UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
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SFD 8-3

October 3, 2005

Mr. Thomas Macchiarella, Code 06CA.TM
Department of the Navy
Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310

RE: Draft Remedial Investigation Report for Operable Unit 2C, Sites 5, 10, and 12, Alameda Point

Dear Mr. Macchiarella:

EPA has reviewed the above referenced document, prepared by SulTech and submitted by the Navy to the agencies on July 1, 2005. EPA requested a 30 day extension for review of the document in accordance with Section 10.7(b)(2) of the Alameda NAS FFA, making regulatory comments due on September 30, 2005. EPA submitted draft comments electronically to the Navy on that date. Final comments are enclosed with this cover letter and replace the comments submitted on September 30th.

In reviewing the Remedial Investigation Report, EPA, DTSC and the RWQCB concluded that the information presented in the document is incomplete and does not adequately form the basis for a Feasibility Study and Record of Decision. Numerous data gaps exist concerning groundwater and soil conditions as well as solid waste management units and other possible release areas. In conversations between the Navy and EPA on September 29, 2005, the Navy agreed to halt further work on the RI report and to collect additional data in OU 2C. The comments provided by EPA and the State on the Draft OU 2C RI report will form the basis for developing a data gap sampling workplan and for improving the presentation of data in the next version of the RI report. The BCT will discuss, as the data gap sampling progresses, whether a revised RI report or a combined RI/FS report best serves the clean up and reuse process.

The regulators will work with the Navy to develop a data gap sampling workplan that will yield adequate information to result in a satisfactory RI report and that will also serve to support the

Feasibility Study and Record of Decision for OU 2C. We appreciate the Navy's willingness to work with the agencies to resolve the problems present in the RI report.

If you have any questions, please call me at (415) 972-3029.

Sincerely,

Anna-Marie Cook

Anna-Marie Cook
Remedial Project Manager
Federal Facility and Site Cleanup Branch

enclosure

cc: Greg Lorton, SWDiv
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EPA Review of the Draft Remedial Investigation Report for Operable Unit 2C, Sites 5, 10, and 12, Alameda Point

GENERAL COMMENTS

1. **Risk Assessment:** EPA commends the Navy for performing a risk assessment that closely follows the criteria we have specified over the last two years. We appreciate that all chemicals were taken through to the end of the assessment and that the calculations were all made easily available on CD with links for the regulators to verify how risk was calculated.

   However, we do not feel it is appropriate to use 47 acres as an exposure area for calculating risk for Site 5. Since the reuse plan calls for possible residential use of the property, a smaller decision area similar to that used for EDC-5 and for the Coast Guard Housing should be used.

   In addition, the RI report did not contain information on workers or tenants in any of the Buildings at Site 5. VOC concentrations in groundwater are very high at this site and EPA feels that soil gas sampling is warranted beneath any buildings potentially overlying portions of the groundwater plumes and currently leased to tenants.

2. **Data Gaps:** Many buildings and SWMUs have inadequate or no soil and groundwater sampling. Past activities at many buildings are likely to have generated or resulted in spills and releases, and soil and groundwater in the vicinity of oil water separators, floor drains and USTs that held waste oil and solvents in or near these building have not been adequately investigated. This lack of characterization and sampling information renders the RI report incomplete and precludes the development of a meaningful FS.

3. **Radiological contamination:** Radiological issues are not included in this RI report, including detailed information on the extent of the removal actions that have been performed at Site 5 and 10 and the clean up goals used for these actions. In addition, all radiological issues associated with Site 26 need to be addressed in the OU 2C RI and FS. Please revise the RI to include all relevant information on the radiological removal actions at Sites 5 and 10; the remaining risk associated with radiological contamination; add this risk to the risk already calculated for soil and groundwater at OU 2C (similar to the method used for risk assessment performed for Site 1); and carry the unremediated portions of radiologically contaminated storm sewer lines and surrounding soil, including that associated with Site 26, forward into the FS.

4. **Hydrogeology**: Groundwater flow variations in the Second Water Bearing Zone

(SWBZ), depicted in Figures 2-14 through 2-19 and described in Appendix B, are not adequately explained in the text. The Navy states, "groundwater flow variability in the SWBZ is likely due to tidal effects or seasonal variability in groundwater flow patterns." It is not clear, however, if the historical groundwater elevation data presented on the figures supports the Navy's statement. In some cases, it appears that the limited number of wells gauged impacted the apparent flow direction. Also, Figures 2-15 (June 2001) and 2-19 (June 2004) show groundwater flowing in opposite directions in the eastern part of the OU, which may be the result of the limited number of wells gauged, tidal influence, or some other factor like measurement error. Furthermore, the RI Report does not adequately discuss variations in groundwater flow due to tidal influence. For example, the discussion in Appendix B states that tidal influence usually decrease with increasing distance from the shore, however, the Tidal Study found that a monitoring well in Site 5 (D05-02) responded to the tides one hour before a well at Site 10 (D10A-01), indicating variations in hydraulic conductivity exist in the SWBZ and/or a conduit to Site 5 exists. Please discuss the results of the Tidal Study at OU-2C in detail; specifically addressing the effects of tidal influence on groundwater monitoring (e.g., gauging wells at low tide and reporting the time of measurements). Please also discuss the impact of gauging only selected wells on groundwater elevations in the SWBZ.

5. **Specific Data Gaps:** There are data gaps associated with several of the solid waste management units (SWMUs) recommended for no further action (NFA) at Site 5. Based on a review of Appendix H, it appears that several SWMUs were placed on the status list as NFA based on visual observation rather than on analytical data. Some SWMUs in Table H3-1 indicate that NFA is recommended because the site was paved and staining was not observed by site inspectors. However, the lack of staining does not mean that there were no spills, since standard Navy procedures would have resulted in cleaning up and repainting areas with visible spills. Solvents and polychlorinated biphenyls (PCBs) can penetrate concrete. Also, although secondary containment is described for many SWMUs it is likely that these SWMU areas were in use prior to designation of these areas as SWMUs and prior to the requirement for secondary containment. Sampling was not done in the vicinity of most SWMUs or was done 25 to 50 feet from the SWMU. In addition, sampling near Generator Accumulation Point (GAP 20) did not include the contaminant of concern. Other SWMUs where sampling was not done include above ground storage tank (AST) 005H, M-01, M-02, M-03, M-04, M-05 (nearby floor drain), GAP 02, GAP 03, GAP 04, GAP 05, GAP 08, GAP 10, GAP 11, GAP 12, GAP 13, GAP 14, GAP 16, GAP 17, GAP 18,(samples not analyzed for lead), GAP 27 (include PCBs), GAP 31 (include PCBs), GAP 57 (include chromium VI [CrVI] and cyanide), GAP 70 (include CrVI and cyanide), NAS GAP 01, NAS GAP 05, OWS 005, OWS 615, SWMU 005, SWMU 614, and SWMU 615. Please acknowledge these data gaps in the text and discuss how they will be addressed.

Other data gaps associated with Site 5 include:

- Soil sampling beneath the industrial wastewater drains (shown as purple

rectangles or squares in the figures) inside the buildings has not been done. Groundwater samples were not collected beneath or adjacent to some of the industrial wastewater drains.

- Hazardous waste including drummed hydraulic fluid and lubricating oils were stored in the hazardous waste storage area outside Building 5 in the southwest corner, but samples from this area were not analyzed for PCBs.
- Building 405 was a storage area for hazardous materials and waste including, hydraulic fluids but samples were not analyzed for PCBs or metals.
- Similarly, sampling for PCBs has not been done in the vicinity of the electrical substations (Buildings 560, 34 etc.).
- Although soil samples collected between wings 1 and 2 of Building 2 because of dry cleaning operations were below the screening criteria,, additional soil sampling was recommended beneath the perchloroethane recovery unit in Wing 2. This additional soil sampling could not be completed inside the building so groundwater sampling was recommended. Elevated concentrations of compounds associated with dry cleaning were detected in the groundwater samples, but the extent of contamination has not been delineated.
- Soil sampling was not done in and around Buildings 102, 505, 43, 44, 281, and 346. Paint, petroleum hydrocarbons, solvents, and radioactive materials, were used and/or stored in some of these buildings, so the extent of contamination has not been determined.
- Although Building 347 was a general purpose manufacturing and repair facility, soil samples were not collected near the building. The closest soil sample was about 20 feet to the west; PAHs and vinyl chloride were above the screening criteria.
- Building 500 was a chemical and equipment storage area (oil, stains, paints, solvents, and glues), but soil samples were not collected beneath this building.
- Building 32 was a metal treatment shop; some deep samples were collected, but the analyses did not include cyanide. The extent of contamination beneath this building is also a data gap.
- Building 6 was a repair shop, steam cleaning, electromotor shop, and storage area but the only analyses were for metals and total petroleum hydrocarbons (TPH). The extent of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and PCBs is a data gap.
- Based on Figure 4-4, it appears that sampling has not been done in the vicinity of Building 282, which was a diesel and gasoline station constructed in 1944.

6. In Site 12, SWMU NAS GAP 02, where waste oil was managed, was recommended for NFA based on a single groundwater sample, but the detection limits for several VOCs were greater than the screening values and groundwater samples were not analyzed for TPH or PCBs. In addition, it is likely that the secondary containment was an addition after 1987, when this location was formerly identified as a GAP, so soil sampling should have been done in this area southwest of Building 10. In addition, OWS 10 was located

in the southwest corner of Building 10, but soil and groundwater samples were not collected beneath or adjacent to this OWS. Further, although there were 16 transformers, an electrical substation, and Building 10 was a power plant facility, the extent of potential PCB contamination has not been determined because few samples were analyzed for PCBs. Since the purpose of the investigation in Site 12 was "to determine if industrial sewer lines were a conduit for contaminant migration," sampling was not done in the vicinity of transformers and the electrical substation. Please include the lack of soil and groundwater samples in the vicinity of NAS GAP 02 and OWS 10 as data gaps and discuss how these data gaps will be filled. Please also discuss how and when the extent of potential PCB contamination will be evaluated.

7. **Inconsistencies:** It is unclear why there are discrepancies between the maximum of the data set used in the risk assessment and the maximum discussed in the text. A cursory review of selected chemicals in Site 5 soil results and groundwater results revealed the following:

Chemical	**Maximum in Text/ Summary Tables**	**Maximum of Risk Assessment Data Set**
Site 5 Soil	(mg/kg)	(mg/kg)
Benzene	6	0.001 / 0.002
Benzo(a)pyrene	16*	0.95 / 1.5
Vinyl Chloride	0.08	OMITTED
Groundwater	(mg/l)	(mg/l)
1,1,1-Trichloroethane	0.36	2,500
1,1-Dichloroethane	95	280
1,1-Dichloroethene	65	89
1,2-Dichlorobenzene	0.22	0096
1,2-Dichloroethane	0.57	0.42
1,3,5-Trimethylbenzene	0.014	0.06
1,4-Dichlorobenzene	0.059	0.016
2-Butanone	0.043	7.6
Benzene	11.5	0.11
Carbon Tetrachloride	4.6	0.13

Chemical	Maximum in Text/ Summary Tables	Maximum of Risk Assessment Data Set
Chloroethane	43	32.3
Cis1,2-Dichloroethene	85	230
Ethylbenzene	0.13	0.12
Tetrachloroethene	0.23	2.8
Trichloroethene	130	580
Vinyl Chloride	11	31

* Analytical result for BaP is from Appendix C.

It is unclear why higher groundwater concentrations were sometimes used in the HHRA than were reported in the text, but in other cases, the concentrations used in the HHRA were lower than those reported in the text. These discrepancies make it very difficult to evaluate the actual site risk. Please verify that all of the concentrations reported and discussed in the text are correct and verify that all of the maximum concentrations used in the HHRA are consistent with the maximum concentrations detected and reported in the text. If a maximum concentration used in the HHRA is higher or lower than the maximum overall concentration, please explain each occurrence.

8. Some of the conclusions of the 1999 RI Report (Tetra Tech EM Inc. 1999) differ from this RI. In particular, the 1999 RI Report concludes that the soil of Site 5 poses an ecological risk, while the 2005 RI Report blanket-dismisses all risk to terrestrial ecological receptors. For example, Section 8.2.1.3 Ecological Risk Assessment Soil Results (Site 5, OU-2 Central) in the 1999 RI Report states:
"IR Site 5 is currently occupied by a building that covers over 75 percent of IR Site 5, and most of the remaining area is paved and supports no vegetation. Therefore, this site is not readily accessible to ecological receptors and none were observed at IR Site 5 during site reconnaissance conducted in June 1995 and June 1997. However, the ecological risk assessment was based on the conservative assumption that future uses could result in the removal of the pavement resulting in increased exposure to ecological receptors."

Section G2.1.2.2 Exposure Pathways and Exposure Routes in the 2005 RI Report makes a contradictory statement: "Because the sites are completely paved with little or no bare ground present, as shown on Figures G-1, G-2, and G-3, the soil exposure pathway was considered incomplete and therefore not evaluated at OU-2C; for the same reason, the air exposure pathway (windblown dust) was not evaluated at OU-2C."

Please explain why it is valid to dismiss the assumption made in the 1999 RI Report, and

if a valid reason is presented, please explain why the 1999 RI Report chose to ignore this reason. Please explain how ignoring the conclusions and recommendations of the 1999 RI Report meets EPA standards for conservative assumptions in Screening-Level Ecological Risk Assessments (SLERAs). Also, please include justification and substantiation for why soil exposure pathways were deemed incomplete as this is not clear in the RI Report. For example, if the site is going to be redeveloped, then explain why future use of the site would not result in terrestrial exposure to surface and subsurface soil.

9. The term "aquatic receptors" is too vague for use in the SLERA because the specific types of aquatic receptors addressed in the SLERA (i.e., macrobenthic community, aquatic invertebrates, aquatic vertebrates, etc.) should be specified. The single assessment endpoint given in the SLERA, "protection of populations of benthic invertebrates and other aquatic receptors" (page G-5) is too broad unless the phrase "aquatic receptors" is replaced with "aquatic life" to refer to ecological receptors that actually inhabit the water and not to terrestrial receptors that may forage adjacent or in the bay. Please clarify the assessment endpoint. As this is a SLERA and not a baseline ERA, the assessment endpoint need not be a specific species or group of species, but it needs greater specificity. Also, this section must describe the measurement endpoint that corresponds to the assessment endpoint. One possibility is:
Assessment Endpoint - Survival, growth and reproduction of aquatic life species inhabiting within the Bay adjacent to the site.
Measurement Endpoint – Comparison of surface water and sediment data to USEPA approved literature-derived ecotoxicity benchmark values (i.e. National Ambient Water Quality Criteria for the protection of aquatic life, etc.)

The phrase "populations of benthic invertebrates and other aquatic receptors" is used again in the second paragraph of G2.1.3 on page G-6. This is too broad unless the words "aquatic receptors" are replaced with "aquatic life".

10. The conclusions and risk management recommendation of the SLERA are made without substantiation or justification. Please summarize the reason that further evaluation is required using statements like "because over 20 chemicals exceed the groundwater screening criteria, several by multiple orders of magnitude." Please either change the recommendation to a baseline ERA, or provide clear justification and substantiation for recommending re-evaluation, specifying precisely which assumptions will be changed and which data will be "refined".

11. It is clear that the primary exposure pathway of concern is the discharge of contaminated groundwater to surface water; however there is very limited nature and extent discussion for groundwater contaminants. It is important to understand whether groundwater is discharging to the Bay and at what concentrations. It is unclear why a simplistic Domenico model was not presented at this stage to predict the concentrations in

groundwater at the point of discharge. Alternatively groundwater data from the most downgradient well or a well near the point of discharge could be used. Please clearly define this pathway in the RI Report to clarify how the data were used to represent exposure concentrations at receptor points.

SPECIFIC COMMENTS

1. **Executive Summary, Page ES-2:** The fifth bullet on page ES-2, Screening-Level Ecological Risk Assessment (SLERA), states that "exposure pathways for terrestrial receptors were considered potentially complete to provide a conservative estimate of risk". That is not true. The SLERA eliminates all exposure pathways for terrestrial receptors. Please include exposure pathways for terrestrial receptors in the entirety of the SLERA, or provide a valid reason not to include such pathways and change this section of the Executive Summary appropriately.

2. **Executive Summary, Page ES-3:** These comments address the table, "Chemicals Exceeding Screening Criteria in Soil at Site 5". Please clarify that the "Exceeds Screening Criteria?" refers to human-health screening criteria (2004 EPA PRGs) by modifying Note "a" to read "Human health screening criteria, identified in Section 4.0" or something similar. Please include a Data Gap section in this RI Report that addresses the data gaps presented in this table as Section 4.0 does not adequately do so.

   In addition, n-nitroso-di-n-propylamine should be added to this table. Although it is recognized that analytical detection limits for this compound exceed risk-based screening criteria, n-nitroso-di-n-propylamine is a risk driver based on the quantitative risk assessment. The elevated detection limit should be considered a data gap, which can be addressed in the feasibility study (FS) by conducting confirmation sampling with a more sensitive detection limit to ascertain whether this compound actually contributes to a quantitative risk greater than 10^{-6}.

3. **Executive Summary, Site 5 - Aircraft Rework Facility, Baseline Human Health Risk Assessment, Page ES-4:** It is stated that arsenic and thallium are considered to be consistent with background at Site 5. However the extent of thallium in soil at the Battery Storage Area is a data gap. Therefore, since thallium is a risk/hazard driver at Site 5, it does not seem appropriate to characterize thallium as consistent with background until this data gap has been filled. It is understood that one elevated thallium concentration is skewing the exposure point concentration high, based on the current data set, and this . However, until the data gap at the Battery Storage Area is filled, it cannot be definitively shown that thallium across Site 5 is consistent with background.

4. **Executive Summary, Page ES-4:** The Screening-Level Ecological Risk Assessment paragraph includes contradictory sentences: "exposure pathways for terrestrial receptors were considered potentially complete to provide a conservative estimate of risk. Results

of the SLERA determined that no complete exposure pathways are present for terrestrial ecological receptors". Further, the SLERA did not adequately substantiate that incomplete exposure pathways are present. Please modify these sentences to (1) agree, and (2) provide an accurate description of how the decision was reached.

5. **Executive Summary, Page ES-4:** Please include text to explain how the bullets in Data Gaps will be addressed and reference that information in this section.

6. **Executive Summary, Page ES-5:** Please clarify that the "Exceeds Screening Criteria" refers to human-health screening criteria (2004 EPA PRGs) by modifying Note "a" to read "Human health screening criteria, identified in Section 5.0" or something similar.

7. **Executive Summary, Page ES-6 and ES-7:** As requested in Specific Comment 3, please modify the sentence, "Results of the SLERA determined that no complete exposure pathways are present for terrestrial ecological receptors," to include clear substantiation and justification for their exclusion in the remainder of the SLERA. Similarly, please modify the sentence on Page ES-7 that reads, "Results of the SLERA determined that no complete exposure pathways are present for terrestrial ecological receptors." Please include substantiation and justification for their exclusion in the remainder of the SLERA.

8. **Executive Summary, Page ES-7:** Several other potential sources of contamination to groundwater (i.e., more than floor drains, sanitary sewer and fuel lines, underground storage tanks [USTs], and ASTs) are identified in Section 7. Please revise the discussion of potential sources of contamination in OU-2C groundwater to include the additional sources identified in Section 7.

9. **Section 2.4, Hydrology, Page 2-7:** The last sentence states that Appendix B presents the results of OU-2B hydrogeological investigations, however, the Appendix B results are for OU-2C. Please cite the correct OU.

10. **Section 2.4.3, Existing Uses of Groundwater, Page 2-13**: The logic used regarding TDS and its relation to domestic use is flawed. In the FWBZ, TDS ranges from 110 mg/l to 5,100 mg/l and these levels are flagged as too high to be considered for domestic use. In addition to the fact that some bottled water sold to consumers in the U.S. has TDS of 500 mg/l, there are parts of the country that make use of groundwater with higher TDS levels than those given in this paragraph and hence the federal criteria of protection of groundwater with TDS of anything less than 10,000 mg/l. Please remove the opinion that this water would not be considered for domestic use.

11. **Section 2.5.2, Alameda Point Ecology, Page 2-14:** Since the RI Report concludes there may be potential risk to aquatic receptors in Seaplane Lagoon and Oakland Inner Harbor, it would be helpful if this section includes at least some description of the ecology of

these water bodies. Please expand this section to include information on the aquatic communities of Alameda Point and, specifically, list the species that are known to occur in Seaplane Lagoon and Oakland Inner Harbor (and thus those species that may be affected by the contaminated groundwater)

12. **Figure 2-5, Operable Unit 2C Cross-Section A-A':** It is unclear why 42 feet below mean lower low water (ft below MLLW) was selected as the elevation of the top of the Merritt Sand in M05-01/REF-S05-01 rather than selecting the top of the silty sand unit at 36 feet below MLLW. This silty sand unit appears to be similar to the unit selected as the top of the Merritt Sand in D05-02. Please verify the elevation of the top of the Merritt Sand in M05-01/REF-S05-01 and discuss how the elevation of this unit was chosen.

13. **Figure 2-6, Operable Unit 2C Cross-Section B-B':** The depiction of CPT S05-04/M05-04 is inaccurate; the logs indicate that CPT S05-04 ended at 33 ft below ground surface (bgs) or at about 20 ft below MLLW, but the cross-section indicates that this boring extended to 30 feet below MLLW. In addition, the depths and lengths of the lithologic units does not match the log. Please revise the cross-section to match the boring log.

14. **Figure 2-15, Potentiometric Surface Contour Map, Second Water Bearing Zone, Summer Quarter June 2001; and Appendix B, Section B3.1 Hydrostatigraphy, Page B-3 :** The statement that groundwater flowed to the east in June 2001 and September 2003 is not consistent with Figure 2-15 which indicates that groundwater flowed to the south in June 2001. Please resolve this discrepancy.

15. **Figure 2-19, Potentiometric Surface Contour Map, Second Water Bearing Zone, Summer Quarter June 2004:** The direction of groundwater flow was misinterpreted, since the arrow depicting flow direction points upgradient rather than downgradient. Please correct this figure.

16. **Section 3.0, Remedial Investigation Approach, Page 3-1:** The last paragraph states that the evaluations of the SWMUs in Appendix H, are based on analytical results. However, the tables in Appendix H indicate that most of the evaluations were not based on analytical results but on visual observation. Soil and groundwater sampling was not done in the vicinity of several of the SWMUs. Please revise the text to describe how the evaluations were conducted.

17. **Section 3.7, Screening-Level Ecological Risk Assessment Approach, Page 3-23:** The last paragraph in this section lists two options if the site fails the SLERA: further evaluation in a Tier II (baseline) ecological risk assessment (Step 3 of the EPA and Navy ERA processes) or an interim cleanup action, but the actual recommendation given in Section G5.0 includes neither of these options. Please include the actual recommendation (Step 3a reevaluation) to be consistent. Similarly, the text on page 3-24 has the sentence: "If the SLERA determines that potential risk is posed to ecological receptors, then a

baseline ecological risk assessment or further evaluation in an FS is necessary". Please also revise this sentence to be consistent.

18. **Figure 3-1, Initial Conceptual Site Model:** The inhalation of volatile emissions in indoor air is not identified as a potentially complete exposure pathway for a Future On-Site Worker (Commercial/ Industrial), although this is a potentially complete exposure pathway based on information in the RI Report text. Please revise Figure 3-1 to include the inhalation of volatile emissions in indoor air as a potentially complete exposure pathway for a Future On-Site Worker at Alameda Point.

19. **Section 4.1, Site 5 Background:** The history of several strips of land included in OU-2C were not discussed or included in the summary table. These strips include the rectangular strip of land to the southwest of Site 5 that runs east and west (Parcels **29A, 50B, and 51B), the strip of land that extends from the western central portion of the site, and land associated with the storm drain line that extends to Outfall F.** Some sampling was done in the eastern portion of the east-west strip, but it is unclear if the sampling was appropriate since the history of the strip of land was not discussed. Please summarize the historical uses of these three strips of land that are included as part of Site 5 on various figures.

    In addition, the history of radiological release of Building 5 does not appear to meet current requirements. The last release was apparently given by the California Department of Health Services in 1988, prior to the discovery of extensive radiological contamination within Building 5 in the sinks, floor drains and storm sewer. A more recent, i.e. post radiological removal action, certification of unrestricted public use needs to be obtained and presented.

20. **Section 4.1, Site Background, Table, Pages 4-2 though 4-4:** This table does not discuss all of the buildings on Figure 4-1, Site 5 Features. It appears that the Table is missing Building 505, Building 281 (removed), an unnumbered building (removed) northwest of Building 347, an unnumbered building south of Building 347, an unnumbered building west of Building 589, two unnumbered buildings (removed) north of Building 405, one unnumbered structure adjacent to the southwest corner of Building 5, three unnumbered structures (one square and two circles) (removed) south of Building 5 (near the southwest corner), one building southwest of 348 (Site 10), four unnumbered buildings(removed) east of Building 615, two unnumbered buildings in area CAA-5A, Building 171 (removed), Building 534-1 (removed), and one unnumbered building southwest of Building 62. The former use of these buildings and structures is important for the site conceptual model. Please include these buildings and their past uses in the table on pages 4-2 though 4-4.

21. **Section 4.1, Site Background, Table, Page 4-3 and Figure 4-1, Site Features:** There is a discrepancy between the Table and Figure 4-1; Figure 4-1 indicates that Building 415

was removed but the Table does not indicate that this building was demolished. Please resolve this discrepancy.

22. **Section 4.1, Site Background, Table, Pages 4-3 though 4-4 and Figure 4-1, Site 5 Features:** Some of the buildings discussed in the table on pages 4-2 though 4-4 could not be located on Figure 4-1. Building 193 and Building 415 in Parcel 57 could not be located, although Building 415 in Site 12 (Parcel 69) is included on Figure 4-1. Since the table includes parcel numbers to help locate the buildings, Figure 4-1 should include the parcel numbers. Please include all of the buildings listed in the table on Figure 4-1. In addition, please include the parcel numbers on Figure 4-1.

23. **Section 4.2.1, Conceptual Site Model, Pages 4-8 through 4-10:** It is unclear why PCB contamination is not considered in the Conceptual Site Model (CSM). The CSM descriptions of Building 34 and other electrical substations should include PCBs. Even though equipment containing oil with a PCB concentration over 40 parts per million was been removed in 2001, PCB-containing equipment may have leaked prior to that date. At other sites, PCB contamination has been found in concrete and soil beneath and adjacent to transformers. Since the presence of PCBs in concrete would impact disposal requirements, concrete in the vicinity of former PCB-containing equipment should be tested. The absence of visual staining should not be considered indicative of no releases because surfaces could have been cleaned and/or repainted. Please revise the CSM to include PCBs and discuss how the data gaps associated with PCBs will be addressed.

24. **Section 4.2.1, Conceptual Site Model, Page 4-10:** The text states that Buildings 2 and 43 are not considered potential sources of contamination, but the table on pages 4-2 through 4-4 states that Building 2 had a dry cleaning facility and solvents and petroleum were stored/used in Building 43. The text also states that buildings 51A, 53A and 67 are not considered potential sources of contamination, but these designations are parcel numbers for open spaces. Please include Buildings 2 and 43 in the CSM as areas where hazardous substances were stored/used and correct the text to refer to 51A, 53A and 67 as Environmental Baseline Survey (EBS) parcels.

25. **Section 4.2.1, Conceptual Site Model, Page 4-10:** It is unclear why AST 2-1 is not included as a potential source of solvents in the bullet 6 list, since this AST was near the portion of Building 2 where dry cleaning was done. It is likely that this AST contained dry cleaning solvents or wastes. Please include AST 2-1 in bullet 6.

26. **Section 4.2.2, Data Quality Assessment, Table (chemicals in Site 5 soil with at least 5 percent of their reporting limit exceeding the PRG), Page 4-11:** The embedded table on page 4-11 states that mercury is not related to former Site 5 activity, but mercury was used in gauges, dials, and is associated with sand blasting waste. Because these activities occurred at Site 5 it is likely that mercury is related to former Site 5 activities. Please change the table on page 4-11 to state that mercury is related to former Site 5 activities or

explain why mercury is not related to Site 5 activities.

Similarly, arsenic was used as a pesticide, so given the maximum concentration of 329 milligrams/kilogram (mg/kg), it is likely that it was used at the site. Please revise the table to indicate that arsenic may have been used at the site.

27. **Section 4.2.4, Nature and Extent, Pages 4-14 and 4-14:** There are some inconsistencies between the data presented in the embedded table on these pages (Chemicals in Site 5 Soil Exceeding Screening Criteria), the data presented on Site 5 figure, and the data in Appendix C. For example, the table indicates that the maximum concentration of 1,1-dichloroethane was 20 micrograms per kilogram (ug/kg), but Figure 4-7 and Appendix C indicate that the maximum was 20 mg/kg (i.e., 20,000 ug/kg). Similarly, based on Appendix C, maximum concentration of benzene was 6,000 ug/kg, the maximum concentration of tetrachloroethene (PCE) was 110,000 ug/kg, the maximum concentration of trichloroethene (TCE) was 260,000 ug/kg, and the maximum concentration of vinyl chloride was 80 ug/kg. It appears that there were systematic errors of three orders of magnitude when VOC data was transcribed to this table. Please resolve these discrepancies and verify that all of the concentrations listed in the table are correct.

    There are errors in the range of benzo(a)pyrene (BaP) equivalent concentrations presented in this table, based on the analytical results in Appendix C. The analytical data in Appendix C indicate that the BAP equivalent concentration of 030-MOD-181 is 22.7 mg/kg, but the maximum concentration in the table is 2 mg/kg. Please resolve this discrepancy.

28. **Section 4.2.4, Nature and Extent, Metals in Soil, Page 4-14:** The text dismisses the maximum arsenic concentration of 329 milligrams per kilogram (mg/kg) in the surface sample collected from location 054-001-007 (grid G-5), which exceeded the screening criteria (0.39 mg/kg) and the maximum background concentration for arsenic (15.6 mg/kg). Although the text states that the statistical comparison indicated "the absence of concentration patterns that might indicate potential release sources of arsenic or hot spots of arsenic," is unlikely that this concentration, which is more than 20 times the maximum background concentration, is consistent with background concentrations; this maximum was not included in the statistical comparisons in Appendix D. In addition, historically, arsenic was used as a pesticide and has been detected at high concentrations at other California Navy Bases. Therefore, it is likely that arsenic was used at the site. Since only a single surface sample was collected at sample location 054-001-007 and there are no other samples within about 95 feet of sample location 054-001-007, the extent of arsenic is not vertically or horizontally bound. It is not acceptable to state that "an extremely low probability exists that additional sampling at this location would yield data exceeding the screening criteria for arsenic." Additional sampling is needed to evaluate the extent of arsenic. Thallium was also detected at an extremely high concentration (335 mg/kg) in the same sample and the text states on page 4-17 that thallium at location 054-001-007

represents a data gap. Please revise the text to delete the text quoted above, discuss the data gap associated with arsenic, and discuss how this data gap will be addressed.

29. **Section 4.2.4, Nature and Extent, Metals in Soil, Page 4-15**: It is likely that the spill of 3000 gallons of wastewater containing hexavalent chromium in Building 348 is responsible for the soil contamination in this area. The extent of the soil and groundwater contamination from this spill is a data gap that warrants further investigation. In addition, the objective of the cadmium soil removal action at the Building 5 plating shop to be the final soil action in this plating area was contingent on the results of confirmation sampling, including chromium and lead analyses in addition to the cadmium. The waste manifests for the soil excavated from the plating shop show the presence of hazardous levels of chromium, but the confirmation sampling for soil left in place only checked for cadmium levels. So it is unknown to what extent lead and chromium are still present in soil around the plating shop and this data gap will need to be addressed prior to developing the FS.

30. **Section 4.2.4, Nature and Extent, Metals in Soil, Page 4-17:** It is unclear why a data gap was not identified for vanadium and thallium in the vicinity of the metal work shop. The extent of iron in the vicinity of sample locations 054-002-012 and 054-003-020, which are located in the former metal work shop area, is considered a data gap for iron. Both these locations have vanadium concentrations above the screening criteria and at location 054-002-012, thallium also is above the screening criteria. Please include vanadium and thallium in the data gap associated with the metal work shop.

31. **Section 4.2.4, Nature and Extent, VOCs in Soil, Page 4-18:** The text states that the trichloroethene (TCE) and tetrachloroethene (PCE) concentrations exceeded their respective screening criteria at locations 057-001-001 and 057-001-002 and are bound by several other samples with concentrations below screening criteria. However, it appears the PCE and TCE concentrations are bound to the south by location 057-006-015 and 55 feet to the north by locations 057-003-008, 057-006-016, and 057-003-007. The TCE and PCE concentrations at 057-001-001 and 057-001-002 do not appear to be bound to the east and west or vertically. Given the high concentrations and the lack of contaminant delineation in an area where degreasing and corrosion control activities were conducted, this area should be considered as a data gap for TCE and PCE in the soil. Please acknowledge the data gap for TCE and PCE in the vicinity of soil sample locations 057-001-001 and 057-001-002.

    In addition, there is a discrepancy in the cited screening criteria for TCE; the value in the first partial paragraph is different than the value cited in the text of the first complete bullet. Please resolve this discrepancy.

32. **Section 4.2.4, Nature and Extent, VOCs in Soil, Page 4-18:** The discussion of TCE detected in B05-11 states that TCE has migrated to groundwater and "this TCE

contamination is not present in soil," but no quantitative information is given on the VOC hits in soil at the adjacent B05-14 and M05-07. Figure 4-7 shows that there are hits above the PRG at all three locations which points to a source in the soil.

33. **Section 4.2.4, Nature and Extent, PAHs in Soil, Page 4-20:** The discussion of the extent of BaP appears to be incomplete and the text is inconsistent. The first paragraph states that only four BaP-equivalent samples exceed screening criteria, but 12 BaP-equivalent samples are discussed in the bulleted discussion. Figure 4-8 has four BaP-equivalent sample locations that exceed screening criteria, of which two (C3S005B003 and C3S005B048) were not discussed in the text. Appendix A (page A-17) states that 18 soil samples exceeded the BaP-equivalent screening criteria. Please discuss and post all data in the text and on Figure 4-8 and revise the text to eliminate discrepancies.

34. **Section 4.2.4, Nature and Extent, PCBs in Soil, Page 4-20:** It is unclear if sampling for PCBs was done in the vicinity of former PCB-containing equipment (e.g., transformers, hydraulic lifts, etc.) at Site 5. Although all PCB-containing equipment with high levels of PCB was changed out or removed in 2001, spills that occurred prior to that date may have contaminated concrete and/or soil in the vicinity of this equipment. In addition, a figure showing the locations of all the former PCB-containing equipment and sampling locations has not been provided. Please provide more information describing the location of PCB-containing equipment and a figure showing the locations of the PCB-containing transformers, hydraulic lifts, etc. and sampling locations. If PCB sampling has not been done in the vicinity of each piece of PCB-containing equipment, please discuss this data gap and how it will be addressed in the text.

35. **Section 4.2.6.1, Surface Soil, Page 4-25; and Section 4.3.1, Conclusions and Section 4.3.2, Recommendations, Pages 4-28 and 4-29:** These sections state that arsenic and thallium are attributed to background soil at OU-2C, but the concentration of arsenic is 21 times greater than background and the concentration of thallium is 64 times greater than the screening criteria at sample location 054-001-007. These concentrations are not consistent with background levels. Please delete every statement that attributes arsenic and thallium solely to background concentrations, acknowledge the data gap in the vicinity of 054-001-007, and discuss how this data gap will be addressed.

36. **Figure 4-4, Soil Sample Locations:** Two of the BaP-equivalent sample locations (NPS-S05-02 and NPS-S05-03) that exceeded the screening criteria could not be found on Figure 4-4. In addition, locations 54-02-12 and B05PS-01 could not be located on this figure. Please post all sample locations on Figure 4-4. In addition, please include an outline of the cadmium removal action and use a unique symbol to designate sample locations that were removed by excavation.

37. **Figure 4-5 (1 of 3) and (3 of 3), Arsenic Concentration Exceeding Screening Criteria In Site 5 Soil:** Figures 1 of 3 and 3 of 3 for Figure 4-5 are missing from the CD-ROM.

Please include all figures on the next version of the CD-ROM.

38. **Figure 4-6, Other Metals Concentrations Exceeding Screening Criteria In Site 5 Soil and Figure 4-7, VOC Concentrations Exceeding Screening Criteria In Site 5 Soil:** On Figures 4-6 and 4-7 some locations are shown with red dots indicating that a soil sample collected from the location exceeded a screening criteria, but the location is not included in the tables on the figures or discussed in the text. Examples on Figure 4-6 include M05-02 and M05-03. On Figure 4-7 049-IW-001, B05-08, 261-S7, 057-005-012, M05HW-01, B05-14, M05-07, and 045-002-003 do not have associated data. Please resolve this discrepancy.

39. **Section 5.1, Site 10 Background, Page 5-2:** One unnumbered building north of Building 400 was not discussed in the text. Please discuss the historical use of this structure.

40. **Section 5.1, Site 10 Background, Solid Waste Management Units, Page 5-3:** The text states that the SWMUs in Site 10 should be considered "a low risk to soil," but soil and groundwater samples were not collected beneath or adjacent to SWMUs that were used to store wastes and liquids. Visual observation is insufficient because the Navy would have repainted areas with stains. Similarly, secondary containment was probably not practiced before the 1980s and is not a sufficient justification for not taking samples. Since sampling was not done beneath or adjacent to M-08, GAP 36, GAP 37, or GAP 38, these SWMUs should be identified as data gaps. Please identify the data gaps associated with M-08, GAP 36, GAP 37, or GAP 38 and discuss how and when they will be addressed.

41. **Section 5.2.1, Conceptual Site Model, Page 5-4:** It is unclear why the CSM does not include former PCB containing equipment (e.g., transformers, hydraulic lifts, etc.) or the industrial drains shown with Building 400. In addition, since Building 400 was a missile rework facility, perchlorate, which was used as a missile fuel, should be considered a potential contaminant of concern. Please include former PCB-containing equipment and the industrial drains in the CSM and discuss how data gaps associated with these features will be addressed. Also, please include perchlorate as a potential contaminant and discuss how this data gap will be addressed.

42. **Section 5.2.4, Nature and Extent**: The CSM states that the hangar floor was a potential source of VOCs and TPH, but samples were not analyzed for TPH or lead, which was an additive in aviation fuel. Please discuss how this data gap will be addressed.

43. **Section 5.2.4, Nature and Extent, Chemicals Exceeding Screening Criteria, Page 5-9:** The text discusses corrective action "north of Building 400, in CAA-5A and CAA-5B," but CAA-5C is associated with Site 10. Please resolve this discrepancy.

44. **Section 6.1, Site 12 Background, Page 6-1:** The first paragraph in this section states that Building 10 represents 25 percent and that paved open space represents another 25

percent of Site 12, but does not account for the remaining 50 percent of the site. Please describe the remaining 50 percent of Site 12 in the text.

45. **Section 6.1, Site 12 Background, Storm Sewers Page 6-2:** The text states that the storm sewer lines located on the north and southern sides of Building 10 were not cleaned, but does not discuss future plans for the storm sewer lines. Please clarify whether these storm sewer lines will be cleaned.

46. **Section 6.2.1, Conceptual Site Model, Page 6-3:** It is unclear why TPH as gasoline (TPH-g), TPH as diesel (TPH-d), lead, and methyl tert butyl ether (MTBE) are not included as potential contaminants of concern. UST 10-6 contained unleaded gasoline and AST 010J contained diesel. Since all gasoline was originally leaded, lead should also be included as a contaminant of concern for the USTs and ASTs. Please add TPH-g, TPH-d, lead, and MTBE as possible sources of contamination for USTs and ASTs.

47. **Section 6.2.4, Nature and Extent, Page 6-6:** The text on page 6-5 states that "Some uncertainties and potential soil data gaps associated with the presence of PCBs in Site12 soil were identified and are discussed in detail in Sections 6.2.4 and 6.2.5," but this promised discussion was omitted from the text. The text states that 16 transformers were present at Site 12 (page 6-1), Building 34 was an electrical substation with transformer oils (page 4-4) and Building 10 was a former power plant facility but it appears that few samples other than those from the monitoring well borings were analyzed for PCBs. This is insufficient to evaluate the extent of potential PCB contamination. Please discuss this data gap in the text.

48. **Section 6.2.4, Nature and Extent, Chemicals Exceeding Screening Criteria, Page 6-8:** The last paragraph in this section states that "Site 12 meets the Water Board criteria for low-risk fuel site closure, and further action is not recommended for soil at Site 12," but soil sampling was not done in the vicinity of most of the USTs and ASTs located on Site 12. Please acknowledge this data gap and discuss how and when it will be addressed.

49. **Section 7.2, Conceptual Site Model, Storm Sewers., Page 7-4:** The text states that sections of the storm sewer between manholes 15G and 13G are below the groundwater, but Figure 4-2 show that storm sewer between manholes 15G and 14G is below the groundwater. Please resolve this discrepancy.

50. **Section 7.5.1.1, Metals in OU-2C Groundwater, Pages 7-9 and 7-10:** It is unclear why soil sample results were not correlated with groundwater results. It appears that most of the areas where arsenic was detected above the screening criterion in groundwater were also areas where the screening criterion for arsenic was exceeded in soil. Please correlate all of the metals detected above background in groundwater with soil sample results and discuss any patterns that are found.

51. **Section 7.10, Recommendations, Pages 7-27 and Section 8.4, Conclusions and Recommendations for OU-Wide Groundwater, Pages 8-3 through 8-5:** The text on page 7-10 acknowledges that the extent of contamination downgradient is a data gap and that further investigation is needed, but this data gap is not included in Section 7.10 or in Section 8.4. It appears that the extent of several chemicals, including, but not limited to 1,1-Dichloroethane, 1,2-Dichloroethane, TCE, and vinyl chloride has not been delineated. Please discuss this data gap and how and when it will be addressed in the recommendations in Sections 7.10 and 8.4.

52. **Section 8.0, Remedial Investigation Conclusions and Recommendations:** All data gaps should be acknowledged and discussed in Section 8. Please include the data gaps identified in these comments and a brief discussion of how and when they will be addressed in the appropriate subsection.

53. **Section 8.1, Conclusions and Recommendations for Site 5, Page 8-1:** The text states, "No further action was recommended for TPH at Site 5," but in Section 4 it was concluded that Site 5 does not meet Water Board criteria for low-risk fuel site closure due to indications of floating product and TPH fractions of xylene exceeding remediation criteria. As a result, further action is recommended for TPH in soil at Site 5. Please resolve this discrepancy.

54. **Section 8.1, Conclusions and Recommendations for Site 5, Page 8-2:** The text states that arsenic and thallium are attributed to naturally background concentrations and are not recommended for further evaluation in a FS, but at sample location 054-001-007 the concentration of arsenic is 21 times greater than background and the concentration of thallium is 64 times greater than the screening criteria. These concentrations are not consistent with background levels. Since the extent of arsenic and thallium has not been determined, please identify this as a data gap.

55. **Section 8.1, Conclusions and Recommendations for Site 5, Page 8-3:** The text states, "No further action is recommended for Site 12 soil," but soil sampling was not performed in the vicinity of most of the USTs and ASTs located on Site 12 and there a data gap for PCBs at Site 12. This recommendation for further action for Site 12 soil is premature. Please revise the text to acknowledge these data gaps and delete the recommendation for no further action.

56. **Appendix A, Environmental Investigations, Pages A-1 though A -39:** Parcel numbers are frequently referenced but are not provided on the figures. In addition, most of the figures have a grid, but the grid numbers of named locations are not provided in the text. This information would help the reader locate specific locations discussed in the text. Please provide include the parcel numbers on the figures and provide the grid numbers of specific locations discussed in the text.

57. **Appendix A, Environmental Investigations, Section A2.2.2, Selective Plating Shop, Page A-5:** The text discusses one subsurface soil sample, but the text does not include the sample location name. Please provide the name of the location of the sample.

58. **Appendix A, Environmental Investigations, Section A3.3.1, Site 5, Parcel 51, Page A-26:** The text discusses 23 samples with 10 subsurface soil samples and 13 HydroPunch® groundwater samples, but the text does not include the sample location names. Please include the sample location names in the text.

59. **Appendix A, Environmental Investigations, Section A3.4.2, Storm Sewer Investigations, Page A-30:** This section states that approximately 1,785 feet storm sewer lines, all within the vicinity of Sites 5, 10, and 12, are in an unknown condition and are in groundwater chemical plumes with contaminant levels that are above potential ecological concern. These sewer lines are part of outfall system F to Seaplane Lagoon. The text further emphasizes that the sewer lines are subject to the radiological program and beyond the scope of this RI Report. However, the possibly damaged 1,785 feet of storm sewer lines could act as a conduit that allows contamination of soil, groundwater, and the Seaplane Lagoon In addition, the agencies asked during the scoping of the RI to have all radiological information included in this RI report, and Site 26 has deferred any radiological issues associated with that site to be addressed with the Site 5 radiological remedial work. Please include the impact of possibly damaged 1,785 feet of storm sewer lines and the surrounding soil as a data gap. Further, please revise the RI to include all information on the radiological removal action at Sites 5 and 10, the remaining risk associated with radiological contamination, and carry the unremediated portions of radiologically contaminated storm sewer lines and surrounding soil forward into the FS.

60. **Appendix A, Section A3.5.1.1, Underground Storage Tank Summary for Site 5, Page A-31; and Figure 4-4 Soil Sampling Locations:** It is not clear why soil at UST 2-1 was sampled for TPH-g since the text states that the tank was used for diesel storage. The statement, "TPH-contaminated soil was excavated," should be deleted or clarified since it is not clear whether soil contaminated with TPH-d remains. Because TPH-d was not analyzed, the extent of contamination was not characterized; this should be identified as a data gap. Further, the text refers to Table A-19 for post excavation TPH results, but this table is a statistical summary of soil analysis lacking detail. Please explain why soil samples from the UST 2-1 area were analyzed for TPH-g only, and discuss whether a data gap exists since there are no results for TPH-d. Please delete or clarify the statement that contaminated soil was excavated. Also, please reference Appendix C for analytical results instead of Table A-19.

61. **Appendix A, Section A3.5.1.1, underground Storage Tank Summary for Site 5, Page A-31:** It is not clear why soil at UST 5-1 was not analyzed for PCBs and chlorinated solvents since the text states it was used to store waste oil. Additionally, the text refers to analytical results in Table A-19, but this table lacks the necessary detail for reviewing the

results of the investigation. Please explain PCBs and chlorinated solvents were not included in the analytical suite for sample location 5C-1, and evaluate whether a data gap for these analytes exists at former UST 5-1. Please also reference Appendix C for analytical results instead of Table A-19.

62. **Appendix A, Section A3.5.1.1, Underground Storage Tank Summary for Site 5, Page A-32:** Given the statement that a jet fuel release to the soil and groundwater had occurred at UST 5-2, it is not clear why JP-5 range TPH was not analyzed in soil samples. Please discuss whether a data gap exists at former UST5-2 since JP-5 range TPH was not analyzed in soil samples.

63. **Appendix A, Section A3.5.1.1, Underground Storage Tank Summary for Site 5, Page A-32; and Appendix C, Table C-8 Complete Analytical Results for OU-2C Water:** The discussion of groundwater results at former UST 5-2 lacks detail. The statement, "Groundwater samples collected from these monitoring wells contained SVOCs, VOCs, lead, and TPH up to 96,400 ug/L," appears to indicate that TPH was measured at 96,400 ug/L. Cross checking the results in Appendix C indicated that this is likely a VOC measurement at M05-07. Please be more specific when discussing groundwater results.

64. **Appendix A, Section A3.5.1.1, Underground Storage Tank Summary for Site 5, Page A-32:** It is not clear why PCB analysis was not conducted at UST 5-3, since the text states that it was used to store waste oil and solvents. In addition, this discussion is too general Please explain why PCB analysis was not done, and include this omission as a data gap. Please also expand the discussion to clarify maximum concentrations and to specify the media sampled.

65. **Appendix A, Section A3.5.1.1, Underground Storage Tank Summary for Site 5, Page A-32:** It is not clear whether adequate analysis has been performed at UST 6-1 and UST 6-2 since the text does not state specifically which petroleum solvent was stored in the former USTs. Furthermore, no basis is given for the statement that contaminated soil was removed. Please identify which petroleum solvent was stored in the tanks. Please explain how analytical results had confirmed that contaminated soil was removed.

66. **Appendix A, Section A3.5.1.1, Underground Storage Tank Summary for Site 5, Page A-32:** The discussion of maximum analyte measurements in soil and groundwater at UST 62-1 lacks detail. Furthermore, results for PAHs and metals discussed in the text appear to be incorrect. Please check the results and identify the maximum measured concentration of the specific analyte in the analytical group.

67. **Appendix B, Section B3.5, Tidal Influence, Page B-6; and Section 9 References, Page 9-1:** The discussion of tidal influence at Parcel OU-2C lacks detail and does not focus on specific data acquired in the Tidal Study that supports the Navy's explanation of

variations in groundwater flow direction in the SWBZ Please add detail to the discussion of tidal influence at OU-2C and present the data from the Tidal Study to support the discussion of groundwater flow variations due to tidal influence.

68. **Appendix B:** The logs for D05-04 and D05-07, which were used for the cross-sections in Section 2 are missing from Appendix B. Please provide logs for all borings that were used in the cross-sections.

69. **Appendix E, Total Petroleum Hydrocarbon Screening, Section E5.1, Soil Screening Results For Site 12, Page E-13, and Section E5.3, Conclusions and Low-Risk Closure Assessment, Page E-14:** Step 5: Conduct Additional Investigation, states "Additional sampling at Site 12 is not warranted" and further action is not recommended in Section E.5.3, but soil samples were not collected near the majority of the USTs and ASTs at Site 12. Please acknowledge this data gap and discuss when it will be addressed.

70. **Table H3-1: Profiles For Solid Waste Management Units In Operable Unit 2C (Sites 5, 10, And 12) Integrated With CERCLA Program, UST(R)-19, Page 59 of 70:** In the Data Analysis section it is stated that USTs 615-1 and 615-2 served as spill control for sprinklers in Building 615. From this statement it is assumed that the sprinklers mostly, if not completely, contained potable water, however, it is unknown if the water contained additional constituents (e.g., fire retardant, corrosion preventative) that could be a possible contaminant if it reached the soil or groundwater. Please state if there were additional substances mixed with the water for the sprinklers in Building 615. If the sprinklers in Building 615 only contained potable water then the NFA is appropriate for USTs 615-1 and 615-2, however, if substances were added to the water, USTs 615-1 and 615-2 will need to be reevaluated for NFA.

COMMENTS ON THE SLERA (APPENDIX G)

1. **Section G2.1, Step 1: Problem Formulation and Ecological Effects, Pages G-2 to G-6:** This section requires some reformatting to present the information in the five bulleted items as the next five main subheaders. These five items are critical to the SLERA and follow Navy and EPA format for the problem formulation step. For example, G2.1.2 should be "Completed Exposure Pathways" within which a conceptual side model (CSM) is then described. G2.1.3 should be Fate and Transport, G2.1.4 should be Ecotoxicity, and G2.1.5 should be Selection of Measurement and Assessment Endpoints. Please reformat Section G2.1.

2. **Section G2.1.2, Conceptual Site Model, Pages G-3 to G-6:** This section does not include a subsection on ecotoxicity and potential receptors as recommended in the EPA guidance for SLERA (EPA 1997). Please include a subsection that describes the toxic mechanisms of contaminants found at OU-2C and lists species that are potential receptors.

3. **Section G2.1.2.3, Fate and Transport, Page G-5:** This section is too vague and needs to be more site-specific. It is unclear in this section if there any groundwater trends were observed downgradient from the site. While SLERA requires the use of maximum detected concentrations, site contaminant distribution and movement should be presented to evaluate the significance of concentration trends to understand if ecological risks at the point of discharge may increase or decrease over time. Information on the level of dilution that would be expected is important. The presence of dense non-aqueous phase liquid (DNAPL) indicates a continuing source of contamination and implies that there will be ongoing risks. This information is needed in the SLERA to provide a perspective on the risk results. Please include more site-specific information to better understand the CSM, since some readers of this section may not read the remainder of the RI Report. Please also discuss low solubility and heavier molecular weight compounds settling into bay sediments, since the transport of chemicals at this site will determine the exposure pathways that need to be evaluated.

4. **Section G2.1.2.4, Assessment and Measurement Endpoints, Page G-5:** Please expand, clarify, and correct the first sentence of the assessment endpoint. In addition, there is a typographic error in the bold-faced sentence that states the assessment endpoint. The two words "Protection of" are repeated. Please delete the duplicate text.

5. **Section G2.1.2.4, Assessment and Measurement Endpoints, Page G-5:** The second sentence of the assessment endpoint is "Aquatic receptors play an important role in the food web at OU-2C," but there is no surface water in OU-2C. The contaminated groundwater in OU-2C poses a potential risk to aquatic receptors in Seaplane Lagoon (which is in OU-4B) and Oakland Inner Harbor (which is in OU-4C). If the sentence means the terrestrial food web in OU-2C, please clarify. Otherwise, please amend the sentence to say "Aquatic receptors play an important role in the food web at Alameda Point" or something similar.

6. **Section G2.1.2.4, Assessment and Measurement Endpoints, Page G-5:** Due to the presence of chlordane and mercury in groundwater, food chain modeling is required. Thus, an additional assessment endpoint needs to be added to address the effects of aquatic predators and water fowl that may ingest aquatic life that has bioaccumulated site contaminants as follows: Assessment Endpoint – Survival, growth and reproduction of aquatic life species residing and foraging within surface water bodies within and adjacent to the site. Measurement Endpoint – Comparison of exposure concentration levels to literature-derived benchmark values.

7. **Section G2.1.2.4, Assessment and Measurement Endpoints, Page G-5:** Due to the presence of bioaccumulative compounds as well as heavy molecular weight compounds (i.e., PAHs), sediment exposure needs to be evaluated. At a minimum groundwater concentrations can serve as pore water concentrations and converted to sediment

concentrations and compare these data to ecotoxicity benchmarks for sediment dwelling organisms.

8. **Section G2.2.1, Selection of Chemicals of Potential Ecological Concern, Page G-7:** The third sentence in this section states: "The data were filtered for the metal analyses". Please clarify what this means, why it was done, and how it is important to the SLERA.

9. **Section G2.2.2, Methodology for Evaluating Exposure and Effects on Ecological Receptors, Page G-7:** This section does not include all available screening criteria that Navy ERA and USEPA guidance recommends to use as a minimum start when screening surface water and sediment data. Revisit the screening of the data and include a screen against any additional values identified in the following references. The available criteria include but are not limited to:
EPA Ambient Water Quality Criteria (AWQC) (applicable to fresh- and marine waters only; not applicable to sediment)
Effects Range-Low values for sediment developed by Long et al. (1995)
NOAA Screening Quick Reference Table (SQuiRT) Guidelines (Buchman 1999)
EPA EcoTox Thresholds (see http://www.epa.gov/superfund/resources/ecotox/)
1997, Suter and Tsao 1996, (see
http://www.hsrd.ornl.gov/ecorisk/reports.html)
Chronic screening values developed by EPA Region 4.

10. **Section G2.2.2, Methodology for Evaluating Exposure and Effects on Ecological Receptors, Page G-7:** This section does not include a sediment screen. Currently the document has not evaluated sediments. At a minimum sediments should be modeled assuming the groundwater concentrations are pore water and convert to a sediment concentration especially since there are bioaccumulative compound detected in groundwater.

11. **Section G2.2.2, Methodology for Evaluating Exposure and Effects on Ecological Receptors, Page G-7:** This section needs to include a screen for bioaccumulative compounds. The presence of persistent, bioaccumulative and toxic (PBT) compounds such as chlordane and mercury, implies a significant ecological exposure pathway that requires evaluation. Please revise the SLERA to screen for bioaccumulative compounds.

12. **Appendix G, Section G.2.2.2, Methodology for Evaluating Exposure and Effects on Ecological Receptors, Page G-7:** The second-to-last sentence on this page has a typographic error. Please strike the words "will be used" from the end of the sentence.

13. **Section G4.2, Detection Limits Exceeding Screening Criteria, Page G-9:** The last sentence in this paragraph says: "Fate and transport modeling for these chemicals would help address the uncertainty associated with the nondetected chemicals for which the reported detection limits exceeded screening criteria". Please conduct fate and transport

modeling for chemicals with detection limits exceeding screening criteria and include this section in the SLERA. Chemicals that still pose a potential risk should be included in the exposure estimate and risk calculation.

14. **Section G4.4, Ecological Point of Exposure, Page G-10:** In this paragraph, the phrases "aquatic receptors" and "benthic invertebrates" are used interchangeably, though they do not necessarily mean the same thing. Once the assessment endpoint has been clearly defined (see General Comment 3), please modify this section for clarity.

15. **Figure G-4, Conceptual Site Model:** Given that the only assessment endpoint in the SLERA is "protection of populations of benthic invertebrates and other aquatic receptors", it is unclear why this figure should concentrate on and expand on only the terrestrial receptors, which have been dismissed at the beginning of the SLERA. Please change the focus of this figure to aquatic receptors and include groundwater/aquatic exposure paths to aquatic plants (benthic and suspended) and animals (benthic, suspended, and open-water). Also, G-4 needs to be revisited based on previous comments. Exposure to sediment is a potentially completed pathway as are potential exposure to higher trophic levels feeding on aquatic life inhabiting the surface water and sediments.

16. **Section G5.0, Risk Assessment Conclusions and Risk Management Recommendations, Page G-10:** This section summarizes information that was not presented in the SLERA. The third paragraph in this section indicates that food chain modeling was done; however, this modeling was not located in the document reviewed. The current SLERA only compared groundwater concentrations to ecotoxicity benchmarks; no food chain modeling was presented. Chlordane and mercury were detected in groundwater; thus, food chain modeling is required for this SLERA. Please revisit this conclusion and include food chain modeling in the SLERA as it was not included in this version of the document.

17. **Attachment G1: Groundwater Screening Criteria for OU-2C at Alameda Point:** This section requires a thorough technical editorial review. Many letters are missing from words in the Notes section (such as all capital and lowercase "w" letters, capital "R"s, and capital "J"s) and, in some places, there are very long spaces between words, parts of words, or individual letters. This table also needs to reference each value as Section G2.2.2 does not explain what the values are in the table.

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

MEMORANDUM

To: Anna-Marie Cook (SFD-8-3)
Remedial Project Manager

From: Dr. Sophia Serda (SFD-8-4)
Regional Toxicologist

Subject: Draft Remedial Investigation Report for Sites 5, 10, 12 Operable Unit 2C, (OU 2c), Alameda Point, California Dated July 1, 2005

Date: September 20, 2005

General Comments

1. Site 5 surface soil evaluation (*Section 4.2.6.1, Appendix F -Section 7.4.1.1 Human Health Risk Assessment*). The arsenic concentration EPC (exposure point concentration) of 29.5 mg/kg and thallium EPC of 31.5 mg/kg are not due to background. The arsenic detection of 329mg/kg and thallium detection of 335 mg/kg represents contamination and must be removed.

2. For the current worker the potential vapor pathway risk is high (greater than 1 in 10,000). I recommend soil gas and indoor air samples be collected to ensure the protection of current workers and to validate the model.

3. Provide in Attachment F-1 Johnson Ettinger model output pages.

4. In Appendix F, the Risk Assessment, Part D Tables were randomly checked and appear correct.

If you have questions, call me at 415-972-3057.