



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street  
San Francisco, CA 94105

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ALAMEDA POINT  
SSIC NO. 5090.3

April 8, 2004

Thomas Macchiarella  
BRAC Operations, Code 06CA.TM  
Department of the Navy, Southwest Division  
Naval Facilities Engineering Command  
1230 Columbia Street, Suite 1100  
San Diego, CA 92101

**RE: Draft Remedial Investigation Report, Operable Unit 1, Sites 6, 7, 8, and 16,  
Alameda Point**

Dear Mr. Macchiarella:

EPA has reviewed the above referenced document, prepared by Tetra Tech, Inc and submitted by the Navy to EPA on February 13, 2004. The major concerns with the Remedial Investigation Report are that it appears to have an incomplete discussion on the nature and extent of contamination at the sites, and it has used a very limited subset of data in the human health risk assessment which results in an underestimation of risk. In addition to these concerns, it is EPA's position that all sites falling into the risk management range be taken into the Feasibility Study for evaluation of whether any type of remedial action is warranted and justification if it is not.

We look forward to working with you to resolve these and other issues that are detailed in the enclosed comments. Please call me at (415) 972-3029 if you have any questions regarding our comments.

Sincerely,

A handwritten signature in cursive script that reads "Anna-Marie Cook".

Anna-Marie Cook  
Remedial Project Manager

enclosure

cc list next page

cc list: Glenna Clark, SWDiv  
Marcia Liao, DTSC  
Judy Huang, RWQCB  
Elizabeth Johnson, City of Alameda  
Lea Loizos, Arc Ecology  
Jean Sweeney, RAB Co-Chair  
Karla Brasaemle, TechLaw Inc  
Sophia Serda, USEPA

**EPA Review of the Draft Remedial Investigation Report Operable Unit 1,  
Sites 6, 7, 8, and 16, Alameda Point, February 2004**

**GENERAL COMMENTS**

1. EPA requires that all sites that fall above the risk level of  $1 \times 10^{-6}$  be taken into the Feasibility Study for evaluation of whether remedial action is warranted, and justification if it is not. Please note that the implementation of institutional controls of any sort is considered taking remedial action and needs to be documented in the Feasibility Study and the Record of Decision.
2. The figures show locations of maximum soil and groundwater contamination but don't give the concentrations. It would be helpful to have that information on the maps.
3. For the tables that show background risk for inorganics in soil and groundwater it would be very useful to have the Alameda Point background 95<sup>th</sup> UCLs included on the table in addition to risk.
4. Soil and groundwater risks are presented separately for each site. Please provide a cumulative risk in future documents.
5. Data gaps are present at some sites. These data gaps are important to address, but may be most expeditiously dealt with at the Remedial Design phase of the project. See specific comments for data gaps at specific sites.
6. The discussion of the nature and extent of contamination should be independent of the risk assessment. It is inappropriate to characterize the nature and extent of contamination based on chemicals that have already undergone a risk assessment and are considered to be risk drivers, particularly since the data used in the risk assessment is only a subset of the validated data considered acceptable for use in the Remedial Investigation Report (RI).
7. The criterion that the only data suitable for inclusion in the risk assessment data set is data that is "consistent with the DQOs for the RI" requires further justification. If samples are analyzed with suitable analytical methods and detection limits, and the data are validated, the data should be included in the risk assessment data set. The use of this criterion apparently resulted in dropping data from the risk assessment that should have been included. In many cases, the highest detected concentrations are not included in the risk assessment data set.
8. Removal actions are not adequately described in the text and figures. For example, at Site 7, the location of the dual vapor extraction (DVE) system is not shown nor is the radius of influence of this system shown on a figure or discussed; in order to obtain this information, it is necessary to go to other documents. When one does this, it appears that

the DVE did not include the area around M07A-05. Similarly, the areas where the In-Situ Chemical Oxidation studies are being performed at Site 16 are not shown on any figures. The RI report should include a complete summary and necessary figures of all removal actions.

9. The RI presents a statistical summary of data in which validated data are screened against preliminary remediation goals (PRGs). However, it appears that much of the RI data has not been included in the risk assessment data set. This is confirmed by the fact that generally less than 50 percent of the validated samples for the RI were used for the risk assessment as shown in the following table:

**Percentage of Validated RI Data included in the Risk Assessment**

Analyte	Site 6 Soil	Site 6 Ground- water	Site 7 Soil	Site 7 Ground- water	Site 8 Soil	Site 8 Ground- water	Site 16 Soil	Site 16 Ground- water
VOCs	43.1	26.8	33.3	23.7	29.4	35.2	32.5	32.3
SVOCs	58.5	17.1	23.7	12.1	45.8	25.7	17.6	31.0
PAHs	75.0	-	76.1	-	100	-	100	-
Pesticides	100	24.1	41.2	12.1	47.6	39.6	120.3	54.8
PCBs	43.3	24.1	36.8	12.1	47.6	39.6	55.2	4.5
Metals	52.2	16.7	29.8	11.3	44.9	28.3	104.3	28.6
Cyanide	-	-	-	-	-	-	23.1	38.1

Based on an evaluation of a few of the chemicals that were detected at Site 7, it is unclear how data were chosen for the risk assessment. It also appears that this has resulted in the exclusion of several contaminants and/or some of the results that represent the maximum detected values from consideration in the risk assessments. For example, methyl-tert-butyl ether (MTBE) was detected above the PRG in CA7-01 at 12,000 micrograms per liter (ug/L) and recently during quarterly groundwater monitoring in M07A-08 at 31 ug/L, but MTBE was omitted from the risk assessment data set. Similarly, at Site 7, trichloroethene (TCE) was not included in the risk assessment groundwater data set. It is unclear why validated data are useful for the RI, but not for the risk assessment. The explanation that the DQOs are different is not sufficient, because validated data should be acceptable for quantitative evaluation of risks. In addition, in two cases, more samples were apparently used for the risk assessment than were validated for the RI. Given the disparity between the two data sets, we have little confidence that the risk assessments accurately assess potential health risks associated with these sites. Consequently, review of the risk assessment focused only on general procedural aspects and a detailed review of the risk assessment has been postponed until the Navy provides an explanation for the disparity between the data acceptable for the RI and the data set used for the risk

assessment. Please either provide a detailed analysis that shows why each sample was or was not included in the risk assessment data set is necessary to demonstrate that the risk assessment data set is representative or revise the risk assessments so that they include some or all of the excluded data.

## SPECIFIC COMMENTS

1. **Page ES-9, Site 16, second paragraph:** Lead is possibly, although unlikely, being increasingly mobilized into groundwater due to the changing subsurface conditions caused by the pilot study. The problem with the lead needs to be addressed and the possible sources of lead from former leaking USTs evaluated.
2. **Page ES-10 and ES -11:** All sites in and over the risk management range must be carried forward into the FS for evaluation for remedial action.
3. **Page 1-1, Section 1.0, last sentence:** Please rephrase this last sentence to reflect that the site uses were related to light maintenance and repair work as well as washdown areas, with relatively low levels of solvents and TPH products. As it reads now, the sites appear to be mostly TPH related.
4. **Page 2-11, last paragraph:** Please confirm that the location of the sheet pile wall described here is accurate. Other Alameda Point documents (such as the radiological removal action documents and the former draft OU 2 RI) state that the seawall is to the north of Seaplane Lagoon. The location of the wall will have an impact on the groundwater flow patterns for Site 6.
5. **Section 3.2, Scoping of the Remedial Investigation, Page 3-5:** This section states that the storm sewer system will not be considered as a potential source, only as a preferential pathway. Please give a brief summary of the storm/sewer investigation and clean out removal action and explain that the sediment in the catchbasins was removed and sampled which supports considering the storm/sewer as only a preferential pathway.
6. **Page 3-7, third full paragraph, last sentence:** Please remove the word “interim” from interim removal action.
7. **Page 3-7, Section 3.3.2:** Explain the relationship between the EBS program and the IR program in this section.
8. **Page 3.9, last sentence of Section 3.3.4:** What type of sampling has been conducted at the RCRA areas? Part of the EBS, TPH or IR programs or a separate sampling effort? Are the sampling results evaluated in this document?

9. **Page 3-11, second paragraph, first sentence:** It would be more accurate to state that **most** historical soil data for PAHs at Alameda Point had elevated detection limits. 92% of the data was unusable for that reason.
10. **Page 3-23, third paragraph:** The reasoning presented for not including homegrown produce as a pathway is faulty. Firstly, all the sites are slated for residential (Site 7) or mixed use which defaults to residential. Contrary to gardening being an extreme unlikelihood, home gardens already exist in the west housing and Coast Guard Housing areas, including existing fruit trees. The pathway cannot be considered incomplete and the risk assessment needs to address this potential pathway.
11. **Page 3-26, second paragraph:** The total HI s should include both groundwater and soil combined.
12. **Page 3-27, first sentence:** Explain that the “risk management range” is the range of risk levels that allow the risk managers to assess whether remedial action is warranted or whether there is justification for taking no action.
13. **Page 3-27, third paragraph:** Again, the risks for soil and groundwater should be combined.
14. **Page 3-36, sixth bullet:** What is meant by “ambient concentrations of pesticides”?

#### **SITE 6 GENERAL COMMENTS**

1. The extent of tetrachloroethene (PCE), trichloroethene (TCE), 1,2-dichloroethene (1,2-DCE) and vinyl chloride in groundwater has not been defined along the west or west-southwest boundaries. The extent of PCE has not been defined along the northern portion of the western boundary. For TCE, the extent has not been defined west of the line between S06-DGS-DP16 and S06HP-07, and west of M06-01. The extent of 1,2-DCE has not been defined along any of the boundaries shown on Figure 4-12 or in the vicinity of S06DGS-DP15. The extent of vinyl chloride has not been defined along the western edge of the plume except in the vicinity of S06-HP07.
2. The depths at which hydropunch or grab groundwater samples were collected should be shown on Figures 4-9 through 4-13.

#### **SITE 6 SPECIFIC COMMENTS**

1. **Page 4-2, first sentence and fourth paragraph:** OWS 040A and 040B should have been sampled even if they were “outside of the site boundary”. The OWSs were part of

the Site 6 washdown area under investigation and furthermore appear not to be connected to the storm sewer (based on text on page 4-3 and figures showing location of sewer lines) which means that soil contamination is a concern. In addition, the groundwater plume contours are unbounded in the northwest portion of the site and standard step-out sampling procedures usually used to bound the plumes should have taken into account the existence and possible source nature of the two OWSs.

2. **Page 4-8, fifth paragraph:** As stated in the above comment, the groundwater plume is not adequately bounded to the northwest due to the lack of step out sampling in this area and the lack of consideration of OWS 040A and 040B as potential sources of soil and groundwater contamination.
3. **Section 4.3.2, Groundwater, 4-12:** It is unclear why all of the data considered useful for the RI was not used in the Risk Assessment (RA). Limiting the RA data set to 29 of 108 VOC samples, 7 of 35 SVOC samples and 7 of 42 metal samples appears to be too small of a subset of the overall data set and inappropriate for fully evaluating risk at the site. It is not clear that a difference in DQOs is sufficient to justify eliminating most of the data.
4. **Page 4-13, 4-14:** Additional potential sources of contamination may be of OWS 040A and 040B.
5. **Page 4-15, first paragraph:** Because of the data gap concerning potential soil and groundwater contamination from OWS 040A and 040B, it cannot be concluded that the sewer line does not form a potential preferential pathway.
6. **Section 4.4.2, Background, Page 4-15:** The criteria and method used to determine whether metals concentrations are statistically different than background are not clear. Please briefly discuss the criteria and method used to compare metals data with the background dataset.
7. **Section 4.4.2, Background, Page 4-15:** This section states that both sodium and potassium are statistically different than background in groundwater, but it was stated in a previous section that sodium is one of multiple possible contaminants from Building 273 x-ray film developing. Before ruling sodium out as "naturally occurring," please evaluate any potential sodium contamination from this building.
8. **Section 4.4.3, Nature and Extent, Page 4-16:** The nature and extent of chloroform, cis-1,3-dichloropropane, 1,1-dichloroethane (1,1-DCA), 1,2-dichloroethane (1,2-DCA), and chloromethane should be presented on figures and discussed in the text since these chemicals were detected above the groundwater PRGs. Similarly, the extent of arsenic and manganese contamination in groundwater should be discussed.
9. **Page 4-16, Section 4.4.3.1:** Soil gas results should be discussed in this section. Explain why the soil gas samples were not taken over the groundwater plume centers (i.e. highest

concentration areas) and also why the soil gas detection levels for some of the contaminants of concern over the PRGs (e.g. vinyl chloride).

10. **Page 4-17, second paragraph:** The logic applied to listing OWS 041 as a source here needs to be applied to OWSs 040A and 040B
11. **Section 4.5.1, Nature and Extent Conclusions, Page 4-32 and Section 8.1.1, Site 6 Nature and Extent Conclusions, Page 8-2:** The text in this section concludes that VOCs are confined to the first water bearing zone (FWBZ) based on the absence of VOCs detected in groundwater samples from the second water bearing zone (SWBZ), but the basis for the conclusion that there is no VOC contamination in the SWBZ appears to be speculative and should be deleted from the text.
12. **Page 4-34, Section 4.5.2.2, first paragraph, second sentence:** If the site is incapable of supporting wildlife, the pathways are **not** potentially complete. Replace the word “therefore” with the word “however”, so that the sentence makes sense.
13. **Page 4-35, Recommendations:** The soil and groundwater risks must be added together and the whole site moved into the FS for evaluation for remedial action
14. **Table 4:** Detection limits for half of the arsenic groundwater samples, some of the pesticide samples, all of the PCB samples and some of the VOCs (including benzene and vinyl chloride) exceeded the PRGs. At a minimum, this data problem needs to be discussed in the text and a case made for having adequate quantities of data to perform a statistically meaningful risk assessment.

## **SITE 7 GENERAL COMMENTS**

1. The extent of Aroclor 1254 and 1260 in soil is not discussed, but is referenced in the conclusions. Also, antimony, barium, cadmium, chromium, iron, manganese, and thallium were found above the Region 9 PRGs, but the extent of these metals in soil is not discussed or presented.
2. The discussion of the nature and extent of groundwater contamination does not include arsenic, manganese, benzene, MTBE, toluene, or xylene. While it is understood that the DVE system was intended to remove floating product, MTBE, and residual dissolved hydrocarbons from groundwater, the system is no longer operating and no groundwater samples have been collected from within the footprint of the former plume. Because of this data gap, the magnitude and extent of the current groundwater plume is unknown.
3. Table 5-2 indicates that three samples (from the 2003 Supplemental Investigation) were analyzed for dioxin/furans: however the results of the dioxin/furan analyses for these three samples are not discussed in this report.

4. It is unclear why MTBE and TCE were not included in the risk assessment data set and it is not known what other constituents were dropped from the risk assessment data set. It also appears that no samples from the center of the "former" groundwater plume have been collected, so it is unclear how the risk assessment can be considered representative of current site conditions. Since there are no samples in this area, it is unclear whether all of the contamination has been remediated, but since removal actions rarely clean up contamination to non-detect levels, it is likely that some residual contamination remains. Please explain why MTBE and TCE were not included in the risk assessment data set, list any other constituents that were detected above PRGs in soil and groundwater that were not included in the risk assessment data set, and explain how the risk assessment is representative if it does not include any information from the center of the "former" plume area.

#### SITE 7 SPECIFIC COMMENTS

1. **Page 5-2, third paragraph:** Were only BTEX analytes tested for during excavation of UST 459-7?
2. **Page 5-3, Soil Debris Area, last sentence:** Was the waste hazardous or non-hazardous?
3. **Page 5-9, Supplemental Remedial Investigation Data Gap Investigation 2001:** EPA believes follow on sampling at Site 7 was to better delineate some lead hot spots in order to perform a removal action and that the existence of the incinerator debris area unknown prior to this follow-on sampling. Dioxins/furans were incorporated into the sampling plan developed to delineate the debris soil area once it was discovered.
4. **Page 5-9, TPH and lead-contaminated Soil Removal Action 2002, last sentence:** Was the soil disposed of off-site hazardous or non-hazardous?
5. **Section 5.2.3, Total Petroleum Hydrocarbon Investigations, Page 5-11:** The text in the first paragraph in this section states that no floating product was detected during the UST removals from 1995-1998, but under the subsequent section heading "Underground Storage Tank Removals", the text in the last paragraph states that water was pumped from the excavation pit of tank 459-7 to remove floating product. Please resolve this discrepancy.
6. **Section 5.3.2, Groundwater, Page 5-15:** It is unclear why all of the data considered useful for the RI was not used in the RA. Limiting the (RA) data set to 36 of 152 VOC samples, 7 of 58 SVOC samples, 7 of 63 pesticide/PCB samples, and 12 of 106 metal samples appears to be too small a subset of the overall data set to be statistically significant; this is inappropriate for fully evaluating risk at the site. It is not clear that a difference in DQOs is sufficient to justify eliminating most of the data, particularly since this resulted in using only 11 percent of the metals data, 12 percent of the SVOC data, 12

percent of the pesticide/PCB data and less than 24 percent of the VOC data. Please justify.

7. **Page 5-16, Section 5.4.1:** An additional potential source of contamination would be OWS 459 and the Transformer Pad.
8. **Page 5-18:** The sentence “Although lead in soil is statistically different from background, concentrations of lead detected in Site 7 soil are consistent with concentrations detected in ambient soil” appears contradictory. EPA believes lead should be included as a COPC.
9. **Page 5-21, Section 5.4.3.2:** EPA disagrees with the statement that lead in soil is believed to be naturally occurring, particularly in light of the nature of the site activities. Lead needs to remain a risk driver for this site for soils both in the soil debris area and outside the soil debris area.
10. **Section 5.4.3.2, Lead in the Soil Debris Area, Page 5-23:** The text states that lead does not extend beyond the footprint of Building 459, but the concentration of lead in the 2 to 3 foot sample at sampling location S07-SSI-S18, which is located beyond the building, is above background. The extent of the contamination that extends beyond the building is unknown. Please revise the text to state that some lead contamination appears to extend beyond the building and discuss how the associated data gap will be addressed.
11. **Page 5-23:** Copper needs to be considered a risk driver for the soil debris area.
12. **Page 5-27, Section 5.4.4.7:** The conceptual model presented to account for PAHs in soil is incorrect. The origins and nature of the Marsh Crust PAH contamination is different from the emplaced PAH contamination found in the fill material. For a well written and thought out description of the origins of the PAHs present at Alameda Point refer to the OU 5 GW RI/FS document.
13. **Page 5-27, Sections 5.4.4.7 and 5.4.4.8:** These two sections contradict each other.
14. **Page 5-28, Section 5.4.4.8:** Why were the PAHs not monitored for during the recent groundwater monitoring events given that they had shown up in previous groundwater samples. This omission is a data gap for Site 7.
15. **Page 5-30, first paragraph:** Soil and groundwater risks should be combined.
16. **Page 5-30:** It would be clearer if the soil surrounding the debris area were given a more descriptive title such as “non-debris area soil” rather than just “soil”.
17. **Page 5-31, Soil Debris Area:** What are the risk drivers? This section is incomplete when compared to the information presented in the non-debris soil area.

18. **Page 5-32, Lead:** What is the point of the comparison to EBMUD drinking water? Please elaborate.
19. **Section 5.5.1, Nature and Extent Conclusions, Page 5-42 and Section 8.2.1, Site 7 Nature and Extent Conclusions, Page 8-5:** The text states that there is no known use of aluminum, arsenic and copper at Site 7, but an incinerator was formerly located at this site. Incinerator ash often contains high concentrations of metals. Please discuss the potential that incinerator ash was the source of metals found at Site 7.
20. **Page 5-42:** EPA disagrees with the conclusions that lead in the soil is considered naturally occurring given the levels of lead and the nature of the site activities. EPA also disagrees that arsenic in groundwater is at background levels. The risk level attributable to background levels of inorganics in groundwater is at  $2.2 \times 10^{-4}$  (See Tables 5-19 and 5-20). Groundwater risks from arsenic at this site are at  $2.6 \times 10^{-3}$ , more than an order of magnitude higher than background.
21. **Page 5-44, Groundwater:** EPA strongly disagrees that arsenic in groundwater is at background levels. Risk levels attributable to background levels of inorganics in groundwater is at  $2.2 \times 10^{-4}$ . Groundwater risks from arsenic at the this site are at  $2.6 \times 10^{-3}$ , more than an order of magnitude higher than background.
22. **Page 5-45, Recommendations:** Both soil and groundwater need to be evaluated for remedial action in the Feasibility Study. The recommendations on this page are inappropriate.
23. **Table 5-5:** Why was the detection limit for all PCBs samples higher than the PRG. Given the presence of a transformer pad at the site, this appears to be a data gap in Site 7 groundwater sampling.

#### SITE 8 GENERAL COMMENTS

1. The extent of Aroclor 1254 in soil is not discussed, but this analyte was also detected above the Region 9 PRG. Also in groundwater, manganese, ethylbenzene and MTBE were detected above the Region 9 PRGs, but the extent of these analytes is not discussed or presented. Please provide figures and discuss the extent of the listed analytes in soil and groundwater. Also, the soil gas results are not discussed; please discuss these results in the text.

## SITE 8 SPECIFIC COMMENTS

1. **Page 6-2, Building 114:** Is the floor drain in the building connected to the storm/sewer drains and was it sampled?
2. **Page 6-2, Washdown Area/OWS-114:** If the washdown slopes to the south, why is the OWS located in the northern portion of the washdown area? Where did the runoff wastewater from the washdown area go?
3. **Section 6.1.4, Hydrogeology, Pages 6-5 and 6-6:** The text on page 6-5 indicates that groundwater in the FWBZ flows to the southwest, but on page 6-5, the text states, "Groundwater in the FWBZ generally flows north toward Oakland Inner Harbor." This is inconsistent.
4. **Page 6-10, last paragraph:** The first sentence in this paragraph appears to contradict itself midsentence. Were VOCs not sampled for because it would be unlikely to find VOCs in the 0 -2 ft level due to volatilization? Were VOCs not sampled for because the site is predominantly paved (which would trap the VOCs in the subsurface and therefore make sampling omission a data gap)?
5. **Page 6-11, Section 6.3.3:** What is the point of taking soil gas samples if the detection limits are set above residential PRGs? The soil gas results seem unusable and therefore should be redone.
6. **Page 6-17, Section 6.4.3.2:** If arsenic is a risk river, why is it not discussed in this section?
7. **Page 6-22, Section 6.4.5.1:** Soil gas results are not discussed anywhere in this chapter. The problem with the detection limits should be discussed and acknowledged as a data gap.
8. **Page 6-25, fifth paragraph:** Please elaborate on the statement that "Although detection limits for TCE exceed the Region 9 residential PRG of 0.028 ug/l, the detection limits were within the detection limits acceptable for the method".

## SITE 16 GENERAL COMMENTS

1. Several analytes were detected above soil or groundwater PRGs but are not presented in the discussion of the nature and extent of contamination. In soil, there are no figures or discussion of the extent of Aroclor 1254, PAHs, or arsenic. It is not clear that arsenic at 45 mg/kg represents background conditions; the arsenic data should be presented to justify this statement. Similarly in groundwater, the extent of benzene, 1,1-DCA, chlorobenzene, antimony, manganese, and thallium is not presented on figures or

discussed. Please include a figure and a discussion of the nature and extent of each analyte that was detected in soil or groundwater above PRGs and that was detected in more than one sample.

2. There is no discussion of soil gas or the cyanide results. Please include a discussion of the findings of the soil gas survey and discuss whether the maxima coincide with the maxima in soil and/or groundwater. Also please discuss the reason the cyanide analysis was done and the extent of cyanide contamination in soil and groundwater.

## SITE 16 SPECIFIC COMMENTS

1. **Page 7-3, second paragraph:** EPA disagrees that OWSs 608A and 608B should be evaluated under the TPH program. Since the OWSs accepted wastewater from aircraft maintenance and washing as well as fueling and defueling operations, it is very likely that soil and groundwater in the vicinity of the OWSs will be contaminated with VOCs. The TPH program will not sample for constituents other than BTEX and not sampling these locations for CERCLA contaminants under the CERCLA program will be an oversight.
2. **Page 7-4, UST 608:** How will the remaining contaminated soil be addressed? Were contaminants other than BTEX sampled for in the confirmation sampling?
3. **Page 7-14, first paragraph:** The OWSs 608A and 608B are potential sources of VOCs to soil and groundwater and not sampling these locations is a potentially big data gap if they provide an ongoing source to groundwater contamination
4. **Section 7.3.2, Groundwater, Page 7-14:** It is unclear why only one of 22 PCB samples was used for the risk assessment or why this is believed to be representative of site conditions. There are many locations with PCB contamination in soil, so it is unclear why only 1 groundwater sample was included in the risk assessment.
5. **Section 7.4.3.1, Chemicals Believed to be Used at the Site:** The table entitled, "Soil Analytical Results for Chemicals Used at Site 16" does not list TCE, benzene, or vinyl chloride results even though the first paragraph of the section states that these chemicals were used and/or stored on site. Similarly, the table entitled, "Groundwater Analytical Results for Chemicals Used at Site 16" does not list PCB results but PCBs are listed as chemicals used and/or stored on site. Please include all chemicals used or stored at Site 16 in these tables for consistency.
6. **Page 7-21, Section 7.4.3.2, last paragraph:** What is meant by the statement "Screening levels of 3.19 and 49 mg/kg were used for cadmium and copper in soil which is based on the maximum metal concentrations detected in ambient soil"? The screening levels

should be the 95<sup>th</sup> UCL calculated for the “blue” area and not some maximum level from the site soil.

7. **Page 7-27, last paragraph:** Lead must be present in site soil to be mobilized into the groundwater, especially at such high concentrations. What is the lead source?
8. **Page 7-30, Section 7.4.4.5:** The presence of lead in soil and groundwater needs to be addressed. The claim that lead is relatively immobile in groundwater makes no sense and its presence at high concentrations is a concern.
9. **Page 7-44, Section 7.5.3:** It is likely that soil sources of contamination have not been adequately characterized. In the FS, further sampling of soil can be evaluated, as well as the potential need for remediation.
10. **Figure 7-3, Geological Cross-Section D-D’ Site 16, OU-1 Area and Section 7.1.3, Geology, Page 7-6:** On Figure 7-3, S16-DGS-DP01 is depicted with a completely different lithology than the two adjacent wells. There is about a 10 year difference between completion dates for the wells and S16-DGS-DP01, but this does not explain the lack of consistency on this cross-section. In addition, there are also large differences between B16-10 and adjacent locations MWC2-1 and BC2-4. Please explain why the lithology is so different or review the boring logs and revise the cross-section as necessary.

#### MINOR COMMENTS

1. The dashed line that represents the contaminant plume boundaries for the various chemicals is never defined in the legend of figures that show the extent of contamination. Please ensure that all symbols used on each figure are defined in the legend.
2. **Section 2.3.2, Installation Geology, Pages 2-6 and 2-7:** The Bay Sediment Unit is described in units of feet below ground surface (bgs) while Yerba Buena Mud is described in units of feet above mean sea level (msl). Please use consistent units when describing lithologic units.
3. **Figure 2-4, Potentiometric Surface Map of the First Water-Bearing Zone, June 2002 and Figure 2-5, Potentiometric Surface Map of the First Water-Bearing Zone, September 2002:** It appears that the 6' contour on the eastern edge of Figure 2-4 should be a 9' contour. Please change the label on this contour. Also, it is unclear why there is a fractional (5.5 foot on Figure 2-4 and 4.5 foot on Figure 2-5) foot contour on these figures. Please either consistently include fractional contours (i.e., 3.5, 4.5, 5.5, 6.5, 7.5 and 8.5) or delete them from these figures.
4. **Page 3-6, first paragraph, second sentence:** The sentence is incomplete.

5. **Figure 4-1, Site 6 Features:** There is an asterisk marked on the figure and in the legend but the significance of the asterisk is not defined. Please define this symbol in the legend or remove it if it is unnecessary.
6. **Figure 5-11, Concentrations of Arsenic in Site 7 Soil and Debris Area:** There are two different colored outer rings, orange and red, represented in this figure but only one is defined in the legend. Please correct the figure to match the legend or vice versa.
7. **Page 5-23, Copper in Soil, second paragraph, last sentence:** Change the word “arsenic” to “copper”.
8. **Page 6-5, third paragraph, fourth sentence:** Replace “Site 6” with “Site 8”.
9. **Page 7-6, Section 7.1.4, first paragraph, third sentence:** This sentence is incomplete.

## HUMAN HEALTH RISK ASSESSMENT

### GENERAL COMMENTS

1. Consistent with EPA guidance (1989), risk estimates should be presented to only one significant figure
2. The RAGS Part D tables presented in the attachments contain numerous redundancies. Exposure pathways (Table 1), values used for daily intake (Table 4.1 through 4.4), and toxicity criteria (Tables 5.1 through 6.2) are identical for each of the sites (and in fact are not identified as site-specific tables). To facilitate finding actual site-specific information and to save paper, please revise the report to include only a single set of tables that are relevant to all sites.

### SPECIFIC COMMENTS

1. **Section G.4.2.2, Detection Frequency, page G-7:** EPA does not support the screening of chemicals of potential concern based on frequency of detection when used in conjunction with risk-based screening criteria (i.e., PRGs).
2. **Section G.4.2.4, Background, page G-8:** Clarify how concentrations of metals can be “below natural background concentrations.”
3. **Section G.5.3, Exposure Point Concentrations, Page G-11:** The text in the first paragraph contains the statement that the  $UCL_{95}$  is based on the probability of long-term contact with contaminated areas. Please reword the text in this section to more correctly

state that an estimate of the average concentration is used because chronic toxicity criteria are based on lifetime average exposures and that the average concentration is most representative of the concentration that would be contacted at the site over time. The  $UCL_{95}$  is used to represent the average concentration at a site because it is not possible to know the true mean. In addition, revise the last sentence of this section to clarify that the calculated value represents a confidence limit on the mean, rather than a percentile.

4. **Section G.5.3, Exposure Point Concentrations, Page G-11:** Please revise the text in this section to correctly describe the method of treating nondetected data as random variables and repeatedly calculating values of the  $UCL_{95}$  is a probabilistic, rather than a stochastic method.
5. **Section G.5.4.3, Inhalation of Nonvolatile Chemicals Bound to Airborne Soil Particulates, Page G-18:** Revise the text in this section to note that the default particulate emission factor used in calculation of Region 9 PRGs is based on a vegetative cover of 50 percent, not unvegetated soil as stated in the text.
6. **Section G.7.3, Lead Risks, Page G-27:** Correct the text to note that the DTSC LeadSpread model provides an estimated blood-lead concentration. It does not assess the health risks associated with them.
7. **Table 6.1, Cancer Toxicity Data-Oral/Dermal:** Please provide clarification or an explanation for the values (or lack thereof) in the "Oral Absorption Efficiency" column.
8. **Table 6.2, Cancer Toxicity Data-Inhalation:** Please provide an explanation for the adjustment value of 3,500 shown for certain analytes in this table. In addition, this table presents inconsistent units for the various unit risk factors. Some are presented as  $(\mu\text{g}/\text{m}^3)^{-1}$ , others are presented as  $(\mu\text{g}/\text{m}^3)$  (or  $(\mu\text{g}/\text{m}^3)$ ). All unit risk factors should be presented as per unit air concentration [either  $(\mu\text{g}/\text{m}^3)^{-1}$  or  $(\text{mg}/\text{m}^3)^{-1}$ ].
9. **Section G9, Uncertainty Discussion, Page G-52:** The claim presented here that chemicals were not eliminated for the risk assessment if they were site-related contradicts the methodology outlined in the previous sentence that states that chemicals were eliminated if the maximum detected concentration was less than the corresponding Region 9 PRG. In fact, if a chemical was detected at a maximum concentration less than its PRG, it was eliminated from the risk assessment. Note that chemicals such as 1,2-dichloroethene and trichloroethene are not naturally occurring, and their detection at a site is viewed as "site-related" regardless of whether they are present as the result of a release that specifically occurred within the "boundaries" of the site. Delete the statement that chemicals were not eliminated if they were site-related.
10. **Section G9, Uncertainty Discussion, Page G-52:** The relevance of the likelihood of using site groundwater for watering livestock as representing "conservativeness" of the

risk assessment is not clear, as food-chain transfer of contaminants was not evaluated for any of the sites. Please clarify or delete the statement.

11. **Section G9, Uncertainty Discussion, Page G-53:** We disagree with the characterization that exposure point concentrations in groundwater are not representative because samples were collected from within the plume. As previously discussed, exposure point concentrations are intended to represent a spatial average. Hence, data collected from the more contaminated areas of the plume have as much relevance as data collected from areas of lower concentration. If the Navy believes that the data are inadequate to accurately define the nature and extent of groundwater contaminant plumes for purposes of evaluating exposure, it should provide an explanation for the data gap and how it will be addressed. A discussion of the specific nature of the data gap and how it affects relevant risk estimates will be far more useful to risk managers than the generic statement presented in this section.
12. **Attachment B, Page B-4:** The discussion of uncertainties here is one-sided and only addresses potential overestimation of risk. A more balanced discussion of uncertainties, which also presents the potential for underestimation should be included. For example, although currently measured chemical concentrations may decrease over time as stated, there is no discussion here of the possibility of the formation of more toxic degradation products (i.e., vinyl chloride) that have been detected infrequently or only at relatively low concentrations to date.

#### **MINOR COMMENT**

1. 2-Butanone is incorrectly listed in the toxicity criteria tables as a pesticide/PCB, which is not the case. As noted in other tables, 2-butanone is a VOC.

#### **ECOLOGICAL RISK ASSESSMENT**

##### **GENERAL COMMENTS**

1. The Ecological Risk Assessment (ERA) does not comply with EPA Guidance. The report states that a "modified" ecological risk assessment was conducted, in which more "site-specific" assumptions were used. However, without first conducting a screening-level ecological risk assessment (SLERA), it is not evident that a site-specific evaluation is warranted. The use of less-conservative exposure assumptions in the report, such as lower chemical concentrations (i.e., 95 UCL or arithmetic mean) and effects-based toxicity values (i.e. Lowest-Observed-Adverse-Effects Levels) are not appropriate prior to a screening-level assessment in which chemicals of potential concern should be selected by comparing maximum chemical concentrations to chronic (i.e., No-Observed-Adverse-Effect) toxicity values.

The ERA should be revised to complete a SLERA (Steps 1 and 2 of 1997 EPA Guidance), in which a Scientific/Management Decision Point will allow risk managers to decide whether further site-specific evaluation is warranted at any of the sites. The ERA should be revised to follow Steps 1 and 2 of EPA Guidance, incorporating conservative exposure assumptions.

2. It is unclear how the relevant soil depth horizon for the ERA was selected. In the description of Chemicals of Potential Ecological Concern (Section 4.4.6.1, Page 4-27, Section 5.4.6.1, Page 5-33, Section 6.4.6.1, Page 6-26, Section 7.4.6.1, Page 7-34) the report states that chemicals in soil between 0 and 4 feet bgs were considered in the ERA. Please provide the rationale and/or technical basis for selecting this depth horizon for evaluation in the ERA.

## SPECIFIC COMMENTS

1. **Section H.1, Introduction, Page H-1:** The report implies that by conducting a “modified” ecological risk assessment, the level of uncertainty inherent in a SLERA is reduced. The report explains that a baseline risk assessment (BERA) was not feasible at these sites because of their urban nature which precluded the collection of the site-specific ecological samples necessary for a BERA. However, it is not evident that an evaluation more site-specific than a SLERA is warranted; further, Steps 1 and 2 according to 1997 EPA Guidance (i.e., a SLERA) should be conducted to allow risk managers to decide whether further site-specific evaluation is warranted as part of a Scientific/Management Decision Point. The ERA should be revised to follow Steps 1 and 2 of EPA Guidance, incorporating conservative exposure assumptions.
2. **Section H.1.2.1, Screening for Ecological Chemicals of Potential Concern, Page H-2:** The text states that the 95 percent upper confidence limit (UCL 95) was used as the exposure point concentration (EPC) for most chemicals. However, in the absence of an unusually robust data set, the maximum concentration should be used as the EPC to select and evaluate chemicals of potential concern. The ERA should be revised to use the maximum detected concentration as the EPC.
3. **Section H.1.2.1.1, Identification of Ecological Chemicals of Potential Concern in Soil, Page H-3:** The text lists 4 steps by which contaminants were reportedly screened in order to focus the ERA on chemicals that are site-specific and that pose the greatest potential risk to receptors. These 4 steps include eliminating contaminants based on whether they are essential nutrients, their frequency of detection, their bioaccumulation potential and toxicity (defined in this section of the report as the tendency of a chemical to partition into lipids), and their concentrations relative to background concentrations. According to EPA Guidance, contaminants are to be eliminated from consideration if they pose negligible risk.

The SLERA should evaluate potential ecological risk by comparing the maximum detected concentrations of all chemicals to readily-available ecotoxicological screening benchmarks. Other factors that contribute to risk management decisions, such as frequency of detection, comparison to background, and bioaccumulation potential, can be discussed in the risk characterization after an initial conservative screening has been conducted. Please revise the ERA to remove frequency of detection, bioaccumulation potential, and comparison to background (Step 2 from the screening steps).

4. **Section H.1.2.1.2, Identification of Chemicals of Potential Ecological Concern in Groundwater, Page H-4:** As stated in the previous comment concerning the identification of COPECs in soil, screening out contaminants in groundwater based on frequency of detect or partition coefficients is not appropriate. Further, screening for groundwater contaminants based on the NOAA dilution factor (Step 6) is not appropriate without site-specific information about the connection of groundwater to surface water. Also, Figure H-3 shows that contaminants were screened based on the NOAA dilution factor following Step 6 by comparing the diluted 95 UCL to ambient water quality criteria (AWQC), and only then were they retained as COPECs. The text in Section H.1.2.1.2 does not describe this last screening step. The process for screening COPECs in surface water should be revised to include only a comparison of the maximum detected concentration from groundwater samples to available state-promulgated surface water criteria based on chronic exposures.
5. **Section H.1.2.1.2, Identification of Chemicals of Potential Ecological Concern in Groundwater, Page H-4:** It is unclear whether groundwater at Sites 6 and 16 is tidally influenced (See page 4-28). The text states that concentrations of chemicals at Sites 6 and 16 were compared to saltwater criteria (See pages H-4 and 4-30). However, if it is unknown whether water is fresh, brackish, or marine, the more conservative criterion between the freshwater and saltwater value should be selected as the screening benchmark. Please clarify whether groundwater is tidally influenced and select the screening benchmark accordingly.
6. **Section H.1.2.2.4, Development of Toxicity Reference Values for Soil, Page H-9:** The text states that scaling factors determined were 1.2 and 0.94 for birds and mammals. However, it is unclear how the ERVs were converted for use in risk calculations. Please provide a more detailed description (and references) to explain how allometric conversions of literature-based toxicity reference values (TRVs) were calculated.
7. **Section H.1.2.3.1, Development of Exposure Estimates, Page H-14:** The assumptions used for the exposure assessment to calculate doses for receptors in this report are not appropriate for a screening-level evaluation. The text states that the average body weight indicated in the literature was used in conjunction with the average ingestion rate. According to EPA guidance, conservative exposure assumptions appropriate to a SLERA include minimum body weight, maximum ingestion rate, diet composition of 100% of the most contaminated food item, and no-observed adverse effects levels (NOAELs) should

be used in the risk calculations. The report should be revised to utilize conservative exposure factors appropriate to a SLERA.

8. **Section H.1.2.4, Evaluation of Assessment Results, Page H-20:** Incorporation of non-conservative exposure parameters is not appropriate for a SLERA. For example, use of high-TRVs, comparison to background or ambient, frequency of detection, absorption potential, development of bioconcentration factors, and the weight-of-evidence approach are all concepts more characteristic of a BERA. The screening level assessment serves to identify preliminary contaminants of concern for the BERA, if deemed necessary, by eliminating those contaminants that pose negligible risks. The contribution to overall risk due to contaminants exceeding background or other exposure parameters should be discussed in the risk characterization.