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

March 8, 2001

Mr. Richard Weissenborn
EFD Southwest, BRAC Offices
1230 Columbia Street, Suite 1100
San Diego, CA 92101-8517

Re: U.S. EPA Review of Draft Remedial Investigation Report for Operable Unit 4A (IR Site 2-West Beach Landfill/Wetlands) Alameda Naval Air Station

Dear Mr. Weissenborn:

The U.S. Environmental Protection Agency (U.S. EPA) has received and reviewed *Draft IR Site 2 Remedial Investigation Report Alameda Point Alameda, California* (draft RI Report), dated December 1, 2000. The draft RI Report was prepared on behalf of the Department of the Navy (Navy) by Neptune and Company, Inc.

Based upon our review, U.S. EPA has determined that the Draft RI Report contains many significant deficiencies and requires major revision/additional documentation. Further, U.S. EPA is disappointed in the quality, content, and conclusions of the draft RI Report in light of the progress that has been made in the remedial investigation for OU3 (IR Site 1 - 1943-1956 Disposal Area). The progress at OU3 has included acknowledgment by the Navy of data gaps and establishment of sampling activities to fill these gaps, and acknowledgment by the Navy of the need to address contaminant "hot spots" (e.g., radiological, lead, unexploded ordnance, and groundwater). Similar acknowledgments by the Navy will be necessary in order to successfully move forward on the OU4A RI. Examples of major deficiencies include the following:

- The Navy's contention that the IR Site 2 landfill is not a major source area is unsupportable given the history of hazardous waste disposal at the site documented in other Navy reports.

- The RI Report has not delineated the nature and extent of contamination at IR Site 2. The Navy has not provided any information on the nature and extent of hazardous wastes within the landfill nor has the Navy provided sufficient data to show that the hazardous materials within the landfill are unlikely to migrate into the environment.

- The RI Report contains almost no data regarding the condition of the in-place containment systems at the landfill, the existing cover and the partial slurry wall between the northwest corner of the landfill and the bay.

- The RI Report screens out ambient contamination from the risk assessment, which is a risk management decision. The Navy should present the risk to human health and the environment posed by the landfill and present the portion of that risk that the Navy believes is due to Navy actions in a separate section.

- The RI Report screens out contaminants from the ecological risk assessment because the Navy has never prepared toxicity reference values for those pollutants, when literature values are available, and is unacceptable.

- The lack of direct soil contact pathways in the human health risk assessment is not protective of future users of the site such as recreational visitors and wetlands researchers.

- The draft RI Report suggests that the Navy has to a large degree excluded the regulatory agencies from RI scoping , work plan development, and preliminary data analysis phases of the investigation. Also, the Navy has not provided the agencies with any previews of the report prior to its issuance, as typically done. The Navy's general failure to actively include the regulatory agencies may partially explain some of the deficiencies with the report. The active inclusion of the regulatory agencies in site planning has been shown to greatly increase the probability of the Navy producing acceptable work and work products.

- The draft RI Report indicates that the only purpose of the follow-on Feasibility Study (FS) to the RI will be to evaluate several Navy "explanations" as to why OU4A is not a threat to human health or the environment and is not acceptable to U.S. EPA.

For a complete list additional general and specific comments, and additional supporting information, please see the enclosures. Please note that U.S. EPA is providing the specific comments for your information only, to assist the Navy with its revision.

U.S. EPA is committed to work with the Navy through the BRAC Cleanup Team (BCT) to clarify any concerns expressed in this letter and assist the Navy in producing an acceptable RI Report. If you have any questions concerning this matter, please contact Ms. Anna-Marie Cook at (415) 744-2367.

Sincerely,

Phillip Ramsey
Remedial Project Manager

Enclosures
cc: see next page

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Enclosure A: March 8, 2001

U.S. EPA Comments on *IR Site 2 Remedial Investigation Report Alameda Point Alameda, California* (draft RI Report), dated December 4, 2000.

General Comments:

1. Based upon our review, U.S. EPA has determined that the draft RI Report for Operable Unit 4A (Installation Restoration Site 2- West Beach Landfilll/Wetlands) contains many significant deficiencies that require major revision/additional documentation. U.S. EPA is disappointed in the quality, content, and conclusions of the draft RI Report in light of the progress that has been made at OU3 (IR Site 1, 1943-1956 Disposal Area). The progress at OU3 has included acknowledgment by the Navy of data gaps and establishment of sampling activities to fill these gaps, and acknowledgment by the Navy of the need to address contaminant "hot spots"(e.g., radiological, lead, unexploded ordnance, and groundwater). Similar acknowledgments by the Navy will be necessary in order to successfully move forward on the OU4A.

2. U.S. EPAdisagrees with the Navy's position that OU4A does not represent a major source area at Alameda Naval Air Station. The Navy position is made clear by the statement in the Executive Summary that "[a]dditional actions to further mitigate site risks are of questionable value...". Unless the Navy is intent on implementing clean closure of the landfill, please revise the draft RI report to include, at a minimum, sufficient data to support horizontal and verticle containment of the hazardous constituents within the landfill and removal of wastes that pose a significant threat to human health and the environment (i.e., radiological, drummed chemical wastes, unexploded ordnance (UXO), and discarded pesticides). U.S. EPA has recently been provided a copy of an Initial Assessment Study for Alameda Naval Air Station prepared for Naval Energy Environmental Support Activity (NEESA 13-014, 1983). This report provides a description of basewide waste generation activities at Alameda NAS and disposal practices at OU4A, and in U.S. EPA's opinion refutes one of the Navy suggestions that the quantity of waste disposed in OU4A may have been minimal.

3. Given the Navy's position that "[a]dditional action to further mitigate site risks are of questionable value...", U.S. EPA is surprised that the draft RI Report documents Navy attempts to initiate interim remedial actions approximately twenty (20) years ago, including the installation of a slurry wall along the northwest border with the Bay and emplacement of cap or surface cover material on the waste disposal area, in response to two RWQCB Administrative orders. Given that the Navy has attempted to provide measures to protect human health and the environment from the hazardous wastes disposed of in the landfill in the past, it is surprising that the Navy no longer believes these types of measures are necessary. Please revise the RI Report to provide the basis for installation of the partial slurry wall installed between the landfill and San Francisco Bay along the northwest corner of the site. In particular, please state what environmental threat the slurry wall was meant to mitigate, whether this threat is still present, and, if so,

whether or not the slurry wall is still capable of containing the threat. In particular, revise the RI Report to indicate how well the slurry wall has stood up to the years of wetting and drying in a salt-water environment if the slurry wall is still required to safeguard human health and the environment.

4. U.S. EPA notes the draft RI Report does not document regulatory coordination for site scoping and work plan development, which suggests there was limited input by regulatory agencies for these critical activities. Please revise the report to include a detailed description and citation of reguatory input in the scoping and work plan approval process. Further, the draft RI Report transmittal letter indicates that a 1999 Final Work Plan West Beach Landfill, Wetlands, and Runway Wetlands Ecological Risk Assessment had been prepared for this portion of the assessment. U.S. EPA staff are not aware of this work plan, and note that the document is not included in the Reference section.

5. Site audit information documenting disposal of radiological, chemical, and UXO hazards needs careful re-evaluation. The Navy should research and review all existing documentation regarding waste disposal activities. As indicated above, U.S. EPA has recently received an Initial Assessment Study, that provides information on disposal practices (NEESA 13-014, 1983). U.S. EPA has identified a key figure from the NEESA study, Figure 6-7 (Areas of Suspected Hazardous Waste Disposal, West Beach Landfill...). This figure identifies "chemical drums, inert ordnance, pesticides, asbestos, oil sumps, buried metal wastes, and dredge disposal areas". A similar figure also appears in the Navy's *Final Unexploded Ordnance Site Investigation Survey Work Package Operable Unit (OU) #3* [which at the time also included the West Beach Landfill] *Alameda Point Alameda, California*, May, 1999. The subject figure, from the 1983 Initial Assessment Study, is included as Enclosure B.

6. U.S. EPA does not agree with the Navy proposal to supplement the RI Report with two additional RI Addenda, to address radiological and risk assessment in Addendum I, and UXO in Addendum II. Given the extensive time period that has elapsed for the generation of a draft report, and the major deficiencies of the draft RI Report, U.S. EPA requires that the Navy integrate all concerns in one RI report. This opinion has been provided to the Navy and U.S. EPA understands the Navy is in the process of establishing a revised schedule for OU4A, as part of the Federal Facilities Agreement (FFA) and its enclosed Site Management Plan (SMP) that will reflect this change in approach.

7. The draft RI Report indicates that the only purpose of the follow-on Feasibility Study (FS) to the RI will be to evaluate several Navy "explanations" as to why OU4A is not a threat to human health or the environment and is not acceptable to U.S. EPA.

8. The purpose of an RI Report is to delineate nature and extent of contamination in support of a feasibility study to select an appropriate remedy, for the threat posed by contamination. Please remove any conclusions from the RI Report that are not related to whether the Navy has satisfactorily delineated nature and extent of contamination at the IR Site 2 Landfill and adjacent wetland.

9. Throughout the RI Report the Navy refers to samples collected in the "landfill". It appears that many of these samples were collected in surface soils (0.5 feet below ground surface) on top of the waste disposal area or in the last daily cover placed on the landfill. To clarify the presentation, please include definitions of waste, daily cover, existing cover materials, fill, and native materials in the RI Report. Then, please revise the RI Report to indicate what type of material each sample consists of. For example, rather than stating that a surface soil sample was collected from the landfill, state that the soil sample was collected from the existing cover over the landfill. In addition, it would be helpful to include physical descriptions (e.g., brownish silty sand) of the samples, if known, and copies of any field logs kept by sampling personnel.

10. The draft RI Report contains descriptions of materials disposed of in the landfill (e.g., liquid and powdered pesticides, sand blasting grit in a matrix of PCB-containing oil, oil-water separator sludge, waste oil, asbestos, radium paint, UXO, tear gas, biomedical waste, plating wastes, solvents, paints, mercury...). However, there is not sufficient information in the draft RI Report to ascertain if any of these materials were ever sampled. Please revise the RI Report to discuss if any of the solid samples collected at the site were waste samples, as described above.

11. It does not appear that the Navy has determined the extent of the waste in the landfill. If the extent of waste at the site is known to an adequate degree of certainty, please revise the RI Report to include this information. If the extent of waste at the site is not known, please note this as a data gap in the RI Report conclusions and provide a plan to fill this data gap.

12. The condition of the existing cover at the landfill is not discussed in the RI Report. Please revise the RI Report to include an isopach map showing the thickness of the existing cover of the landfill across the entire landfill. Please include a topographic map of the landfill showing the existing drainage patterns of the landfill and a discussion of the soil type of the existing cover. Please include a discussion of the susceptibility of the landfill cover to wind and water erosion. This discussion must include test results sufficient to classify the different types of soil present in the cover in accordance with the Unified Soil Classification System. Please include all necessary climate data in the RI Report, e.g., prevailing wind directions, speed, and duration as well as rainfall data. Please assure that all data necessary to perform a soil loss calculation, using the Natural Resources Conservation Service (NRCS) wind erosion equation: $E = f(I, K, C, L, V)$[1], is included in the RI Report. This calculation, to determine how long the existing cover at the landfill is likely to last, will be a required element of the feasibility study.

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[1]where E is the potential average annual soil loss, I is the soil erodibility index, K is the soil ridge roughness factor, C is the climate factor, L is unsheltered distance across a field, and V is the equivalent vegetative cover

13. The Navy has indicated that potentially all of the hazardous constituents from the 1.6 million tons of industrial waste disposed in the landfill may have leached out into San Francisco Bay. While this conclusion is not supported by any hard data in the draft RI Report, the Navy has conducted an investigation of the sediments offshore of the West Beach Landfill (see, Data Summary Memorandum, Breakwater Beach and Western Bayside Offshore Areas, prepared by Battelle, Entrix, and Neptune & Company, dated December 2000). The Data Summary Report has been reviewed by U.S. EPA, in correspondence dated February 8, 2001, and U.S. EPA has indicated the subject offshore areas (including the Western Bayside Area adjacent to the West Beach Landfill/Wetlands) warrant further evaluation. Please revise the RI Report to address the nature and extent of contaminants detected in offshore sediment samples collected adjacent to the West Beach Landfill/Wetlands and compare them to the waste materials known to have been disposed of in the West Beach Landfill.

14. The Navy appears to be, inappropriately, using the RI Report to support a conceptual site model that all of the hazardous, toxic and radioactive waste disposed of in the landfill has been rendered harmless. The Navy hypothesizes that either all of the harmful contents of the landfill have been leached into San Francisco Bay, or that all of the harmful contents of the landfill have been fixed in place and cannot leach because of the nature of the matrix into which the wastes have been disposed.

    It does not appear from the draft RI Report that the Navy has performed any investigations to show that any waste within the landfill has either decomposed, leached or been fixed in place by the surrounding matrix. Therefore, U.S. EPA must assume that all of the toxic wastes (solvents, PCBs, heavy metals, radioactive materials, sludges, pesticides, et cetera) are still present in the landfill in large quantities. The Navy has not presented any data within the RI Report to indicate that the current landfill cover is capable of continuing to keep any harmful constituents from entering the environment, either due to wind or water erosion or leaching out of the landfill, and has not shown that any modification to the landfill's containment systems could protect human health and the environment. Therefore, the only conservative conclusion that can be drawn from the data presented in the RI Report is that the landfill poses a significant and continuing threat to human health and the environment and that it has not been shown that the landfill could ever be made to be protective of human health and the environment.

    If the Navy wishes to pursue the presumptive remedy for municipal solid waste landfills, containment with hot spot removal (see Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites, U.S. EPA, EPA/540/P-91/001, February 1991), significant additional data is needed. This additional data includes, but is not be limited to, the current condition and location of UXO, drummed wastes, and pesticide containers disposed of in the landfill, the current condition and makeup of the current cover on the landfill, the quality and quantity of leachate being generated in the landfill, the quantity of landfill gas being generated in the landfill, the thickness of waste disposed of in the landfill, the state of decomposition of the waste, and the amount of hazardous constituents that become submerged at the landfill due to tidal action.

If the Navy wishes to pursue a, no-action alternative, which is indicated by their conclusion that, "Additional actions to further mitigate site risks are of questionable value...", then the Navy must show that all of the landfill contents are either inert, or will be fixed within the current landfill boundary for as long as they could pose a hazard to human health and/or the environment.

Unless the Navy is intent on implementing clean closure of the landfill, please revise the RI Report to include, at a minimum, sufficient data to support horizontal and vertical containment of the hazardous constituents within the landfill and removal of wastes that pose significant threats to human health and the environment and whose location is known, e.g., radiological materials, drummed chemical wastes, UXO, and discarded pesticides.

15. The first paragraph in Section 6.2.1 describes the initial procedures used to identify COPCs, whereby chemical constituents detected in site soils were compared to analytical results for soil samples collected from unimpacted areas at Alameda Point (termed "ambient" conditions). For this comparison, statistical distributional tests were applied in an attempt to determine whether site soils were significantly different than ambient soils. It is inappropriate to screen out COPCs due to ambient contamination as the risk presented by ambient (and/or background) contamination is an important datum to be considered by the decision makers when they select an overall remedy for the facility. The Navy must present the total risk to the receptors present at the site due to the hazardous constituents present at the site. The Navy may present, in a separate section, a discussion of the portion of the total risk at the site that is due to what the Navy believes is its contribution to the site contamination (e.g., the portion of the actual risk due to Navy contamination and the portion of the risk due to ambient contamination). This information will likely be considered by the decision makers in selecting a remedy for the site. Please revise the ecological risk assessment to restore all COPCs that were eliminated based on a screening for ambient contamination.

16. A major shortcoming in the Ecological Risk Assessment has resulted in the elimination of approximately two-thirds of the chemicals of potential ecological concern (COPECs) identified for the site from further consideration, simply because no Navy TRVs were available for those 40+ chemicals. The ramifications of such elimination are undoubtedly significant. The risk assessment should be revised using available TRVs from the literature for all COPECs identified in the screening. The Navy is again referred to U.S. EPA's February 8, 2001, review of the Navy report entitled "Data Summary Memorandum, Breakwater Beach and Western Bayside Offshore Areas" for additional suggestions on conducting an acceptable Ecological Risk Assessment.

17. It appears that dioxins and furans were not included in the suite of analyses performed on samples collected during the investigations. Please revise the ecological risk assessment to include dioxins and furans or provide justification for not evaluating these chemical groups.

Specific Comments:

1. Section 2.2, Operational History: The RI Report indicates that the landfill was to be closed in accordance with California Class II Standards and that Regional Water Quality Control Board Order No. 83-35 required that a clay cover be installed on the landfill. It isn't clear that this clay cover was ever completely installed on the landfill. Section 2.3.1.4.2, page 2-24, indicates that the existing landfill cover is permeable, so it is doubtful that the landfill was ever capped with a clay cover. Please revise the RI Report to indicate if the Navy is in compliance with Regional Water Quality Control Board Order No. 83-35. If the Navy is not in compliance with this order, please revise the RI Report to indicate what steps the Navy will take to come into compliance with the order.

2. Section 2.2.1.1, West Beach Landfill: Appendix D contains additional information on the landfill operations. Page D-3 indicates that, "Disposal operations began at the landfill in the early 1950s with the disposal of chemical drums in an area termed the chemical dump, located at the northeastern corner of the landfill." Please revise Section 2.2.1.1 to include this information. Please indicate that the number of drums, the contents of the drums and their current condition are unknown, and are thus a critical data gap. Please include a statement in Section 8, Conclusions and Recommendations, that the Navy will develop a plan to characterize the drum conditions and contents on an expedited basis, and that this plan will include geophysical surveys to locate the drums as well as the excavation and analysis of at least 10% of the drums to ascertain their contents and the conditions of the drums. Please include a tentative schedule for the preparation and implementation of this plan. If the Navy has no other data on the drum contents and conditions, please indicate if the possible imminent threat posed by these drums to San Francisco Bay would justify a time-critical removal action.

3. Section 2.2.1.1, West Beach Landfill, Page 2-10: The RI Report indicates that the Pesticide Works Pest Control Shop (PWCS) disposed of all of its surplus pesticides, in their original containers, into unlined trenches located in the southeastern corner of the landfill. If records exist regarding the quantities and types of pesticides disposed into the landfill, please revise the RI Report to include them. If no records exist, please revise the RI Report to include a summary of interviews conducted with base personnel who worked at the PWCS regarding the types and quantities of materials disposed of in the landfill. If personnel who worked in the PWCS during the late 1970s cannot be located, please revise the RI Report to indicate what actions were taken to try to locate these workers.

4. Section 2.3.1.4.1, Hydrogeologic Units at IR Site 2: It appears that a key assumption made by the Navy is that the lower aquifer of the Alameda formation is protected by a continuous aquitard. However, it does not appear that the Navy has any data to support this conclusion in the footprint of the landfill. Please revise the RI Report to discuss what evidence the Navy has that the aquitard is continuous above the Alameda formation aquifer. Please present the results of the aquifer pump tests discussed in this section in the RI or provide a reference to the report in which the test data is presented. In addition,

please provide a summary table providing the number of groundwater samples collected from the Alameda formation groundwater, the dates these samples were collected, the analyses performed on the groundwater samples, and the results of these analyses. If the Navy has no data showing that the Alameda formation aquifer has not been impacted, please consider this to be a data gap and provide a sampling plan to assess the groundwater quality in the Alameda formation aquifer.

5. Figures 2-7 through 2-12 and Section 2.3.1.3.2, Geology of IR Site 2: It isn't clear why some poorly-graded sands, silty sands and clayey sands are identified as belonging to the Merritt Sands and some are identified as belonging to the Bay Sediments Unit (BSU) while others are identified as belonging to the Upper San Antonio Formation. Possibly, the differentiation was made on the basis of geotechnical or geochemical properties, though the methodology is not clear and no boring logs are presented. Please revise the RI Report to indicate how the Merritt Sands were differentiated from the BSU and Upper San Antonio Formation. Also, please include all of the boring logs for the wells and geotechnical borings installed at the West Beach Landfill and neighboring wetland in an Appendix to the RI Report or electronically on the accompanying CD.

6. Section 3, Site Characterization Activities: It does not appear that the Navy has conducted a methane survey at the landfill. Besides posing a hazard in and of itself, methane is also a carrier of other harmful compounds, e.g., vinyl chloride. In addition, as a key Navy assumption is that the landfill provides an optimal environment for biodegradation of organic contaminants, the presence of methane is necessary to buttress this case. Please revise the RI Report to indicate that the potential presence of methane gas, with trace contaminants, is a data gap. Please include a statement in Section 8, Conclusions and Recommendations, that the Navy will develop a plan to characterize the nature and extent of landfill gas production at the landfill, including analysis of surface and subsurface vapor samples for methane, oxygen, carbon dioxide, carbon monoxide, and the Method TO-15 volatile organics. Please include a tentative schedule for the preparation and implementation of this plan.

7. Section 3, Site Characterization Activities: The Navy has conducted special analysis for tri and tetra butyltin. Please revise the RI Report to indicate why the Navy was concerned that these compounds might be present in the landfill and surroundings.

8. Section 3, Site Characterization Activities: Page D-3 of Appendix D indicates that the surface of the landfill is covered with debris such as tires. Please revise the RI Report to indicate if this debris consist of waste illegally-disposed of at the landfill since closure, or represent waste that has become exposed since closure.

9. Section 3, Site Characterization Activities: Please include a topographic map of the landfill surface in the RI Report.

10. Figure 3-1: The locations of borings WB-1 through WB-4 are not shown on Figure 3-1, (the locations of WB-1 through WB-3 are shown of Figure 2-6). Figure 3-1 shows a

series of exterior data points (WB011 through WB019) that have no sampling data associated with them. Most of the boring locations shown on Figure 2-6 do not appear on Figure 3-1, though this is possibly because no soil samples were collected for chemical analyses from these borings. Please revise Figure 3-1 to include the locations of WB-1 through WB-4. Please revise the RI Report to include any data collected at locations WB-011 through WB-019 (geotechnical or chemical). If there were any chemical data collected from the borings installed throughout the site, please include that data in the RI Report. In addition, many of the subsurface sampling locations shown on Figure 3-2 included surface soil sampling, though many of these locations are not shown on Figure 3-1. Please update Figure 3-1 to include these locations (e.g., M019A, M020B, M023A, M023C, M024A, M036A, M037A, M038A, M039A, et cetera). Please also verify that these data were used in the human health and ecological risk assessments.

11. Table 4-8. Summary Statistics for Organics Data, Coastal Margin Surface Soil, pages 4-14 and 4-15: Table 3-2 (page 3-12) indicates that three surface samples were collected and analyzed for VOCs at sample locations M016-B, M016-E, and M024-A. Table 4-8, however, reports that only one sample was analyzed for VOCs. Resolve the discrepancy.

12. Section 4.1.2, Exploratory Data Analysis and Ambient Comparisons - Organics, page 4-36: The text on page 4-36 discusses the possible presence of "hot spots" with respect to screening constituents of potential concern (COPCs) against a 5% detection criteria. The text directs the reader to review the bubble plots in Appendix B to view whether hot spots are present or not. Rather than simply indicating the reader perform his/her own analysis for hot spots, revise the text to clearly indicate whether any hot spots are indicated by the bubble plots. Clearly discuss in the text of the document whether the presence of any hot spots indicate that constituents with low detection frequencies should not be eliminated as COPCs.

13. Section 6.3.1, Land-use Scenarios and Exposure Pathways, pages 6-5 and 6-6: Please explain why none of the discussion of exposure pathways specifically addresses the potential human contact with the wetland soils. Provide justification for the assumption that no walking trails will be constructed within the wetland areas not typically submerged under water. Without sufficient justification, exposure to wetland soils should be assessed in the risk assessment. Claims that pathways are expected to be diverted from the wetlands areas should be supported by conversations with appropriate agency personnel or other sources identifying what the typical recreational use set-back is likely to be for a wildlife refuge located near urban areas.

    Please explain why an exposure scenario consisting of a researcher conducting a long-term research project specifically in the wetland area was not considered in the risk assessment. Local researchers at nearby universities who conduct wetland studies could be contacted for estimates of exposure frequency and duration. The level of personal protective gear worn in the course of conducting research could also be discussed. Unless more thorough justification can be provided for eliminating all potential exposures in the

wetlands area, the IR Site 2 report should develop an appropriate scenario that involves contact with wetland soils, sediments, and water.

It also seems a reasonable and conservative assumption that exposure to wetland sediments and water could occur infrequently by recreational users. Children, in particular, can be expected to run off walking trails and, in the course of their explorations, contact sediment and water. Similarly, not all adults can be expected to remain on the designated trails. Rather than simply assuming that contact with wetland sediments and waters represents a negligible exposure pathway, the risk assessment should be revised to include these exposure. Alternatively, some sort of screening procedure or uncertainty analysis that evaluates these potential exposures would provide assurances that these exposures are, in fact, negligible. Further discussion and justification for eliminating all wetland area exposure pathways must be provided.

Page 6-5 states that external irradiation from radium isotopes in wetland sediments is assumed to be negligible due to the shielding effects of water. Provide a more thorough justification to support this statement, including identifying supporting reference source(s) for the shielding claim. Identify the minimum depth of water that will effectively shield a potential receptor from radiation emitted specifically by radium isotopes. Show that this minimum water depth is actually met at the site. Discuss why radiation from sediments in shallow areas or areas where the sediments are effectively damp mud is not addressed.

Please explain why inhalation exposure from VOCs in subsurface soil is not evaluated in the risk assessment, although VOCs in groundwater are evaluated semi-quantitatively using a screening procedure focusing on benzene. The text on page 6-6 states that the highest VOCs are likely found in the landfill material itself, rather than the contaminated soils and groundwater associated with the landfill. Such a statement seems only to emphasize the need to include VOCs in the risk assessment, even if transport models must be used to estimate the air concentrations of VOCs. Further, page 6-32 identifies gaseous dispersion to the atmosphere as being the major release route for uncontainerized VOCs in the landfill. EPA's *Soil Screening Guidance*, which the Alameda Point IR Site 2 report relies on for the estimation of soil particulate inhalation risks, as well as the EPA Region 9 preliminary remediation goals methodology, provide a means to screen soils for VOC inhalation risks. Other models are also available at EPA's National Center for Environmental Assessment (www.epa.gov/ncea/) to calculate air concentrations from VOCs in soil in landfills. Provide further explanation for as to inhalation of VOCs in soil (in this case subsurface soil, since surface VOC data is not available) is not included in the risk assessment.

14. Table 6-2, Contaminants of Potential Concern in the Landfill Exposure Area, page 6-8: There is a typographical error in the header for the last column of Table 6-2. The header should read "≥5% Detect Frequency" rather than "<5% Detect Frequency."

15. Table 6-4, Exposure Point Concentrations in Soil, page 6-12: Table 6-4 reports the Landfill Exposure Area 95% UCL for Radium-226 and Radium-228 to be 3.13 mg/kg and 0.375 mg/kg, respectively. Table B-9 in Appendix B, however, reports the 95% UCL concentrations of Radium-226 and Radium-228 in the Landfill Exposure Area to be 3.14 pCi/g and 0.247 pCi/g, respectively. Similarly, Table 6-4 reports the Coastal Margin 95% UCL for Radium-226 and Radium-228 to be 3.54 mg/kg and 0.375 mg/kg, respectively. Table B-13, however, reports the 95% UCL concentrations of Radium-226 and Radium-228 in the Coastal Margin to be 3.49 pCi/g and 0.222 pCi/g, respectively. Resolve these discrepancies, and correct the appropriate tables.

16. Section 6.3.2, Exposure Point Concentrations in Soil, page 6-13: A more detailed discussion of the rationale to exclude VOCs and certain metals from the risk assessment on the basis that they were infrequently analyzed is required. While it may not be possible to conduct a statistical analysis of the data given few data points, this is not, as a matter of course, sufficient justification for eliminating these constituents from the risk assessment. Provide a more detailed analysis that identifies how often VOCs and metals were detected in those few samples for which these constituents were analyzed. For VOCs, discuss any surface soil detects in comparison with nearby subsurface soil sample VOC results. Clarify whether any patterns or assumptions can be drawn for surface soil VOC detections in comparison to subsurface soil VOCs.

17. Section 6.4.2, Chemical Carcinogenic Effects, page 6-19: The text of page 6-19 indicates that the more conservative CalEPA toxicity criteria for certain PAHs and more conservative CalEPA equivalency factors for PAHs were <u>not</u> used in this risk assessment. Since the site is located in California, provide justification to explain why these California-specific risk assessment criteria and equivalency factors are not used in preference to EPA values. Simply not wishing to repeat the risk assessment using the more conservative values is not sufficient justification. The uncertainty section (Section 6.5.5) briefly mentions the use of EPA versus CalEPA toxicity criteria in the risk assessment. But the uncertainty analysis only seems to account for the difference in EPA and CalEPA cancer slope factors for benzo(a)pyrene. The differences in slope factors for the other affected PAHs do not appear to be addressed in the conclusion that using the CalEPA values would raise the risk result by only 10 percent. This issue needs to be addressed in greater detail and a more refined uncertainly analysis that clearly accounts for all toxicity value differences should be provided.

18. Table 6-9, Hazard Indices for Noncancer Effects, page 6-26: None of the values reported for the Occupational Worker or the Recreational Child in Table 6-9 correspond to those provided in the supporting risk assessment Appendix C tables. When the appropriate columns of Tables C-6, C-8, C-10, C-12, C-14, C-16, C-18, and C-20 are summed, those values do not match the hazard indices reported in Table 6-9. This means that the pathway-specific hazard indices and the discussion as to which constituents contribute the majority of the risk cannot be verified. This is a serious problem that must be addressed.

There are no tables in Appendix C that correspond to the Reasonable Maximum Exposure (RME) and Central Tendency Exposure (CTE) Recreational Adult. This means the hazard indices and the discussion as to which constituents contribute the majority of the risk cannot be verified. This deficiency must be addressed.

19. Table 6-10, Chemical Incremental Lifetime Cancer Risks, page 6-28: None of the values reported in Table 6-10 correspond to those provided in the supporting risk assessment Appendix C tables. When the appropriate columns of Tables C-7, C-9, C-11, C-13, C-15, C-17, C-19 and C-21 are summed, the results do not match the cancer risks reported in Table 6-10. This means the pathway-specific cancer risks and the discussion as to which constituents contribute the majority of the risk cannot be verified. This is a serious problem that must be addressed.

20. Table 6-11, Radionuclide Incremental Lifetime Cancer Risks: None of the values reported in Table 6-11 correspond to those provided in the supporting risk assessment Appendix C tables. When the appropriate columns of Tables C-7, C-9, C-11, C-13, C-15, C-17, C-19 and C-21 are summed, the results do not match the radionuclide cancer risks reported in Table 6-11. This means the pathway-specific cancer risks and the discussion as to which constituents contribute the majority of the risk cannot be verified. This is a serious problem that must be addressed.

21. Section 6.5.4, Assessment of Inhalation Risks for VOCs, page 6-32: Explain why a detection frequency of 10% is being used as a screening criteria for selection of potential organic groundwater constituents that may represent a potential inhalation hazard.

It is unclear why groundwater concentrations of VOCs are compared to Maximum Contaminant Levels (MCLs), when the purpose of the Section 6.5.4 screening exercise is to evaluate VOC exposure through inhalation. MCLs refer to consumption of drinking water.

It is also unclear why the VOC inhalation screening exercise is conducted only for benzene. Since the screening procedures to calculate an estimated VOC concentration at 1 meter from its groundwater source are very straightforward, and the input parameters are provided in EPA's *Soil Screening Guidance: Technical Background Document* (as well as EPA Region 9's web site for the PRG tables), explain why air concentrations are not calculated for all detected groundwater VOCs. Further explain why estimated VOC concentrations are not subsequently compared to readily available constituent-specific Reference concentrations (RfCs to evaluate noncancer effects) and unit risks (to evaluate cancer risks). This would provide a real measure of potential high-end hazard indices and cancer risks from volatilization of constituents from groundwater. If the screening procedure indicates risks exceeding de minimus levels, then more refined modeling is usually warranted. As it currently stands, the evaluation suggests that the inhalation risk to a calculated air concentration of benzene at 4 $\mu g/mg^3$ could be as high as 3.1×10^{-5}. The subsequent discussion that the screening methodology is highly conservative and therefore the real risk results are likely negligible is not compelling. The procedures to

evaluate VOCs entering the air from groundwater, as well as VOCs entering the air from subsurface soils (as discussed earlier in the review of Section 6.3.1), must be revisited and more thoroughly examined in this risk assessment.

22. Section 8.2, Conclusions from Risk Assessment Results, page 8-2: The risk assessment results predict carcinogenic risks to the RME occupational worker of 3E-05 from radiation exposure alone. The text on the bottom of page 8-2 states that this level of risk should be considered acceptable, in part, because not many occupational workers are expected to be exposed at the site. A higher risk is not more acceptable because few people will be exposed to that risk. It is suggested that this statement be deleted.

    It is not appropriate at this time to comment on the remainder of the conclusions related to the human health risk assessment at this time. However, the lack of comments should not be construed as acceptance of these conclusions. Constructive comments cannot be offered because of the apparent calculation errors identified in Appendix C that may have occurred, questions as to why certain exposure pathways and exposure scenarios were not considered in the risk assessment. Also at issue are the incorrect radiation risk results due to the use of out-of-date toxicity values. This is of major concern, since it appears that radiation may be the major risk driver at the site. When these errors and omissions are addressed, the conclusions section must be revised. The lack of comments on the human health risk assessment conclusions at this time should not be construed as acceptance of these conclusions.

23. Appendix C, Section C.1.7, Soil Ingestion (Radionuclide), page C-4: There is a typographical error in the soil ingestion equation. The multiplication sign in the middle of the equation should be corrected to be an addition sign.

24. Appendix C, Table C-1, Chemical Toxicity Values, page C-6: EPA Region 9 recommends use of 5.4E-04 mg/kg-d as the oral RfD for cadmium. This value is based on water exposures. Although the IR Site 2 risk assessment uses a more conservative RfD from IRIS intended to apply to food exposures, the risk assessment preparers may want to consider whether the EPA Region 9 convention should be followed.

    Identify the source of the 1.8E-02 mg/kg-d oral RfD for chromium in Table C-1. EPA Region 9 and IRIS recommend use of a 3.0E-03 mg/kg-d value for chromium +6 and 1.5E+00 mg/kg-d for chromium +3. It is standard practice in risk assessment to assume that, unless the speciation for chromium has been defined by analyses, all chromium is in the +6 state. Provide clarification of how the oral RfD for chromium was developed for the risk assessment.

    EPA Region 9 recommends use of a oral RfD for manganese of 2.4E-02 mg/kg-d, which is more conservative than the value used in the risk assessment. As explained in the background information used to develop the Region 9 PRGs, this modified value is intended, not only to account for environmental exposures, but to allot half of the

acceptable daily intake to food exposures. Explain why the IR Site 2 risk assessment has not followed this EPA Region 9 convention.

EPA Region 9 recommends use of a inhalation RfD for DDT of 5.0E-04 mg/kg-d based on route-to-route extrapolation. Explain why the IR Site 2 risk assessment has not followed this EPA Region 9 recommendation.

25. Appendix C, Table C-3, References and Values for Central Tendency Exposure Parameters, pages C-8 and C-9 AND Table C-4, References and Values for Reasonable Maximum Exposure Parameters, pages C-10 and C-11: The risk assessment uses an adult body weight of 71.8 kg based on EPA's 1997 *Exposure Factors Handbook*. Section 7.3 of the *Exposure Factors Handbook*, however, cautions the user that if the 71.8 kg average body weight is used instead of the customary 70 kg body weight typical of most risk assessments, then the risk assessor must be sure to appropriately adjust dose-response factors that use the 70 kg weight. For example, some of IRIS's cancer slope factors and unit risks use a 70 kg body weight factor in their derivation. Also, the IR Site 2 report uses a 70 kg value in converting inhalation reference concentrations (RfCs) to inhalation reference doses (RfDs) and a 70 kg value in converting IRIS unit risk values to inhalation slope factors. It is recommended that, rather than adjust toxicity values as necessary to accommodate a 71.8 kg body weight, the risk assessment be corrected to use the standard 70 kg body weight value. In any event, hazard indices and cancer risks have been underestimated by the use of the 71.8 kg body weight without the accompanying adjustment of appropriate toxicity values. The risk assessment must be corrected to reflect this issue.

Similarly, the risk assessment uses an carcinogenic averaging time of 75 years (to reflect average life expectancy), based on EPA's 1997 *Exposure Factors Handbook*. Section 8.2 of the *Exposure Factors Handbook*, however, explicitly states that if the 75 year averaging time is used instead of the typical 70 years, then the risk assessor must be sure to appropriately adjust dose-response factors that use a 70 year lifetime average. Some of IRIS's cancer slope factors and unit risks use a 70 year lifetime factor. It is recommended that, rather than adjust toxicity values as necessary to accommodate a 75 year lifetime, the risk assessment be corrected to use the standard 70 year value. In any event, cancer risks have been underestimated by the use of the 75 year averaging time without the accompanying adjustment of appropriate toxicity values. The risk assessment must be corrected to reflect this issue.

Further explanation must be provided for the derivation of the parameter values for the child and adult skin surface area. First, it appears that the reference cited for the value provided is incorrect, since EPA 1997a refers to the *Health Effects Assessment Summary Tables*. Even if it is assumed that the correct reference is to EPA 1997b (the *Exposure Factors Handbook*), the provided skin surface area values cannot be verified. Provide a more clear explanation of what body parts are assumed to be exposed and ensure that these body parts clearly correspond to the table of body parts provided in the *Exposure Factors Handbook*. It would be helpful to identify the specific tables in the *Exposure*

Factors Handbook that are being referenced to derive the child and adult skin surface area parameters.

Footnotes 9, 10, 11, and 12 in Tables C-3 and C-4 refer to several numbered "Equations." It is unclear where these equations are to be found. Equations corresponding to these could not be found in the EPA references cited. Revise the footnotes to clarify exactly how skin surface area has been calculated and what assumptions have been made with respect to this parameter.

Explain why recommendations for soil adherence factors (AF) from EPA's newer dermal exposure assessment guidance *Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment* (interim, May 2000) are not used in the risk assessment. Elsewhere, the IR Site 2 report has relied on this document as the latest guidance for dermal exposures. The RAGS Part E interim guidance recommends a soil AF of 0.07 mg/cm^2-d for the adult resident, rather than the 0.05 mg/cm^2-d value used in the risk assessment. Similarly, new RAGS Part E recommends a soil AF of 0.2 mg/cm^2-d for occupational exposures, rather than the 0.05 mg/cm^2-d value used in the risk assessment. Further the reference source and the explanatory footnote cited for the AF values in Table C-3 and C-4 appear incorrect, since they don't address soil adherence. The AF values should be corrected and risks recalculated.

The discussion under footnote "f" of Tables C-3 and C-4 indicate that parameter values for exposure frequency and exposure time are based on best professional judgement. The footnote directs the reader to contact appropriate agencies to determine whether this professional judgement is sound. This is unacceptable. The burden should not be on the reader to perform the necessary research to determine what might constitute a reasonable exposure time and duration. This is the role of the risk assessors conducting the risk assessment. The risk assessors preparing the IR Site 2 risk assessment should themselves contact appropriate agencies that oversee open space areas and wildlife refuges that are similar to the anticipated refuge that may be established at Alameda Point to discuss worker maintenance exposures and recreational use. It can then be verified whether the professional judgement used to estimate worker and recreational exposures are sufficiently representative of the future site. The agencies and individuals contacted should then be added to the references cited for the IR Site 2 report. Revise the risk assessment accordingly.

26. Appendix C, Section C.2.3, Dermal and Gastrointestinal Absorption Parameter Values and References, page C-11 and C-12: Table C-5 identifies a default dermal Absorption (ABS_{derm}) value of 0.01 for most inorganic constituents. The RAGS Part E document cited as the source of the ABS_{derm} term does not support this default value. In fact, the EPA guidance document explicitly states that no default ABS_{derm} values are recommended for inorganics. The EPA Region 9 PRG tables also indicate that a default ABS_{derm} value for inorganics is no longer being used. Revise the risk assessment to remove use of this default ABS_{derm} value for inorganics. Alternatively, identify the data source used to support this default value.

27. Appendix C, Tables C-6 through C-21, pages C-13 through C-35: There is a major problem with all the Appendix C tables used to show the chemical specific hazard quotients and cancer risks for soil ingestion, dust inhalation, and dermal absorption. When the equations in Section C.1 are used with the exposure point concentrations in Table 6-4, the exposure parameters in Tables C-3 or C-4, the toxicity values in Table C-1 and the dermal absorption values in Table C-5, none of the values in Tables C-6 through C-21 can be verified. As a rule, the values reported in the Appendix C tables are all lower than the values that are calculated using the above mentioned equations and parameter/data tables. The magnitude of the errors is not consistent, which would suggest a simple spreadsheet programming error. Instead, the errors in one column may be vary from less than one to more than four orders of magnitude from their actual values, suggesting a more serious programming error has occurred. All of the Appendix C tables must be reviewed to correct the underlying spreadsheet errors. Without correct values, it is impossible to perform spot checks to verify that the risk summaries and discussion provided in Section 6 of the text are accurate. This serious problem must be corrected.

The last column in Tables C-6 through C-21 is a "Sum" column intended, it is supposed, to show the total chemical-specific hazard index or cancer risk. However, several entries in the "Sum" column show "NA" (not applicable) even though values were calculated for a least one type of exposure pathway for that chemical. Page 6-25 states that, in this risk assessment, hazard indices are conservatively summed all constituents and all exposures, regardless of their actual target organs/effects. For carcinogens, the chemical-specific risks are always summed for all constituents and all exposures. Therefore, it is unclear why the "Sum" column is "NA" for any constituent having a hazard quotient or cancer risk in any of the individual exposure pathways. Tables C-6 through C-21 need to be corrected to resolve this inconsistency and apparent error.

The Appendix C tables that summarize cancer risk are clearly in a error with respect to the reporting of risks from Radium-226 and Radium-228 exposure. The cancer risks reported in these tables are several orders of magnitude too high. The problems with these tables must be resolved.

28. Section 7.2, COPEC Screening, page 7-2: The first paragraph describes the initial procedures used to identify COPECs, whereby chemical constituents detected in site soils were compared to analytical results for soil samples collected from unimpacted areas at Alameda Point (termed "ambient" conditions instead of background or reference conditions). For this comparison, statistical distributional tests were applied in an attempt to determine whether site soils were significantly different than ambient soils. The text states that areas representing ambient conditions were identified by PRC Environmental Management, Inc. (1997). It is inappropriate to screen out COPECs due to ambient contamination as the risk presented by ambient (and/or background) contamination is an important datum to be considered by the decision makers when they select an overall remedy for the facility. The Navy must present the total risk to the ecological receptors present at the site due to the hazardous constituents present at the site. The Navy may present, in a separate section, a discussion of the portion of the total risk at the site that is

due to what the Navy believes is its contribution to the site contamination (e.g., the portion of the actual risk due to Navy contamination and the portion of the risk due to ambient contamination). This information will likely be considered by the decision makers in selecting a remedy for the site. Please revise the ecological risk assessment to restore all COPECs that were eliminated based on a screening for ambient contamination.

29. Section 7.2, COPEC Screening, page 7-2: The second paragraph states that COPECs were compared to soil ecological screening levels (ESLs) developed by Los Alamos National Laboratory (LANL), selected over EPA soil screening levels and screening levels developed by Oak Ridge National Laboratory (ORNL). A table listing soil screening level values would be helpful in evaluating whether each of the LANL ESLs is truly the most applicable value that should be used to determine whether risk is posed to ecological receptors at the site. Therefore, please provide a table comparing the soil screening levels developed by LANL and ORNL.

30. Section 7.2, COPEC Screening, pages 2-3: It is not clear how the distinction between soil and sediment was made. It appears that the emphasis was on soil benchmarks, even though many of the "soils" evaluated in the areas listed (i.e., the landfill wetland and the coastal margin of IR 2) may be characteristic of sediments. The text should be revised to differentiate between areas of the site that were evaluated as soils or sediments.

31. Tables 7-2 through 7-5: The tables list only chemicals that were retained in the ERA and the justification for retaining these constituents. Please provide a list of chemicals that were screened out of the ERA and the justification for eliminating these chemicals.

32. Section 7.3, Baseline ERA, page 7-7: The text states that there is no complete pathway between groundwater and ecological receptors. This appears to contradict the text on page 7-3, which states that chemicals in groundwater were screened using benchmarks for marine surface water, because the first water bearing zone is tidally influenced and surfaces into the wetland ponds and the offshore area at Alameda Point. The report should be revised to clearly describe how exposure of ecological receptors to groundwater will be evaluated.

    Additionally, the ERA lacks a conceptual site model (CSM). The report should be revised to provide a conceptual site model as part of the problem formulation for the ERA so that receptor selection and the representativeness of existing data can be properly evaluated.

33. Table 7-7, page 7-13: The first row (Protection of benthic invertebrate populations) does not include any uncertainties or assumptions (last two columns) associated with bioassays using an amphipod and a polychaete. Toxicity tests and bioassays using site-derived media are fraught with limitations, uncertainties, and assumptions. Please revise the table to adequately summarize and identify these issues. In addition, the bioassay results section (Section 7.3.2.2) and the uncertainty section (Section 7.3.4) should be similarly revised to summarize and identify these issues.

34. Section 7.3.1, Identification of Assessment and Measurement Endpoints, page 7-15: The first paragraph states that tissue data included plant, mammal, invertebrate, and fish tissue. However, the derivation of exposure point concentrations from tissue data into the dose assessments for the applicable receptors is not provided (e.g., PCBs in crab ingested by great blue heron). Please revise the text to specifically describe and identify the usage (or non-usage) of plant, fish, invertebrate, and rodent tissue data.

35. Section 7.3.2.3, pages 7-45 through 7-50: This section only presents the results of comparisons of site-derived plant and rodent tissue with reference site plant and rodent tissue. No discussions or presentations are provided regarding invertebrate or fish tissue data results. Please revise the text to include detailed discussions of omitted tissue data. Additionally, given that a limited number of tissue samples were collected from the site, the bioaccumulation factors (BAFs) calculated using site-specific tissue and used to estimate exposures should be compared to literature BAFs for chemicals that bioaccumulate, and chemicals that are risk drivers.

36. Section 7.3.2.3, Plant and Animal Tissue Comparisons, pages 7-46 through 7-50: The rationale for conducting statistical tests to identify "significant differences" between the reference tissue data set and the IR Site 2 tissue data set is not apparent, given that the sample sizes are small. Between 9 and 12 samples were collected from the reference site, and only 6 samples were collected from IR Site 2. Further, the text on page 7-49 states that analytes with detection rates below 50% were excluded from analysis. The report should be revised to provide a table listing the range of concentrations of each chemical found in reference site tissue and in IR Site 2 tissue, and a notation for chemicals for which the maximum concentration in IR Site 2 tissue exceeds concentrations in reference tissue. Additionally, if statistical treatment of the data is conducted, the rationale and objectives should be clearly presented in this section.

37. Section 7.3.2.3, Plant and Animal Tissue Comparisons, page 7-47: The first full paragraph states that statistical distribution comparisons were made only when chemical constituents were detected at both the IR2 site and the reference site. Although not specifically stated, it appears that COPECs detected only in tissue collected from the IR2 site were eliminated from further consideration. In other words, it is difficult to determine whether these other COPECs were merely excluded from the distributional tests, or they were actually dropped from the risk assessment altogether. Please revise the text to more clearly describe the comparison process and the implications associated with exclusion of COPECs not detected at both areas. A summary table would also be helpful, showing the ranges of concentrations in tissue for each organism. In addition, please present figures showing box/whisker plots displaying side by side comparisons of chemical concentration data for site and reference mouse tissue samples for representative compounds.

38. Tables 7-21 and 7-22, pages 7-47 and 7-48: The significance and utility of the 6th column (Site 2>Reference?) is unclear, and the data sets for the reference area and IR Site 2 are not labeled. Please provide footnotes or text descriptions to clarify these issues. In

addition, it would be helpful to the reviewer if the values with statistical significance were highlighted as in preceding tables.

39. Section 7.3.2.3, Plant and Animal Tissue Comparisons, pages 7-48 and 7-49: The last paragraph on page 7-48 states that a variety of chemicals were excluded from analysis because they were not analyzed for in one of the tissue populations. Please provide some additional text regarding the implications of this oversight, and how this may contribute to the uncertainty of the risk assessment.

40. Section 7.3.2.4, Food Chain Dose Calculations, page 7-50: The third paragraph states that Navy TRVs for 20 chemicals were used in this risk assessment. No other available published or calculated TRVs were used to calculate hazard quotients. As evidenced by Tables 7-23 through 7-32, non-utilization of alternative TRVs results in the virtual elimination from further consideration of approximately two-thirds of the COPECs. This renders the risk characterization unusable. Please revise the risk assessment to include alternative TRVs for those COPECs for which no Navy TRVs exist.

41. Section 7.3.4, Uncertainty of the ERA, pages 7-72 through 7-79: Please revise the uncertainties section to incorporate uncertainties identified in the preceding comments.

42. Section 7.4, Conclusions of the ERA, page 7-82: Despite the significant implications associated with the lack of hazard quotients for a large proportion of the chemicals found at IR Site 2, the text presents a list of rationale for a recommendation of No Further Action. The first bullet states that the results of most lines of evidence were equivocal (i.e., confusing, uncertain, or undecided). It would appear that such a determination implies a high degree of uncertainty, and that such a high degree of uncertainty would apply to the final determination that no high risk exists at the site. The second bullet states that food chain doses only exceeded low TRVs; however, as stated above, food chain doses were not evaluated for two-thirds of the COPECs. The third bullet discusses risk drivers. The list of risk drivers may significantly change when the aforementioned TRV revisions are implemented. The fourth bullet states that a valued ecosystem is in place, with no evidence that it is being impacted by chemicals. Based on the information presented in the report, it is not clear that adverse biological or ecological effects are not taking place, particularly when the evidence being used is limited in scope and "equivocal" in nature, and when mortality is observed in sediment toxicity tests. Please revise the conclusions section to reflect changes to a revised ecological risk assessment in which TRVs are provided.

43. Appendix B, Surface Water Quality Plots: The box plots for the surface water samples contain data that disagrees with the data presented in Appendix E and Tables 4-14 and 4-15. For example, per Tables 4-14 and 4-15, no detectable concentrations of any PCB Aroclor was ever detected in a surface water sample. However Figures B-249 and B-250 indicate that there are PCBs present in the site surface water at 2000 times the tap water PRG for PCBs. This same apparent discrepancy holds for other organics. For aluminum, Table 4-14 indicates a maximum detected concentration of 3340 ug/l. Figure B-219

indicates a maximum detected value of around 780 ug/L. Please revise the RI Report to address these apparent discrepancies. If high detections were deleted from the data set because they were felt to be "outliers", please revise the RI Report to include a section on outliers that discusses the procedures used to identify outliers and lists the data points that were thought to be outliers. It will not be acceptable to eliminate data points simply because they are higher than most of the rest of the data.

44. Appendix B Tables: Indicating that there is no human health risk screening values for radioactive materials, HH=NA, in Figures B-25, B-28, and B-29 is misleading. Either calculate a health-based screening level for these elements using an approved risk methodology, or footnote the figures to indicate that radioactive elements are screened against background.

45. Appendix B Tables: No whiskers are shown on any of the box plots in Figures B-2 through B-76. Either show the whiskers or delete the reference to them in Section B.3.1. It is somewhat misleading to plot box plots for data sets with less than 4 values in them, so please review these plots and delete the plots that do not present robust data. It is not clear what the horizontal line drawn through some data points represents. Please revise the RI Report to explain what the line represents (detection limits?). On Figures B-219 through B-288, please delete the shading in the box plots as it makes them difficult to read when the figures are not color-copied. In addition, if it is practicable, please use different symbols for filtered and non-filtered data as this information is lost on non-color copies.

46. Appendix D: If possible, please revise Appendix D as follows:

    i. Please include rainfall data for the Oakland Airport, if available;
    ii. Please indicate what points were used as groundwater reference points;
    iii. Please show the groundwater contours in the landfill interior as dashed to indicate they are extrapolated;
    iv. Please include groundwater elevation data from monitoring wells MO-11-A, MO10-B, MO-12B, MO13-A, and MO-14-B, if available;
    v. Please modify Figure 3-2 to show the location of the slurry wall between MO36-A and the Bay;
    vi. In Section D3.3.1.3, please include a discussion of evaporation, hyper-salinity (chloride concentrations have been as high as 57,000 mg/l in the ponds, which is triple sea water chloride concentrations), and explain how groundwater can discharge to the ponds against a downward vertical gradient;

47. Appendix E: Benzene was detected at 11 micrograms per liter (ug/L) in a groundwater sample collected from monitoring well M037A. However, the fact that benzene is present in site groundwater at twice the applicable maximum contaminant level (MCL) cannot be determined from the RI Report without looking through 800 pages of tables containing approximately 100 data points per page that are not sorted by contaminant

type. Gross alpha and gross beta radiation concentrations are also present in groundwater at levels more than 50 times the applicable California MCLs. Please revise the RI Report to include a table showing all data that exceed the applicable MCL for groundwater and surface water or the U.S. EPA Region IX industrial preliminary remediation goal (PRG) for soil and sediment. If this table is to long to include in the text, an electronic version on CD would be acceptable.

Minor Comments:

1. Executive Summary, Page ES-1: The Executive Summary indicates that sites that are subject to CERCLA regulation are listed on the National Priority List (NPL). This is not completely accurate. In addition to NPL sites, all Navy sites covered by the Defense Environmental Restoration Program (DERP, codified in 10 USC Section 2701-2708 and 2810) are implemented subject to and in a manner consistent with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986 and CERCLA's implementing regulation, the "National Oil and Hazardous Substances Pollution Contingency Plan" (NCP, codified in 40 Code of Federal Regulations (CFR) 300). Thus, Alameda Point was subject to CERCLA even before it was added to the NPL. Please revise the RI Report to provide clarification on this point.

2. Section 1.2, Second Bullet: The RI Report indicates that after the FS is completed, a Record of Decision (ROD) may be issued. A ROD is a required document, even if the decision is that no action is required. A no-action ROD would document that the decision to take no action complied with CERCLA and would provide an analysis of the alternatives considered and would justify the action selected. The only reason a ROD would not be required would be that the site was found to not contain any contamination, which would mean the site was not part of the superfund site. Please revise the RI Report to indicate that a ROD will be issued to document the remedial decision reached at OU4A.

3. Appendix B Figures: Many of the figures presented in Appendix B (e.g., Figure B-301) are missing the vertical scale on the top box. Please review all of the figures and assure that all boxes displaying numerical data have scales.

4. Section 2.3.2.1, Native Flora and Fauna: Please revise the second paragraph of this section to clarify if the high in "high-salt marsh" refers to elevation or salinity.

5. Figure 3-2: This figure indicates that subsurface soil samples were collected at locations M036E-M039E, though no results for these locations are shown in any of the tables. Please verify if subsurface soil sampled were collected at these locations.

6. Table 4-23: Please provide the units for the data contained in the table.

7. Appendix B, Background Memorandum: The background memorandum presented on pages B-70 through B-77 references tables and a plate that are not included with the memorandum. Please revise the RI Report to include any tables, plates or figures that accompany this memorandum. In addition, two of the references (Ecology and Environment, 1993 and Gilbert, 1996) are letters that will be impossible to track down. If these letters contain important information used for determining ambient chemical concentrations, they should be included with the RI Report. Page B-78 is missing from the review copy forwarded to EPA and there appear to be at least 4 missing tables that are referenced in the memorandum.

8. Appendix B Tables and Figures:

   Table B1: The highlighting referenced in the table footnoting was not visible on the review copy.

   Figures B24, B26: Please revise the ordinate scale of the table to include the eco screening threshold value.

   Figure B-25, B100: Please clarify what the note, "Pre-Landfill" refers to on figure B-25. Also, there is a non-cancer endpoint PRG for uranium..

   Figures B-53, B59, B-128, B-134: Chlordane does have PRGs.

   Figure B-70, B-145: There are PRGs for Tributyltin oxide.

   Figure B-76: Endrin does have a PRG.

   Figures B-77 through B-151: Even looking at the color copies supplied on the CD, it is difficult to differentiate between soil and sediment locations. If possible, please show sediment sample locations as dashed circles. If practicable, i.e., if it can be done in a couple of hours, please include separate plots showing sediment results on the CD.

9. CD: Please include an electronic version of the text of the RI Report on the CD that will accompany the draft final version of the RI Report. The data tables on the CD are in Adobe Acrobat™ format, which cannot be sorted or edited. Please also include the tables on the CD in either a spreadsheet or database format for ease of use.

10. Table E, Page 398: Please check the units of the tissue metals concentrations. For example, sodium concentration in sample WBLW-W02 is given as 11.5%. It seems unlikely that a plant that is only 17% solids could contain 11.5% sodium. Similarly, sample WBLW-W07 is 10.1% solid, but contains 10% sodium, 4% potassium, 3% magnesium, 1% iron and presumably 15% chloride (based on the sodium concentration).

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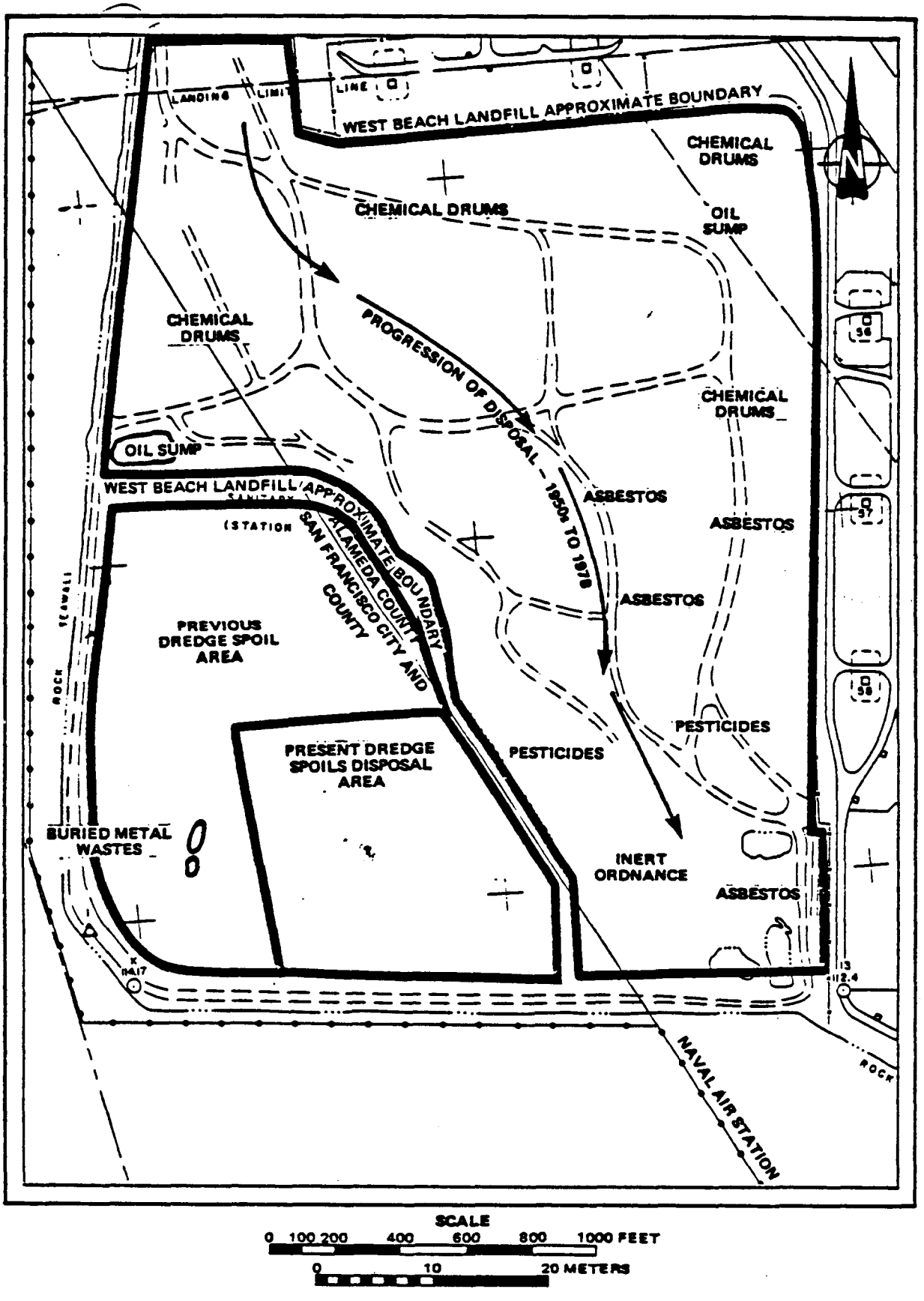

Figure 6–7. AREAS OF SUSPECTED HAZARDOUS WASTE DISPOSAL, WEST BEACH LANDFILL (SITE 1), NAS ALAMEDA