FINAL
NAVAL AIR STATION ALAMEDA RESTORATION ADVISORY BOARD
MEETING SUMMARY

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

August 14, 2008

The following participants attended the meeting:

Co-Chairs:	
Patrick Brooks	Base Realignment and Closure (BRAC) Program Management Office (PMO) West, BRAC Environmental Coordinator (BEC), Navy Co-chair
George Humphreys	Restoration Advisory Board (RAB) Community Co-chair
Attendees:	
Doug Biggs	Alameda Point Collaborative (APC)
Tommie Jean Damrel	Tetra Tech EM Inc. (Tetra Tech)
Doug Delong	BRAC PMO West, Compliance Manager
Fred Hoffman	RAB
Joan Konrad	RAB
James Leach	RAB
Dot Lofstrom	California Environmental Protection Agency (Cal/EPA) Department of Toxic Substances Control (DTSC)
Lona Pearson	Tetra Tech
Steve Rosansky	Battelle
Peter Russell	Russell Resources/Alameda Reuse and Redevelopment Authority (ARRA)
Brant Smith	Xpert Design and Diagnostics (XDD), LLC
Dale Smith	RAB
Jean Sweeney	RAB
Michael John Torrey	RAB
Xuan-Mai Tran	U.S. Environmental Protection Agency (EPA)
John West	Water Board

Heather Wochnick BRAC PMO West, Remedial Project Manager (RPM)

The meeting agenda is provided in Attachment A.

MEETING SUMMARY

I. Approval of Previous RAB Meeting Minutes

Mr. Humphreys called the meeting to order at 6:30 p.m.

Mr. Humphreys provided the following comment:

- Page 2 of 12, third bullet; "looses" will be changed to "loses."
- Page 3 of 12, first bullet; "Ms. Sweeney" will be changed to "Mrs. Sweeney."

Ms. Smith provided the following comment:

- Page 4 of 12, second paragraph, last sentence, "…industrial waste was deposited where the runway is located" will be revised to, "…industrial waste was likely deposited where the runway is located."
- Page 5 of 12, last paragraph, second sentence, "…the RI/FS was completed in a condensed schedule…" will be revised to "…the RI/FS was completed on a condensed schedule…."

Ms. Lofstrom provided the following comments:

- Page 9 of 12, in the second full paragraph, "Ms. Lofstrom said that 1,4 dioxane contamination was discovered several years ago and now, 1,4 dioxane is sampled for analysis wherever there was a trichloroethene (TCE) plume. She said 1,4-dioxane does degrade, and so it is ubiquitous" will be revised to "Ms. Lofstrom said 1,4 dioxane is sampled for analysis wherever there was a trichloroethene (TCE) plume. She said 1,4-dioxane does not readily degrade, and so it is ubiquitous."

Mrs. Sweeney provided the following comment:

- Page 6 of 12, third paragraph, fourth sentence, "Mrs. Sweeney asked if the removal action did not remediate the entire area contaminated by lead, and so it was evaluated in the FS" will be revised to, "Mrs. Sweeney asked why the earlier removal action did not remediate the entire area contaminated by lead."

The minutes were approved as modified.

II. Co-Chair Announcements

Mr. Humphreys distributed his list of reports and correspondences received during July 2008 (Attachment B-1). He noted that the list of reports received during June 2008 was included in the previous RAB mailer packet (see Attachment B-1). Mrs. Sweeney said she noticed the final Site Characterization and Analysis Penetrometer System (SCAPS) report for tarry refinery waste (TRW) was submitted in June (Document 3 of June 2008) and that she was interested in hearing more about TRW. Mr. Brooks agreed and said that the TRW project could be an upcoming agenda item.

Mr. Humphreys said that he submitted two comments letters to the Navy in June: one on the Operable Unit (OU)-2C draft remedial investigation (RI) report, and the other on the Installation Restoration (IR) Site 35 Proposed Plan (PP). He asked the RAB members if they would like to verbally approve his letters as support to his comments. Mrs. Sweeney, Ms. Smith, Ms. Konrad, Mr. Hoffman, and Mr. Torrey all verbally indicated their support for Mr. Humphreys' comment letters. Mr. Humphreys noted one of his main comments for the OU-2C RI involved radiological screening of the heating and ventilation ducts of the Building 5 and that he hoped that task would be added in the site management plan (SMP) discussion. His main comments for the Site 35 PP involved evaluation of the lead paint chips washed into storm drains. Because sampling was not completed beneath buildings and roadways, the potential for additional polycyclic aromatic hydrocarbon (PAH) contamination remained in the Alameda Point Collaborative (APC) housing area. If the buildings or roadways are redeveloped, sampling should be completed in those areas. He added that he prefers 4 feet of soil isolation compared with the 2 feet proposed in the PP.

Mr. Humphreys provided an update on the August 7, 2008, SunCal meeting. He said there were some significant ideas in the presentation, which was based on two alternatives: Alternative A and Alternative B. Alternative A was compliant with Measure A and included 1,700 residences. Alternative B included 4,000 residences. Mr. Biggs said he thought there were 7,000 residences. Both alternatives showed the area of Northwest Territories, including IR Sites 1 and 32, as a wetlands/ponds restoration area instead of the current planned golf course. He added if Site 1 is capped as a remedy for the radiological contamination and chemical waste, it would not be wise to excavate the cap and create ponds. In addition, SunCal shows a solar thermal power generation plant east of Sites 1 and 32 and west of a planned recreation complex. The solar plant would presumably generate enough power to make the new development self sufficient; however, there was no mention of the need to be on the grid when the solar plant was off line. Another presentation topic was the personal rapid transit (PRT) system, which used programmable pods that would travel around the island. He noted that there was no discussion about funding for the solar and PRT systems.

Mr. Humphreys thanked the Navy for providing the tours of Site 1 and Site 2. He said the tour was interesting; however, he would have preferred a discussion or narrator providing information on the points of interest. He said in cases where people had specific questions, no answers were forthcoming. Mr. Humphreys also noted that although the tour was to include Site 32, the tour did not reach Site 32 and was instead about 0.25 mile away from the actual site.

Mr. Humphreys provided the RAB and Navy two position papers: one on the analysis of the Site 1 trenching report (Attachment B-2a), and the other on the Site 1 PP (Attachment B-2b). He said he would discuss his papers later in the meeting during the Site 1 discussion. He asked the RAB members if they agreed or disagreed with his papers that they may want to submit an official collective transmittal to the Navy.

Mr. Brooks announced that Anna-Marie Cook (EPA) arranged a site visit to the storm drain removal action/radiological removal action visited by members of the Navajo EPA from the four corners region where uranium is mined. Matt Slack of the Navy Radiological Affairs Support Office (RASO) attended the meeting and was available to the Navajo EPA and its contractors. Mr. Brooks noted that information on the subject is available on the Internet at http://www.epa.gov/region09/waste/sfund/navajo-nation/index.html. Several federal agencies have worked together to create a 5-year plan to address the uranium contamination. Mr. Brooks said that the Navajo EPA must address considerable issues and the Navy is available to provide information and training. Mrs. Sweeney asked why the Navajo EPA is not "in the know" about the issue since the problems are long standing, and asked why the Navy is in the position to instruct them. Mr. Brooks responded that he was not familiar with the Navajo EPA's experts, and was unable to attend the meeting. However, the Navy is in a position to help them understand the process by virtue of having completed many similar projects.

Mr. Brooks said that the Navy is continuing to coordinate with Young Community Developers in San Francisco. The Navy has identified a potential candidate that just received his hazardous waste operations and emergency response (HAZWOPER) training.

Mr. Brooks said that the petroleum sites at Alameda Point do not seem to draw much interest and he wanted to make sure the RAB was aware of the ongoing petroleum program. The piping seen around the entrance to the base (near the plane on a stick) is part of a large remediation system to clean up the groundwater and remove fuel from the subsurface. The area is known as Corrective Action Area (CAA)-3, which has recently been expanded. He noted that the system is working well and has removed tens of thousand of pounds of hydrocarbons from the subsurface. Mrs. Sweeney noted that, historically, there was a large fuel inventory lost in that area and that she believes what has been recovered is only a fraction of what was lost. She added that the RAB is interested in CAA-3. Mr. Brooks said that a presentation on CAA-3 can be provided at a future RAB meeting.

Mr. Brooks said that CAA-C was highlighted during a green career film. CAA-C remediation has just started. The CAA-C is contaminated with aviation fuel with a high volatile fraction. He added this project will be interesting to track. Mrs. Sweeney asked about the location of CAA-C. Mr. Brooks replied that CAA-C is near the storm drain removal area, Site 26.

Mr. Brooks provided a brief update on the storm drain removal. He said two survey units have been completed that include piping and manholes. The survey unit that passes under the road has been initiated. The piping sections will be removed and then replaced. The removal will occur inside Building 5 in about 3 weeks. Building 5 housed the former radium paint shop, which is the source of the radium that contaminated the drains.

Mr. Brooks said Navy RPM Michelle Hurst is on maternity leave and should return in about 3 months.

III. Site 26 Remedial Action/Groundwater Monitoring

Ms. Wochnick introduced herself and the IR Site 26 remedial action/groundwater monitoring presentation (Attachment B-3). Site 26 is located southeast of Building 20. Contaminants of concern are trichloroethylene (TCE), dichloroethylene (DCE), and vinyl chloride (VC), which are present in the groundwater at concentrations as high as 700 (TCE), 2,500 (DCE), and 530 (VC) micrograms per liter (μg/L). Mr. Hoffman asked about the source the three contaminants. Steve Rosansky (Battelle) replied that the site was a washdown area for various aircraft; DCE and VC are degradation products of TCE, which was probably used in the washdown. Mr. Hoffman asked why degradation is stopping. Mr. Rosansky said that he was unsure if degradation was ceasing, but the purpose of the in situ chemical oxidation (ISCO) is to accelerate remediation and natural degradation.

Ms. Wochnick said the Navy is conducting a two-phase approach to clean up the constituents. The first approach is ISCO. The second approach after ISCO is in-situ bioremediation (ISB). She said the Navy has proposed different objectives for each approach. For ISCO, a small concentration area is desired, targeting TCE and bringing concentrations down to 5 μg/L, and targeting DCE to bring concentrations to 30 μg/L (Slide 2). After ISCO, ISB would be implemented to decrease all contaminants of concern to the following remedial goals: TCE – 5 μg/L, DCE – 6 μg/L, and VC – 0.5μg/L.

Ms. Wochnick explained the ISCO injection process and reagent used (Slide 3). The reagent used is Fenton's, which is a mixture of hydrogen peroxide and ferrous iron that produces hydroxyl radicals when combined.

There will be two full-scale injection events for 51 injection points (Slide 5). Seventeen multi-depth clusters will be injected in wells screened at three depths: shallow (3 to 7 feet below ground surface [bgs]), mid (7 to 11 feet bgs) and deep (11 to 15 feet bgs). The goal is to inject 29,000 gallons of hydrogen peroxide to achieve a 2 percent hydrogen peroxide concentration at each monitoring location. Mr. Hoffman requested clarification on the number of injection points and injection events. Ms. Wochnick explained that each of the two injection events will include an application into the 51 injection points. Citric acid will be used as a peroxide stabilizer. A photograph of current injection applications is shown on Slide 5.

Ms. Wochnick discussed the ISCO treatment area. The treatment area of 2,700 square feet was established using post-pilot test monitoring results for TCE and DCE. In comparison, the treatment area was originally estimated at 5,000 square feet based on baseline sampling for ISCO. The results from the pilot test allowed the site to be reduced and the injections concentrated.

Ms. Wochnick discussed spacing of injection wells, noting that the injection location design focuses on areas with the highest concentrations. Wells will be more closely spaced in areas of high concentration. Mr. Humphreys asked if the injections will occur simultaneously. Ms. Wochnick said the injections are performed in multiple locations simultaneously with 1 hour on and 1 to 1.5 hours off. The goal is to inject 2,200 gallons of reagent per well per day over the 4-week duration. Mr. Rosansky clarified that up to 10 injection points are used simultaneously.

Ms. Wochnick discussed health and safety controls. Safety controls include work zone demarcation, personal protective equipment, and chemical reagents stored with secondary containment. In addition, injections will be discontinued if reagents surface, injection and monitoring wells are equipped with pressure relief valves, and equipment is fenced and secured from the public. Mr. Hoffman asked about the construction materials for the wells. Ms. Wochnick replied polyvinyl chloride (PVC) piping. Mrs. Sweeney asked if most of the treatment process is under concrete and if the reaction was explosive or could lift the concrete. Ms. Wochnick replied the treatment is underground, but the reaction is not explosive but generates heat and the exothermic reaction creates gas. If the groundwater containing % levels of peroxide comes up to the ground surface, the injections are shut down. Mrs. Sweeney asked if all free product was pumped out when the plume was discovered. Ms. Wochnick replied she did not believe there was free product at the site; the plume is dissolved-phase only.

Several monitoring parameters will be evaluated: flow rates and pressures, water quality sampling, hydrogen peroxide, and visual observations. Water quality sampling include dissolved oxygen (DO), conductivity, oxidation-reduction potential (ORP), temperature, and pH. Samples for analysis of volatile organic compounds (VOC) will also be collected. Initial full-scale injection results indicate no downward influence from injections into the Bay Sediment Unit (BSU) since DO and ORP measured in the BSU-1 monitor well continue to be similar to the baseline measurements during the injection monitoring. Ms. Smith asked if there was only one BSU well; Ms. Wochnick replied that there are two BSU wells.

Ms. Wochnick discussed the remedial action decision flow chart on Slide 10. She noted a transition will be made to ISB if the performance objectives are not met (TCE below 5 μg/L and DCE below 30 μg/L) after the two rounds of ISCO. Post-ISCO monitoring includes one monitoring event after each injection event. ISB injections and monitoring will continue until four consecutive quarters of groundwater data show that all VOCs remain below remedial goals.

The monitoring network includes 14 permanent monitoring wells and five three-level (shallow, mid, and deep) Hydropunch locations. Samples will be collected 4 weeks after each phase of ISCO injections has been completed. Analytes include VOCs, metals, and water quality parameters (total dissolved solids, anions/cations, and alkalinity). Bioremediation parameters will also be measured 4 weeks after final ISCO injections. Reduction of VOCs will be compared against baseline data. Mr. Hoffman asked if the first monitoring samples will be collected after ISCO. Ms. Wochnick replied the first samples will be collected after the first phase, and another round of monitoring will take place after the second phase. Bioremediation parameters will be measured only after the second phase, unless the concentrations have been reduced below the remedial goals after the first phase.

Ms. Wochnick summarized the post-ISCO monitoring parameters and explained how the data would be used. Fourteen individual monitoring wells make up the monitoring well network. Four sentry wells are outside the treatment area to ensure the plume is not growing. The black dots represent Hydropunch locations. Mr. Hoffman asked where the monitoring wells are screened. Mr. Rosansky said at 5 to 15 feet; with 10-foot screens. Ms. Wochnick added the BSU wells are screened in the BSU aquitard. Mr. Hoffman asked at about the depth at the top of the aquitard, and Mr. Rosansky replied 15 feet below ground surface.

Ms. Wochnick discussed the second remedial phase, ISB treatment, on Slide 14. Referring to the conceptual illustration shown on Slide 14, she said there will be 40 injection points with 10-foot spacing between the points and 30-foot spacing between each row. Results from the bioremediation sampling after ISCO treatment will determine whether oxygen releasing compounds (ORC) or hydrogen releasing compounds (HRC) will need to be injected to stimulate bioremediation. ORC will be used if DCE or VC remains above remedial goals, and HRC will be used if TCE remains above its remedial goal.

Mrs. Sweeney asked for an explanation of the term aquitard. Mr. Rosansky replied an aquitard is a confining layer that would prevent contamination in water from migrating downward. Mr. Brooks added the confining layer can be thought of as a clayey or silty sediment layer that prevents water transfer.

The ISB amendments are discussed on Slide 15, which shows a photograph of an ORC sock being inserted into a monitoring well. ORC is used to promote an aerobic environment and is used for VC or DCE only. HRC is used to increase an anaerobic (oxygen-deficient) environment and is used to treat TCE. HRC is a viscous honey-like material that releases organic acids on contact with water. The organic acids ferment to produce hydrogen, which donates electrons and drives the anaerobic reductive chlorination process. The process is slow and allows electrons to be delivered into the system for about 1 year. Both ORC and HRC can be interchanged, depending on the residual contaminants. Mrs. Sweeney asked what was meant by “viscous honey-like” and if the material was sweet. Ms. Wochnick replied that the material is thick and flows slowly like honey, is not necessarily sweet, but contains nutrients.

Ms. Wochnick said that 4 quarters of groundwater monitoring will be performed after bioremediation is complete The results for the samples will be compared with baseline conditions and post-ISCO treatment. Samples will be analyzed for VOCs and water quality parameters including DO, ORP, pH, temperature, and specific conductance. Sample results will determine if additional ISB amendments will be needed to optimize continued bioremediation. Monitoring will continue until remedial objectives have been met. The goal is to remove the land use controls for the site once concentrations of TCE, DCE, and VC are reduced to remedial goals.

Ms. Wochnick said the project is currently being conducted and the first event should be finished by the end September 2008. The first round of post-ISCO monitoring will be conducted after a 30-day rest. If all goes well, then the project will move to either ISB or site restoration. If the constituents of concern are still present at high concentrations, then another round of ISCO

injections will be conducted, followed by post-ISCO monitoring. The ISB phase will begin in early 2009. Monitoring will be conducted during the ISB phase.

Mr. Hoffman noted several concerns. He said the monitoring program will not be adequate to evaluate subsurface conditions during injections. The first injection will displace all the water in the surrounding wells. On Slide 5 three different levels of injections were noted and the reaction rate would be diffused. The biggest problem is mixing the reagent with the contaminants in water. He said he likes the plan of injecting into different layers because it increases the surface area that interacts with the reagent. The reagent will work well with sorbed contaminants but the rest will be pushed aside. He added that waiting a month after the injection event to check conditions is too long. Ms. Wochnick replied that water quality parameters will be monitored during the entire injection scenario. Mr. Hoffman said that samples for analysis of TCE should be collected immediately in the monitoring wells closest to the current injection site. Mr. Rosansky said that the samples are showing 3 to 7 percent hydrogen peroxide in the closest monitoring wells. Brant Smith (XDD) added that a poorly designed reagent injection plan will displace contaminants. However, the Navy addresses this concern with the number of injection points, injection spacing, the different injection depths, and use an outside-in, to inside-out, to outside-in, injection strategy, to strategically displace the contaminants and keep them within the project area. Mr. Rosansky said that this injection design is mixing the reagent well into the subsurface. The groundwater data for water quality parameters and peroxide in the monitoring wells show that the strategy is working since we see an increase in dissolved oxygen in the monitoring wells within our injection area. Mr. Smith said that there is good distribution of the reagent into the subsurface as shown by the ORP and DO graphs demonstrated on Slide 9. The oxygen is a byproduct of the high peroxide reaction. Based on high DO levels from the injection monitoring, the Navy expects a significant decrease in DCE and VC.

Mr. Hoffman asked if the Navy attempted to model the injection design. Mr. Smith said the project design is based on professional experience. Mr. Hoffman asked if any monitoring is conducted for contaminant movement. Mr. Smith said it is not, but wells will be monitored for VOCs. Ms. Wochnick added that the ISCO injections are being performed in the high concentration area of the plume, and that the monitoring conducted post-ISCO will be adequate to determine if the plume has been pushed out. Follow-on remedies will be adjusted to the plume size based on post-ISCO sampling.

Mrs. Sweeney asked if the fill soil present at the site behaves differently than other soils. Mr. Rosansky said regardless of the presence of fill soil, it is difficult to predict the outcome with any in-situ technology. He added the water table is rising because of gas generation, which is considered beneficial because the rising water and gases are distributing the reagent and promoting mixing throughout the subsurface.

Mr. Hoffman asked how often the water levels are measured. Mr. Rosansky said water levels are measured every morning and checked throughout the day during operation. Mr. Hoffman asked if monitor wells, 26MW05 and BSU2, are measured. Mr. Rosansky said they are measured. Both are relatively consistent with baseline conditions with some slight fluctuations. Mr. Hoffman asked if it could be identified if TCE was driven from of the area in front of the

reagent. Mr. Rosansky said that the concentration of TCE has not yet been measured in the wells but TCE will be measured after the ISCO treatment. Mr. Hoffman requested TCE sampling soon to allow the potential to avoid contaminant displacement away from the remediation area and to evaluate the injection design.

Ms. Wochnick said the design concept is to both contain the contaminants and distribute the reagent throughout the subsurface. The Navy will be monitoring for TCE after the injection events and looking for rebound and displacement.

Mr. Brooks asked when the sampling is scheduled. Mr. Rosansky replied the post-ISCO sampling will occur at the end of September; however, a sample could be collected sooner.

The RAB discussed the TCE breakdown process to DCE and VC, and the expectation that the VC plume would increase after ISCO treatment. Ms. Wochnick said the VC plume will be treated with ISB in the final remedy and is not being targeted by the selected ISCO remedy.

Mr. Hoffman requested an explanation of the TCE degradation process. Mr. Smith provided a lengthy technical explanation.

Mr. Brooks noted that any additional samples outside of the current scope of work would require a contract renegotiation with the Navy and contractor. He added that he would check with the Navy contract specialist and contractor on the issue.

IV. Site Management Plan Update

Mr. Brooks began the Site Management Plan (SMP) presentation (Attachment B-4). He said the presentation is a preview of the schedule for fiscal year (FY) 2009. The SMP describes each operable unit (OU) and work occurring at individual sites and provides a detailed schedule. He added schedules are the key to tracking the whole program (Slide 2).

OU-1 is composed of Sites 6, 7, 8, 16 and 14. Sites 6, 7, 8, and 16 are grouped together in the remedial design document. Site 14 is geographically isolated from the other sites.

The final OU-1 Record of Decision (ROD) for Sites 6, 7, 8, and 16 was approved on October 1, 2007. All four sites require soil excavation and Sites 6 and 16 also require groundwater treatment using ISCO and ISB. The draft Remedial Design (RD) is currently in review. Mrs. Sweeney asked if the design document is available for review. Mr. Brooks said that it should be available in the information repository. Mr. Brooks requested comments from the RAB and reassured the RAB that the comments would be considered. The final RD is due in December 2008 and the Remedial Action (RA) is estimated to take 2 years.

The Site 14 ROD was approved on January 31, 2007. It specifies no further action for soil and groundwater treatment using ISCO and ISB. The final RD is due August 2008. The RA is estimated to take 2 years.

OU-2A includes Sites 9, 13, 19, 22, and 23, similar to OU-2B. Mr. Brooks said he provided a groundwater presentation recently for OU-2A and OU-2B. Mrs. Sweeney added this area includes Site 13, the TRW site (former oil refinery). Mr. Brooks said that when he arrived at Alameda Point, the feasibility study (FS) was submitted and received a number of comments. The Navy decided to withdraw it, rework the document, and produce a revised FS. He said there are data gaps to fill and groundwater results to incorporate. He said that there were questions about the quality of the human health risk assessment (HHRA), so it will be reevaluated.

Mr. Humphreys commented that the plan presented by SunCal showed the expansion of Encinal High School into OU-2A. Mr. Brooks added that he has not reviewed the SunCal redevelopment conceptual design in detail. However, the preliminary design concept (PDC) provided by ARRA is the plan that the Navy follows until any new plan is finalized. Mr. Humphreys said the SunCal draft is planned for submittal on September 19, 2008, but the date can change. Ms. Smith asked if the Navy would be willing to reassess its cleanup strategy if the city changes its reuse plan. Mr. Brooks said that the Navy keeps an open mind, but for now the ARRA PDC is followed. Ms. Konrad asked if the Navy cleaned up sites to different levels, because the plan has changed. Mr. Brooks said cleanup is based on the development plan and discussions with the city and ARRA. Mrs. Sweeney said that plans can be approved but it will not change the cleanup. Ms. Lofstrom said that nothing precludes the developer from cleaning up where the Navy has stopped and do additional work to adjust to a change of plan — for example, at Alameda Landing. Mrs. Sweeney said that OU-2A is a considerably larger piece of land and the likelihood that the developer will implement additional cleanup is remote. Ms. Lofstrom said that SunCal has not yet consulted with the BRAC Cleanup Team (BCT) but is talking to ARRA. Mr. Brooks said he talked with SunCal representatives and they are interested in meeting with the BCT. Ms. Lofstrom said she spoke with a SunCal representative on August 7, 2008, who said that SunCal would be contacting the BCT in September. She added that the BCT will inform the RAB of any information obtained. Mr. Humphreys said another change was the flood plain determination in the housing collaborative area; all of the housing would be removed and a park constructed. Polycyclic aromatic hydrocarbons (PAH) might be exposed when the buildings are removed. Mr. Brooks added SunCal has proposed a number of changes and he cannot comment on it until he gets a chance to review the plan in detail.

Mr. Brooks continued with the presentation. OU-2B includes Sites 3, 4, 11, and 21. The revised FS will be submitted in 2009. A new contract will be awarded in September. The FS requires results from the data gaps investigation to evaluate remedial alternatives. The data gaps report is due in August 2008. A treatability study is planned near oil-water separator (OWS)-163 using a new technology at Alameda Point, using zero-valent iron to treat TCE.

OU-2C includes Sites 5, 10 and 12. Mrs. Sweeney asked about the additional six-phase heating; she had believed the six-phase heating was completed. Mr. Brooks replied high concentrations of some VOCs remain in a few cells. A final supplemental RI is due in September 2008, and the

FS should be final by August 2009. Sites 5 and 10 storm drain line removal will be complete by April 2009. Mr. Brooks added that the roof drains are also being assessed with the storm drain work. There may be radium particles on the roof or in the roof drains because the roof drains tie into the storm drains. All drain work will be tied into the final closeout report due in November 2009.

Mr. Humphreys asked where the radiological survey is listed in the SMP, and Mr. Brooks said it is on the next to the last page.

Mr. Brooks continued with OU-3, disposal area Site 1. The Navy wrote a letter to the regulatory agencies and delayed the final ROD based on findings of the time-critical removal action (TCRA). Mr. Brooks noted that the Navy initially believed there would not be a problem with radium, but low levels were found in Site 1 and in Site 32. Therefore, the site boundaries for Site 1 and Site 32 were adjusted. Site 1 became smaller and the areas where radium was unexpectedly found were moved within the Site 32 boundary, which became larger. Mr. Leach asked if the Site 1 disposal areas will be excavated even though the landfill was not found. Mr. Brooks replied that some of the waste areas will be excavated.

Mrs. Sweeney requested clarification of the Site 1 and Site 32 boundary adjustments. Mr. Brooks referred to a letter to the regulators dated June 25, 2008, detailing the proposed changes to the closure strategies for Site 1 and Site 32 (Attachment B-5). The letter includes three figures; the third figure shows the current and proposed site boundaries. Mr. Brooks also noted that the adjustments to the site boundary are described in the text of the letter. Mrs. Sweeney requested additional clarification, and Mr. Brooks compared the first figure to the third figure showing the new site boundaries (see Attachment B-5). Mrs. Sweeney asked if the Site 1 areas that are not included in the adjustment would be capped and if the areas at the northwestern point would be excavated. Mr. Brooks agreed and said that the cap would extent to all of the areas of Site 1 to consolidate the waste, but the northwestern point (burn area) would be excavated and consolidated under the landfill cap. Mrs. Sweeney asked about the burn area. Mr. Delong said that the burn area was not found during trenching.

Mr. Humphreys said he believed all of the radium-contaminated soil would be excavated and removed off site. Mr. Brooks replied that action is part of, but is not the complete, remedy. Mr. Humphreys asked if all of Site 1 would be capped. Mr. Brooks said he understood the entire site would be capped where waste is present. Mr. Brooks suggested having a RAB meeting devoted to Site 1, and the RAB agreed. Mrs. Sweeney requested maps showing trenching locations. Mr. Brooks said 11 trenches were completed, and the summary of findings report is available in the information repository. He said the report describes the trenches, their location in relation to the waste pits, and what was found. Mrs. Sweeney said she reviewed the report but it did not provide the information she wanted. Mr. Humphreys noted that he has comments on the trenching report (Attachment B-2a) that he would like to discuss after the SMP presentation.

Mr. Brooks continued his presentation with Site 2. He mentioned there is good potential for input from the RAB for Site 2. He suggested it may be possible to create new wetlands at Site 2.

During the site tour, the RAB made it clear that Site 2 was important to the community. He said the RAB and community should work with the Navy to get a remedy in place.

OU-4B includes Site 17 Seaplane Lagoon. Mr. Brooks said the contractor proposals for remedial action are currently being reviewed, and a contract should be awarded in September 2008. Once the storm drain removal is completed, dredging and dewatering of dredged material from Seaplane Lagoon can begin. Mrs. Sweeney asked if the Navy will begin with the debris piles or the corners. Mr. Brooks said the debris piles will be removed first, and will be completed in about a month; dredging the corners will require 2 months each. Mr. Humphreys asked if the work will be completed when it is raining. Mr. Brooks said that the plan is to conduct the work during the dry season.

OU-4C includes Site 20, Oakland Inner Harbor (Slide 20). The Final No Further Action ROD is due in September 2008.

The Final ROD for OU-5 was completed in September 2007. The Navy and regulators are working together to finalize the Final RD and work plan, due in September 2008. The current contractor's period of performance is ending and another contractor will be assuming the work. Mr. Humphreys asked if a pilot test was completed. Mr. Brooks replied that a pilot test was completed and the results be used in the design. The groundwater will be treated with biosparging for aerobic biodegradation, which is expected to last 2 years.

OU-6 includes Sites 26, 27, and 28. Site 26 was discussed earlier in the meeting.

- Site 27 Final ROD signed in February 2008; data gap and bench testing before the RD for a washdown area and OWS.
- Site 28 Final RD and Work Plan due in January 2009. Soil will be excavated and metals fixated to reduce precipitation to groundwater.

Newer Sites

- Site 30 proposed plan due in January 2009; no further action for soil; groundwater is part of the OU-5 plume.
- Site 31 Final ROD due in September 2008; no further action for soil and groundwater.
- Site 32 boundary modified; radiological investigation planned end of 2008 and early 2009. Previously, the site had been assigned a no further action determination.
- Site 34 Final RI submitted May 2008; data gaps identified and sampling will be completed by January 2009. Final FS is due in August 2009.

- Site 35 PP and public meeting in May 2008; Final ROD due in February 2009. The RA is to begin in March 2009.

Federal transfer parcels (Slide 27) are located in the center of Alameda Point. The Veterans' Administration (VA) wants one of the parcels for use as a VA hospital, benefits center, columbarium, and for long-term care. The Final Site Investigation Report is due in October 2008. Additional work is to be completed in 2009 based on comments from the regulatory agencies.

Basewide projects are shown on Slide 28. Basewide groundwater monitoring and radiological survey work will continue in 2009. Building 346 (Quonset hut) previously housed radiological waste and radiological hand-held meters and will need a survey. Mr. Humphreys asked where Building 346 is located, and Mr. Brooks replied it is near Building 5 and close to the storm drain line removal area.

V. Site 1 Boundary Modification

The Site 1 boundary modification agenda item was discussed on page 11 of these minutes.

VI. Community and RAB Comment Period

Mr. Humphreys discussed the two comments handouts he provided to the RAB, *Analysis of Trenching Report* (Attachment B-2a) and *Deficiencies in the Proposed Plan* (Attachment B-2b). The handouts are his detailed review of the Site 1 Trenching Report and the Site 1 Proposed Plan. Mr. Humphreys reviewed some of the key points highlighted in the handouts. In response to Mr. Humphreys' summarization of his two papers, Mr. Brooks said that because he is a geologist he would not have said that there would not be liquefaction at Site 1. He is well aware that there is a potential for liquefaction in poorly consolidated soils during earthquakes in the Bay Area. Mr. Brooks also said the estimated displacements of 20 feet laterally and 1.5 feet vertically is based on engineering calculations in the seismic stability study. Mr. Brooks said he has not reviewed the report. Mr. Humphreys pointed out that, from the historical aerial photograph, there appears to be another possible waste disposal area south of the cells depicted in Figure 1-1 of the trenching study. He reported that a former Navy fighter pilot said they took their plane onto downward sloping ramps and test fired their 20-mm cannons into a below-grade pit. He noted that a list of questions appears on the last page of the *Deficiencies in the Proposed Plan* handout. Mr. Brooks thanked Mr. Humphreys for his effort on his comments. Mrs. Sweeney also thanked Mr. Humphreys and said she hopes the Navy seriously considers his comments.

Mr. Humphreys asked if the RAB contact list was available for distribution. Mr. Brooks said that it was available, but he wanted to check with the RAB before handing it out. Ms. Damrel asked how the RAB wanted to receive the list, and the RAB decided a hard copy would be adequate. It will be delivered at the September RAB meeting.

Ms. Smith provided a comment handout titled *Site 1 and Site 2 Status* (Attachment B-6). The handout discusses Ms. Smith's views on the recent site tours and general comments on the proposed plans for Sites 1 and 2. Mr. Brooks noted that her comments on high levels of radiation at Alameda Point are incorrect; he also noted that any radiological reading, even the low levels found at Alameda Point, will trigger safety procedures. Ms. Smith commented that the pre-tour discussion on ladder safety was too long. Mr. Brooks replied that he hopes to come to the RAB every month and report that there have been no accidents or injuries on Alameda Point.

Ms. Smith noted that she would like the Navy to prepare remediation updates periodically for the RAB. She also noted the base consultant at Treasure Island provides updates whenever the RAB requests them at the Treasure Island RAB meetings. Mr. Brooks noted further that the Hunter's Point Shipyard RAB has a technical sub-committee composed of a few members with strong technical interest who meet with the Navy on certain projects and bring the information back to the RAB. The Alameda Point RAB might consider the sub-committee approach. Ms. Smith confirmed there was a Treasure Island technical sub-committee and she was a member. She added that since there are only a few sites in question, a short update is all that is needed. Mr. Brooks replied that a quick executive summary-type update could be provided.

Mr. Leach commented that he had a quick summary on Site 1. He said the groundwater monitoring report for Site 1 stated that the landfill accepted all solid waste that was generated at Alameda Point. Part of the solid waste was transformers, rejected airplane parts, and aluminum airplane parts. He said these materials do not decompose. If aluminum is not found during excavation, the trench should be moved. Aluminum would be prevalent in a disposal pit.

Mr. Hoffman commented that there is a long list of hazardous materials that were discarded in the disposal cells that can be identified on aerial photographs. He said he did some work on the FS and groundwater monitoring report and believes the waste is below the groundwater. He said he has heard discussions that the remedy of a cover can be defended because the monitoring wells will detect movement of material out of the cells. He said using the data in the FS and in groundwater report and he was unable to reproduce the plume that is mapped and identified in the FS. The current groundwater monitoring wells do not recognize the source of the plume. He added well MW-28 is the only well that seems to raise a concern, where the map shows 213,000 parts per billion (ppb) TCE at its source. He said that information is absent from the annual groundwater monitoring report, and he could not find the data for well MW-28 in the FS other than on the contour map. He added that contaminant movement to the bay cannot be detected with the current groundwater monitoring network. Mr. Brooks said that the FS is a summary of previous reports. He said there is a good opportunity to conduct a complete RAB meeting on Site 1.

Ms. Lofstrom noted that DTSC has repeatedly made the same comment regarding the monitoring well network. The Navy's response is that an in-depth groundwater study will be completed during the RD. She added that a good Resource Conservation and Recovery Act (RCRA) quality groundwater monitoring system is therefore advisable. DTSC has a clear idea of what it wants, and the Navy has agreed to address the issue during the RD. Mr. Hoffman commented that the

issue should be addressed, assuming that the Navy decides to implement the remedy. He said he does not believe there is enough information on the groundwater plume to characterize the groundwater. Mr. Brooks replied that the issue will need to be examined more closely; many documents need to be reviewed.

Ms. Lofstrom said that most of the characterization she has worked with has involved direct-push and grab groundwater samples, not monitoring wells, although she was not on the project during this time.

Mr. Russell said he was involved, and the information would be in the RI and not in the FS, although it can be argued whether the plume is properly characterized. He added that it would not be expected in the FS. In addition, the quarterly groundwater monitoring program samples only a small fraction of the wells. During the characterization phase, many more samples are collected than what would be described in the groundwater monitoring reports. Mr. Hoffman replied that he believes the issue should be discussed with the regulatory agencies. Mr. Russell responded that a complete RAB meeting devoted the subject is advisable. Mr. Brooks suggested Mr. Hoffman visit the information repository and check out the RI or wait until the Navy compiles the information.

Mrs. Sweeney said during the site tour she overheard Doug Delong mention cleaning out tanks near Breakwater Beach. She said she observed two large aboveground tanks and piping that were cut up. She said she later noticed the tanks were removed and the berm surrounding the tanks was flat and graded. She said that there was a red spot where the tanks were and she wanted to know what occurred when the Navy cleaned up the tanks. Mr. Brooks said that area was a fuel storage area. Ms. Wochnick said that confirmation samples were collected on a grid below the berm area and below the tanks and any pipes that were removed. Mrs. Sweeney said she wanted to know who cleaned up the tanks and when they were cleaned. Ms. Wochnick said the tanks were cleaned out about 15 years ago and were certified clean. Mrs. Sweeney asked why there was a red indicator on the site tour handouts, indicating it was a toxic site. Ms. Wochnick replied that there was only small impact from petroleum hydrocarbons at the site and that the site was not considered a toxic site. Mr. Brooks said that the tanks were cleaned, tested, and the metal recycled. He considers the tank removal a success story.

Mr. Hoffman said he had final comments regarding ISCO and ISB. He said he is not opposed to using the treatments. He believes ISCO methods are best used after hydraulic controls are established from the source area and then pump and treat. Mr. Brooks agreed that hydraulic control is an important element in groundwater treatment. Mr. Rosansky said that a groundwater recirculation strategy is going to be used at Site 14, but Site 26 was not a good candidate for the same treatment. Mr. Smith added that there are several ISCO injection strategies.

VII. Meeting Adjournment

The meeting was adjourned at 9:36 p.m.

ATTACHMENT A

NAVAL AIR STATION ALAMEDA
RESTORATION ADVISORY BOARD MEETING AGENDA

August 14, 2008

(1 page)

RESTORATION ADVISORY BOARD

NAVAL AIR STATION, ALAMEDA

AGENDA

AUGUST 14, 2008, 6:30 PM

ALAMEDA POINT – BUILDING 1 – SUITE 140
COMMUNITY CONFERENCE ROOM
(FROM PARKING LOT ON W MIDWAY AVE, ENTER THROUGH MIDDLE WING)

TIME	SUBJECT	PRESENTER
6:30 - 6:45	Approval of Minutes	Mr. George Humphreys
6:45 - 7:00	Co-Chair Announcements	Co-Chairs
7:00 – 7:30	Site 26 Remedial Action/Monitoring	Heather Wochnick
7:30 – 8:50	Site Management Plan Update	Pat Brooks
7:50 – 8:00	Site 1 Boundary Modification	Pat Brooks
8:00 – 8:15	BCT Update	Dot Lofstrom
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-1a List of Reports and Correspondence Received During June 2008. Distributed by Mr. George Humphreys, RAB Community Co-Chair (2 pages)

B-1b List of Reports and Correspondence Received During July 2008. Distributed by Mr. George Humphreys, RAB Community Co-Chair (2 pages)

B-2a Analysis of Trenching Report. Provided by Mr. George Humphreys, RAB Community Co-Chair (6 pages)

B-2b Deficiencies in the Proposed Plan. Provided by Mr. George Humphreys, RAB Community Co-Chair (9 pages)

B-3 Remedial Action and Groundwater Monitoring at IR Site 26. Provided by Heather Wochnick, Navy RPM (9 pages)

B-4 2009 Site Management Plan Preview. Provided by Mr. Pat Brooks, Navy Co-Chair (15 pages)

B-5 Proposed Changes to Closure Strategies for Site 1 and Site 32. Distributed by Mr. Pat Brooks, Navy Co-Chair (7 pages)

B-6 Site 1 and 2 Status. Provided by Dale Smith, RAB Member (1 page)

ATTACHMENT B-1

LIST OF REPORTS AND CORRESPONDENCE RECEIVED DURING JUNE and JULY 2008

(4 pages)

Restoration Advisory Board
Documents and Correspondence
Received during June 2008

Documents

1. May 30, 2008 (Rec'd June 2, 2008), "Draft, Site Inspection Report, Transfer Parcels FED-1A, FED-2B, and FED-2C, Alameda Point, Alameda, California", prepared by Bechtel Environmental, Inc. for BRAC Program Management Office West.
2. June 4, 2008, "Technical Memorandum for First Quarter 2008, CAA 3, Alameda Point, Alameda, California", prepared by Shaw Environmental, Inc. for BRAC Program Management Office West.
3. June10, 2008, "Final, SCAPS Laser Induced Fluorescence, Tarry Refinery Waste Investigation Report, Alameda Point, Alameda, California", prepared by Richard Brady & Associates for BRAC Program Management Office West.
4. June 12, 2008, "Draft Final, Remedial Investigation Addendum for IR Site 30, Alameda Point, Alameda, California", prepared by Bechtel Environmental, Inc. for BRAC Program Management Office West.
5. June 7, 2008, (Rec'd June 16, 2008), "Technical Memorandum for CAA-1 January through March 2008", CD, prepared by Shaw Environmental for BRAC Program Management Office West (see, also item 2 above)
6. June 16, 2008, "Action Memorandum, CERCLA Time-Critical Removal Action Installation Restoration Sites 5 and 10, Buildings 5 and 400, Storm Drain and Sewer Line Removal, Alameda Point, Alameda, California", prepared by Tetra Tech EC Inc. for BRAC Program Management Office West.
7. June 16, 2008, "Final Project Work Plan, Installation Restoration Sites 5 and 10, Buildings 5 and 400, Storm Drain and Sewer Line, Time-Critical Removal Action, Alameda Point, Alameda, California", prepared by Tetra Tech, EC Inc. for BRAC Program Management Office West.

Correspondence

1. June 5, 2008, "Response to Comments on the Draft Remedial Action Plan for Alameda Landing, Former Fleet and Industrial Supply Center Oakland, Alameda Facility/Alameda Annex, Alameda, California", letter from Ms. Dot Lofstrom, P. G., DTSC, to Mr. George B. Humphreys, P. E., Community Co-Chair RAB.
2. June 5, 2008, "Temporary Discharge of Treated Groundwater from Storm Drain Removal Activities-IR Sites 5 & 10 (known as Buildings 5 and 400)", letter from Mr. John R. West, S. F. Bay Regional Water Quality Control Board to Mr. George Patrick Brooks, BRAC Environmental Coordinator, BRAC Program Management Office West.
3. June 5, 2008, "Revised Proposal to Discharge Treated Groundwater from Structural Dewatering Activities to Seaplane Lagoon and/or to Land for Dust Control and Irrigation Purposes, Buildings 5 and 400 Storm Drain Time-Critical Removal Action, IR Sites 5 and 10, Former NAS Alameda, Alameda Point,

Alameda, California CTO-0028", letter from Mr. George Patrick Brooks, BRAC Program Management Office West to Mr. John West, SF Bay Region, California Water Quality Control Board.

4. May 2008, (Rec'd June 5, 2008), "Response to Comments on the Human Health Risk Assessment/Feasibility Study/Remedial Action Plan, Alameda Landing, Alameda, California, Former Fleet and Industrial Supply Center Oakland, Alameda Facility/Alameda Annex, Alameda, California", from Department of Toxic Substances Control.
5. May 28, 2008, (Rec'd June 5, 2008), "Draft Final Remedial Design/Remedial Action Work Plan IR Site 14, Alameda Point", letter from Ms. Anna-Marie Cook, U. S. EPA region IX to Mr. George Patrick Brooks, BRAC Program Management Office West.
6. May 28, 2008, (Rec'd June 5, 2008), "Draft Land Use Control Remedial Design IR Site 25 Soil, Alameda Point", letter from Ms. Anna-Marie Cook, U. S. EPA Region IX to Mr. George Patrick Brooks, BRAC Program Management Office West.
7. June 9, 2008, "Review of the Revised Draft Final Feasibility Study Report, IR Site 2, West Beach Landfill and Wetlands, Alameda Point, Alameda, California, April 2008", from Ms. Xuan-Mai Tran, U. S. EPA Region IX to Mr. George Patrick Brooks, BRAC Program Management Office West.
8. June 25, 2008, "Draft Final Preliminary Remedial Design/Remedial Action Work Plan (RD/RAWP), Installation Restoration Site 14, Alameda Point, Alameda, California", letter from Ms. Dot Lofstrom, P. G., DTSC, to Mr. George Patrick Brooks, BRAC Program Management Office West.
9. June 25, 2008, "Proposed Changes to Closure Strategies for Site1 and 32, Alameda Point, Alameda, California", letter addressed to U. S. EPA, Region IX, DTSC, and R. W. Q. C. B. from Mr. George Patrick Brooks, BRAC Program Management Office West.

Restoration Advisory Board
Documents and Correspondence
Received during July 2008

Documents

1. June 27, 2008 (received July 1, 2008), "Draft Pre-Design Work Plan for Installation Restoration Site 27, Alameda Point, Alameda, California", prepared by Battelle, Columbus for BRAC Project Management Office West.
2. July 2, 2008 (received July 7, 2008), "Preliminary (90%) Remedial Design, Operable Unit 1, Installation Restoration Sites 6,7,8, and 16, Alameda Point, Alameda, California", prepared by Battelle, Columbus, for BRAC Program Management Office West.
3. July 2, 2008 (received July 7, 2008), "Draft, Remedial Action Work Plan, Operable Unit 1, Installation Restoration Sites 6,7,8, and 15, Alameda Point, Alameda, California", prepared by Battelle, Columbus for BRAC Program Management Office West.
4. July 7, 2008 (received July11, 2008), "Draft, Petroleum Investigation Report, Petroleum Site Investigation AOC 23G, Alameda Point, Alameda, California", prepared by Shaw Environmental, Inc. for BRAC Program Management Office West.
5. July 2008 (received July 14, 2008), "Fact Sheet, Remedial Action at IR Site 26, Western Hangar Zone, Former Naval Air Station Alameda", BRAC Program Management Office West.
6. July 21, 2008 (received July 22, 2008), "Final Remedial Investigation Addendum for IR Site 30, Alameda Point, Alameda, California", document-spine, cover, signature page, replacement pages for Appendix C and Draft Final CD, prepared by Bechtel Environmental, Inc. for BRAC Program Management Office West.

Correspondence

1. June 30, 2008 (received July 1, 2008), "Draft Land Use Control Remedial Design, IR Site 26 Soil, Alameda Point, Alameda, California", letter from Ms. Dot Lofstrom, P. G., DTSC, to Mr. George Patrick Brooks, BRAC Program Management Office West.
2. June 18, 2008 (received July 1, 2008), Request for 30-day extension for review of Draft Remedial Investigation Report for Operable Unit 2C-Revision, Alameda Point, letter from Ms. Anna-Marie Cook, U.S. EPA Region IX, to Mr. Pat Brooks BRAC Program Office West.
3. July 9, 2008 (received July 12, 2008), "Draft Record of Decision IR Site 31 Soil, Alameda", letter from Ms. Anna-Marie Cook, U.S. EPA Region IX, to Mr. Pat Brooks, BRAC Program Management Office West..
4. July 14, 2008 (received July 15, 2008), "Review of Appendix K, In-Situ Chemical Oxidation (ISCO) Pilot Test Data Evaluation Report, Installation Restoration Site

26, Alameda Point, Alameda, California", letter from Ms. Dot Lofstrom, P.G., to Mr. Pat Brooks, BRAC Program Management Office West.

5. July 16, 2008 (received July 17, 2008), "Review of the Draft Record of Decision, Installation Restoration (IR) Site 20 (Oakland Inner Harbor) Former Naval Air Station Alameda, Alameda, California", letter from Ms. Dot Lofstrom, P. G., Brownfields Environmental Restoration Program DTSC, to Mr. George Patrick Brooks, BRAC Program Management Office West.
6. July 15, 2008 (received July 17, 2008), "Review of Revised Draft Final Feasibility Study, Installation Restoration Site 2, West Beach Landfill and Wetlands, Alameda Point, Alameda, California", letter from Ms. Dot Lofstrom, P. G., Brownfields and Environmental Restoration Program, DTSC, to Mr. George Patrick Brooks, BRAC Program Management Office West.
7. July 16, 2008 (received July 17, 2008), "Concurrence with Draft Sampling and Analysis Plan for Site 14, Remedial Design, Alameda Point, Alameda, California", letter from Ms. Dot Lofstrom, P. G., Office of Military Facilities to Mr. George Patrick Brooks, BRAC Program Management Office West.
8. July 23, 2008 (received July 24, 2008), "Review of the Draft Record of Decision (ROD) Installation Restoration (IR) Site 31 Soil Former Naval Air Station Alameda, Alameda, California", letter from Ms. Dot Lofstrom, P. G., Brownfields Environmental Restoration Program DTSC, to Mr. George Patrick Brooks, BRAC Program Management Office West.
9. July 23, 2008 (received July 24, 2008), "Response to Proposal to Modify Closure Strategies for Site 1 and 32, Alameda Point, Alameda, California", letter from Ms. Dot Lofstrom, P. G., Brownfields and Environmental Restoration Program DTSC, to Mr. George Patrick Brooks, BRAC Program Management Office West.
10. July 23, 2008 (received July 30, 2008), "Draft Remedial Investigation Report for Operable Unit 2C-Revision 1, Alameda Point", Letter from Ms. Anna-Marie Cook, U. S. EPA Region IX, to Mr. George Patrick Brooks, BRAC Program Management Office West.

ATTACHMENT B-2

ANALYSIS OF TRENCHING REPORT

AND

DEFICIENCIES IN THE PROPOSED PLAN

(15 pages)

B2a

Analysis of Trenching Report

Exploratory trenches were excavated within the waste cell area (Area 1a) of Site1. The stated objectives of the trenching were to:

a. Verify waste volume estimates.
b. Confirm the absence of intact drums

The final report[1] on the exploratory trenching was issued on May 16, 2008. The findings were as follows:

a. The total waste volume within the cells could be between 94,000 and 133,000 cubic yards (cy). This corresponds to a tonnage range of from 141,000 to 200,000 tons. This can be compared to a range of between 15,000 and 200,000 tons used in the Feasibility Study Report[2] .
b. No intact drums were found.
c. Although approximately 25 % of the waste volume had radiation levels above the Navy's criterion for removal (6,000 counts per minute), the study states "…. It should not be inferred that the distribution of radiological contamination in the excavations is consistent throughout the volume that was radiologically impacted, nor should it be inferred that this distribution would be consistent throughout the site". (Emphasis added) .

It is also noteworthy that little or no evidence of municipal (household) wastes was found, only construction debris (concrete, bricks, pipes, glass, and wood) interspersed in the soil. This may account for the statement by Mr. Pat Brooks, the Navy's Base Environmental Coordinator, during the aborted tour of Site 1, that a lot of municipal wastes were excavated from Site 1 before construction of the runway. He said that he thinks the wastes went to Site 2. This raises questions about where the wastes from Site 1 were deposited in Site 2 and how municipal wastes could have been transferred without taking along interspersed toxics and radiological contamination. If the Navy excavated a substantial volume of wastes from Site1, and the Navy can document where this occurred (e.g. under the runway), then the cost of excavation and removal of the remaining wastes would be much less than estimated in the Proposed Plan ($92 million).

The Navy still has not adequately characterized the contents of the waste cells. According to the Spring 2007 Basewide Annual Groundwater Monitoring Report [3], IR Site 1 accepted all of the solid waste generated at Alameda Point between 1943 and 1956. Wastes included municipal garbage, construction debris, transformers, cleaning solvents, oil/lubricants, ordnance and explosive waste, and radiological materials such as radium dials and buttons. There was a golden opportunity to take samples and analyze them for toxics during the exploratory trenching. Unfortunately, the Navy was explicit that they were not going to characterize the wastes and that they were only trying to prove the absence of intact drums (a negative objective). Even though the Navy said they weren't

going to characterize the wastes, measurements of radioactivity were made during the trenching operations.

Figure 1-1 from the trenching report is attached and has been annotated by the writer. Note that five of the trenches were located relatively close to the walls separating the waste cells. These locations have been circled in the figure. If the locations of these trenches were off only slightly, the trenches may have been cut into the walls between the cells or into the sloping portions of the walls. Thus, it would not be surprising if little or no waste debris were found.

Of the eleven trenches, seven showed some excessive radioactive contamination (as indicated on the trenching logs for the respective trenches). Perhaps more significantly, six of the seven cells had some radioactively contaminated soil in the excavated soil.

Consider the carefully worded conclusion of the trenching report, i.e. that it should not be inferred that the radiological contamination is consistent throughout the waste volume. The word "consistent" can be taken as meaning uniform or at the same concentrations throughout. Certainly no one would expect that. What can be reasonably concluded is that radioactive contamination of the subsurface material is widely scattered throughout the waste cells (but not uniformly).

Another observation from Figure 1-1 is that the southernmost cell (in which trench T-6 was excavated) overlaps or abuts the shoreline. This indicates that either wastes from this cell are currently exposed to the Bay or that they could easily be exposed by minor shoreline erosion in the future. Note also the notation from the T-6 trench log that all the excavated soil from this cell was radioactively impacted. One would expect some radioactive contamination of the adjacent beach area.

It is also significant that little or no municipal (household) wastes were found and that Mr. Brooks stated that such wastes were moved to Site 2. The Navy early on relied on the presence of municipal rather than industrial wastes as justifying the "presumptive remedy" of source containment. It appears that the justification for the "presumptive remedy" has been substantially weakened.

From the report and accompanying photographs, it appears that trenching only went down 7 or 8 ft from the surface to the groundwater level. There could be wastes buried deeper. It is likely that groundwater and the depth of the bay mud aquitard do not coincide. If the wastes were used as fill, the wastes could extend down to the original level of the Bay's bottom (i.e. sand or mud). See the attached figure from a presentation by the Navy's former Remedial Project Manager, Mr. Rick Weissenborn, that shows the sea level 8 ft below the surface, but fill going down to about 25 ft below grade or 17 ft below sea level. One can reasonably assume that the groundwater level is approximately at, or slightly above, sea level. Aerial photos of the Site 1 waste cells (from the Feasibility Study) appear to show ponds in the bottom of at least two cells. This indicates that the excavations went substantially below the groundwater levels.

Conclusion

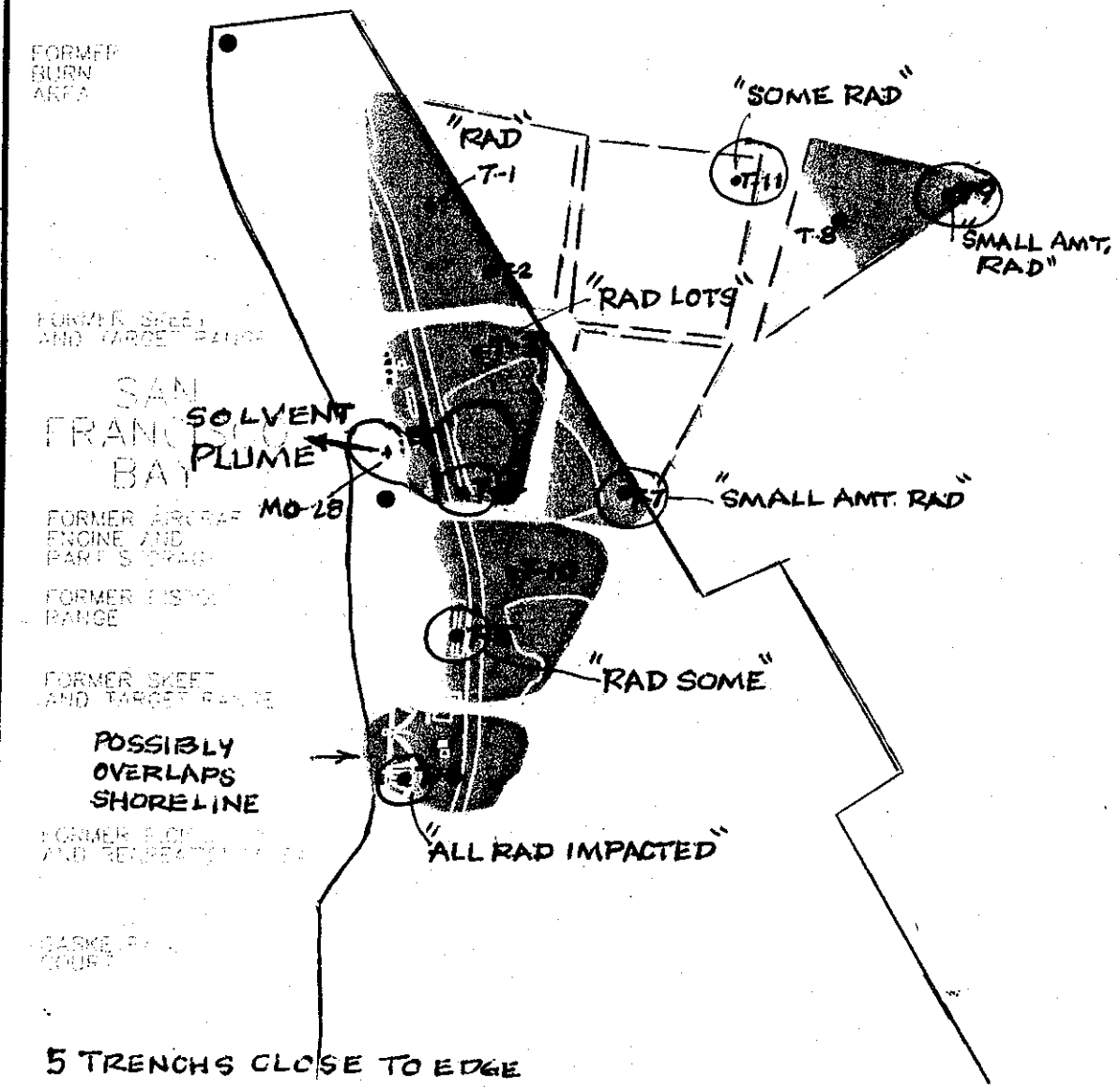
The trenching report demonstrates that a substantial fraction of the material buried in the waste cell area is radiologically impacted. Further, this radiologically-impacted material is widespread and randomly scattered. If this material finds its was to the surface in the future, it will have to be removed from the site because it is radiologically-impacted at levels (> 6,000 counts per minute) that are unacceptably high.

References:

(1) "Final Summary of Findings Exploratory Trenches, Revision 1, IR Site 1, Former Naval Air Station, Alameda, Alameda Point, Alameda, California", May 15, 2008, prepared by Tetra Tech EC, Inc. for BRAC Program Management Office West.

(2) "Draft-Final Feasibility Study Report IR Site 1, 1943-1956 Disposal Area, Alameda Point, Alameda, California", Jan. 2006, prepared by Bechtel Environmental, Inc. for the BRAC Program Management Office West.

(3) "Final Spring 2007, Alameda Basewide Annual Groundwater Monitoring Report, Alameda Point, Alameda, California", April 2008, prepared by Innovative Technical Solutions, Inc. for BRAC Program Management Office West.



5 TRENCHS CLOSE TO EDGE
OF 11 TRENCHS
7 HAD SOME RAD CONTAMINATION
4 W/O RAD CONTAMINATION
OF 7 CELLS,
6 HAD SOME RAD CONTAMINATION
225 CY TOTAL VOLUME EXCAVATED (PG.3)
57 CY RAD-IMPACTED SOIL (>6000 CPM)

LEGEND

- IR SITE 1 AND 32 BOUNDARIES
- DISPOSAL AREA BOUNDARY
- SEASONAL WETLAND BOUNDARY
- RMA BOUNDARY
- TRENCH LOCATIONS
- SEASONAL WETLAND AREA
- DISPOSAL CELL

300 150 0 300
SCALE IN FEET

Figure 1-1
TRENCH LOCATIONS

IR SITE 32 AND THE SHORELINES OF IR SITES 1 AND 2
ALAMEDA POINT - ALAMEDA, CA

TETRA TECH EC, INC.

DRAWN BY: MD | CHECKED BY: LB | APPROVED BY: KW | DCN: ECSD-2201-0015-0005.R1 | DRAWING NO: 000411.DWG
DATE: 10/19/07 | REVISION: 0 | CTO: #0015

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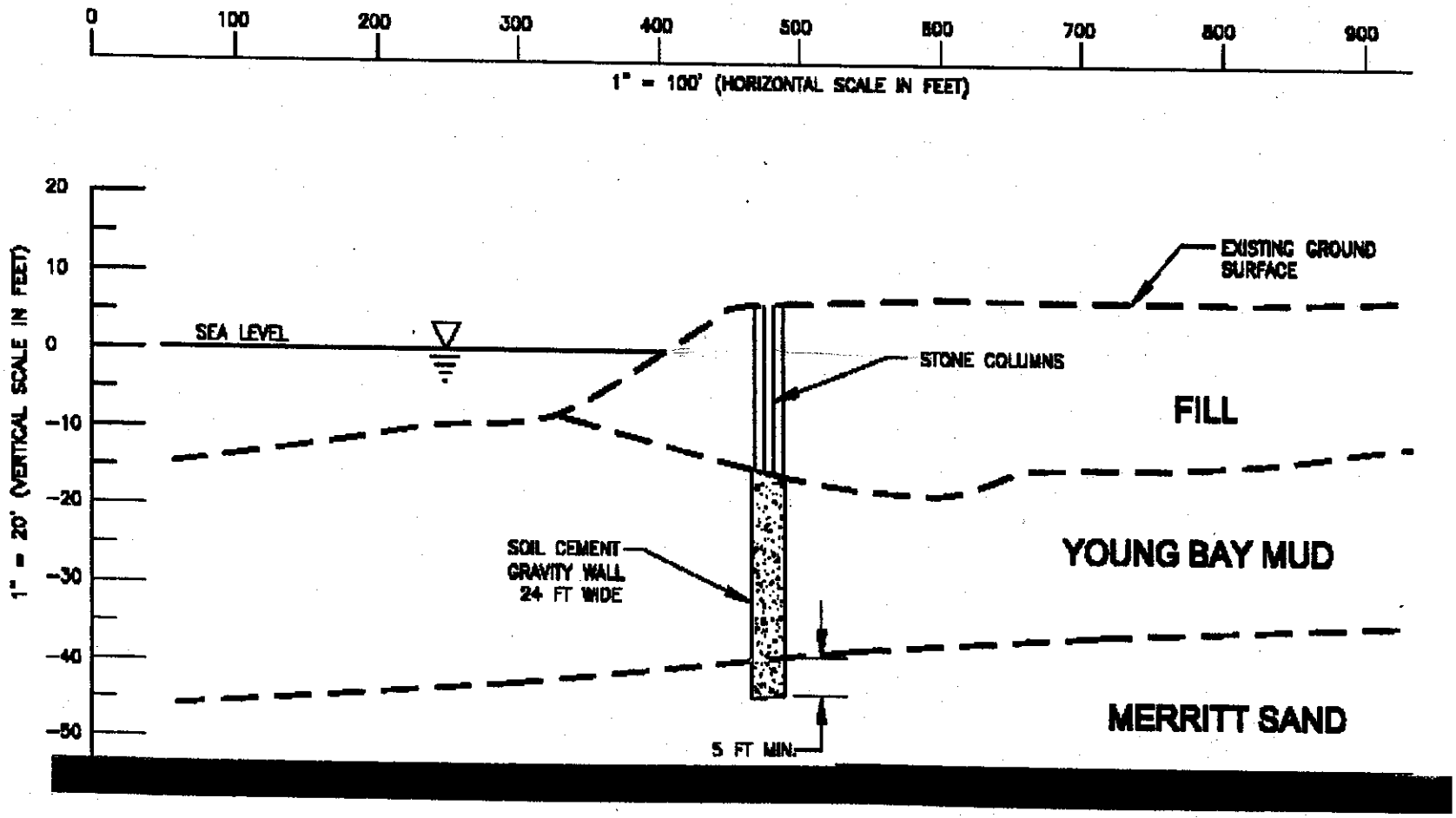
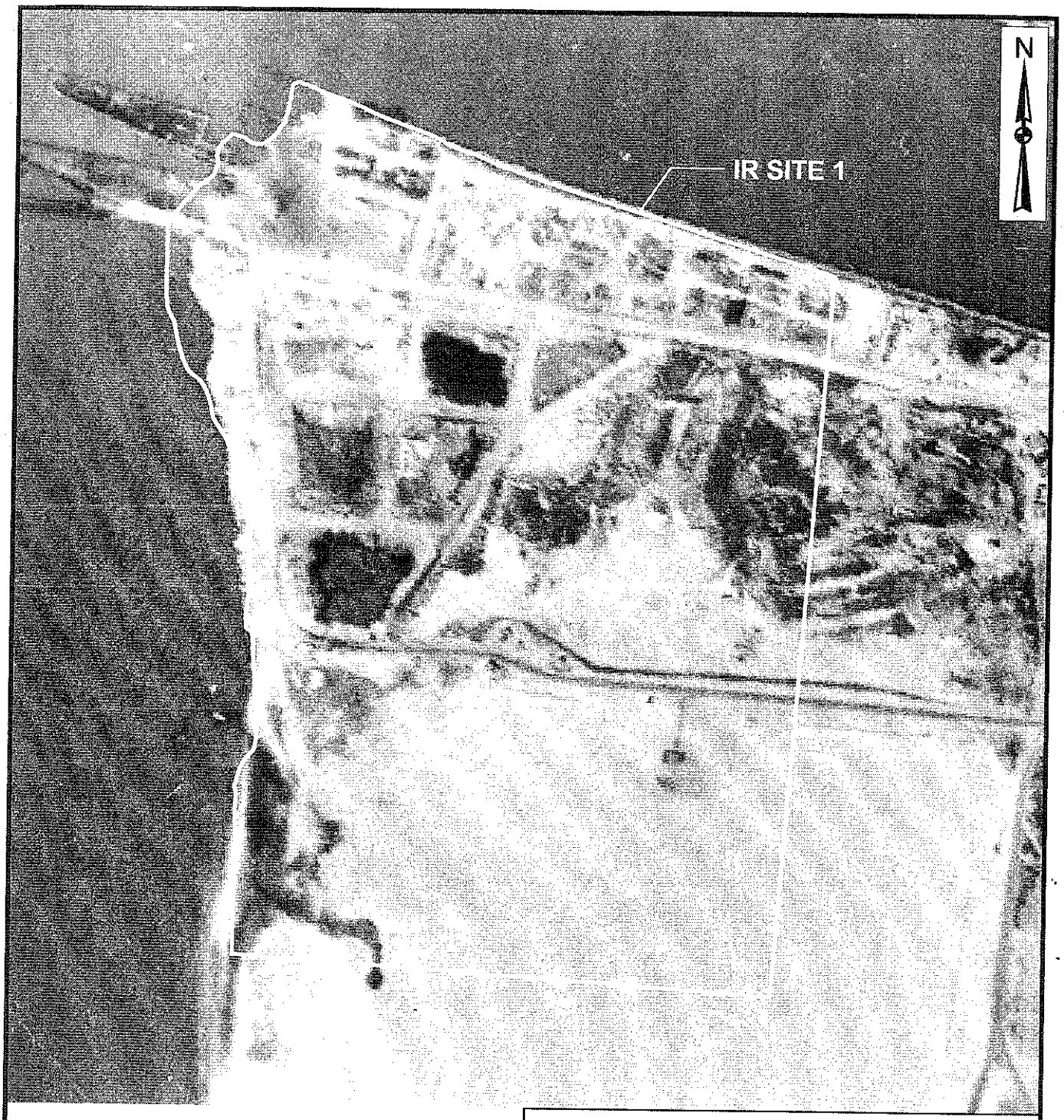
SOURCE: "OPERABLE UNIT 3 FEASIBITY STUDIES"
A PRESENTATION BY RICK WEISSENBORN,
REMEDIAL PROJECT MANAGER, JAN. 7, 2003

ALAMEDA POINT

ALAMEDA, CALIFORNIA

Recommended Geotechnical Alternative





400 0 400 Feet

SOURCE: PACIFIC AERIAL SURVEYS. 1947. SCALE 1:2,400.

Feasibility Study for IR Site 1

Figure 2-2

1947 Historical Aerial Photograph

Alameda, California

Bechtel Environmental, Inc.

CLEAN 3 Program

Date: 12/16/05
File No.: 068E13582
Job No.: 23818-068
Rev No.: B

Deficiencies in the Proposed Plan

B-2b

The Navy's proposed plan for the waste cell (Area 1a) portion of Site 1 is 4 feet of soil cover and in-situ chemical oxidation for treatment of the volatile organics plume. In November 2006, the community RAB members took the position that excavation of the contaminated portion of the wastes is the appropriate remedy for Area 1a because the types of waste materials disposed of in the waste cells contained a larger proportion of industrial type (potentially hazardous wastes). The proximity to San Francisco Bay, nearby wetlands, and a high water table, favor excavation and off-site disposal rather than source containment as the preferable alternative. The City took the position in 2007 that they would not accept transfer of a site containing uncharacterized wastes with a soil cover. Nevertheless, the Navy is proceeding with plans to issue a Record-of-Decision based on the Proposed Plan.

An example of current best practices for military landfills [1] is the excavation and off-site disposal of contaminated material at the 5-acre former Connaught Military Landfill near Ottawa, Canada. The site contained mechanical debris from target maintenance, potential unexploded ordnance, paint cans with paint residue, hospital wastes, broken concrete and hydrocarbon impacted soil. Off-site disposal costs were reduced by sorting our inert waste materials (concrete, bricks, and steel) and disposing of them on-site. The site was considered environmentally sensitive because of its proximity to the Ottawa River, the City of Ottawa and a bird sanctuary (an analogous situation to that which exists at Sites 1 and 2).

Concerns about the Navy's proposed remedy include:

a. The source containment, as proposed, is inadequate because the sandy soil cover does not meet low-permeability standards for hazardous waste landfills and there is no lateral containment. The most southern waste cell apparently overlaps the shoreline and also contains radiologically impacted materials. The Navy has recently said that a rodent barrier and plastic sheet will be added to the top cover, but this has not yet been documented in writing and there aren't any design specifics. An example of an integrated containment system is the Mare Island landfill [2]. That application represents integrated source-containment. The RCRA Subtitle C cap includes a composite gas vent layer, a geocomposite clay layer, a 60-mil high-density polyethylene geomembrane, a geocomposite drainage layer and two feet of cover soil. The 72-acre landfill site was surrounded by a 7,300-ft long soil-bentonite slurry wall 25-ft deep and keyed into a naturally-occurring clay layer underlying the site.

b. The integrity of the top cover may be compromised by liquefaction and sand boils [3] as a result of a large earthquake. There is considerable doubt as to whether the Navy will be able to design the

top cap to resist damage during and/or following a large earthquake in the S. F. Bay area. There is nothing to show that four feet of cover will prevent radioactivity or other toxic materials from being brought to the surface by liquefaction as a result of a major earthquake. The Navy says that the seismic design of the cap will be addressed during the remedial design phase. However, there may be no practical, economic way of preventing such liquefaction. The Navy took the position during the May 2008 RAB meeting that geysers and sand boils will not occur at Site 1. However, there is ample scientific evidence that liquefaction has occurred in poorly consolidated sandy fill areas during both the 1906 earthquake and the 1989 Loma Prieta earthquake. During the Loma Prieta event, liquefaction occurred in the Marina District in San Francisco, at Treasure Island, and along the Cypress freeway in Oakland. Sand boils occurred on Treasure Island during the Loma Prieta seismic event [3] (see the attached photos showing these sand boils). Sand boils and/or geysers represent the conversion of kinetic energy from the seismic shaking into pore (or static) pressure. This pore pressure can cause liquefaction and/or sand boils. Whether or not sand boils or geysers result, of course, will depend on the violence and duration of the earth movement. The sand boils that happened on Treasure Island during the Loma Prieta event evidence the fact that this can occur. The photos indicate that holes 2 to 3 ft in diameter were created and that sand and subsurface water were ejected from the holes. The Feasibility Study for Site 1 [4], in fact, reported that evidence of liquefaction also was observed at IR Site 1 after the 1989 Loma Prieta earthquake. The Navy's seismic stability study showed 20 ft of lateral displacement of the shoreline and 1 ½ ft of vertical displacement in the cover material after a major seismic event.

It is important that the bayside stability of Site 1 be maintained both to prevent disposed waste materials from being directly released into S. F. Bay, and to maintain the shoreline integrity of the planned park and golf course. The earlier study proposed a rock column/soil cement barrier along the bayside of Site 1. The Navy has retreated from that recommendation and has said that the bayside stability would be achieved by a method to be determined during the remedial design phase. The writer asked, and was assured, that access would be provided to the Site 1 beach area during the July 16, 2008 site tour. However, that area had been fenced off and freshly placed rip rap made it impossible to determine whether shoreline erosion had occurred or whether waste material had been exposed to the bay. One possible solution to shoreline instability, that has been mentioned by the Navy, is the use of 'seismic vents". Such vents would consist of perforated pipes filled with gravel. They would allow pore pressure, which might cause liquefaction, to be vented to the surface during a

seismic event. Such venting could also cause toxic materials and radiologically contaminated soil to be released to the surface.

c. Ground squirrels, gophers and other burrowing animals may penetrate the cover and bayside perimeter. The four-foot cover thickness was selected to provide 2 ft of cover, plus 2 ft to protect against penetration by ground squirrels. The Navy cited a study in the Site 2 Remedial Investigation that ground squirrels do not dig holes deeper than 2 feet. The writer's personal observations are that ground squirrels often dig their burrows along banks. On Bay Farm Island, the squirrels have burrows at the top of the shoreline and have a labyrinth of burrows under the rip rap. These burrows appear to go parallel to the slope for 10 or 15 ft. Also, burrowing owls use the burrows abandoned by ground squirrels and jack rabbits. The owls enlarge and extend the burrows up to a depth of seven feet [5]. Gophers burrow as deep as 6 feet to create nest and food storage chambers [6].

d. The trenching study has shown that radiologically impacted soil is widely scattered within the waste cell area. Physical isolation by the top cover may be compromised by a major seismic event and/or penetration by burrowing animals. Maintenance personnel for the proposed shoreline park and golf course(or restored wetlands) will not be equipped with radiation detectors and likely will not be trained in radiological removal or recognize the danger presented by surface releases of soil contaminated by radioactive and toxic materials.

e. In-situ chemical oxidation (ISCO) may not be effective in treating the solvent plume because the injected oxidants may force the contaminants away from the injection points. Subsurface heterogeneities and preferential flow paths can cause uneven distribution of the oxidant, resulting in untreated pockets of contaminants [7]. Because the volatile plume is close to the shoreline, there is a danger that the injection of oxidants will displace the plume into the bay. Also, within the ISCO treatment zone, changes in the oxidation states and/or pH may result in the mobilization of radium and other toxic metals [7]. If you have high concentrations of contaminants in a well-defined plume, there is a good opportunity to remove a lot of mass by pumping and treating. Later, ISCO could be used for polishing.

f. The high concentrations (exceeding 100,000 μg/L) of volatile organic compounds (VOC's) in the groundwater plume indicate that dense non-aqueous phase liquids (DNAPL's) probably are present under the plume. The Proposed Plan [9] for Site 1 states that DNAPL's may be present. These DNAPL'S have a tendency to make the bay mud aquitard more permeable. Thus, it would be expected that pathways might open up for contaminants to flow into the second water-bearing zone.

g. The radium hazard is not whole body radiation, but rather, internal via inhalation and ingestion. Radium is a bone-seeker that can cause

bone cancer, leukemia, or lung cancer if it gets into the body. Direct contact with radiologically impacted soil and toxic materials brought to the surface in the future poses an inhalation and ingestion hazard to adults and children who might come into contact with such exposed materials. The 1,600-year half-life of radium brings into question the long-term containment integrity due to seismic activity, shoreline erosion, burrowing animals, and site inundation (global climate change and tsunamis). Note that even without the effects of man-made greenhouse gases, the bay water level has risen 25 to 30 ft over the last 3,500 years [8] . The Navy has said that it does not have to design for rising sea levels, but it is illogical to design for some physical phenomena and not others.

h. The presentation by SunCal on August 7, 2008 showed the western portion of the "northwest territories" being used for wetlands restoration, with return to Bay wetlands instead of a golf course. If it is planned to excavate portions of Site 1 to create permanent wetlands, this appears incompatible with leaving large quantities of uncharacterized wastes and radiologically impacted soil in place under a cap. In fact, the creation of an engineered cap in such a situation appears wasteful. There needs to be closer coordination between the Navy, the City of Alameda and the developers regarding cleanup, restoration, and development plans.

References

(1). Don Plenderlieth, Golder Associates, "Cleanup Duty", pg. 41, Mechanical Engineering, Feb. 2008.
(2). "Successful Public-Private Partnership at Former Mare Island Naval Shipyard", 2006, 4 pages, U. S. Department of the Navy.
(3). "Treasure Island Reuse Plan, Existing Conditions Report: Volume 2, Physical Characteristics, Building and Infrastructure Conditions, prepared by ROMA Design Group, Cerbatos & Associates Consulting Electrical Engineers, Cervantes Design Associates, Don Todd Associates, Manna Consultants, Moffat & Nichol Engineers, Olivia Chen Consultants, Inc., Takahashi Consulting Engineers, and Treadwell & Rollo, Inc., for The Office of Military Base Conversion, Planning Department, City & County of San Francisco, and the San Francisco Redevelopment Agency, August 1995, Second Edition.
(4). "Draft-Final Feasibility Study Report IR Site 1, 1943-1956 Disposal Area, Alameda Point, Alameda, California, Volume 1, Part A", page 2-28, Jan. 2006, prepared by Bechtel Environmental, Inc. for the BRAC Program Management Office West.
(5). "The Gull's Call", May/June 2008, article on page 7, "Burrowing Owls on Bay Farm Island" by Gerry Long.
(6). Alameda Journal, June 13, 2008, article by Nzong Xiong, "Going after Gophers; learn how to get rid of the uninvited lawn guests".

(7). "Draft Feasibility Study, IR Site 32, Alameda Point, Alameda, California", June 2007, prepared by Bechtel Environmental, Inc. for BRAC Program Management Office West.
(8). "Geologic Guidebook of the San Francisco Bay Counties", Bulletin 154, State of California, Division of Mines, 1951.
(9) September 2006, "Proposed Plan for IR Site 1, 1943-1942 Disposal Area, Former NAS Alameda", BRAC Program Management Office West.

Large sand boils near the western edge of Treasure Island.
Photo courtesy of David T. Schrier

TREASURE ISLAND REUSE PROJECT Treasure Island, California
LOMA PRIETA EARTHQUAKE PHOTOGRAPH
Project No. 1719.01 · Figure 7
Treadwell&Rollo

Large sand boils near the southwest corner of Treasure Island.
Photo courtesy of David T. Schrier

TREASURE ISLAND REUSE PROJECT Treasure Island, California	
LOMA PRIETA EARTHQUAKE PHOTOGRAPH	
Project No. 1719.01	Figure 8
Treadwell&Rollo	

Sand boils and ponded water at school yard on 12th Street, Treasure Island, on October 18, 1989.
Photo courtesy of David T. Schrier

TREASURE ISLAND REUSE PROJECT Treasure Island, California	
LOMA PRIETA EARTHQUAKE PHOTOGRAPH	
Project No. 1719.01	Figure 11
Treadwell&Rollo	

Questions

1. What were the volumes and locations of wastes moved from Site 1 to Site 2 during construction of the runway? Where in Site 1 did the wastes originate? Where in Site 2 were the wastes deposited?
2. During the TCRA, for each location in Site 1, Site 2, and Site 32 what were the volumes and depths of radiologically impacted soil excavated and removed? (Note that during the site tour, were told that there was very little waste and that it was only on the surface at the "radium disposal pit". This seems counterintuitive in view of the Navy's letter that stated that radiologically impacted soil in Areas 3a and 3b were deeper than expected.)
3. Where was radiologically impacted soil taken for disposal?
4. During the TCRA, for each location in Site 1 what were the volumes and depths of soil contaminated with PAH's that were excavated and removed? Was the burn area 1b the only location involved?
5. During the TCRA, what were the volumes of soil excavated from the firing range berm? What volume of lead-contaminated soil was disposed of offsite and where did it go? How far below grade did the excavation go? What was the volume of below-grade material that was excavated and removed? (A former Navy fighter pilot stationed at Alameda said that they took their Corvairs onto downward sloping ramps and test fired their 20-mm cannons into a below grade pit.) Was the soil removed from the firing range berm surveyed for radioactivity? (Note that the exploratory trench in the area showed "all rad contaminated".)
6. During the exploratory trenching, of the 57 cu yd of radiologically impacted soil removed, what volumes came from the respective trenches?
7. Why are groundwater-monitoring wells, sampled for groundwater monitoring reports, approximately 100 yd apart? At this spacing, contaminated plumes as large as the known plume could be entering the Bay between monitoring wells.
8. Will the barge(s) that protrude from the bank along the shoreline be removed before transfer of the site? This situation appears to present an attractive nuisance and danger to those (especially children) using the shoreline park and beach area.
9. Is excavation and removal of the most southern waste cell planned because of its proximity to the Bay, shoreline seismic weakness and the prevalence of radiologically impacted soil?

August 14, 2008

ATTACHMENT B-3

REMEDIAL ACTION AND GROUNDWATER MONITORING SITE 26

(9 pages)

Welcome

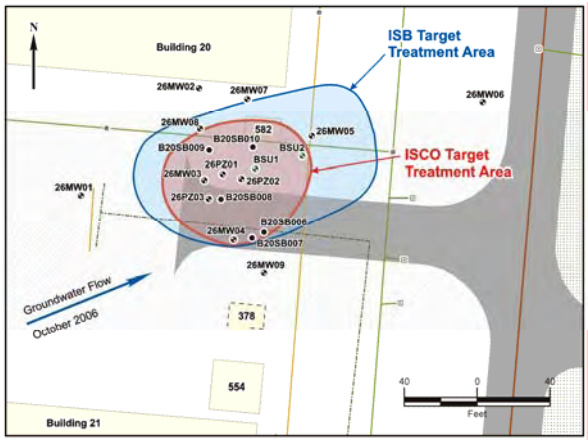
Remedial Action and Groundwater Monitoring at IR Site 26

14 August 2008

Background

- IR Site 26 (32 acres) is located in the central portion of Alameda Point
- TCE, DCE, and VC are present in groundwater at concentrations as high as 700, 2,500, and 530 µg/L, respectively
- Remedy consists of in-situ chemical oxidation (ISCO) followed by in-situ bioremediation (ISB)

COC	Performance Objectives (µg/L)	
	ISCO	ISB
TCE	5	5
DCE	30	6
VC	NA	0.5

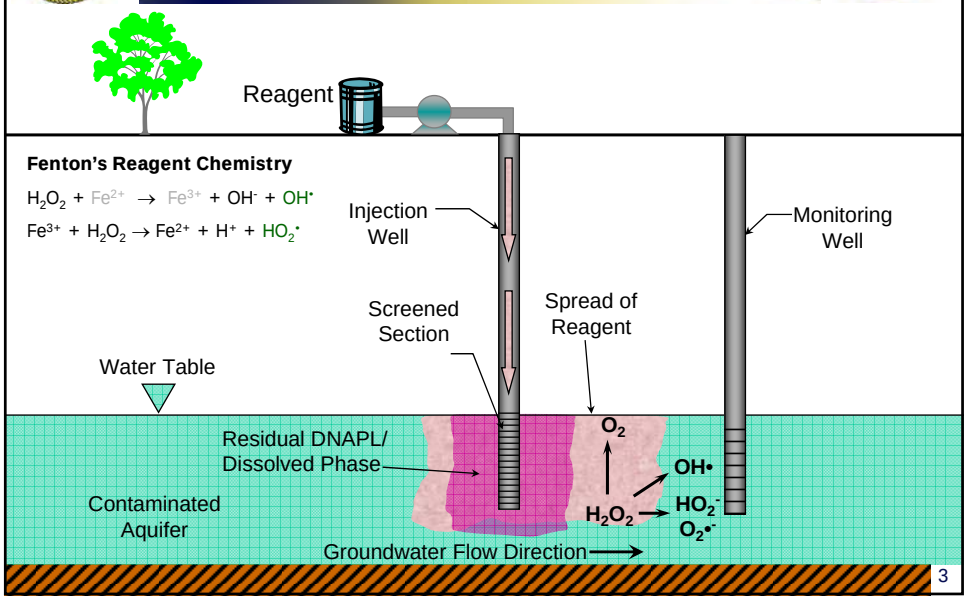


Treatment areas as determined from baseline data collected prior to ISCO pilot test

14 August 2008

2

In Situ Chemical Oxidation (ISCO)
Oxidant Injection Process



3

Presumed Advantages and Limitations of Fenton's Reagent

Advantages

- Hydroxyl free radical is very reactive and can oxidize many more COCs
- Ability to treat strongly sorbed contaminants
- Chemicals involved do not appear to contain trace impurities of concern
- No significant generation of solids that could clog the aquifer and reduce effectiveness of follow-on treatment (ISB)

Limitations

- Peroxide and hydroxyl free radicals are extremely short-lived and this could limit distribution (reaction rate is diffusion controlled). Other reactive species generated are more long-lived.
- Reaction is highly exothermic
- Safety issues with H_2O_2
  - ✓ Chemical fires and explosions
  - ✓ Chemical burns

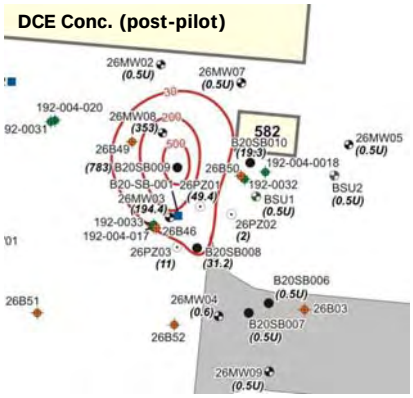
14 August 2008 4

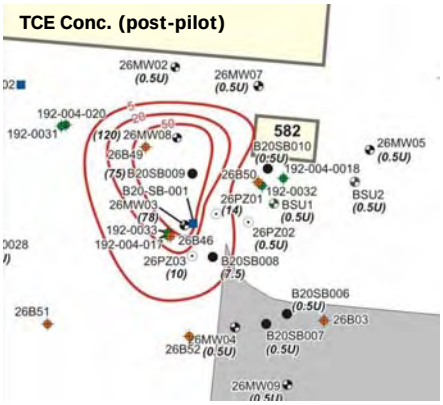
Full-Scale ISCO Application

- Two full-scale injection events
- Fifty-one injection points (seventeen multi-depth clusters)
  - 3 to 7 ft bgs
  - 7 to 11 ft bgs
  - 11 to 15 ft bgs
- Each full-scale application is designed to inject about 29,000 gallons of 8% hydrogen peroxide (about 20,000 lbs peroxide)
- Citric acid for peroxide stabilization

Treatment Area for Full-Scale ISCO

- The target treatment area (2,700 ft^2) for application of full-scale ISCO was determined using post-ISCO monitoring results for TCE and DCE
- Area was selected based on portion of the site in which the 95% confidence of the mean concentration exceeded the remedial goal of 5 µg/L for TCE and/or 30 µg/L for DCE

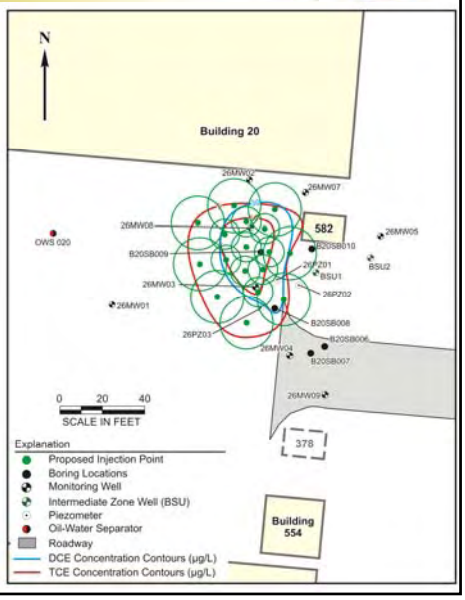




Well Spacing

- Injection location design focuses on areas with greatest contamination
- Inner ring target area has higher density of injection locations, reagent volume and mass of oxidant
- Outer ring targets areas of lower concentration of contaminants of concern

TCE Concentration	> 50 µg/L	5 to 50 µg/L
Injection Well Spacing (ft)	14	25
# of Locations	9	8
Injection Interval (ft)	12	12
Design Volume of Oxidant (8% H_2O_2) per Location (gal)	1,140	2,420
Oxidant Target Conc. After Distribution in Aquifer (%)	2.3	1.5

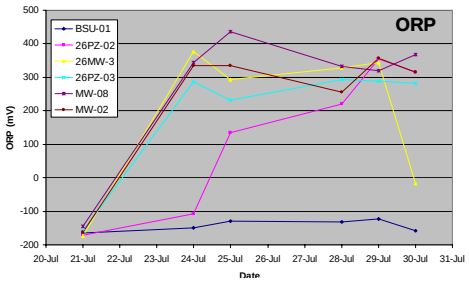


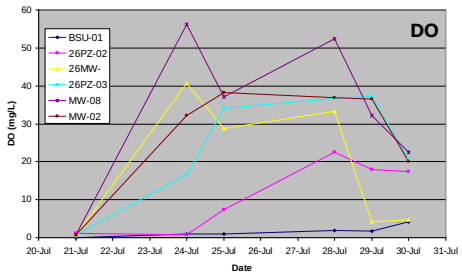
Health and Safety

- Work zone is demarcated with cones and caution tape
- Proper personal protective equipment, including face shields, glasses, Tyvek® aprons, reinforced-toed boots, hard hats, are worn while working in the work zone
- Chemical reagents (citric acid and hydrogen peroxide) stored within secondary containment pads
- Injections discontinued if surfacing of reagents ("daylighting") occurs
- Seals equipped with pressure relief valves installed on all injection points and monitoring wells to control release of fluids from wells
- Equipment stored in secured fenced-in area

Performance Monitoring

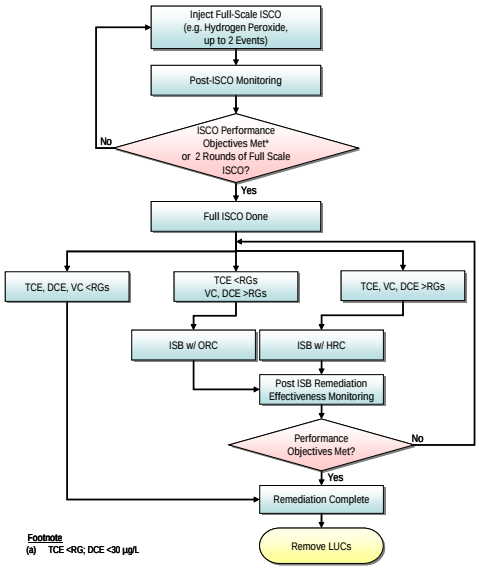
- Flowrates and pressures
- Water quality parameters
  - Dissolved oxygen (DO), conductivity, oxidation-reduction potential (ORP), temperature, pH
  - Volatile organic compounds
- Hydrogen peroxide
- Visual observations





Remedial Action Decision Flowchart

- Performance objectives for ISCO are to reduce TCE to below the remediation goal of 5 µg/L and reduce *cis*-1,2-DCE to <30 µg/L
- If performance objectives have not been met after two rounds of full-scale ISCO, a transition will be made to ISB
- Post ISCO monitoring includes one monitoring event after each full-scale ISCO injection event
  - Performed 4 weeks after injection
  - 14 monitoring wells and 5 multi-level hydropunch locations
- ISB injections and monitoring will be performed until four consecutive quarters of groundwater data demonstrate that all VOC concentrations remain below RGs



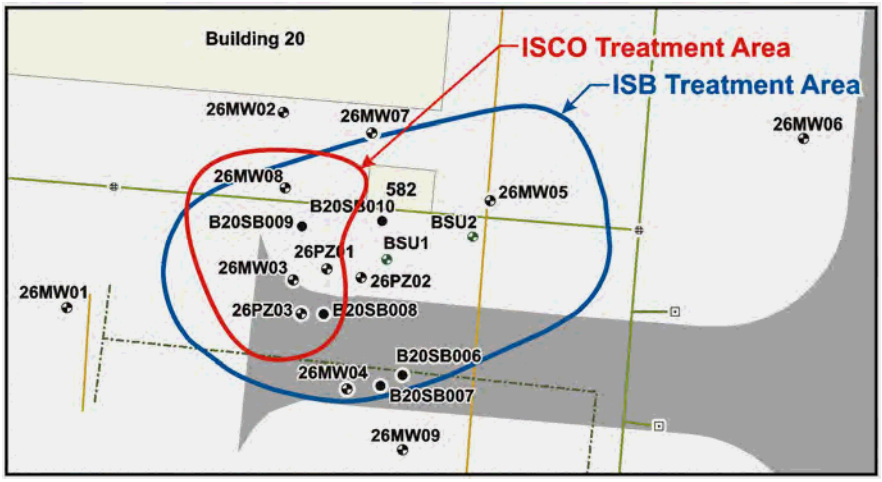
Post-ISCO Monitoring

- Monitoring network includes 14 permanent groundwater monitoring wells and five 3-level hydropunch locations
- Samples will be collected 4 weeks after completing each phase of ISCO injections
- Analytes include:
  - VOCs and metals
  - Total dissolved solids, major anions & cations, and alkalinity
- Bioremediation parameters also will be measured 4 weeks after the final ISCO injections
  - dissolved organic carbon (DOC), orthophosphates, total phosphorous, and total nitrogen in groundwater
  - Phospholipid fatty acids (PLFA), heterotrophic plate counts, fraction of organic carbon, and D*ehalococcoides* population in the aquifer material
- Reduction of VOCs will be calculated based on baseline data

Post ISCO Monitoring (Cont.)

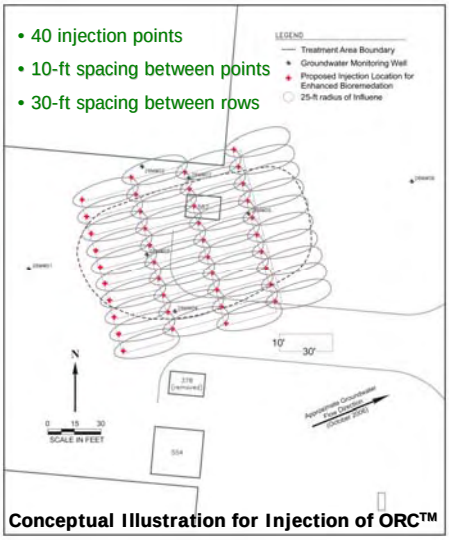
Monitoring Parameter	Data Use
Temp, DO, ORP, conductivity, pH	Help to determine that the aquifer has returned to baseline condition
VOCs	Determine compliance with RGs. Calculate mass reduction compared to baseline
Metals	Compare concentrations to baseline values to determine if changes have occurred. If an increase has occurred, compare to background values to determine if there is a cause for concern
Total dissolved solids, major anions & cations, and alkalinity	Assess return to background conditions and/or any changes resulting from ISCO. Helps to establish baseline conditions for ISB.
DOC, orthophosphates, total phosphorous, and total nitrogen	Determine concentration of nutrients in groundwater available to bacteria to utilize for ISB. If low levels are present, nutrients may be injected to enhance ISB
PLFA, Heterotrophic Plate Counts, fraction of organic carbon, and *Dehalococcoides*	Determines population type and density of indigenous bacteria in aquifer material. Results will aid in design of in situ bio portion of the remedy

Monitoring Well Network



In-Situ Bioremediation

- Aerobic or anaerobic in-situ biodegradation (ISB) of remaining COCs
  - Inject ORC™ or equivalent if VC and/or DCE remain above their respective RGs after completing ISCO
  - Inject HRC™ or equivalent if TCE remains above its RG after completing ISCO
- Direct push injections
  - Pressure inject slurry of powdered ORC or liquid HRC™ with water
  - Partially relies on groundwater flow to distribute reagents
- Finalize number, locations, and depths of injections based on post-ISCO and ISB baseline data collected from the 14 wells and 5 hydropunch locations



Conceptual Illustration for Injection of ORC™

ISB Amendments

- ORC® treatment for VC/DCE
  - Manganese dioxide

    $MgO_2 + H_2O \rightarrow 1/2\ O_2 + Mg(OH)_2$
  - Can be directly injected into aquifer
- HRC® treatment for TCE
  - Viscous honey-like material that releases lactic acid and other organic acid derivatives upon contact with water
  - Organic acids fermented to hydrogen, which donates electrons that drive the anaerobic reductive chlorination process
  - Slow process allows electrons to be delivered to the aquifer for about 1 year without the need to reinject new material

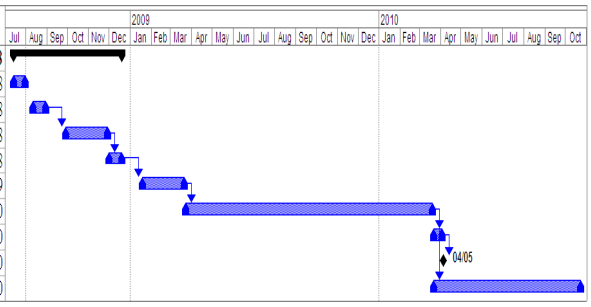
ORC® Socks Going Into a Monitoring Well

ISB Monitoring

- Perform four quarters of groundwater monitoring at 14 monitoring wells to evaluate progress toward achieving remedial goals
- Analyze groundwater samples for VOCs to monitor contaminant reduction
- Measure groundwater quality parameters including: pH, ORP, DO, temperature, and specific conductance
- Continue monitoring until remedial objectives have been met, as demonstrated by four consecutive quarters of groundwater data showing all residual VOC concentrations remain below RGs

Schedule of Activities

ID	Task Name	Start	Finish
1	**Full-Scale ISCO**	**Mon 07/14/08**	**Fri 12/19/08**
2	Injection Event 1a	Mon 07/14/08	Wed 07/30/08
3	Injection Event 1b	Mon 08/11/08	Fri 08/29/08
4	Monitoring	Mon 09/29/08	Fri 11/28/08
5	Injection Event 2	Mon 12/01/08	Fri 12/19/08
6	Post-ISCO/Pre-ISB Monitoring	Mon 01/19/09	Fri 03/20/09
7	In Situ Bioremediation	Mon 03/23/09	Fri 03/19/10
8	Site Restoration	Mon 03/22/10	Fri 04/02/10
9	Remedial Action Complete	Mon 04/05/10	Mon 04/05/10
10	RA Completion Report and Fact Shee	Mon 03/22/10	Fri 10/22/10



Meeting Wrap Up

Questions?

ATTACHMENT B-4

2009 SITE MANAGEMENT PLAN PREVIEW

(15 pages)

2009 Site Management Plan Preview

RAB Meeting
Alameda Point
August 14, 2008

Site Management Plan Purpose

- Provide brief explanation of each Operable Unit and describe work occurring at individual sites
- Provide detailed schedules for site work

2

Operable Unit 1 Sites

- Site 6 – Aircraft Maintenance Facility
- Site 7 – Navy Exchange Service Station
- Site 8 – Pesticide Storage Area
- Site 16 – Shipping Container Storage Area

- Site 14 – Former Fire Training Area

3

Operable Unit 1 Schedule

- Sites 6, 7, 8, and 16
  - Final ROD approved 10/01/07
    - Soil excavation – all sites
    - Groundwater treatment (ISCO & ISB) – Site 6, 16
  - Draft Remedial Design in review
  - Final Remedial Design due in December 2008
  - Remedial Action will require approximately 2 years (new project in process of award)

4

Operable Unit 1 Schedule

- Site 14
  - ROD approved 01/31/07
    - Soil – No further action
    - Groundwater (ISCO & ISB)
  - Final Remedial Design due in August 2008
  - Remedial Action estimated to take approximately 2 years

5

Operable Unit 2A Sites

- Site 9 – Paint Stripping Facility
- Site 13 – Former Oil Refinery
- Site 19 – Hazardous Waste Storage Area
- Site 22 – Former Service Station
- Site 23 – Missile Rework Operations

6

Operable Unit 2A Schedule

- Sites 9, 13, 19, 22, and 23
  - Feasibility Study in preparation
    - Requires results from data gaps investigation and reevaluation of human health risk assessment to evaluate remedial alternatives
    - Data Gaps Report due in August 2008
  - Final Feasibility Study report in May 2009
  - Prepare Proposed Plan and solicit public input

7

Operable Unit 2B Sites

- Site 3 – Abandoned Fuel Storage Area
- Site 4 – Bldg. 360 Aircraft Engine Facility
- Site 14 – Bldg. 360 Engine Test Cell
- Site 21 – Bldg. 162 Ship Fitting/Engine Repair
- Site 23 – Missile Rework Operations

8

Operable Unit 2B Schedule

- Sites 3, 4, 11, and 21
  - Revised Feasibility Study to be submitted in early 2009
    - To be awarded in September
    - Requires results from data gaps investigation to evaluate remedial alternatives
    - Data Gaps Report due in August 2008

9

Operable Unit 2B Schedule

- Sites 3, 4, 11, and 21
  - Treatability study near OWS-163

10

Operable Unit 2C Sites

- Site 5 – Bldg. 5 Aircraft Rework Facility
- Site 10 – Bldg. 400 Missile Rework Operations
- Site 12 – Bldg. 10 Power Plant

11

Operable Unit 2C Schedule

- Sites 5, 10, and 12
  - Final Supplemental Remedial Investigation due in September 2008
  - Final Feasibility Study due in August 2009
  - Additional six-phase heating in 2008 – timing to be coordinated with storm drain removal in Bldg. 5

12

Operable Unit 2C Schedule

- Sites 5, and 10
  - Compete storm drain line removal action in April 2009
  - Final Removal Action Closeout Report in November 2009

13

Operable Unit 3

- Site 1 – Landfill (1943-1956 Disposal Area)

14

Operable Unit 3 Schedule

- Site 1
  - Final ROD delayed due to refining site boundary based on TCRA findings – anticipated in September 2008
  - Remedial action to follow ROD

15

Operable Unit 4A

- Site 2 – West Beach Landfill and Wetlands

16

Operable Unit 4A Schedule

- Site 2
  - Final Feasibility Study due in August 2008
  - Proposed Plan and public input following Feasibility Study Report

17

Operable Unit 4B

- Site 17 – Seaplane Lagoon

18

Operable Unit 4B Schedule

- Site 17
  - Finalize Remedial Design – late 2008
    - Proposals being evaluated from contractors to conduct dredging, dewatering, and sediment disposal
    - Remedial action to be awarded in September 2008
    - Dredging and dewatering will require approximately 1 year

19

Operable Unit 4C

- Site 20 – Oakland Inner Harbor
  - Final No Further Action ROD due in September 2008

20

Operable Unit 5

- Final ROD in September 2007
- Final Remedial Design and Work Plan due in September 2008
- Remedial Action, biosparging estimated to operate for 2 years

21

Operable Unit 4B

- Site 26 – Western Hangar Zone
- Site 27 – Dock Zone
- Site 28 – Todd Shipyard

22

Operable Unit 6

- Site 26 - Final ROD in August 2006
  - Final Remedial Design and Work Plan due in July 2008
  - Remedial Action, ISCO and ISB for groundwater
  - First phase of ISCO compete
- Site 27 – Final ROD in February 2008
  - Data gap and bench testing prior to Remedial Design, which is due in May 2009

23

Operable Unit 6

- Site 28 - Final ROD in August 2006
  - Final Remedial Design and Work Plan due in January 2009
  - Remedial Action, excavation and metals fixation estimated to operate for 2 years (FY09 project)
- Site 30 – Proposed Plan/Public Input - Jan 2009
  - No Further Action for soil
  - Groundwater beneath school yard is part of OU-5 plume

24

Operable Unit 6

- Site 31 – Final ROD due in September 2008
  - No Further Action for soil and groundwater
- Site 32
  - Site boundary modified
  - Radiological investigation planned for 2008/2009

25

Operable Unit 6

- Site 34
  - Final RI in May 2008
  - Data gaps identified and sampling to be completed by January 2009
  - Final Feasibility Study due in August 2009
- Site 35
  - Proposed Plan and Public Input in May 2008
  - Final ROD due in February 2009
  - Remedial Action to begin in March 2009 (FY09 project)

26

Fed Transfer Parcels

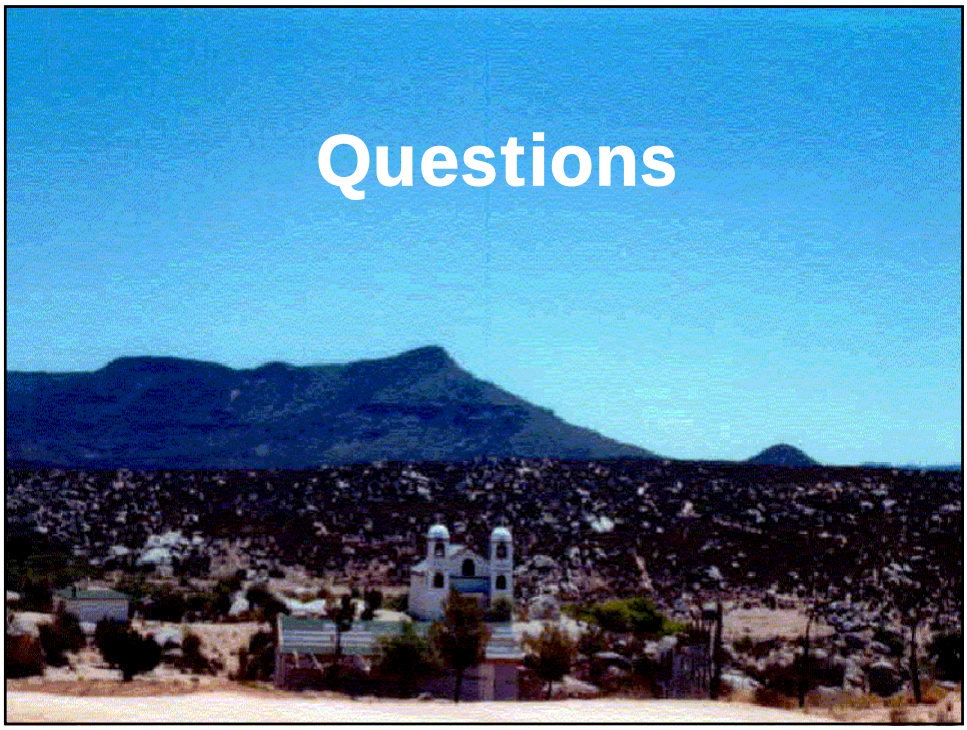
- Final Site Investigation Report in October 2008
  - Additional work in 2009 based on Report recommendations

27

Basewide Projects

- Continue basewide groundwater monitoring in 2009
- Continue basewide radiological survey work in 2009

28


Questions

ATTACHMENT B-5

PROPOSED CHANGES TO CLOSURE STRATEGIES SITE 1 AND SITE 32

(7 pages)

DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE WEST
1455 FRAZEE RD, SUITE 900
SAN DIEGO, CA 92108-4310

B-5

5090
Ser BPMOW.DR/0535
JUN 25 2008

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U.S. EPA
Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Ms. Dot Lofstrom
Department of Toxic Substances Control
8800 California Center Drive
Sacramento, CA 95826-3200

Mr. John West
Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Dear Federal Facility Agreement Members:

Subj: PROPOSED CHANGES TO CLOSURE STRATEGIES FOR SITE 1 AND SITE 32, ALAMEDA POINT, ALAMEDA, CALIFORNIA

The Navy outlined a proposal to modify the closure strategy for Installation Restoration (IR) Site 1 at the April 15, 2008 and June 17, 2008 BRAC Cleanup Team (BCT) meetings. The proposed change in strategy is based upon the latest findings of the Sites 1, 2, and 32 Time-Critical Removal Action (TCRA) conducted from February 2007 through the present. The findings of the TCRA affect the Conceptual Site Models and the closure strategies for adjacent Sites 1 and 32 and for the area located east of Site 1 and south of Site 32. This letter proposes a change of closure strategy for these areas.

The Sites 1, 2, and 32 TCRA is now complete, with the exception of the final radiological status survey, some outstanding laboratory analyses, and report preparation. To accomplish the TCRA objectives for Sites 1 and 32 the Navy intended to: 1) determine the extent of surface radiological impacts; 2) Remove discrete radiological objects from surface soil (less than 2 feet below ground surface); and, 3) Obtain radiological free-release for these areas.

The TCRA included Site 1 Areas 3a, 3b, 5b, and Site 32, which are outside of the landfill footprint. The potential for radiological contamination in these areas was considered low, with potential radiological contamination possible in surface soil due to site grading, spillage during refuse shipment, and wind erosion. Preliminary findings of the TCRA are as follows:

- Radiological contamination is limited to radium-226, which was used in the manufacture of luminescent dials and gauges;
- Low levels of radium-226 were found in soil at Site 1 Areas 3a, 3b, 5b, and at Site 32; the vertical extent was not investigated below 2 feet below ground surface;

- The lateral extent of radium-226 in soil east of Site 1 and south of Site 32 was not completely determined; and
- The lateral and vertical extent of radium-226 in soil does not fit the current conceptual site model for Site 1 Areas 3a and 3b and Site 32, warranting a change in the model.

Conditions at Site 1 Areas 1a, 1b, 2a, 2b, 4, 5a, and groundwater were not investigated as part of this TCRA.

Prior to the TCRA, no action was considered appropriate for Site 32 soil and the following three remedial alternatives were considered for soil at Site 1, Area 3a and 3b:

1. No action;
2. Tier 2 ecological risk assessment, hot spot relocation, institutional controls, and a wetlands mitigation plan;
3. Tier 2 ecological risk assessment, hot spot removal and off-site disposal, institutional controls, and a wetlands mitigation plan.

While the low levels of radium-226 found at Site 1 can easily be identified in surface soil, deeper contamination may not be detected by radiological surveys. Given the deeper than expected contamination at Areas 3a and 3b, and more widespread contamination than expected east of Site 1, at Site 32 and south of Site 32, it would be appropriate to evaluate additional remedial alternatives for soil. Based upon the preliminary TCRA findings, the Navy is proposing to remove portions of Site 1 and include them in Site 32. Site 1 would include Areas 1a, 1b, 2b, 4, 5a, 5b, and groundwater as described in the Site 1 Proposed Plan. In addition to Site 32 soil and groundwater, Site 32 would be expanded to include Site 1 Areas 2a, 3a and 3b, and soil located east of Site 1 and south of Site 32 (actual extent to be determined by a radiological survey). The Navy would then prepare the following documents:

<u>Site 1</u>

- Includes Areas 1a, 1b, 2b, 4, 5a, 5b, and groundwater.
- The existing Site 1 Draft ROD will be used as a basis to issue a Draft-Final ROD describing the change in strategy and deletion of Areas 2a, 3a, and 3b from Site 1.
- No changes are proposed for the selected remedies in the remaining areas.
- During the planning stages of remedial action for Site 1, the Navy will conduct a radiological survey to determine the lateral extent of radium-226 at Site 32.

<u>Site 32</u>

- Includes soil at Site 1 Areas 2a, 3a and 3b, soil and groundwater at Site 32, and soil located east of Site 1 and south of Site 32 in an area yet to be determined.
- An RI/FS addendum that includes findings from the TCRA and explains the addition of Site 1 areas and the expanded soil areas.
- A Site 32 Proposed Plan and ROD will be issued after BCT concurrence with the FS amendment.

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The NCP at 40 CFR Section 300.430(f)(3)(ii) sets forth the requirements that apply when new information becomes available after a Proposed Plan has been released to the public that changes the proposed remedy with respect to scope, performance, or cost such that the remedy significantly differs from that described in the Proposed Plan. If the public could reasonably anticipate the change, then a revised Proposed Plan is generally not necessary; the change need only be described in the ROD.

For areas to be addressed in the Site 1 ROD, no significant changes are anticipated. Therefore, the Navy proposes to move forward on the Site 1 ROD without issuing a revised Proposed Plan or seeking additional public comment.

Site 32 will include a Proposed Plan and public comment period. This will ensure that the public is informed of, and involved with, the revised remedy selection process for Site 1 Areas 2a, 3a, and 3b, Site 32 soil, and for those areas that had their proposed remedy affected by the TCRA findings. This strategy minimizes delay with the selected remedies for Site 1, while allowing BCT input and public review and comment on soil and groundwater remedies for Site 32.

The Navy looks forward to discussing these proposed changes with the BCT. If you have any questions or comments, please call Mr. Derek J. Robinson at (619) 532-0951 or me at (619) 532-0907.

Sincerely,

George Patrick Brooks

GEORGE PATRICK BROOKS
BRAC Environmental Coordinator
By direction of the Director

Enclosures: (1) IR Site 1 Post-Remedial Excavation NaI Field Readings and Soil Sample Ra226 Analytical Results

(2) IR Site 32 Post-Remedial Excavation Soil Sample Ra226 Analytical Results

(3) Current and Proposed Areas of Installation Restoration Sites 1 and 32

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Copy to
Ms. Xuan-Mai Tran
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Ms. Suzette Leith
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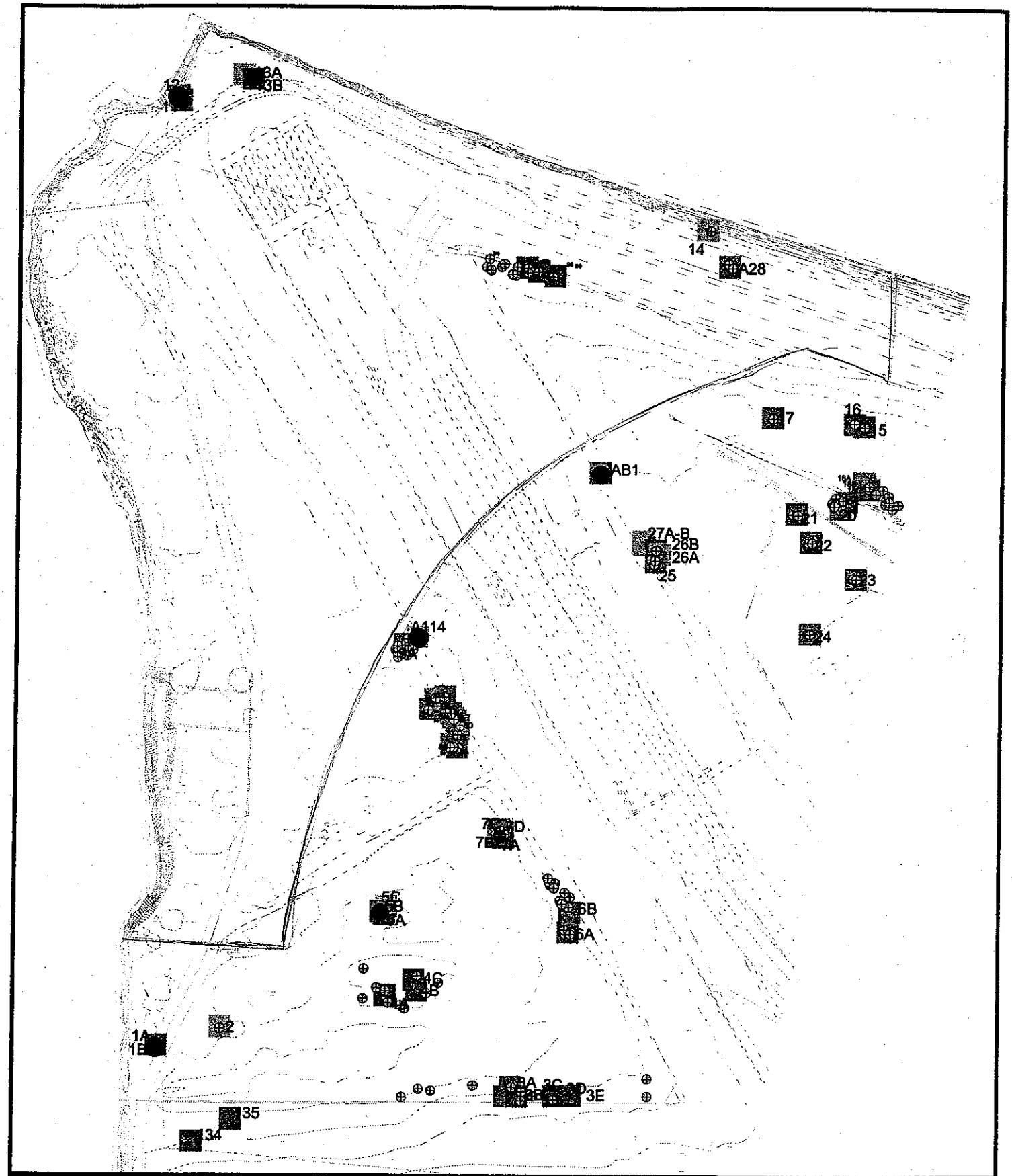
Russell Resource, Inc.
440 Nova Albion Way
San Rafael, CA 94903

Mr. George Humphreys
Community Co-chair
Restoration Advisory Board
25 Captains Drive
Alameda, CA 94502

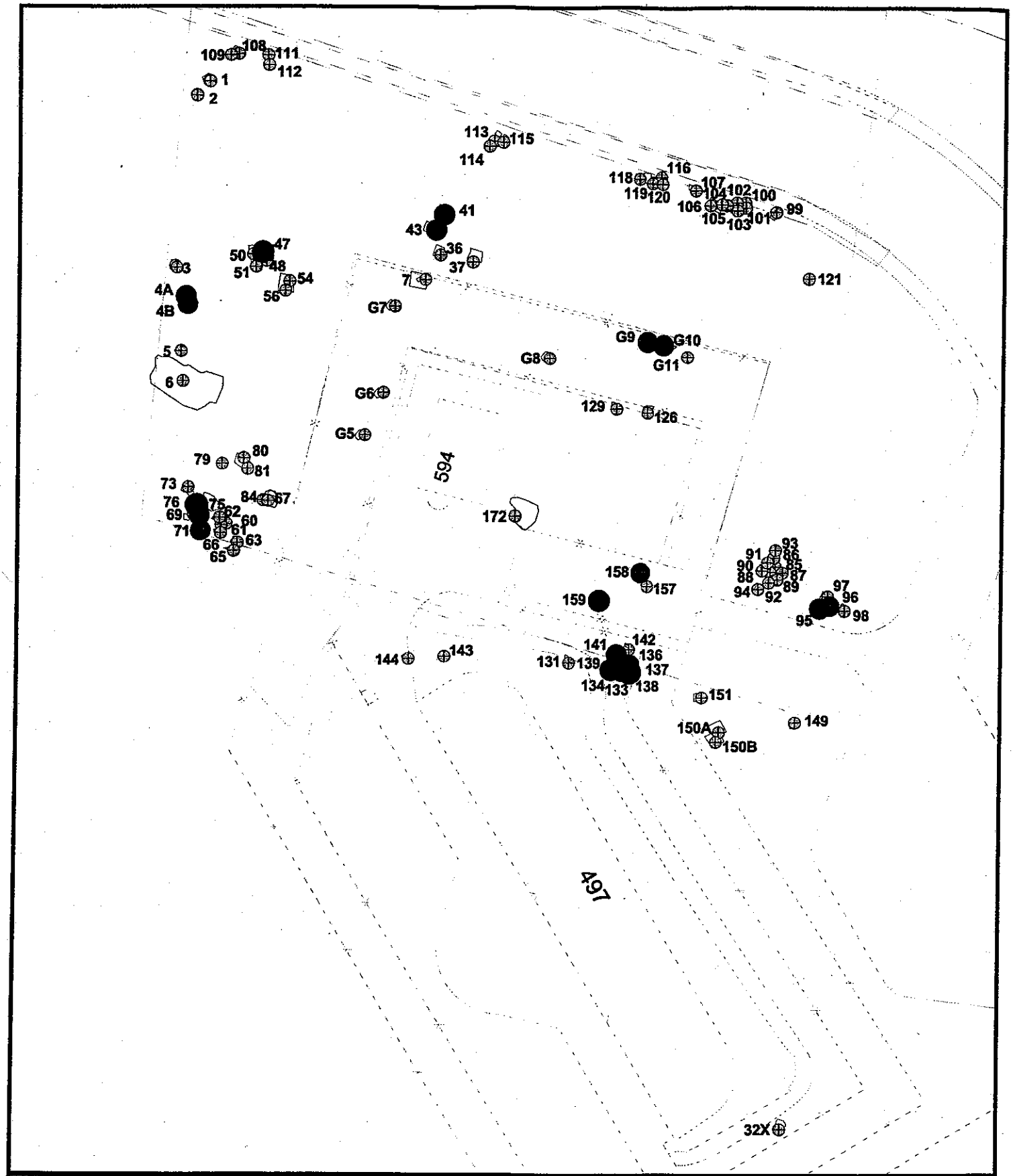


Gross CPM	SS Lab (pCi\g)
< IL (<6k)	< 1
6k - 7k	1 - 2
7k - 10k	2 - 5
10k - 25k	5 - 10
> 25k	> 10

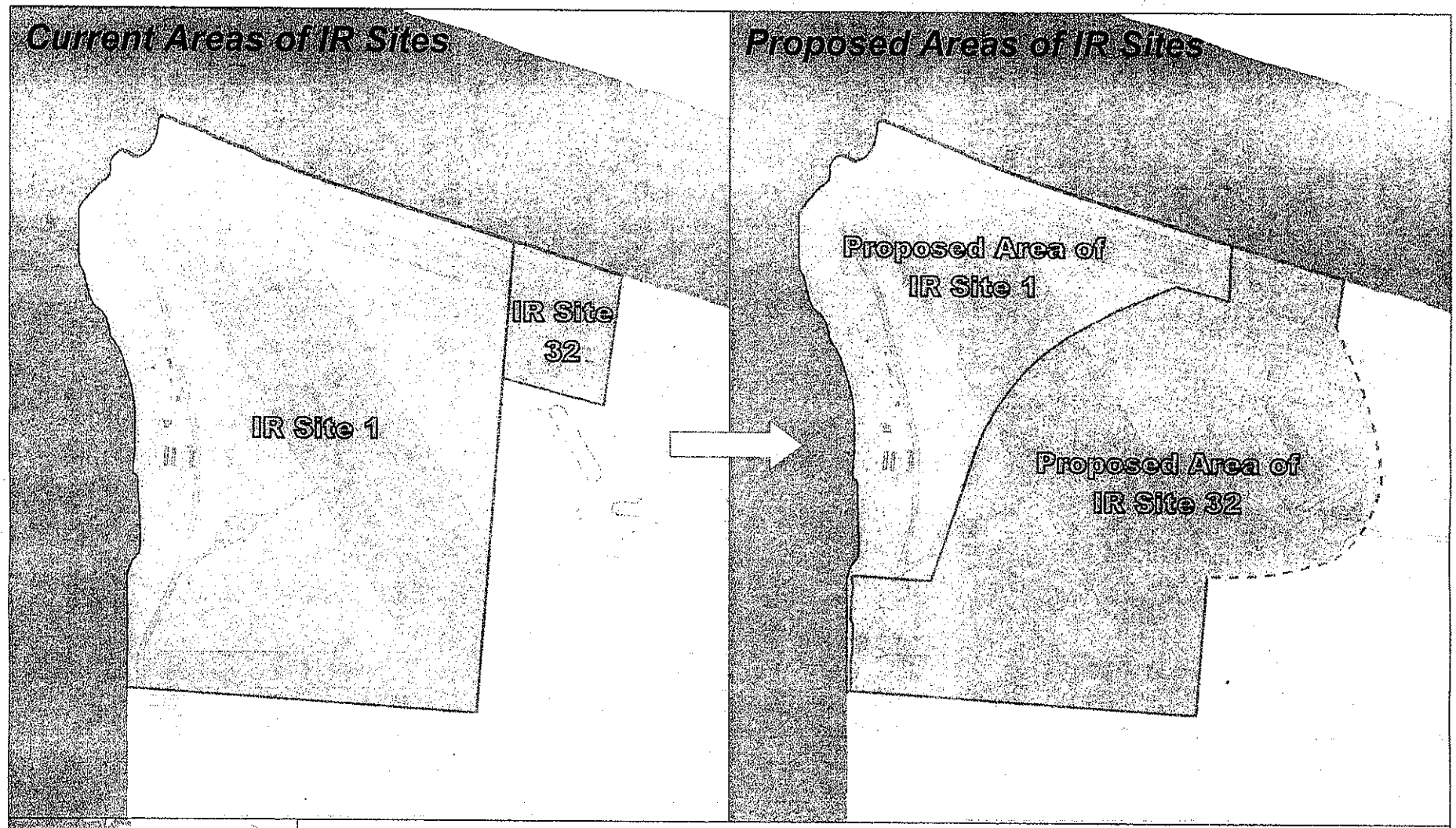
CTO-015(28) Alameda Point
IR Site 1 Post-Remedial Excavation
NaI Field Readings
and Soil Sample Ra226 Analytical Results

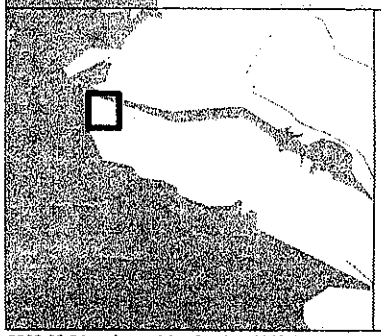
100 0 100 Feet

TETRA TECH EC, INC.



Soil Sample Lab Results (Ra-226 pCi\g)	CTO-015(28) Alameda Point IR Site 32 Post-Remedial Excavation Soil Sample Ra226 Analytical Results	30 0 30 Feet TETRA TECH EC, INC.
< 1 1 - 2 2 - 5 5 - 10 > 10		





IR Site 1
IR Site 32
Area Yet To Be Defined
Building
Road or Runway
Building/Structure
Water

Note:
IR Installation Restoration

N

300 0 300 600
Feet

ChaduxTt JV
Consulting Engineers and Scientists

Alameda Point, Alameda, California
U.S. Department of the Navy, BRAC PMO West, San Diego, California

CURRENT AND PROPOSED AREAS OF INSTALLATION RESTORATION SITES 1 AND 32

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ATTACHMENT B-6

SITE 1 AND 2 STATUS

(1 page)

from Dale

B-6

Site 1 and Site 2 Status

Over the last few months we have had occasion to review the site characterizations of sites 1 and 2. We had requested a visit to sites 1 and 2 in February to assist us in our evaluation of the proposed clean-up plans. We were not offered an opportunity to visit the sites until May. We received a flyer announcing that we would drive to sites 1 and 2, get out and look around. When we went on the tour we were informed that we could not enter either site due to high levels of radioactive contamination. This contamination had never been discussed; we were never made aware that during the firing range cleanup radiation had been discovered. We were not informed that significant radiation had been found below ground surface. We had questioned the accuracy of the statement that radiation had occurred at isolated sites and had been spread on the ground surface due to soil movement during excavation for the runways. Now, we are informed that our suspicions were right and radiation extends to depth throughout Site 1; it is not isolated in hot spots and there is no record of how it got there or why it is in such quantity. It is known that Alameda was used to decontaminate ships used in atomic bomb tests, as a berth for nuclear-powered warships, stored nuclear weapons and used and maintained depleted-uranium ballasts and munitions. It is not surprising radioactive contamination has been found. Testing, however, is for a narrow suite of radionulcides and is probably missing significant hazardous waste.

Another issue that has bothered members of the RAB is that clean up goals shift throughout the base and between bases. Peter Strauss noted that clean-up standards were much higher at Moffett Field than at Alameda Point. Both sites are adjacent to the Bay and will impact the wellbeing of the Bay. Both should have the same levels of clean up and that should be more stringent than those approved by the regulators. Dr. Oberdorfer made the same comment in her presentation on the RI for Site 2.

Site characterization has been poor with historical data lacking in recent reports, a lack of in-depth assessment of groundwater migration pathways, a limited temporal data set for water quality, poor delineation of the geological characteristics of the site and insufficient subsurface sampling.

The military and the Federal regulators are willing to proceed with a cleanup plan without adequate site characterization, either of radioactive waste or hazardous waste. They are willing to expose future visitors to the site to contamination with unknown consequences.

As a result it is unethical and unwise to continue with the proposed plan. The information reluctantly shared with us indicates a serious lack of information about the site and this should warrant a thorough examination of both sites to eliminate the data gaps and accurately identify the size and scope of contamination before a plan is developed.