UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105
SFD 8-3

February 7, 2005

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 Feasibility Study Report Installation Restoration Site 28, Todd Shipyards, Alameda Point**

Dear Mr. Macchiarella:

EPA has reviewed the above referenced document, prepared by Bechtel Environmental, Inc and submitted by the Navy to the agencies on November 5, 2004. EPA requested a 30 day extension for review of the document, in accordance with the FFA, making our comments due on February 7, 2005. The Draft Final Feasibility Study for Site 28 will be due for submittal by the Navy on April 8, 2005.

We have enclosed our comments on the Site 28 Draft Feasibility Study, and look forward to discussing them with you. I can be reached at (415) 972-3029.

Sincerely,

Anna-Marie Cook

Anna-Marie Cook
Remedial Project Manager

enclosure

cc list next page

cc list: Jennifer Stewart, SWDiv
Marcia Liao, DTSC
Judy Huang, RWQCB
Elizabeth Johnson, City of Alameda
Peter Russell, Russell Resources, Inc
Jean Sweeney, RAB Co-Chair
Suzette Leith, EPA
Sophia Serda, EPA
Karla Brasaemle, TechLaw Inc

EPA Review of the Draft Feasibility Study Report
IR Site 28, Todd Shipyards
Alameda Point

Specific Comments:

1. **Page ES-6, Monitoring**: EPA maintains that monitoring as an action by itself is not a remedy. The Navy cannot show that monitoring prevents or mitigates an exposure to a threat. If, instead of monitoring, the Navy means to state monitored natural attenuation, as implied in the last sentence of this page, then Monitored Natural Attenuation should be the remedy presented here. Natural Attenuation is actually the remedy that mitigates the exposure to a threat and the monitoring is used to provide evidence that it is occurring.

2. **Page ES-11, GW2**: EPA does not understand how additional monitoring wells and monitoring for 5 years will provide a remedy for the groundwater contamination. What is the purpose of the additional monitoring wells and monitoring program? How does it provide protection to onshore and offshore receptors?

3. **Page ES-12, first sentence**: Again, how does monitoring for five years to establish baseline conditions fulfill the requirement to protect human and ecological receptors from being exposed to a contaminant?

4. **Page 2-5, last sentence**: The sentence "The Storm Sewer Study Report summarized archive plans of historical storm sewer construction and replacement, and did not identify any former NAS Alameda storm sewer drains connecting to or crossing Site 28" is misleading. No storm sewer drains were identified because Site 28 was not considered part of NAS Alameda at the time the study was being developed, so therefore Site 28 was not even examined. It is unknown whether there are any storm sewers under the site or, if there are, what condition they are in.

5. **Table 2-4, Comparison of Analytes in Soil Exceeding Residential PRGs, Page 2-17:** It is not clear what "not applicable" (NA) means in this table. Please clarify whether the constituents identified as NA were not considered contaminants of concern (COCs) in the south part of the site, or whether samples were not analyzed for these constituents and revise this table to clarify this issue. Also, the residential preliminary remediation goal (PRG) for benzo(a)pyrene [B(a)P] is 0.062 milligrams per kilogram (mg/kg), not 0.62 mg/kg. Even though the BCT for Alameda Point uses 0.62 mg/kg BaP eq as a screening value for PAHs, the actual PRG remains 0.062 mg/kg for benzo(a)pyrene. In addition, the Residential PRGs listed in this table for cadmium, chromium, and vanadium are different than the values for these metals in 2004 EPA Region 9 PRG table. Please use the 2004 Region 9 PRGs or cite the source of the values used in Table 2-4.

6. **Section 2.4.2.1, Pre-1939 Fill Area, Page 2-18:** The text states that arsenic and iron were the only metals detected in soil in the southern portion of the site that exceeded residential PRGs, but Figure 2-17 does not indicate that there are any locations south of

the northern edge of the dog part with arsenic above PRGs. Please resolve this discrepancy.

7. **Page 2-20, last paragraph**: Please explain why mass loading of mercury into the Bay from Site 28 is not considered a problem worth addressing given the large problem of mercury contamination that exists around the Bay.

8. **Section 2.4.3.1, Shoreline Wells, Page 2-22:** It is unclear why the text states that beryllium was detected above the Alameda Point background ranges, since the Remedial Investigation Report (the RI) indicates that the maximum concentration of Beryllium was 3.5 micrograms per liter (ug/L), but the Alameda Point Groundwater Monitoring Reports state that the background value for beryllium is 3.8 ug/L. Please resolve this discrepancy.

9. **Section 2.5, Fate and Transport of Contaminants, Page 2-25:** The text in this section presents the conclusion that only copper concentrations in groundwater at well 28SW03 are high enough to be a potential concern; however, since copper exceeds the California Toxics Rule (CTR) criteria of 3.1 ug/l in all three shoreline monitoring wells, it is not clear why groundwater in all three shoreline monitoring wells is not a potential concern. It appears that a comparison criteria that is greater than the CTR is being applied to groundwater, but this concentration is not defined. Please clarify how a groundwater concentration for copper was developed in order to justify the conclusion that copper is not a concern in groundwater at monitoring wells 28 SW01 and 28 SW02.

10. **Section 2.6.1, Human Health Risk Assessment (HHRA), Page 2-26:** Four scenarios are identified for the HHRA: residential, occupational, construction, and recreational; however, it is not clear if both adult and child receptors were considered in the residential and recreational scenarios. The receptors are only defined as 'resident' and 'recreational visitor.' Please revise the FS to clarify whether the risk to both adults and children were evaluated and clarify to which receptors the cancer risk and hazard index values apply.

11. **Page 2-27, Section 2.6.2**: Were the impacts from the soil COPECs evaluated for potential impacts on dogs using the park including kicking up dust particulates and subsequently carrying the dust back to residences?

12. **Page 3-10, Section 3.4, second paragraph**: The cancer risk of 5×10^{-5} and HI of 2 for construction workers indicates a potential exposure threat for this pathway that should be addressed, particularly in light of the fact that construction work in the form of utility maintenance is very likely and therefore this exposure pathway is very likely.

13. **Page 3-10, Section 3.4.1, second to last sentence on page**: This sentence does not make sense. The recreational risk scenario is less protective than the occupational, so how can it be considered protective of the latter? In addition, since the construction worker scenario yielded the highest cancer and non-cancer risk, the RAO's should be set to protect this exposure scenario, in addition to occupational or recreational.

14. **Page 3-11, second sentence at the top of the page**: Please clarify what is meant by the statement "However, the Navy reserves the right to revise the RAOs at IR Site 28?" At this point in the RI/FS process, the Navy should have chosen the RAOs they intend to use so that the remedial alternatives can be fairly evaluated and compared to each other.

15. **Page 3-11, Section 3.4.1.1, Arsenic**: EPA strongly disagrees with setting the RAO for arsenic at the highest level established in the background range. Rather, the 95th UCL should be used which equates to an approximate basewide average of 9 mg/kg. Please see the OU 1 FS for an appropriate development of the RAO for arsenic in soil.

16. **Page 3-11, Section 3.4.1.1, PAHs**: Estuary Park, like Todd Shipyards, is slated for recreational reuse and also had PAH contamination. The Navy excavated the top two feet of soil at Estuary Park to remediate PAHs and it appears inconsistent that the same treatment would not be applied to Site 28.

17. **Page 3-11, Section 3.4.1.1, PCBs and Lead**: Site 15 cleaned up PCBs and lead contamination to a clean up levels of 1 mg/kg, and 130 mg/kg respectively. Site 15 is also slated for recreational use. The Site 28 clean up goals for PCBs and lead, i.e. 2.1 mg/kg for PCBs and 750 mg/kg for lead, seem inconsistent with the clean up already performed at Site 15.

18. **Page 3-12, Section 3.4.1.2**: This section does not acknowledge that the risks to construction workers are such that remedial action is warranted. An IC prohibiting construction work including utility maintenance seems impractical, so the FS needs to present a better way to address this potential exposure pathway.

19. **Page 3-14, First sentence**: The inland groundwater at the Site actually does meet the definition of a Class II aquifer, so it is not correct to state that it is not a potential drinking water source. Rather, state that it is unlikely to be used as a potential drinking water source and will not be treated as such for CERCLA clean up purposes provided residential use of the property is prohibited.

20. **Page 3-15, Section 3.4.3**: While the final RAOs are set in the Record of Decision, EPA does not understand the purpose of reviewing an FS report where the RAOs are not the ones the Navy anticipates using. All the site specific information listed in this section as factors in choosing RAOs should already be present in the FS and reflected in the RAOs presented in this document.

21. **Page 4-2, Section 4.1.2.3**: Monitoring is not a remedy.

22. **Section 4.3.1.3, Cost, Page 4-18:** The text refers to a soil cover rather than to the soil/synthetic membrane cover discussed earlier in this section and does not discuss which type of cap is more expensive. Please change the reference to a soil/synthetic membrane cover and discuss whether there is a difference in cost between an asphalt cap and a soil/synthetic membrane cover.

23. **Section 4.3.1.4, Cost, Page 4-19:** The text discusses the costs and rates for both shallow and deep In Situ solidification/stabilization (S/S), but does not indicate which are applicable to Site 28. Please clarify whether the costs and rates for shallow or for deep In Situ S/S are applicable to Site 28.

24. **Page 4-19, Implemetability**: If the debris is suspected to be the cause of the soil and groundwater contamination, it should be removed per EPA's requirement for source removal.

25. **Page 4-20, Implementability**: Please note that the electrokinetic pilot study to remove high cadmium contamination at Site 5 was a failure. Implementability and effectiveness of this technology at Alameda Point is very questionable, and supports the Navy's decision to eliminate this technology from further consideration in this FS.

26. **Page 4-21, Effectiveness**: It should be noted in this section that conditions for phytoremediation at Site 28 are quite favorable. Highly soluble contaminants are not a problem, and the depth of plant roots is adequate to remediate the area for recreational use.

27. **Section 4.3.1.4, Phytoremediation, Pages 4-21 and 4-22:** The text on page 4-22 only discusses removal of arsenic and PAHs, but soil also contains lead above the RAO, so it is unclear why lead was not included in the list of constituents to be remediated by phytoremediation. Table 4-3 and the text on page 4-22 indicate that only two species of plants would be required, so it appears that one of the three constituents (arsenic, lead, and PAHs) was not considered. In addition, even though this alternative applies only to soil, it is possible that given the shallow water table, removal of copper from soil would lower the concentration of copper in groundwater. It is recommended that removal of copper from soil also be considered. This may require more than two species of plants, but use of several species should not be considered a limiting factor for this technology. Please clarify if there are plants that can remove lead and copper from soil. If there are plants that can remove copper and lead from soil, please include them in the description of this technology and modify the text and Table 4-3. Also, please clarify if the plants that would remove arsenic, lead, copper, and PAHs would tolerate the saline conditions that are likely present in the shoreline environment of Site 28.

28. **Page 4-22, Implementability**: Please elaborate on how the plants would enter the food chain given the stated lack of receptors at the site.

29. **Section 4.3.1.5, Removal, Page 4-23:** This section seems incomplete because it does not contain discussions of the technology, effectiveness, implementability, cost, or the conclusion that was reached about this technology. In addition, special techniques appropriate for shoreline environments may be necessary. Please provide text that discusses the technology, any special techniques needed for a shoreline environment, effectiveness, implementability, cost, and the conclusion that was reached about this technology

30. **Section 4.3.1.6, Ex-Situ Solidification/Stabilization, Pages 4-23 and 4-24 and Ex-Situ Soil Separation/Soil Washing, Page 4-25:** The text discuses the effectiveness of ex-situ S/S and ex-situ Soil Separation/Soil Washing for immobilizing arsenic, lead, and other metals, but does not discuss whether these technologies would also be effective to immobilize the PAHs that are also present in Site 28 soil. Please include a discussion of whether these technologies are effective for immobilizing PAHs in the text of this section.

31. **Section 4.3.2, Screening of Remedial Technologies for Groundwater, Page 4-27:** This section does not address source removal as a potential technology for groundwater; however, two of the groundwater alternatives screened in this FS included source removal. For clarity and completeness, please revise the FS to include a description and discussion of source removal as a remedial technology for groundwater.

32. **Page 4-28, top of the page**: ICs preventing residential use of the property would also be required.

33. **Page 4-28, Section 4.3.2.3, Groundwater Monitoring**: This option is not a remedy, and cannot be retained as a stand-alone process option. It does not meet either of the threshold criteria for a remedy and should not be carried forward.

34. **Section 4.3.2.3, Monitored Natural Attenuation, Page 4-28:** There is no discussion of source removal in this section; monitored natural attenuation (MNA) is not appropriate without source removal. Since soil at Site 28 is also contaminated with copper, the source of copper in groundwater is most likely copper-contaminated soil and source removal would be necessary before MNA could be considered. Please include a discussion in this section of the need for source removal before implementation of MNA.

35. **Page 4-29, Effectiveness**: What mechanism(s) are causing the arsenic and lead to naturally attenuate? No evidence is presented in the FS to support this assertion. Furthermore, it is not clear what natural attenuation mechanisms are operating on copper or if these mechanisms would be effective under the groundwater conditions present at Site 28 (e.g., salinity, pH, oxidation-reduction potential, etc.).

36. **Section 4.3.2.4, Containment, Page 4-29:** Only vertical subsurface-barriers are listed as potential containment technologies. The FS does not include one of the most common groundwater containment technologies - pumping. For completeness, please revise the FS to discuss groundwater pumping for hydraulic containment of contaminated groundwater. In addition, the FS should consider the usefulness of pumping in combination with other technologies such as passive treatment zones, to prevent the discharge of injected substances into the Oakland Inner Harbor.

37. **Section 4.3.2.4, Containment, Page 4-29:** Biobarriers are listed as one of the vertical subsurface-barrier options, but biobarriers are not evaluated for effectiveness, implementability, or cost. For completeness, please include biobarriers in the evaluation, or explain why they are not applicable at the site.

38. **Section 4.3.2.5 In Situ Passive/Reactive Treatment Zone, Page 4-30:** It appears that injection of MRC into the subsurface at the shoreline would have issues similar to soil flushing. In the case of soil flushing, it was argued that low permeability and heterogeneous soil would interfere with effectiveness and that it would be difficult to implement due to strong tidal effects near the shoreline and shallow groundwater. In addition, preventing flushing fluids from impacting the bay and benthic community was deemed problematic. MRC also involves injecting compounds into the subsurface near the shoreline; however, the FS does not discuss the impact of shallow groundwater, tidal effects, low permeability or heterogeneity on the effectiveness and implementability of MRC. Nor does it discuss the likely impacts to the Bay or benthic community of the injected compounds. The heterogeneity of the subsurface, which may include large buried objects, has been cited as the limiting factor for implementation of barrier walls and monitored natural attenuation, as well as for soil flushing, but this issue is not discussed with regard to MRC. It is not clear how the heterogeneity of the subsurface would not also affect the implementability of MRC. Please revise the FS to include a thorough discussion of in situ passive reactive treatment zones to allow comparison with other technologies including: the range of available reagents/manufacturer's, the likely impact of injected reagents on the Bay and benthic communities, the impact of heterogeneities in the subsurface and strong tidal effects, the impact of saline conditions on MRC, and the likely long term effectiveness (i.e., will treatment last 30 years without remobilization of copper?).

39. **Section 4.3.2.6, Groundwater Extraction and Ex Situ Treatment, Page 4-33:** Groundwater extraction is eliminated from further consideration due to high cost, long duration, and limited implementability; however, these criteria were evaluated in terms of achieving end-point remedial goals using pump-and-treat alone. Groundwater extraction could be a useful component of a remedial action when combined with other technologies. Please revise the FS to retain groundwater extraction in combination with other technologies.

40. **Section 5.1.1.3, Alternative S3 - Soil Cover with ICs, Page 5-3:** The FS asserts that the design and construction of a soil cover would not be 'straightforward'; but it is not clear what is meant by this statement. Although engineering design work is required to construct a soil cover, it is routinely done. Please revise the FS to clarify what would not be 'straightforward' about the design of a soil cover.

41. **Page 5-4, Section 5.1.1.5, last sentence**: Please add "An *annual* maintenance and repair program..." to the last sentence. (Italics denote added word).

42. **Page 5-8, Section 5.1.2.2, first paragraph**: Please explain what monitoring for 5 years will yield in terms of remedial action.

43. **Page 5-9, Section 5.1.2.3, first paragraph**: Again, EPA does not understand the purpose of monitoring for 5 years to "establish baseline conditions" in terms of remedial action. What does this accomplish?

44. **Page 5-10, Section 5.1.2.4, first paragraph**: Monitoring would be required for the life of the ICs.

45. **Page 5-10, Section 5.1.2.5**: Why are "baseline conditions" being established and how can they be established in this case if conditions are changing? Perhaps what is meant is that the monitoring is being performed to verify the effectiveness of the treatment?

46. **Page 5-11, Section 5.2.1**: EPA does not agree with the "low implementability" of phytoremediation at this site and in fact believes that is may be an ideal site to try this innovative and low cost remediation technology.

47. **Table 5-5, Screening Results for Groundwater Remedial Alternatives, Page 5-15:** Alternative GW2 is retained for detailed analysis even though Table 5-5 indicates that shoreline groundwater would continue to contribute copper into the Oakland Inner Harbor. Since modeling and groundwater sampling indicates that the CTR for copper is likely exceeded in shoreline sediment porewater, monitoring and IC would not be protective of the environment and, therefore, this alternative does not meet the threshold criteria. Since GW2 does not meet the threshold criteria of overall protection of human health and the environment, it should not be retained for further evaluation.

48. **Page 6-6, Section 6.1.8**: Proposed Plan should come before ROD in the last sentence.

49. **Page 6-8, Section 6.3.1, first paragraph**: As stated in previous comments, EPA does not agree with the proposed RAOs. They are different from those used for clean up actions at other sites on the base slated for recreational reuse. We request the following clean up levels in the first two feet of soil: the 95th UCL for background range for arsenic, i.e. 9mg/kg; an average BaP eq. concentration of no greater that 0.62 mg/kg, and no single point in excess of 1.0mg/kg, for PAHs; 1.0mg/kg for PCBs; and 400mg/kg or less for lead.

50. **Page 6-23, Section 6.7.2.1**: Copper levels are potentially harmful to aquatic receptors which means that the first threshold criterion component of protection of the environment is not met.

51. **Section 6.8.2.1, Overall Protection of Human Health and the Environment, Page 6-27:** The discussion of mitigation of environmental risks from groundwater discharge is speculative and not adequate to eliminate this risk from consideration when evaluating remedial alternatives in this FS. Filtered groundwater samples would likely have lower copper concentrations than unfiltered samples, but assumptions should not be made about likely concentrations, Also, the risk of exceeding the CTR in shoreline sediments was based on modeling results that considered leaching from existing soil contamination, not groundwater sample results. The 'dispersive' action of tides and currents is also speculative and vague. It is not clear that tides and currents will have any mitigating effect for exposure to benthic infauna. Groundwater is also influenced by tides and currently groundwater in all three wells exceeds the CTR criterion. Please revise the FS

to conclude that, based on currently available information, Alternative GW2 would not be protective of the environment.

52. **Section 6.8.2.2, Compliance with Applicable or Relevant and Appropriate Requirements, Page 6-27:** This section states that the same ARAR issues for ICs discussed in Section 6.3.2.2 also apply to Alternative GW2, but ARAR issues are not discussed in Section 6.3.2.2. Please revise this section to discuss the ARARs issues.

53. **Page 6-30, Section 6.9.1.1**: Please explain the purpose of conducting a groundwater monitoring program for 10 years here?

54. **Section 6.9.2.6, Implementability, Page 6-32:** The FS concludes that "it is likely that MRC can be distributed within the treatment zone with acceptable uniformity to mitigate risk to benthic organisms," but it is not clear what constitutes acceptable uniformity and no evidence is presented to support the conclusion that it is *likely* that MRC can be distributed with acceptable uniformity. On the contrary, the information presented in the FS indicates that, given the heterogeneity of the subsurface and buried objects, uniform distribution of injected material appears highly unlikely. It is also not clear that the proposed 10 foot spacing of the boreholes would be sufficient to ensure treatment of contaminated groundwater between boreholes that are located close to the potential receptors. Please revise the FS to discuss the uncertainties in the distribution of MRC due to subsurface heterogeneity and discuss why a 10 foot lateral spacing between boreholes would be sufficient.

55. **Page 6-34, Section 6.10.1.1**: What is the purpose of conducting a groundwater monitoring program for 5 years here?

56. **Section 6.10.2.1, Overall Protection of Human Health and the Environment, Page 6-36:** This section refers to the discussion of compliance with ARARs for GW2; however, it appears that GW2 does not meet ARARs for the reasons discussed in comments on Section 6.8.2.2 above. Please revise this section to discuss the compliance of Alternative GW5 with the CRT ARAR for copper.

57. **Section 6.11.2.1, Long-Term Effectiveness and Permanence, Page 6-53, Table 6-14, Comparative Analysis of Groundwater Remedial Alternatives, Page 6-49 and Table ES-7, Comparative Analysis of Groundwater Remedial Alternatives, IR Site 28:** It is unclear why Alternative GW-2 was rated medium for long-term effectiveness, since this alternative is not protective of benthic infauna. As stated in the comment on Section 5.1.1.2, it is not appropriate to assume that attenuation will occur when there is no source removal. Since will be no source removal and no attenuation of copper under this alternative, benthic infauna will still be affected by the discharge of copper-contaminated groundwater and this alternative should be rated "low." Please change the rating of the long-term effectiveness and permanence for Alternative G2 to "low" in the text and in Table 6-14.

General ORC Comments

1. **Characterization of groundwater.**

(a) In several places, the Navy states that the groundwater at Site 28 is not considered to be a current or potential drinking water source. These statements should be qualified that the Navy does not consider this groundwater to be a current or potential drinking water sources "for purposes of this CERCLA cleanup." Additionally, any references to the Huetteman or Cook letters should state EPA's conclusion that "it seems unlikely that groundwater in this area will be a potential source of drinking water in the future," rather than stating that EPA found that the groundwater "should not be considered a drinking water source." (e.g., page A2-4)

(b) EPA disagrees with the conclusion that that the inland groundwater should not be considered a potential drinking water source under all cleanup scenarios. As discussed below, EPA would consider this to be a potential drinking water source unless residential use of the property is prohibited.

(c) EPA agrees that the shoreline groundwater is a Class III aquifer and MCLs are not relevant and appropriate.

2. **MCLs as ARARs.** Whether MCLs are relevant and appropriate to remediating the inland groundwater must take into consideration several factors, including, on the one hand, protection of the resource, and, on the other hand, protection of human health and the environment. In terms of protection of the resource, as the Navy has acknowledged in the FS, this is a Class II aquifer, but it is unlikely to be used as drinking water due to high TDS and the possibility of saltwater intrusion if significant pumping takes place. On the other hand, as discussed in the Anna-Marie Cook's 2000 letter, drinking water with high TDS levels can and is treated to lower TDS levels for drinking water in parts of the US. Given the high population in the Bay Area and the general aridness of California, no Class II groundwater should be easily written off as a potential future drinking water source. In terms of protection of human health, EPA's concern is that even if ICs are imposed to prohibit private wells, given the difficulty of enforcing ICs of this type, the shallowness of the groundwater, and the frequency of illegal wells in Alameda, there is a significant risk of an illegal well and illegal/accidental ingestion of the contaminated groundwater by a resident, especially by a child. Given the experience with illegal wells at Alameda (as evidenced by EBMUD's Off-Base Well Location information provided in the Final Determination of the Beneficial Uses of Groundwater, July 2000, Department of the Navy), EPA questions the reliability of such ICs at this particular site. For these reasons, EPA proposes the following:

- If there is a potential for residential use of the property, then the groundwater should be considered potential drinking water, due to the risk of illegal wells. In that case, MCLs would be ARARs.

- If there is a strict prohibition on residential use of the property, EPA could agree to not treating this particular groundwater as potential drinking water for the purposes of this particular CERCLA cleanup, and MCLs would not be ARARs.

3. **Monitoring as a remedy**. Throughout the FS, there is discussion of monitoring as a remedy. EPA has several concerns:

(a) Although EPA agrees with the Navy that monitoring can be a component of a remedy, monitoring by itself is not a stand-alone remedy. Language to that effect should be changed (e.g., in Sec. 4.1.2.3).

(b) In Table 4-3, the FS indicates that monitoring is "retained for use as a component of remediation alternatives." However, it appears that monitoring is the only remedy for the shoreline groundwater in Alternative GW-2. This needs to be clarified.

(c) If the Navy is considering the shoreline component of GW-2 to be MNA, as in hinted in Sec. 5.1.2.2, that needs to clarified and explained. The Navy needs to explain why MNA would be appropriate in this situation, given that copper does not degrade, and MNA via dispersion in the Oakland Inner Harbor would not appear to be appropriate given that the Inner Harbor is already considered to be impaired due to copper. (See Regional Board's 2002 Clean Water Act 303(d) list of impaired waters.)

(d) If the Navy does intend "monitoring" to be the stand-alone remedy for the shoreline groundwater under GW-2, then, when analyzing the evaluation criteria, this must be equated to no-action for that portion of the groundwater. Thus, it is difficult to see how Alternative GW-2 could rate highest among the balancing criteria, as stated on page ES-14, when the FS indicates (p. ES-14) that the no action alternative does not meet the threshold criteria.

4. **Joint evaluation of groundwater remedies**. Evaluating the remedies for the inland and shoreline groundwater together is confusing and appears to present an inaccurate picture of how each of the separate remedies meets the evaluation criteria, especially the criterion of long-term effectiveness, where the Navy found GW-2 (ICs/monitoring) to be just as effective as the alternatives that included active remediation for the shoreline groundwater. It appears that the rating may have been based solely on the similar remedies for the inland groundwater and did not give much, if any, weight to the fact that this alternative would not include any remedy for the shoreline groundwater.

Specific ORC Comments

1. **"Baseline conditions". P. ES-12 and 13, line 2** on each, refer to conducting groundwater monitoring "to establish baseline conditions". What does this mean? If current conditions are not known, how can it be determined whether remediation is necessary, and, if so, what remedy would be appropriate?

2. **Tables ES-5 and ES-7**. EPA appreciates the inclusion of the first row listing the parameters considered, and recommends that the Navy include this in all its FSs.

3. **Cost comparison tables**.

(a) EPA appreciates the inclusion of a line without the net present value, so both total costs and present value of costs can be considered.

(b) EPA is concerned that adequate costs for long-term monitoring and implementation of ICs are not included, as it cannot be presumed that monitoring and ICs

will end in the thirtieth year. We recognize that approximate yearly monitoring costs can be calculated fairly easily by dividing the total cost by 30. We recommend, at the very least, an asterisk acknowledging which costs will extend beyond 30 years, and how long they will extend (including, if appropriate, in perpetuity).

4. **Comparison of alternatives (ES and Section 6).**

(a) Because alternatives that do not meet the two threshold criteria cannot be selected, it is not necessary to include them in the comparison of the balancing criteria. Therefore, the discussion of whether the no action remedy meets the balancing criteria is unnecessary.

(b) As discussed above, it is confusing to evaluate the remedies together for the two separate groundwater units. On page ES-14 the FS indicates that GW-1, no action, does not meet the threshold criteria, but on that same page the FS states that GW-2, which is described as "monitoring" but in fact is a no-action remedy for the shoreline groundwater, rates highest in the balancing criteria. This does not make sense. In Table ES-7, the discussion of long term effectiveness and permanence does not appear to take into consideration that no remediation action would be taken for the copper contamination in the shoreline groundwater.

(c) Page ES-14, last two paragraphs. It is not apparent from the charts why certain alternatives are considered to rate the highest, although it appears that the primary consideration was cost. A brief explanation here would be helpful.

5. **Table ES-8**. The big cost for GW option 5 seems to be hauling offsite. Why not evaluate the option of putting it in the CAMU, i.e. Site 1?

6. **Sec. 3.4, Remedial Action Objectives (p. 3-10)**. EPA is concerned with the apparent conclusion in the FS that risks in the range of 5×10^{-5} are "acceptable" for the construction worker scenario. Under 40 CFR 300.430(e)(2)(i)(A)(2), 10^{-6} should be used as the point of departure for determining remediation goals where ARARs are not available or are not sufficiently protective. For this same reason, EPA prefers that the term "risk management range" be used instead of "acceptable risk range" (e.g. on page 6-9, Sec. 6.3.2.1). It should not be simply presumed that any risk within this range is "acceptable."

7. **Sec. 3.4.2, Groundwater. P. 3-12 and elsewhere (e.g., p. A2-14)** indicate that the point of compliance for the shoreline groundwater remediation goals is the Oakland Inner Harbor, following initial dilution. EPA questions whether allowing dilution is appropriate given that the Inner Harbor sediment is considered impaired due to copper.

8. **P. 3-15, Sec. 3.4.3, RAO conclusions**. Discussion of soil remediation goals is puzzling. If there are alternative possibilities for future use, the Navy should set residential RAOs and recreational RAOs and analyze the alternatives that would meet each RAO.

9. **5.1.1, Remedial Alternatives for Soil**. For all the remedies involving ICs, there should be some discussion of what the ICs would be – both the vehicles (e.g. land use covenant) and the substantive restrictions (e.g. no residential use, no digging without a permit).

Additionally, there is no basis for the statement (e.g. on page 5-3) that the assumed duration of the IC remedial alternative would be 30 years. If contamination is left in place, it should be assumed that the ICs would have to be in place in perpetuity.

10. **Sec. 6.1.9, Community acceptance**. To the extent any information is currently available regarding community acceptance, this should be discussed in the FS, even though the more thorough consideration of this factor will occur at the ROD stage.

11. **Alternative S-2, ICs**. (a) On page 6-8, the discussion of Alt. S-2, ICs, indicates that ICs prohibiting residential use can be released if the transferee demonstrates to the Navy, EPA, DTSC, and the Regional Board that there is no unacceptable threat. Separately on that page, the FS says that the ICs will prohibit residential and agricultural use of the site without the prior review and written approval from the Navy and the other FFA signatories. Since the only other FFA signatory is EPA, these two statements appear to be inconsistent. It is also not clear whether the Navy is envisioning an IC that would be released upon concurrence of the regulatory agencies, or whether the IC itself would allow residential use so long as there was regulatory concurrence.

(b) It appears that this discussion may be a reference to the phased remediation scenarios that the City of Alameda and Navy have been discussing, under which the Navy could clean up a site to non-residential levels, with an IC prohibiting residential use unless the site were cleaned up further to residential levels, and a subsequent owner – e.g., the City or Developer – could perform an additional cleanup to allow residential use. Please note that if this is the intent, this needs to be spelled out in more detail as a separate alternative in the FS. EPA will also have input as to the provisions of the ICs. For example, EPA would require the IC to prohibit residential use until and unless additional remediation has been performed under an Administrative Order with EPA.

12. **Sec. 6.3.2.3, Alt. S2 -- Long-Term Effectiveness and Permanence**. EPA appreciates the Navy's acknowledgement in this section on page 6-9 that ICs would remain in place indefinitely. The Navy should also acknowledge its responsibility to monitor and enforce the ICs, and should note the permanence of the ICs in discussions of cost.

13. **Sec. 6.3.2.7, Alt. S2 -- Cost. P. 6-10, 6.3.2.7**. EPA appreciates the Navy's acknowledgement on page 6-10 that the costs are estimated for comparison purposes and not for budgetary or planning purposes. EPA recommends that this paragraph acknowledge that costs will be higher because monitoring of ICs will be necessarily in perpetuity. (Same comment applies to IC portion of other remedies.)

14. **Alt. GW2—Monitoring and ICs/Monitoring**

(a) EPA disagrees with conclusion on page 6-27 that the ICs as described would be protective. We do not think restrictions on extraction of groundwater by individual property owners are especially effective and instead would recommend ICs prohibiting residential use of the property.

(b) As with the soil remedies, the discussion of groundwater ICs should acknowledge that even if a 30-year duration is used for costing purposes, without an

active remedy, it must be assumed that ICs will need to be in existence – and monitored – in perpetuity, with annual monitoring reports.

(c) The Navy needs to explain how this remedy is protective as to the shoreline groundwater given the statement in the executive summary that the no-action alternative does not meet threshold criteria, and, as discussed above, "monitoring" is not a remedy in itself, but must be analyzed the same as a no-action alternative.

(d) As discussed above, it is not clear that this alternative meets ARARs, specifically the CTR objective for copper, without more information as to why inclusion of a dilution factor is appropriate.

(e) Sec. 6.8.2.3 says that "if monitoring results indicate a continuing risk, no other action would be taken under this alternative." The implication is that an active remedial alternative would then be implemented, but this is not at all clear. This needs to be clarified. Is the Navy contemplating that if this alternative were selected, there would be a specific re-opener in the ROD?

ARARs Comments

15. Page numbers on the ARARs tables would be appreciated.

16. **Sec. A.4., Waste Characterization**. This section is very clearly written, and we appreciate the Navy including its expectations as to whether the waste at Site 28 will be categorized as RCRA Hazardous Waste or California-Regulated Non-RCRA Hazardous Waste. It would also be helpful to include tentative expectations as to whether any of the potential waste would be categorized as either a designated waste or a nonhazardous solid waste (Sec. A1.4.3).

17. **Groundwater ARARs.**

(a) P. A2-4, Sec. A2.2.1.1, discussion of potential drinking water ARARs. The discussion of the Huetteman letter should specify that it dealt with whether an aquifer should be considered a potential source of drinking water for the purposes of making CERCLA cleanup decisions. The discussion of the Cook letter should be changed to accurately reflect that letter: It did not say that the groundwater in the central region "should not be considered a drinking water source," but, rather, that "it seems unlikely that groundwater in this area will be a potential source of drinking water in the future. On page A2-5, it should be clarified that the inland groundwater is not considered a current or potential source of drinking water supply for the purposes of this CERCLA cleanup.

(b) As discussed in our general comments above, EPA considers MCLs relevant and appropriate for any remedy for the inland groundwater that allows residential use of the property.

18. **Surface water – mixing zone and dilution (p. A2-14)**. See comment above regarding application of dilution and a mixing zone to evaluate compliance with the CTR criteria. Discussion of the Ocean Plan on p. S2-14 is not persuasive given that the Ocean Plan does not govern the Oakland Inner Harbor and generally deals with much deeper water. The Navy should explain why the mixing zone it is proposing is appropriate in applying

the CTR criteria based on CTR, Basin Plan and/or SIP requirements rather than the Ocean Plan.

19. **A2.2.3.1 PCBs (p. A2-19).** EPA recommends as a TBC EPA's Guidance on Remedial Actions for Superfund Sites with PCB Contamination (1990), which recommends an action level of 1 ppm for residential use.

20. **Location-Specific ARARs**: ESA (p. A3-8) and California ESA (p. A3-10). Is there any habitat in the Inner Harbor or any threatened or endangered species among the benthic organisms in the sediment that could be affected by contaminants from the site, especially in the shoreline groundwater?

21. **Action-Specific ARARs**

(a) EPA appreciates the general clarity of the action-specific ARARs discussion in Sec. A4, especially the concise discussion of the potential ARARs for each remedy. We also appreciate inclusion of the details of each of the requirements in the ARARs tables, and also the notation in the ARARs tables of which alternative remedy each ARAR applies to.

(b) P. A4-4, staging pile requirements at 40 CFR 264.554. We recommend that the FS note that these have been adopted in California in 22 CCR 66264.552(f). Also, in the discussion on page A4-5 of the federal staging pile requirements and the State waste pile requirements, it would be helpful to know how much overlap there is and which requirements are more stringent.

(c) The summary on page A5-2 indicates that the substantive portions of various laws and regulations are ARARs for the IC alternative, but these are not included in the ARARs table.

Minor Comments:

1. **Executive Summary, Remedial Alternatives for Soil, Page ES-7:** This section states that seven alternatives for soil were developed and subjected to detailed analysis; however, S4 and S5 were not retained for detailed analysis. Please revise the executive summary to clarify that only five soil alternatives were subjected to detailed analysis.

2. **Executive Summary, Remedial Alternatives for Groundwater, Page ES-10:** This section states that five alternatives for groundwater were developed and subjected to detailed analysis; however, GW3 was not retained for detailed analysis. Please revise the executive summary to clarify that only four groundwater alternatives were subjected to detailed analysis.

3. **Section 4.3.1.3, Containment, Page 4-16:** Since containment will not reduce the toxicity or volume of contaminated soil, please remove the word 'necessarily' from the sentence: 'Although containment reduces the mobility of contaminants and prevents human and

ecological contact with contaminated soil, it does not *necessarily* reduce the toxicity or volume of contaminated soil.

4. **Section 5.1.1.3, Alternative S3 - Soil Cover with ICs, Page 5-3 and Section 6.4, Alternative S3 - Soil Cover with ICs, Pages 6-10 to 6-13 :** The title of this alternative does not reflect the fact that a synthetic membrane will also be installed. The phrase "soil cover" implies a simple soil cover without a synthetic membrane. In addition, although the text in Section 6.4.2.2 states that this is an "engineered cap" some of the text in section 6.4 still refers to a soil cover. Please retitle this alternative to reflect the inclusion of the synthetic membrane and use consistent terminology in Section 6.4.