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

March 7, 2007

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 Revision I Soil Remedial Investigation Report for IR Site 31 Marina Village Housing, Alameda Point

Dear Mr. Macchiarella:

EPA has reviewed the above referenced report prepared by CDM Federal Programs Corporation and submitted by the Navy on November 29, 2006. This document is a revised Remedial Investigation Report intended to address regulatory agency concerns about the adequacy of the evaluation of nature and extent and risk assessment performed in the initial RI report. Among other things, EPA requested that the comparison between Site 31 soil data and data collected as part of a Lawrence Berkeley National Lab (LBNL) site study be eliminated due to lack of evidence that the two studies had any connection and that instead a background comparison be made with either the Alameda Point "pink" background data set or with the neighboring Site 25, College of Alameda and FISCA properties.

During a telephone conference on August 24, 2006, the Navy agreed to eliminate the comparisons to the LBNL data and the regulators agreed to allow the Navy to use background data from Site 25, College of Alameda, FISCA property and the East Housing property, instead of the "pink" background data set. After the revised RI report was submitted, EPA reviewed the new background data submitted by the Navy for the neighboring sites. In summary, it appears that the Navy determined that 1) Site 31 did not qualify for comparison with the Alameda Point "pink" background data set because the fill history of Site 31 was different from that west of Main Street; 2) Site 25 did not qualify for comparison purposes because an "updated" fill history map showed that the fill event occurred for Site 25 in 1919 and for Site 31 in 1927; 3) the College of Alameda did not have any suitable background data that could be used for comparison purposes;

4) limited FISCA data could be used for comparison with Site 31; 5) East Housing data could be used for comparison with Site 31.

EPA does not agree with the Navy's assessment of suitable comparison data for Site 31 based on the following: 1) according to the fill history maps provided in the Site 25 Feasibility Study Report and compiled using USGS Quadrangle Maps and aerial photographs, Site 31 was filled at the same time as the West Housing Area which is west of Main Street. The West Housing Area displays no elevated concentrations of inorganics, falling consistently within the Alameda Point "pink" background data set; 2) portions of Site 25 were filled at the same time as Sites 30 and 31, yet no elevated inorganics were found during extensive soil investigations at Site 25; 3) College of Alameda data were used as a comparison for FISCA inorganic sample results to determine whether inorganics in FISCA soil were within background ranges. Therefore, data sets for the College of Alameda must be sufficiently extensive to be used for Site 31 as well; 4) the FISCA data submitted by the Navy appears to use inappropriately high detection limits; e.g. arsenic is set at 10 mg/kg and, in a few samples, at 20 mg/kg or even 40 mg/kg. As a result, the data set is not satisfactory for use as a background data set; 5) the East Housing data, likewise, uses inappropriately high detection limits with approximately half of the data yielding non-detects due to the high detection limits. The statistical analyses performed on the data set are not defensible. Additionally, iron and manganese sample results have not been included for the East Housing data set.

In the absence of being able to supply the reviewers with suitable alternative data for comparison purposes, and given the fill history as presented in previous documents, EPA has compared the Site 31 data set to the Alameda Point "pink" background data set. It appears that arsenic is elevated at Site 31, along with less pervasive contamination of vanadium and iron. Although much of the soil at Site 31 is currently covered by houses and paving, the risk presented by soil if the houses and paving are removed is over the risk management range for State of California toxicity values, and at the high end of the risk management range for federal toxicity values. We have therefore concluded that a Feasibility Study to evaluate remedial action options is warranted.

Please find enclosed the detailed comments from our review of the document. We look forward to working together to resolve these issues.

Sincerely,

Anna-Marie Cook

Anna-Marie Cook
Remedial Project Manager

Enclosure

cc list: next page

4. **Executive Summary, Conclusions, Page vii through xi:** The recommendation for no further action based on "no evidence of a release of chemicals to soil due to a Navy release" is not substantiated. Please forward this site to a Feasibility Study.

5. **Figure 2-10, Top of Clay Elevation Map:** In general contour lines should be smooth, but some of the contours on this figure do not follow this convention. The 5 foot contour in the north central portion of the map centered on hydropunch location 3121 has an acute angle and the 6 and 7 foot contours in the same region have right angles. Also the four foot contour has an acute angle in the western area of the map, in the vicinity of hydropunch 3105. Please revise the elevation contours to follow standard contour conventions by eliminating acute angles and right or near-right angles.

   Also, it is unclear why there is a closed 6 foot contour around hydropunch location 3134 when there is a 6 foot contour adjacent and to the south that could be extended to include the area surrounding punch location 3134. Please remove the closed contour around this location and extend the southerly contour to include this sample location.

6. **Section 4, Nature and Extent of Contamination, Page 4-2:** The text states that PAH data collected in 2002 "was largely duplicated in a 2003 PAH assessment," but this statement implies that some data points were not duplicated. Also, comparison of data from nearby points may provide an indication of the variability in PAH concentrations in Site 31 soil, so the 2002 data should be included. Please revise the RI Report to include a presentation and discussion of the 2002 PAH data.

7. **Section 4.1.3.2, Polynuclear Aromatic Hydrocarbons, Page 4-9:** The text indicates that the arithmetic mean of the benzo(a)pyrene (BaP) equivalent values was calculated for the entire site, but it is not appropriate to calculate a single mean for an approximately 25 acre site. The site should be broken up into smaller units for consideration of the nature and extent of contamination. This approach, using smaller units, would then be consistent with the approach for Site 25 and the West Housing Area. In addition, an examination of the data indicates that there are just a few areas where there is significant contamination in the 0 to 4 foot depth interval (e.g., the northwest corner and borings along the western edge of Site 31; the western portion of the 12 housing units west of IR Site 30, etc. Further, a figure showing all of the BaP equivalent concentrations should be included. Please break up the site into smaller areas and revise the discussion of mean values to reflect these smaller areas. Also, please provide a figure that includes all of the BaP equivalent concentrations.

8. **Section 4.1.3.2, Polynuclear Aromatic Hydrocarbons, Page 4-9:** The second paragraph suggests that the high values of BaP equivalent values found in the soil represent biased PAH values due to the proximity of the soil samples to asphalt

but justification has not been provided for this statement. Further, most of the locations with the highest concentrations of PAHs in shallow soil are located near IR Site 25 or in close proximity to Main Street. Since PAH contaminated fill was found in IR Site 25 and in the West Housing Area in EDC-5, please explain the rationale for assuming that asphalt is responsible for the higher hits found here. Furthermore, the assumption that the PAH concentrations were impacted by the presence of asphalt has serious implications for the sampling protocols used during the 2003 PAH investigation. It is inappropriate to dismiss the PAH values for the three highest soil samples in the 0 to 2 foot range, when many of the soil samples throughout the entire site are beneath or adjacent to asphalt, the sampling protocols are called into question, and PAH-contaminated fill is known to have been used at adjacent and nearby sites. Please delete the statement that the three locations with the highest BaP equivalent values are "considered biased by the presence of asphalt and not representative of soil conditions."

9. **Section 4.1.3.3 Metals, Page 4-11:** The conclusions drawn in this section are inconsistent with the analytical metal results for IR 31. This section contends that "there is strong evidence that metals in the soil of IR Site 31 are not the result of a release from Navy activities" and that an aerial photo review shows no evidence of a release, but a release of metals is not likely to be visible on aerial photographs. For example, arsenic was used in pesticides and rodenticides; and a release would not necessarily be visible on an aerial photo. Also the use of metals such as arsenic, copper, lead, mercury, and zinc, has been documented in anti-fouling paint and hot plastic (see for example, *Marine Fouling and Its Prevention*, which was prepared for the Navy in 1952). It is likely that this paint containing these metals was used in Alameda Point shipyards by the Navy and by Todd Shipyards and that wind-borne deposition or use of dredge containing these antifouling metals potentially contaminated soils at this site. Possible scenarios include, but are not limited to, deposition of airborne particulates from sandblasting a ship; releases from paint or antifouling additives stored at the DRMO; or use or release of arsenic as a pesticide or rodenticide in the Site 31 area. Regardless of the analysis of the likelihood of a release, it is not acceptable to leave an island of contamination surrounded by a sea of clean. Please retain the "pink" data set as background and evaluate accordingly the portions of IR 31 that are above background in the FS.

10. **Section 4.1.4, Area-Specific Background Evaluation, Page 4-15 and Appendix H2, Summary, Page i:** The conclusion that "concentrations of arsenic are present at ambient levels and do not represent releases from on-site activities" does not take potential release mechanisms and sources into account. The historical use of arsenic as a pesticide and rodenticide suggests that arsenic could have been released from pesticides/rodenticides stored in the OU-5/FISCA/Site 31 area or that these materials could have been used for their intended purpose.

11. **Section 4.1.4.1, Arsenic at IR Sites 30 and 31, Page 4-16 and Appendix H2, Arsenic at IR Site 30 and 31, Page ii and 2:** The argument that the range

between the maximum and minimum is less than 2 orders of magnitude is irrelevant because it does not preclude arsenic from being a contaminant.

Also, it is unclear whether Figure 2 of Appendix H2 is the probability plot used to apply the Department of Toxic Substances Control (DTSC) guidance since this figure is not referenced in the text of Section 4.1.4.1. Please reference this plot within the main text of the document. Figure 2 appears to indicate that there may in fact be more than one population represented by this data, and this would mean that the data for IR 31 could not be considered ambient. The inflection points and curves as seen in the plot on Figure 2 of Appendix H2 imply the data represents two separate or two overlapping populations respectively. Please discuss the inflection points and curves in the region of a probability of 25 % and a concentration of 1.5 on the log scale and approximately 90% and log concentration 3.0.

12. **Section 4.1.4.2, Off-site Background Locations, Page 4-17 and Appendix H2, Off-site Background Locations, Pages ii and 4: :** It has not been demonstrated that arsenic data meet criteria for background, so the first sentence in these sections should be removed. Please delete the first sentence in these sections.

Similarly, it has not been demonstrated that the iron and manganese concentrations at Sites 30 and 31 have not been impacted by anthropogenic sources. Since iron and manganese (as well as vanadium, chromium, and other metals) are constituents of steel that would be released as fine particles from sandblasting operations, elevated iron and manganese concentrations may be indicative of a release. Iron and manganese data have not been provided so the argument in these sections cannot be verified. Please provide the iron and manganese data sets and discuss the analysis of this data.

Finally, the lack of samples collected from the area east of Main Street alone is not sufficient to preclude the use of the "pink data set, so this bullet point should be deleted from this section. Please delete the third bullet point from these sections.

13. **Section 4.1.4.3, Fill History and Lithology, Pages 4-17 and 4-18 and Appendix H, Fill History and Lithology, Page iii and Section 3.1, Lithology and Fill History, Page 6:** The text indicates that 400 borings were evaluated as potential background, however the boring logs have not been provided for the sites other than IR 31. Please provide the boring logs for the East Housing Area, Alameda College, and IR 25. Also it is unclear if each of these 400 borings was considered for comparison and/or if the entire length of the boring was evaluated for comparison. Please provide specific information one which borings were evaluated for comparison and which ones were excluded, if any.

14. **Section 4.1.4.3, Fill History and Lithology, Pages 4-17 and 4-18 and Appendix H2, Section 3.0, Soil Parameters, Page 5 through 7:** The analysis

of gravel content at IR Sites 30 and 31 does not appear to take into account the potential that gravel was used as surface material in the former DRMO area, or that it was used for roads and building subbase materials. Many DRMO yards are on gravel so that materials are not placed directly on soil. Since Site 25 was not used for DRMO storage, and at least 2 feet of fill was placed on top of Site 31, it is likely that there would be significantly more gravel in the upper 4 feet of soil at Sites 30 and 31 than at Site 25. In addition, boring logs to substantiate the claims in these sections have not been provided. Further, the text in Section 3.2 states that the percentage of gravel was estimated using American Society for Testing and Materials (ASTM) standards for visual classification if the gravel percentage was not specified on boring logs, but Table 1 does not specify the percentage of locations where gravel content was estimated in this fashion. Please revise the text to state that gravel was likely used to cover the soil in the DRMO storage yard, provide the percentage of logs where gravel content was estimated, provide all boring logs, and revise or delete the argument about the percentage of gravel in the top 4 feet of soil at Sites 30 and 31.

15. **Table 4-6, Groundwater Comparison:** The entry for arsenic is incorrect; the first column indicates that arsenic was not detected and the remainder of the row is blank. Arsenic was detected in 3142 at 14.8 micrograms per liter (ug/L). Please revise the table to reflect the analytical data in Appendix G.

16. **Section 6.1.3, Exposure Assessment, Page 6-3:** This section outlines the complete exposure pathways associated with (among others) future on-site residents. Although future residential exposure considers ingestion of groundwater as drinking water and inhalation of volatiles while showering as complete exposure pathways, dermal contact while bathing appears to be omitted from consideration. Please clarify this apparent oversight/discrepancy. This issue is ongoing throughout the remainder of the report and Appendix I. Additional comments related to this issue in other sections of the Draft RI have not been repeated pending response from the Navy.

17. **Section 6.1.5.1.4 and Appendix I, Section I6.4, Cancer Risks – Ambient Concentrations of Arsenic, Pages 6-8 and I-15, Respectively:** It is inappropriate to consider the cancer risk without arsenic.

18. **Section 7.1, Conclusions, Page 7-1:** Arsenic and several organic chemicals are present at concentrations that result in risk. Therefore, the decision to not proceed to the FS is inappropriate. We recommend a FS for Site 31. Also, please revise the conclusions to reflect changes made to the Draft RI Report in response to previous comments.

19. **Section 7.1.1, Soil, Pages 7-2 and 7-3:** Many conclusions drawn throughout this RI and reiterated in this section have not been adequately substantiated. This RI has failed to establish that the pink data set is not an appropriate background for IR 31, and has failed to supply satisfactory alternative background data for

comparison purposes. Also it has not been adequately established that the IR 31 data set alone fits the DTSC guidance for representing a single ambient data set.

20. **Section 7.2, Recommendations, Pages 7-6 and 7-7:** There is not enough evidence to support the recommendation for no further action. Please proceed with the development of remedial alternatives and evaluate them in a Feasibility Study for IR 31.

21. **Appendix H, Inorganic Background Comparison:** Based on the results as presented in this appendix the median concentrations of most metals that have been analyzed for in IR 31 are statistically higher than the median of the same metals in the "pink" background data, therefore the assumption should be that the soil in IR 31 has been contaminated and should be evaluated as such. Please include this conclusion in the appendix and main text of the document.

22. **Appendix H2, Site Specific Background Evaluation, Summary:** It is unclear how data was selected for the off site areas that were compared to IR 31. In reviewing the information on inorganic data sets for FISCA and East Housing, it is unclear why the 95 percent Upper Confidence Limit (95 UCL) has been calculated for metals where there were only 1, 2, or 4 detections within a data set of 18 or 21 total samples. The calculated UCL is meaningless with so few detections and the resulting value only represents the UCL of the detection limits used in the analytical process. The significance of calculating a mean or median is similarly unclear, as the resulting calculations represent the mean or median of the detection limit. In addition, the detection limits for some metals are too high (e.g., 20 or 40 milligrams per kilogram [mg/kg] for arsenic) because they exceed the preliminary remediation goals (PRGs) and/or range of concentrations in the background data set. Finally, the East Housing data set appears to represent two separate populations for some metals, one population appears to have soil impacted by metals (e.g., from a spill or release, or from a different source area) and the other representing soil with lower (potentially background) concentrations of metals. For example, the data set for barium includes three locations (B-6, B-7, and B-8) with the highest concentrations of the data set (147 to 224 mg/kg). Since the highest concentration of mercury (9.36 mg/kg, an order of magnitude higher than other mercury detections) also was detected in a sample from one of these borings, there is further evidence that these borings represent a second and impacted population. In addition, data should be evaluated for presence of a second population before the 95 UCL is calculated. Please describe and provide all data available for the comparison sites.

No comparison is provided for the iron and manganese between IR 31 data and the potential offsite background areas, even though the comparison of these metals is one of the significant rationales for the position that the pink data is inadequate for comparison with IR 31 analytical results. Please provide this comparison.

23. **Appendix H2, Summary, Page i and Section 2.2, Potential Off-Site Background Locations, Page 4:** The extent to which locations that have been selected as potential background are contaminated with other constituents is unclear, since the full analytical data set has not been provided. Samples with detections of VOCs, SVOCs, pesticides, or PCBs should be excluded from the potential background data set. Please exclude locations with organic contaminants, include a discussion of the potential for the selected data sets to be contaminated, and include the full data set (all analytes) for all samples used in this analysis.

24. **Appendix H2, Summary, Page iii and Section 5, Conclusions:** The text indicates that metals concentration in the "pink" data set are statistically different from one another, however it is unclear why the conclusion is that they are entirely different populations when there is a likelihood that the IR 31 data may represent a contaminated subset of the "pink" data set. In order to more conclusively determine the statistical difference between the "pink" data set and the IR 31 data, comparisons should be provided for the two sets of data that include other chemical constituents and a comparison of lithology and grain sizes to establish the similarity or difference between the two populations. Please provide further comparison analysis of the pink and the IR 31 data sets.

25. **Appendix H2, Section 2.1, PRC Pink Background Data Set, Page 3:** Historic maps and aerial photographs to validate information in this section have not been provided. Please provide this supporting evidence.

26. **Appendix H2, Section 2.1, PRC Pink Background Data Set, Page 3 and Figure 4, History of Artificial Fill:** The inset (updated fill history) and main map are inconsistent because the main map shows that most of IR Site 30 and a portion of IR Site 31 are in the "blue" area (i.e., fill in place by 1930) and that a portion of both sites were filled during the "olive" (i.e., filled before 1919) deposition period, but the inset shows that both areas are in the "light yellow" fill area (i.e., fill in place by 1927). Maps and aerial photographs to support this change have not been presented. Please provide supporting documentation to validate the information in the inset. If oblique aerial photographs were used, please discuss how the fill history was extrapolated, including points of reference that were used.

APPENDIX I, HUMAN HEALTH RISK ASSESSMENT

GENERAL COMMENTS

1. One of the goals for conducting the baseline human health risk assessment (HHRA) was to "provide information for making decisions concerning the necessity for remedial action to reduce any potential exposure." Part of assessing exposure is understanding all possible routes for contaminant migration. Several constituents are present in soil at elevated levels. In addition, a viable drinking

water aquifer underlies the site. However, it does not appear that an assessment of the potential for contaminants in soil to migrate to groundwater has been conducted. It is noted that the Draft RI Report indicates that while groundwater at Site 31 is impacted with volatile organic compounds (VOCs) and semi-VOCs (SVOCs), the source for the groundwater contamination is not likely associated with Site 31. However, the RI Report also does not appear to address whether contamination in soil at Site 31 could be a possible source for future contamination via migration of contamination in soil to groundwater. Typically a migration assessment is conducted to assess whether constituent concentrations in soil have the capacity to leach via downward migration and adversely impact underlying groundwater. This pathway is typically assessed using soil-to-groundwater Soil Screening Levels. This evaluation is also useful in determining areas that may require remediation. Please discuss why this evaluation was not conducted and if warranted, revise the RI Report to include a comparison of site concentrations to the soil screening levels.

2. The 1997 United States Environmental Protection Agency (EPA) Exposure Factors Handbook was used as a primary guidance for deriving exposure factors. Please note that for the evaluation of the child scenarios, exposure data should be obtained from EPA's Child-Specific Exposure Factors Handbook (2002) (ChEFH). Please ensure that the child exposure factors applied in the risk assessment are consistent with those in ChEFH.

3. The most recent EPA guidance is not consistently used for this risk assessment. For example, EPA's 1996 Soil Screening Guidance is referenced while the 2002 update to this document, EPA's Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, December 2002 is not (e.g., referencing an assessment approach for construction worker exposures). Please revise the HHRA to cite the most recent relevant guidance documents.

4. It is unclear whether 'chromium' concentrations represent the trivalent form (Cr3+) of this metal or total chromium, assuming a ratio of the hexavalent and trivalent forms ([Cr6+]+{Cr3+]). Please clarify whether 'chromium' concentrations represent trivalent form or total chromium, assuming a ratio of the hexavalent and trivalent forms ([Cr6+]+{Cr3+]).

   Table I5-2 indicates that hexavalent chromium (Cr6+) is used as a surrogate for Cr3+. The Navy has not considered risks associated with chromium in Table I6-1, suggesting that chromium concentrations are not based on total chromium (i.e., an assumed ratio of 1:6, Cr6+:Cr3+). Table I6-3 presents the oral reference dose (RfDo) for Cr6+ as the selected toxicity criterion for use in assessing hazard attributable to chromium. Please clarify which form(s) of chromium the data are representing.

SPECIFIC COMMENTS

1. **Appendix I, Section I4.2.2, Incomplete Exposure Pathways, Page I-7:** Dermal contact and incidental ingestion of groundwater by a construction worker are reasonable exposure scenarios; however, as the duration of these events is expected to be minimal, these pathways were deemed incomplete. Minimal duration does not address an incurred dose and is not sufficient justification for the exclusion of a pathway from the Risk Characterization. Please revise the risk assessment to include an expanded qualitative assessment (i.e., potential for substantive impact on overall expressions/quantitative point estimates of risk or hazard) or full quantitative assessment based on dermal contact with, and incidental ingestion of, groundwater for a construction worker population.

2. **Appendix I, Section I4.3.2, Quantification of Daily Intake, Page I-8:** The exposure frequency (EF) considered for use in assessing exposures associated with ingestion of homegrown produce is equivalent to exposures occurring over approximately 20 percent of a given year. Please provide the decision criteria and supporting rationale to describe how this EF was derived.

3. **Table I4-1, Selection of Exposure Pathways:** The HHRA does not appear to include the inhalation pathway. Inhalation of vapors while showering/ bathing is listed as a complete exposure pathway for future adult and child residents. Text in Section 6.1.2 and Section I3.2 indicates that this pathway was evaluated quantitatively in the risk assessment using groundwater data from the Site 31 RI and the OU-5 RI (Neptune et al. 2002). However, the risk assessment does not appear to contain an analysis of this pathway. Rather, the results are cited in another report, the Final Groundwater RI/FS for Site 25/IR-02, but the extent to which the results are specific to Site 31 is unclear. Please clarify how this pathway was evaluated for Site 31. If this scenario was not addressed using site-specific data; please provide adequate justification for its exclusion or revise the risk assessment to include an evaluation of risks and hazards associated with inhalation and dermal contact with groundwater while showering.

4. **Table I4-1, Selection of Exposure Pathways:** The rationale provided in this table supporting exclusion of dermal contact with groundwater as a relevant pathway attributable to a future construction worker includes the argument that exposure would be transient and minimal. Section 2.4.2 indicates that depth to groundwater in the first water-bearing zone (FWBZ) is 3.8 to 7 ft bgs. Because shallow groundwater could be contacted during routine excavation activities, the risk assessment should be revised to include a quantitative or qualitative analysis of this pathway.

5. **Table I4-5, Reasonable Maximum Exposure Values Used for Daily Intake:** This table fails to provide any parameters or equations used in assessing the inhalation of volatiles while showering. In addition, this table does not address ingestion of groundwater. Please revise Table I4-5 to include input parameters

and equations for assessing the inhalation of vapors while showering and the ingestion of groundwater by a future child or adult resident.

APPENDIX J, SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT

GENERAL COMMENTS

1. The soil sampling intervals used for examining potential exposures to ecological receptors is unclear. The soil sampling intervals listed for soil appear to be samples collected between 0 and 8 ft bgs. However, no justification is provided to clarify why this depth class is considered appropriate. Surface soil exposures for surface foraging receptors, typically 0 to 0.5 ft bgs, do not appear to have been examined separately from exposures to sub-surface foraging receptors, typically 0.5 to 4 ft bgs (or deeper, depending on the receptor of concern [ROCs]). The use of a sample collected from the 0 to 8 ft bgs sampling interval does not represent actual site-specific exposures for either receptors class. Please revise the RI Report to clarify and justify the depth classes used for examining exposures to ROCs, or include a clear, complete, and detailed discussion of this in the Uncertainties Section.

2. It is stated throughout the RI Report that lower trophic level receptors, such as plants and invertebrates, are not expected to occur at IR Site 31, since current and expected future site conditions are not expected to include habitat areas for these receptors. However, it is also stated in the RI Report that landscape areas are present at IR Site 31, and therefore it can reasonably be assumed that invertebrates are present in these areas. In addition, although probably not native, plant species are also present, and both of these lower trophic level receptors can be assumed to provide a food base for upper level receptors. This is further supported by the fact that herbivorous, insectivorous, and omnivorous mammal and bird species have been selected as ROCs at the site. Please revise the RI Report to include plants and soil invertebrates as ROCs for the risk assessment.

3. No information appears to be contained in the RI Report regarding assessment and measurement endpoints. It is important that the ecological resources in need of protection are clearly established for the site to ensure that the ecological risk assessment process is conducted in an appropriate manner. Please revise the RI Report to include this information.

4. Appendix J (subsection J1.A) describes the complete and incomplete fate and transport pathways in regards to ecological exposure settings. The Appendix J subsection provides compelling evidence that brings important pathways to closure (groundwater to surface water, stormwater runoff to adjacent estuaries). These pathway descriptions need to be brought forward into the Risk Characterization descriptions within the Executive Summary (page xi) and

Appendix J (subsection J9 page J-19) in order to address all ecological risk concerns.

SPECIFIC COMMENTS

1. **Section J1.2.2, Threatened, Endangered, and Of-Concern Species, Page J-4:** Numerous aquatic species are listed in this section. However, as indicated on page J-2, this ecological risk assessment does not focus on the potential groundwater to surface water transport/exposure pathway, and no aquatic resources are present onsite. Please revise the RI Report to clarify why these aquatic species are included in this section (e.g., transport of precipitation driven run off and associated contaminated soils) or remove the aquatic species from this section and provide an abbreviated discussion regarding the information and results presented in the previous documents that deal with contaminated groundwater migrating to nearby aquatic habitats.

2. **Section J3.2.3, Soil-to-Small-Mammal Bioaccumulation Factors, Page J-12:** This section states that 2,3,7,8-tetrachlorodibenzo-p-dioxin was used to estimate bioaccumulation factors for organic COPECs. No justification or rationale has been provided for this approach, nor does the full citation from the 1998 paper by Sample appear to have been provided in the Reference Section. Please revise the RI Report to provide a complete, clear, technical justification for using 2,3,7,8-tetrachlorodibenzo-p-dioxin to estimate bioaccumulation factors (BAFs) for all organic compounds, along with the complete literature citation, or use the appropriate BAFs for these compound from proper open literature.

3. **Section J5.5, Exposure Estimates, Page J-15:** The third paragraph in this section states that the maximum detection of methylene chloride in the six "late" soil samples was approximately three times greater than detected in the previously established data set, but these data were not included as it would have no impact on risk characterization. However, no information is included to support this claim. Please revise the RI Report to provide information to verify this statement, or include this information from these six soil samples in the data set for examining potential ecological exposures at IR Site 31.

4. **Section J6.2, Exposure Factors, Page J-17:** Exposure factors (e.g., body weights and ingestion rates) for terrestrial wildlife were refined to more closely represent site-specific conditions. No information appears to be provided in the RI Report to describe the criteria used for this refinement process. Please revise the RI Report to include this information.

cc list: Mary Parker, SWDiv
Dot Lofstrom, DTSC Sacramento
Erich Simon, Regional Board
Peter Russell, Russell Resources, Inc
George Humphreys, RAB Co-Chair
Karla Brasaemle, TechLaw, Inc
John Chesnutt, EPA

Review of the Draft Soil Remedial Investigation Report IR Site 31, Marina Village Housing, Alameda Point

GENERAL COMMENTS

1. Arsenic has been detected in on-site soil (fill) at concentrations in excess of the Alameda Point background data set. Even though Appendix H2 presents information which describes arsenic concentrations in the most recent fill material as consistent with concentrations reported within the Alameda Point vicinity, the arguments presented to support this assertion are not substantiated. Site 31 appears to have higher levels of arsenic in the soil than in the neighboring sites and compared to other areas at Alameda Point, and EPA does not agree with the approach of leaving an "island of elevated concentrations in a sea of lower concentrations". We therefore request that Site 31 be taken forward to a Feasibility Study for evaluation for remedial action.

2. In sections throughout the Draft Soil Remedial Investigation Report IR Site 31, Marina Village Housing (the Draft RI), Sites 30 and 31 are referenced together. It is understood that these two IR sites are adjacent to one another and therefore when describing locations and other general site characteristics the use of both sites is appropriate. However, when specific analytical concentrations are being discussed, then discussions should be limited to IR 31, exclusively, as this Draft RI is providing support for the decision to move forward to a Feasibility Study (FS) or not. Please see specific comments below.

SPECIFIC COMMENTS

1. **Executive Summary:** The language within the Executive Summary is confusing in regards to understanding the need and use of the screening level ecological risk assessment (SLERA). The second paragraph (page iii) indicates that strictly human health risk concerns were considered as suitable endpoints for the Site evaluation process. Then, the Executive Summary goes on to mention the SLERA, its methods and results. Please clearly and consistently describe the application of the SLERA to the Site closure process.

2. **Executive Summary, Human Health Risk Assessment, Page vi:** It has not been demonstrated that off-site background values have been adequately compared to IR Site 31. Please delete the statement "arsenic at IR 30 and 31 represents ambient concentrations in the fill soil."

3. **Executive Summary, Nature and Extent of Potential Contaminants, Pages vii:** Sufficient substantiation has not been provided to conclude that the Alameda Point "pink" background data set is not applicable to IR Site 31 or that the lines of evidence are valid. Please see specific comments on Section 4.1.3.3, below and revise the Executive Summary as necessary.