considered. Mr. Anderson explained that this FS deals only with arsenic. The Navy is initiating radiological scoping surveys for portions of the base (including special weapons magazines at Site 22A) that

were identified for radiological screening in the Basewide Historical Radiological Assessment.

**VI. OTHER TOPICS, NEXT MEETING, AND ACTION ITEMS**

Mr. Anderson said the next official Inland Area RAB meeting will take place on April 6, 2011. Mr. Anderson said the Navy is looking to host a RAB site tour in June 2011 when the days are longer and the weather is better. Depending on whether it works for the RAB, the Navy may propose a site tour in the evening in lieu of a meeting. Mr. Anderson will work with Ms. Williams to schedule a RAB tour. As information is available, the Navy will let the RAB know about the upcoming site tour.

<b>No.</b>	<b>Action Item</b>	<b>Target Date for Completion</b>	<b>Responsible Person</b>	<b>Completion Date (or Status)</b>
1.	Mr. Anderson will contact the RAB applicant and invite him to the meeting of April 6, 2011.	4/6/11	S. Anderson	An update will be provided at the April 2011 RAB meeting.
2.	Mr. Anderson will work with the Army to address the pipeline issues.	4/6/11	S. Anderson	An update will be provided at the April 2011 RAB meeting.
3.	The Navy will finalize the minutes of the RAB meeting on October 6, 2010.	3/1/11	C. Hunter	This action item was completed.

**ATTACHMENT A**  
**ATTENDEES AND AFFILIATIONS**  
**RESTORATION ADVISORY BOARD MEETING**  
**FORMER NAVAL WEAPONS STATION SEAL BEACH DETACHMENT CONCORD**

**FEBRUARY 2, 2011**

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**ATTENDEES AND AFFILIATIONS  
 RESTORATION ADVISORY BOARD MEETING  
 FORMER NAVAL WEAPONS STATION SEAL BEACH  
 DETACHMENT CONCORD, CALIFORNIA  
 FEBRUARY 2, 2011**

<u>Name</u>	<u>Affiliation</u>	<u>Telephone</u>
Wayne Akiyama	Shaw Environmental	(925) 288-2003
Scott Anderson	Navy, BRAC PMO West	(619) 532-0938
Edi Birsan*	Concord Resident	(510) 812-8180
Joanna Canepa	Tetra Tech	(425) 877-2806
Paul Choisser*	Concord Resident	(925) 270-3096
Julie Crosby	Navy, BRAC PMO West	(619) 532-0929
Katherine Duno- Luttjoahon	Concord Resident	(925) 676-3111
Jimm Edgar	Mount Diablo Audubon Society	
Amy Estey	Shaw Environmental	(925) 288-2091
Melinda Garvey	EPA	(415) 947-4184
Valerie Harris	Navy, BRAC PMO West	(619) 532-0981
Katie Henry	Tetra Tech	(510) 302-6298
Carolyn Hunter	Tetra Tech	(916) 853-4556
Jackie Lane	EPA	(415) 972-3236
Dan Leigh	Shaw Environmental	
Jim Pinasco	DTSC	(916) 255-3719
Igor Skaredoff*	Martinez Resident	(925) 229-1371
Mary Lou Williams*	Concord Resident	(925) 685-1415
Shon Wolf*	Clyde Resident	(925) 686-5924

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Notes:

*	Community Restoration Advisory Board (RAB) Member
BRAC PMO	Base Realignment and Closure Program Management Office
DTSC	Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
Tetra Tech	Tetra Tech EM Inc.

**ATTACHMENT B**

**AGENDA  
RESTORATION ADVISORY BOARD MEETING  
FORMER NAVAL WEAPONS STATION SEAL BEACH  
DETACHMENT CONCORD, CALIFORNIA**

**FEBRUARY 2, 2011**

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INLAND AREA AGENDA

FORMER NAVAL WEAPONS STATION SEAL BEACH  
DETACHMENT CONCORD INLAND AREA  
RESTORATION ADVISORY BOARD (RAB) MEETING

Wednesday, February 2, 2011  
6:00 p.m. – 7:45 p.m.

Location: Clyde Clubhouse  
109 Wellington Avenue  
Clyde, CA 94520

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- 6:00 – 6:15 Call to Order
- Welcome
  - Introductions/Agenda Review
  - Public Comment Period
  - Approval of the October 2010 Meeting Minutes
- Lead: Community Co-chair
- 6:15 – 6:20 Announcements
- Review of Action Items
- Lead: Navy Co-chair
- 6:20 – 6:40 Committee Reports/Announcements
- RAB Announcements, Reports or other business (Community Co-chair)
  - RAB Open Comment Period
  - Remedial Project Managers' (RPM) Update (Navy/EPA/DTSC/RWQCB)
  - City of Concord Update
- 6:40 – 7:15 Presentation: Site 29 Pilot Study Work Plan  
Navy: Julie Crosby, Remedial Project Manager (RPM)
- 7:15 – 7:35 Presentation: Site 22A Draft Final Feasibility Study  
Navy: Valerie Harris, Remedial Project Manager (RPM)
- 7:35 – 7:45 Meeting Evaluation and Topic Suggestions of Future Meetings  
Next RAB Meeting: April 6, 2011
- 7:45 Adjourn

*\*Next RAB Meetings\**

- Inland Area: April 6, 2011

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*NAVWNPSTA CONCORD RAB Meetings are held the first Wednesday of every month, unless changed. Information regarding the Environmental Restoration program at Former Naval Weapons Station Seal Beach Detachment Concord Inland Area can be found at:*

*<http://www.bracpmo.navy.mil/basepage.aspx?baseid=39&state=California&name=concord>*

*BRAC Environmental Coordinator: Mr. Scott Anderson (619) 532-0938, [scott.d.anderson@navy.mil](mailto:scott.d.anderson@navy.mil)*

*Community RAB Co-Chair: Ms. Mary Lou Williams, (925) 685-1415*

**ATTACHMENT C**

**NAVY REMEDIAL PROJECT MANAGERS' UPDATE  
RESTORATION ADVISORY BOARD MEETING  
FORMER NAVAL WEAPONS STATION SEAL BEACH  
DETACHMENT CONCORD, CALIFORNIA**

**FEBRUARY 2, 2011**

(2 Pages)



***Navy Remedial Project Manager (RPM) Update for 2 February 2011 Meeting of  
Former Naval Weapons Station Seal Beach Detachment Concord***

Summary of Navy Base Realignment and Closure (BRAC)  
Inland Area RPM activities since the last RAB meeting held on  
Wednesday, 6 October, 2010

**Installation Restoration and Munitions Response Programs Sites**

- October 10, 2010 – Navy issued Draft Record of Decision (ROD) for Site 22.
- November 2, 2010 – Conference call with Navy and City of Concord to discuss the draft ROD for Site 22
- November 2 through 4, 2010 – Navy collected groundwater samples from 5 locations at Building 93.
- November 9, 2010 – Navy issued a Quarterly Groundwater Monitoring Report for Solid Waste Management Units 2, 5, 7, and 18, September 2010
- November 15, 2010 – Navy issued Draft Treatability Study Work Plan for Site 29
- December 3, 2010 – RPMs met at EPA offices to discuss the Site 22 Record of Decision.
- December 6, 2010 – RPMs met by teleconference to discuss the Site 29 Pilot Study Work Plan.
- December 6, 2010 – Plan for trapping California Tiger Salamander and California Red-legged Frog at eight sites was issued to the U.S. Fish and Wildlife Service (USFWS).
- December 7, 2010 – USFWS gave permission to begin trapping activities.
- December 9, 2010 – Navy granted DTSC's request for a 45-day extension on submission of comments on the Draft Record of Decision for Site 22.
- December 15, 2010 – Navy issued the Final Semi-Annual Basewide Groundwater Monitoring Report for the Second Event 2010.

## **Continued**

- December, January, and February 2010/11 – Navy performed trapping for the California Tiger Salamander and Red-Legged Frog.
- December 13, 2010 – Navy issued a 111-day Site Management Plan extension request on submittal of the Draft Remedial Action Work Plan for Solid Waste Management Unit Sites 2, 5, 7, and 18 (now due 5/5/11).
- December 20 through 23, 2010 – Navy installed 3 new wells and decommissioned 2 wells at Solid Waste Management Units (SWMUs) 2, 5, 7, and 18. Conducted quarterly sampling event at SWMUs site.
- December 22, 2010 – Navy revised the previously granted 45-day extension on agency comments for the Site 22 Record of Decision to 30-days.
- January 7, 2011 – Navy issued the Draft Final Feasibility Study for Site 22A.
- January 10, 2011 – Navy issued errata pages for the Draft Final Feasibility Study for Site 22A.
- January 6, 2011 – Navy issued a 2-week extension request for submission of the Draft Removal Action Completion Summary Report for Site 27 (now due 1/21/11).
- January 18, 2011 – Issued request to USFWS to install exclusion fence for California Tiger Salamanders and California Red-legged Frogs at Guam Way.
- January 21, 2011 – Navy issued the Draft Removal Action Completion Summary Report at Site 27.
- January 21, 2011 – EPA requested a 2-week extension on submittal of comments on the Draft Engineering Evaluation/Cost Analysis for Site 24A.
- February 2, 2011 – RPMs met for a bi-monthly RPM meeting.

## **Acronyms**

BRAC – Base Realignment and Closure Commission  
DTSC – Department of Toxic Substance Control  
EPA – United States Environmental Protection Agency  
EOD – Explosive Ordnance Disposal  
RAB – Restoration Advisory Board  
ROD – Record of Decision  
RPM – Remedial Project Managers  
SWMU – Solid Waste Management Unit  
USFWS – United States Fish and Wildlife Service

**ATTACHMENT D**

**SITE 29 PILOT STUDY WORK PLAN PRESENTATION  
RESTORATION ADVISORY BOARD MEETING  
FORMER NAVAL WEAPONS STATION SEAL BEACH  
DETACHMENT CONCORD, CALIFORNIA**

**FEBRUARY 2, 2011**

(15 Pages)



## Installation Restoration Program Site 29



### **In Situ Bioremediation / Soil Vapor Extraction Treatability Study**

**Presented by Dan Leigh – Shaw E&I  
RPM – Julie Crosby**

**February 2, 2011  
Restoration Advisory Meeting**



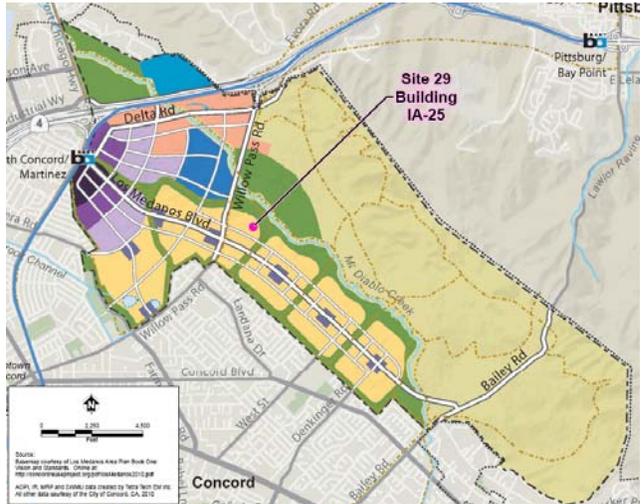
## Presentation Overview



- Location
- Background
- Purpose of Treatability Study
- Method
- Technology overview
- Treatability Study at Site 29
- Schedule



# Site 29 Location and Reuse Areas



- Site 29 (Building IA-25)
- North Concord TOD Core
- North Concord TOD Neighborhood
- Central Neighborhood
- Village Center
- Village Neighborhood
- Campus
- First Responder Training Center
- Commercial Flex
- Conservation Open Space
- Greenways, Citywide Parks, and Tournament Facilities
- Seasonal Wetlands (delineated as of 2010)
- Recreation Trails
- Through Streets
- Collector Streets
- Planning Area boundary
- City of Concord Boundary

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# Site 29 Location Aerial



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## IRP Site 29



## Site 29 Background



- Building IA-25
  - Built in 1945 for pilot scale development of munitions and munitions re-work
- Building 263
  - Built in 1973 for break-down cell for munitions
- Building IA-19
  - Built in 1945 - housed a boiler to provide heat for Building IA-25
- Buildings IA-25 and 263 surrounded by steep cut slopes and man-made berms
- Wooden loading dock connects Buildings IA-25 and 263



## Site 29 Regulatory Background



- Draft Final Focused Feasibility Study - 2003
  - While reviewing, team agreed to perform additional characterization
- 2005 – collected groundwater sample near septic tank
  - Trichloroethene (TCE) concentration of 4,300 ug/L
- Re-initiated Remedial Investigation
  - Installed wells, conducted SCAPS investigation – collected soil gas and groundwater samples
  - Collected additional soil samples to assess whether source of lead is lead-based paint
  - Human health and ecological risk assessments
  - Draft RI submitted in August 2010

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## Treatability Study Site 29



- Purpose of Treatability Study
  - Evaluate if in situ bioremediation (ISB) can effectively treat chlorinated ethenes (TCE, DCE, VC) in groundwater at Site 29
  - Evaluate if soil vapor extraction (SVE) can effectively treat chlorinated ethenes in the unsaturated zone
  - Evaluate if solar power is an effective technology for operating the SVE system
- Method
  - Conduct ISB pilot test in source area groundwater
  - Conduct SVE pilot test in source area unsaturated zone

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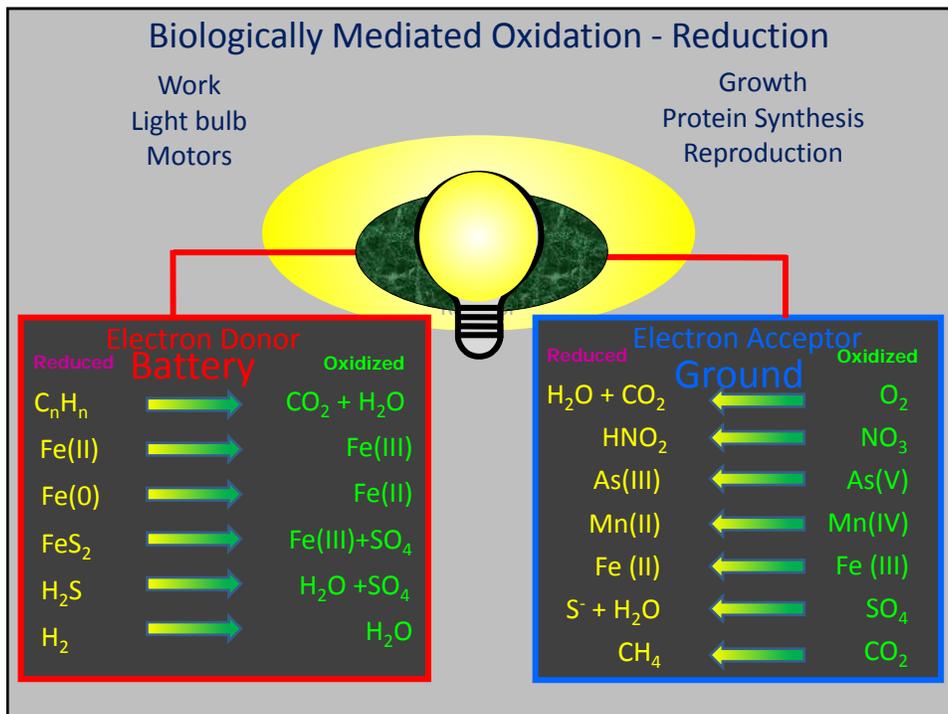


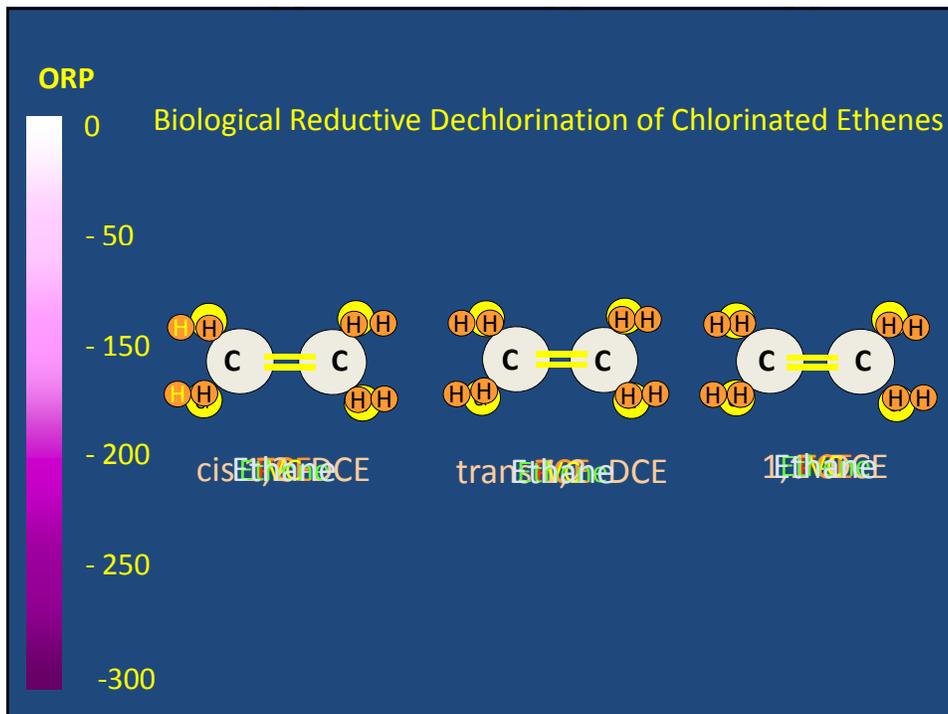
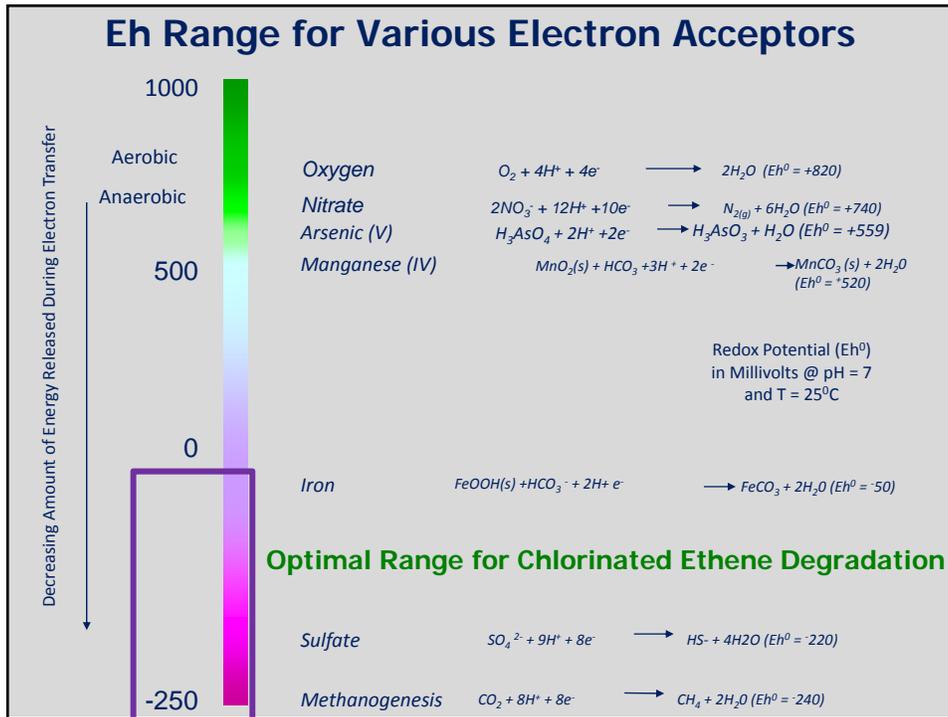
# Bioremediation



Bioremediation: any process that uses microorganisms, fungi, green plants or their enzymes to return the natural environment altered by contaminants to its original condition

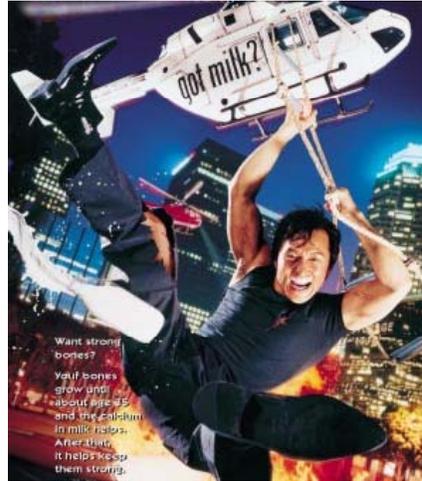
- Natural, sustainable process
- Accomplished by naturally occurring organisms
- Modifies environment to create conditions conducive to degradation of contaminants
- Uses organisms' life processes to degrade contaminants
- Can occur automatically (intrinsic bioremediation) or can be stimulated (enhanced bioremediation)







## Chlorinated Solvent Bioremediation



- Inject easily fermentable food (substrate)
- Bacteria ferment substrate
- Fermentation generates  $H^+ + e^-$
- Other bacteria utilize hydrogen to sequentially dechlorinate trichlorethene to non toxic end product (ethene)



## Substrates for Anaerobic Biodegradation



Substrates provide  $H_2$  for Reductive Dechlorination

- Naturally Occurring Organic Carbon
- Petroleum Hydrocarbons
- Lactate
- Lactose
- Molasses
- Cheese Whey
- Vegetable Oils
- Hydrogen gas ( $H_2$ )
- Synthetic Lactate Polymers (e.g. HRC)



## Biostimulation vs Bioaugmentation



Biostimulation is the modification of the environment to stimulate existing bacteria capable of bioremediation

- Nutrients: nitrogen, phosphorous, potassium
- Electron Acceptors: oxygen, nitrate, manganese, ferric iron, sulfate carbon dioxide
- Electron Donors: lactate, vegetable oil, molasses, cheese whey, lactose

Bioaugmentation is the introduction of a group of natural microbial strains or a genetically engineered variant to achieve bioremediation

- Indigenous
- Exogenous

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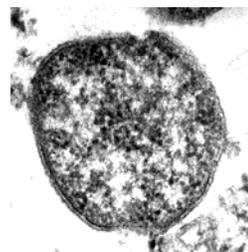


## Bioaugmentation



- "DCE stall" - at many sites dechlorination is insufficient to completely degrade chlorinated ethenes to ethene
- Dehalococcoides *sp* (DHC) is the ONLY organism demonstrated to completely degrade PCE and TCE to ethene
- Several commercially available bioaugmentation cultures

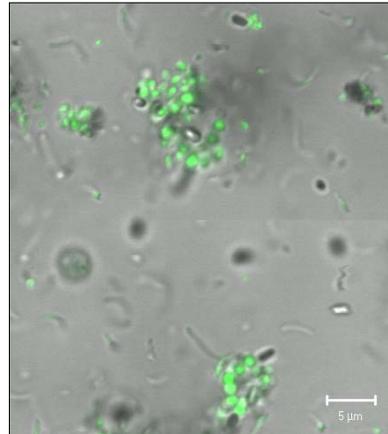
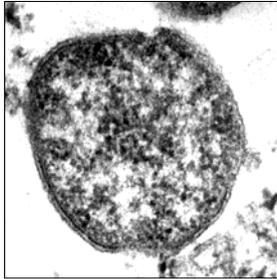
Several bioaugmentation cultures are commercially available



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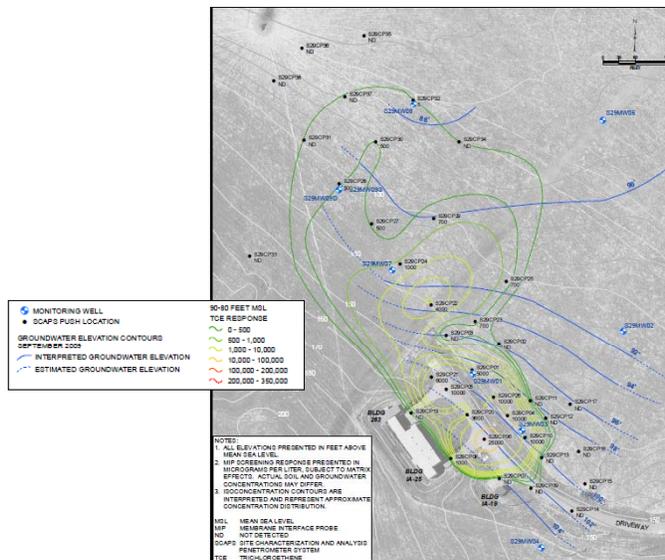
# Dehalococcoides sp



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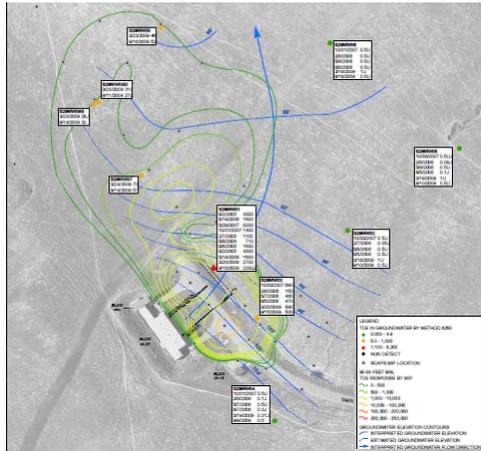


# SCAPS Results – Overview





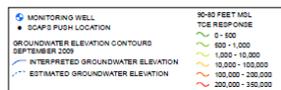
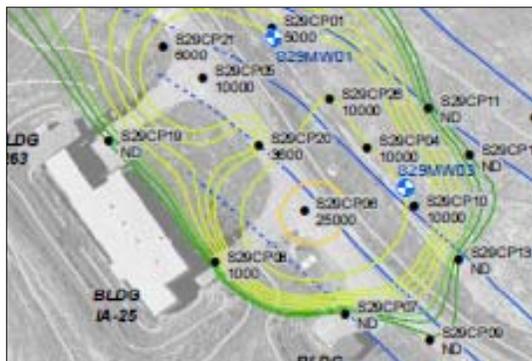
# TCE in Groundwater



19



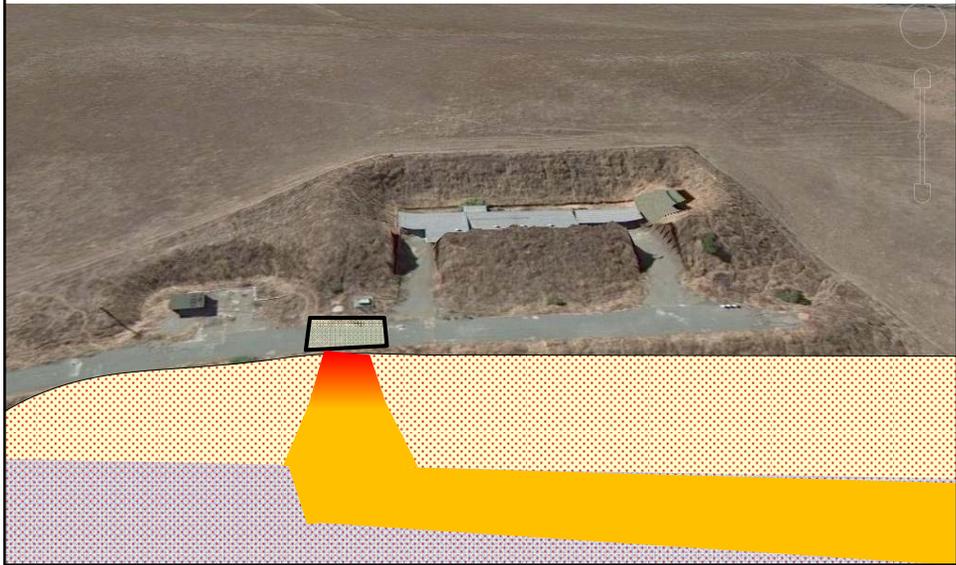
# SCAPS Results – Zoomed In



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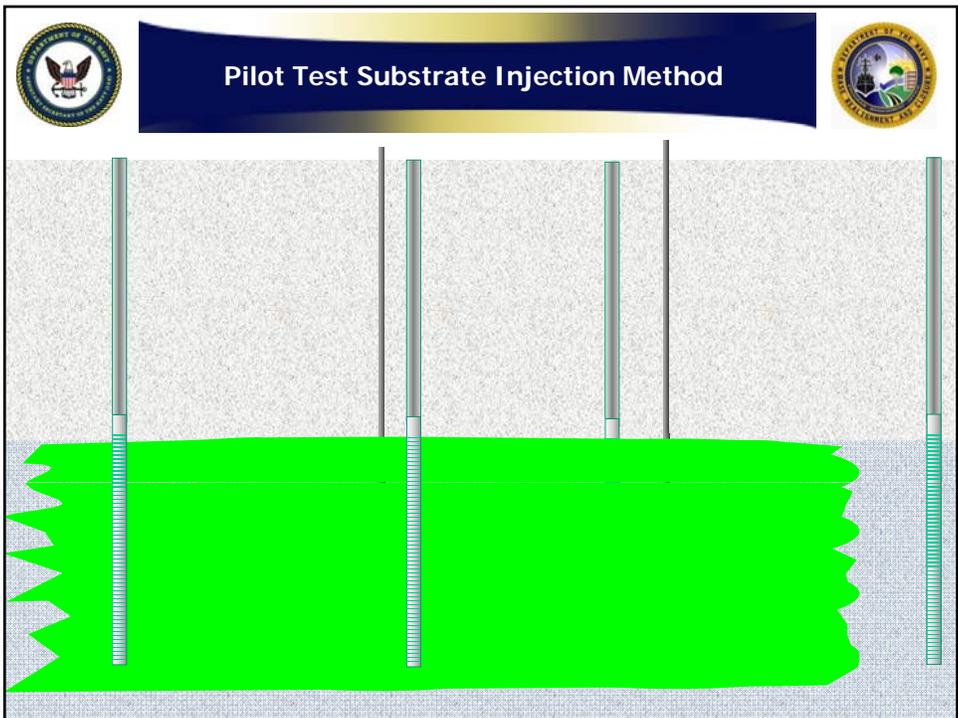
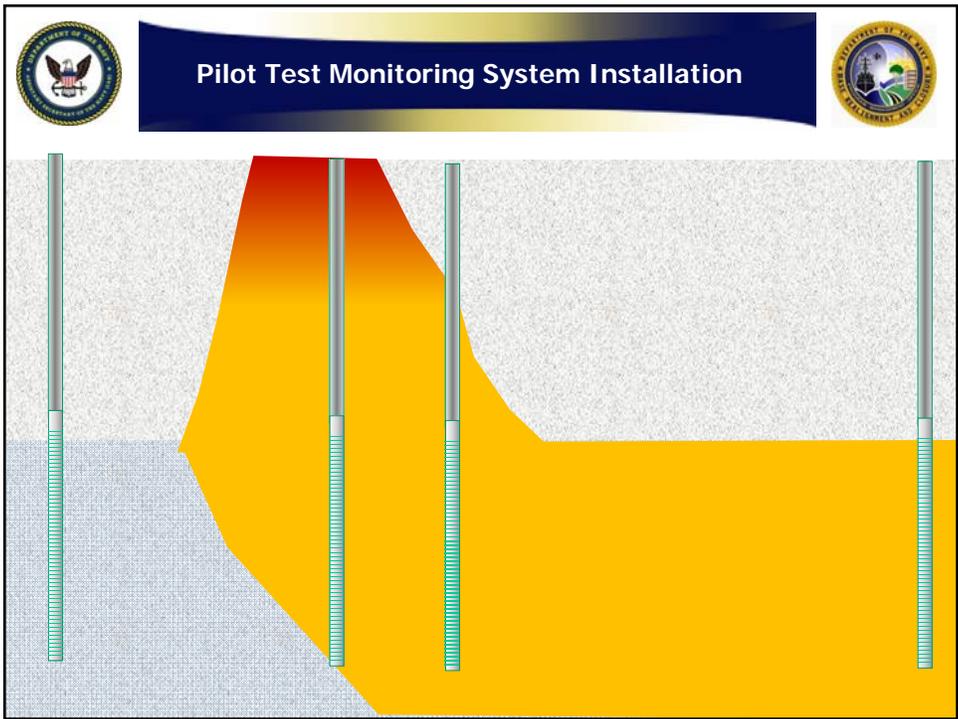
## IRP Site 29

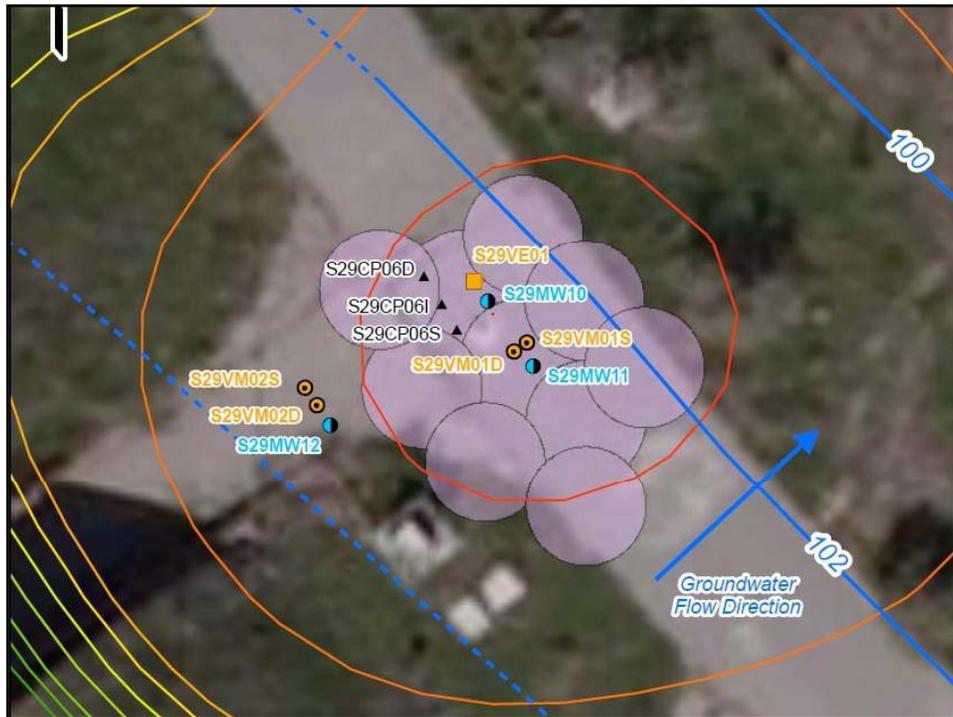


## In Situ Bioremediation Pilot Test at Site 29



- **Install 3 additional monitoring wells**
- **Conduct baseline sampling**
- **Prepare injection mixture**
- **Inject substrate at regular intervals at 10 locations**
- **Injection locations all on asphalt area**
- **Conduct performance monitoring**







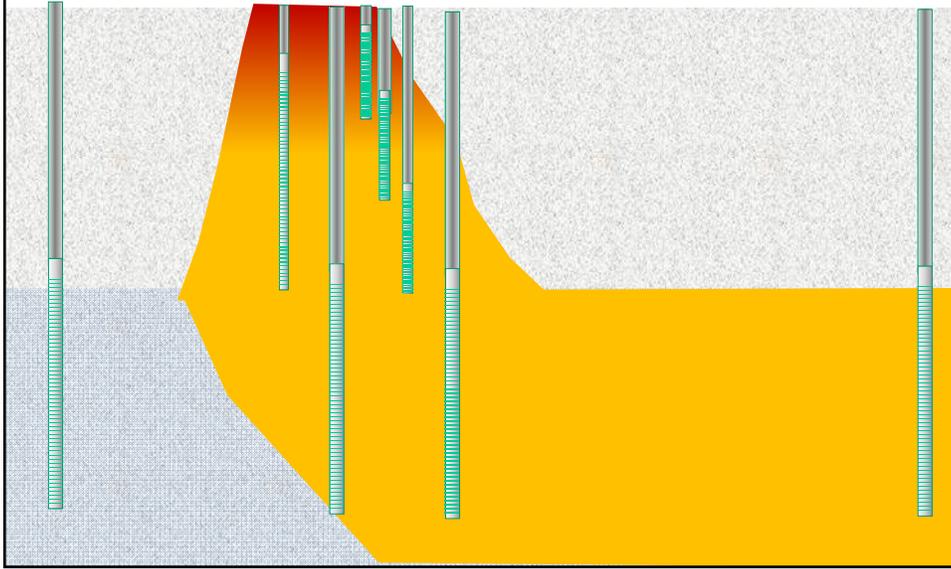
### SVE Pilot Pilot Test at Site 29



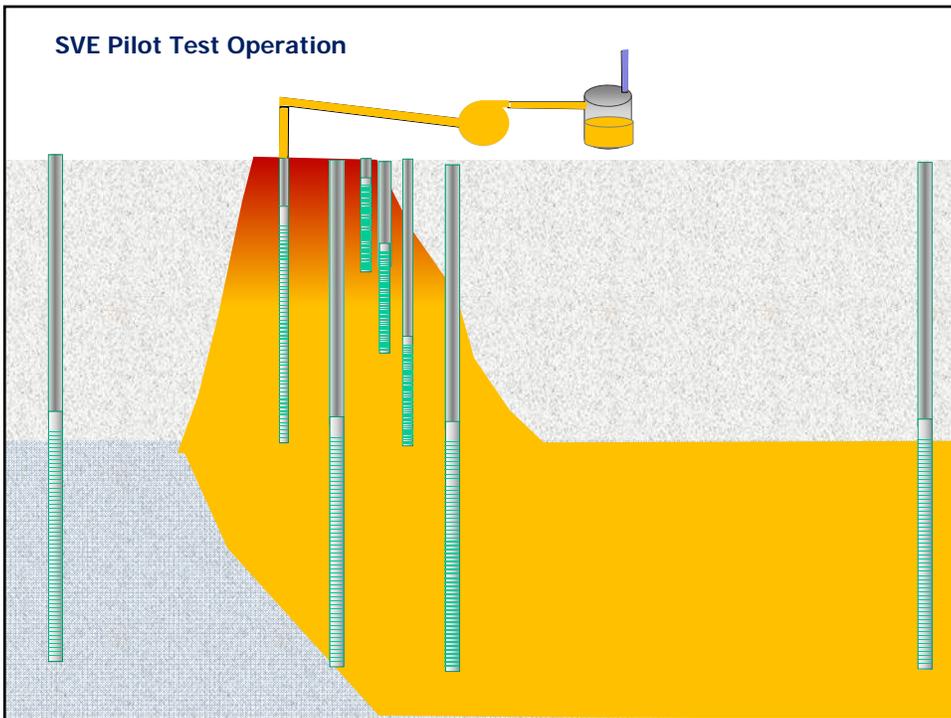
- **Install 5 additional SVE wells clusters**
- **Install 1 SVE extraction well**
- **Install photovoltaic vapor extraction and treatment system**
- **Conduct baseline sampling**
- **Begin vapor extraction**
- **Monitor changes in pressure and vapor concentration in wells**

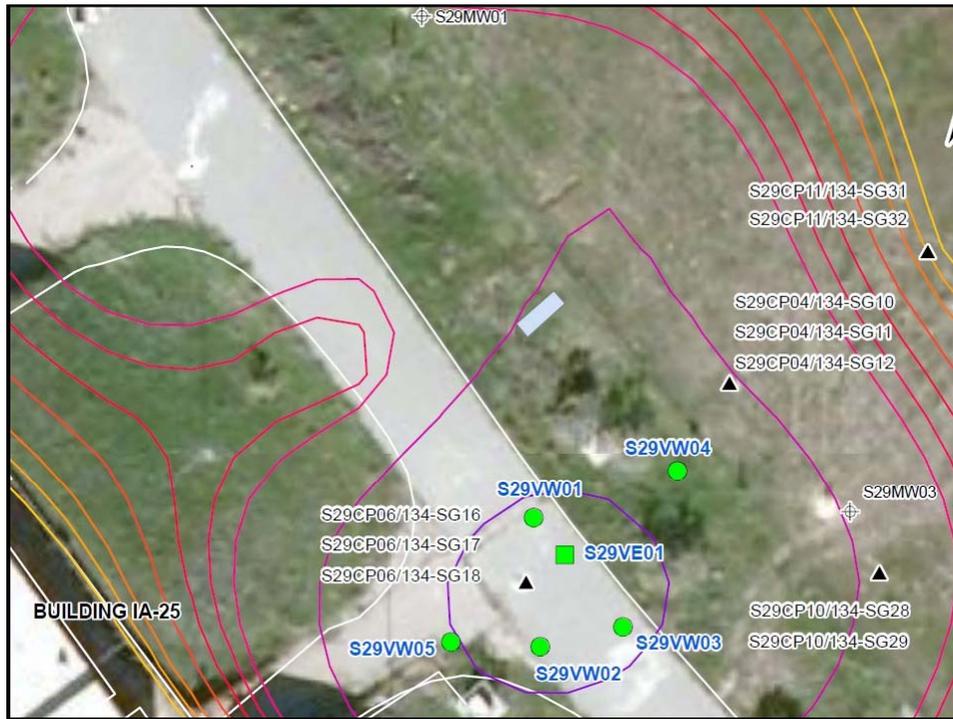
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### SVE Pilot Test System Installation



### SVE Pilot Test Operation





 <b>Schedule:</b> 	
<b>Task</b>	<b>Estimated Completion</b>
<b>Work Plans</b>	<b>3/17/11</b>
<b>Install Wells</b>	<b>3/29/11</b>
<b>Baseline GW Sampling</b>	<b>3/29/11</b>
<b>ISB Injection</b>	<b>6/6/11</b>
<b>Vapor System Installation</b>	<b>4/14/11</b>
<b>O&amp;M</b>	<b>6/17/11 to 5/17/12</b>

**ATTACHMENT E**

**SITE 22A DRAFT FINAL FEASIBILITY STUDY PRESENTATION  
RESTORATION ADVISORY BOARD MEETING  
FORMER NAVAL WEAPONS STATION SEAL BEACH  
DETACHMENT CONCORD, CALIFORNIA**

**FEBRUARY 2, 2011**

(10 Pages)



# Site 22A Draft Final Feasibility Study

Former Naval Weapons Station Seal Beach  
Detachment Concord, Concord, California

Restoration Advisory Board Meeting  
February 2, 2011

Valerie Harris, Navy RPM  
Katie Henry, Tetra Tech



## Presentation Overview

- Site Description and History
- Site 22A Remedial Investigation Results
- Feasibility Study Process
- Remedial Action Objectives
- Remedial Alternatives Evaluated
- Remedial Alternatives Ranking Results
- Questions



# Site 22A Description



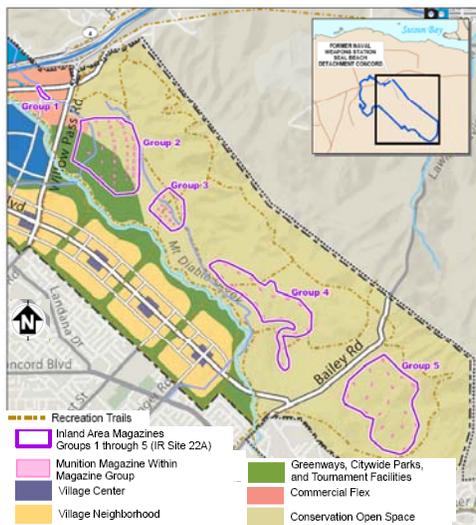
Site 22A consists of 5 Magazine Groups

- Group 1 – 6 magazines; 2.4 acres
  - Near several buildings, paved parking, and roadway
  - Tall grasses not present
- Group 2 – 39 magazines; 154 acres
- Group 3 – 18 magazines; 39 acres
- Group 4 – 20 magazines; 124 acres
- Group 5 – 20 magazines; 185 acres

Magazines were constructed in the mid-1940s for storage of munitions and explosives



# Site Reuse Area Map





## Site 22A History



- Herbicides containing arsenic were applied to vegetation on top of and within 50 feet of the magazines to kill tall grass that represented a fire hazard
- Arsenic is elevated around the perimeter of a subset of the magazines but below background in open areas



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## Remedial Investigation Results



### Nature and Extent of Contamination Evaluation

- Arsenic distribution consistent with pesticide application
- Concentrations above background typically in upper 6 inches of surface soil
- Concentrations not above background in Group 1

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## Range of Arsenic Concentrations



- Group 1: 2.1 to 6.9 mg/kg
- Group 2: 1.8 to 47.1 mg/kg
- Group 3: 3.3 to 61.8 mg/kg
- Group 4: 3.0 to 53.0 mg/kg
- Group 5: 2.2 to 65.3 mg/kg

10 mg/kg: Background concentration in soil at Former Naval Weapons Station Seal Beach Detachment Concord

0.39 mg/kg: EPA Region 9 PRG (now RSL) for residential soil; 39 mg/kg corresponds to a  $10^{-4}$  cancer risk

22 mg/kg: Hazard quotient (HQ) = 1 based on the residential scenario

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## Risk Assessment Results



### Human Health Risk Assessment

- All groups are suitable for non-residential use
- All groups are within the risk management range (RMR) for residential use based on Federal toxicity criteria
  - Groups 3 through 5: cancer risks within RMR for residential use based on Federal toxicity criteria, slightly exceed range for State criteria
  - Group 2: cancer risks are within the RMR for residential use based on Federal and State criteria
- Noncancer hazard is acceptable (below 1) for all magazine groups

### Ecological Risk Assessment

- No unacceptable risk for all magazine groups

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## Remedial Investigation Recommendations



- Conduct a Feasibility Study to address human health risks associated with arsenic-contaminated surface soil at Site 22A Groups 2 through 5 magazine areas
- No further action for Group 1 Magazine Area

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## Feasibility Study Process



- Identify remedial action objectives and applicable regulations
- Identify and screen treatment technologies
- Develop and evaluate alternatives against seven of the nine NCP criteria
- Perform comparison of remedial alternatives

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## Remedial Action Objective



Reduce exposure of potential future residents through inhalation, ingestion, and dermal contact, to arsenic concentrations in surface soils at Site 22A that

- (1) result in a cancer risk above the risk management range ( $10^{-6}$  to  $10^{-4}$ ) or
- (2) result in a hazard index greater than 1.



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## Remedial Alternatives



- Alternative 1: No Action
- Alternative 2: Land Use Controls
- Alternative 3: Excavation and Off-Site Disposal
- Alternative 4: Excavation, Containment, and Land use Controls

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## Alternative 1: No Action



- Required in the NCP
- Baseline for comparison with other alternatives
- Site remains unchanged
- No response actions would be implemented

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## Alternative 2: Land Use Controls



- Restrict future residential use of the property
- May be implemented through access restrictions, land use restrictions and covenants
- Would not allow property to be used in a manner that allows future residents to be exposed to arsenic in surface soils that presents an unacceptable risk
- Residential use is not currently planned for any of the magazine groups

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### Alternative 3: Excavation and Off-Site Disposal



- Excavation of surface soil (0-6 inches) around select magazines
- Area to be excavated approximately 4,800 - 6,200 cubic yards from areas totaling 6.5 to 7 acres
- Excavated areas would be backfilled
- No magazines or roads would be removed



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### Alternative 4: Excavation, Containment, and Land Use Controls



- Excavation of surface soil (0-6 inches) around select magazines
- Area to be excavated approximately 4,800 - 6,200 cubic yards from areas totaling 6.5 to 7 acres
- Excavated soil would be placed in an on-site containment unit (CAMU)
- Land use controls would restrict use of CAMU and area around it to protect its integrity
- No magazines or roads would be removed



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## Evaluation Against NCP Criteria



- Overall protection of human health and the environment
- Compliance with applicable or relevant and appropriate requirements (ARAR)
- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume through treatment
- Short-term effectiveness
- Implementability
- Cost
- Community Acceptance (evaluated after proposed plan)
- State Acceptance (evaluated after proposed plan)



## Alternatives Ranking Summary



Alternatives	Overall Protection of Human Health and the Environment *	Compliance with ARARs *	Long-Term Effectiveness and Permanence	Reduction of Toxicity, Mobility, or Volume through Treatment	Short-Term Effectiveness	Implementability	Cost (\$ Million)	Overall Rating by Alternative
Alternative 1: No Action	Protective	NA	○	○	●	●	● (\$0)	●
Alternative 2: Land Use Controls	Protective	Meets ARARs	◐	○	●	●	● (\$0.66)	●
Alternative 3: Excavation and Off-Site Disposal	Protective	Meets ARARs	●	○	○	●	● (\$1.53-1.73)	●
Alternative 4: Excavation, Containment, and Land Use Controls	Protective	Meets ARARs	●	○	◐	●	● (\$2.25-2.36)	●

**Legend:**

- Poor
- ◐ Marginal
- ◑ Good
- Very Good
- Excellent



## Schedule



- February 2011: Comments on the Draft Final Feasibility Study due; if no comments, document becomes final
- October 2011: Proposed Plan submitted to the public
- October/November 2011: Proposed Plan Public Meeting
- April 2012: Draft Record of Decision



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## QUESTIONS?



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