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CLEAN Contract N62474-88-D-5086
Contract Task Order 0236

**Subject: Moffett Federal Airfield Operable Unit 1 (OU1) Feasibility Study (FS)
Response to Comments**

Dear Messrs. Chao and Chan:

Enclosed are PRC Environmental Management, Inc.'s (PRC's) responses to comments received on the OU1 Revised Draft Final FS Report and Proposed Plan, dated December 20, 1994. The comments will be incorporated into the OU1 Final FS Report and Proposed Plan following regulatory agency concurrence with responses.

If you have any questions, please call us at (303) 295-1101.

Sincerely,

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Project Engineer

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Project Manager

Enclosure

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Mr. C. Joseph Chou, DTSC (2 copies)
Mr. Michael Bessette, RWQCB
Mr. Peter Strauss, MHB
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Ms. Sandy Olliges, NASA (2 copies)
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**MOFFETT FEDERAL AIRFIELD OU1 FS
RESPONSE TO COMMENTS
REVISED DRAFT FINAL FEASIBILITY STUDY REPORT**

1.0 INTRODUCTION

This report provides PRC Environmental Management Inc.'s (PRC's) responses to comments on the Operable Unit 1 (OU1) Revised Draft Final Feasibility Study (FS) Report dated December 20, 1994. The comments were provided by the U.S. Environmental Protection Agency (EPA), California Regional Water Quality Control Board (RWQCB), California EPA Department of Toxic Substances Control (DTSC), California Integrated Waste Management Board (CIWMB), Silicon Valley Toxics Coalition (SVTC), and the National Aeronautics and Space Administration (NASA). The comments will be incorporated into the Final OU1 FS Report and Proposed Plan after agency concurrence with the responses. The FS report developed remedial alternatives to address landfill refuse, leachate, surrounding groundwater, surface water, and landfill gas for the two landfills at OU1.

2.0 RESPONSES TO EPA COMMENTS

GENERAL COMMENTS

Comment 1: EPA appreciates that ecological considerations were taken into account at this OU and that additional quarters of groundwater samples were taken. The delay in finalizing this FS was worth it. In general, EPA agrees with the proposed Alternative 2 comprised of a native soil cap, an operation and maintenance (O&M) plan, ongoing groundwater monitoring, and a contingency plan. Based on EPA guidance (EPA 1991), the remedial action objectives (RAOs) for a landfill where a significant percentage of hazardous substances is in fill below the water table, and where lowering the water table is not practicable are:

- Prevent direct contact;
- Minimize erosion;
- Minimize infiltration; and,
- Control landfill gas emissions.

Preventing direct contact with the soil is achieved by Alternative 2 because it places a 3 foot native soil cap over the landfills. Erosion is minimized using the soil cap provided that there is ongoing O&M. Infiltration will not be significantly reduced by implementing a low permeability, multilayer cap; however, because of the low average yearly rainfall (on average 13 inches per year), infiltration does not appear to be a significant issue in the cap selection. Landfill gas emissions will be controlled using a passive venting system for Site 1.

Response: Comment noted.

Comment 2: The Navy should consider starting corrective action at Site 1 before contaminant levels are detected outside the landfill boundary. Two recommendations are provided. The first recommendation is to install sumps in existing leachate wells and pump these highest contaminant levels to portable (Baker) tanks before installing the soil cap. This action would address elevated water levels within the landfill early and reduce the positive pressure gradient from the landfill to the surrounding water bodies. The second recommendation is that after cap implementation, for 6 to 12 months, the Navy should monitor head changes to observe any differences. Head increase can be used as a criteria for triggering corrective action at Site 1. A significant head increase in the landfill indicates a strong pressure gradient that could potentially drive leachate beyond the landfill boundaries. The weight of 3 feet of soil (cap) could cause pore spaces to be filled and potentially accelerate the movement of contaminants.

Response: The Navy has revised the FS report to include a strategy that addresses this concern. During cap construction, the Navy will monitor leachate and surrounding groundwater elevations daily to monitor for possible head increases. If head levels rise in response to surcharging the landfill surface, the Navy will respond by pumping leachate until levels return to normal. Following cap construction, the Navy will continue daily leachate level monitoring for 2 weeks and then monitor levels monthly for the first year. Head levels will then be monitored quarterly as part of quarterly groundwater sampling. Following cap construction, leachate elevations should fall below prevailing levels because infiltration will be reduced.

Comment 3: The statement on page 24, first full paragraph, that the "Chemical analyses of surface water samples and groundwater samples from the wells surrounding the landfill do not indicate significant or consistent chemical releases..." should be rewritten to be less subjective. Data tabulated in the attached table (Attachment 1) show that leachate appears to be migrating beyond the landfill boundaries, particularly in the vicinity of Site 1 wells W1-2, W1-5, W1-8, and W1-12. It is recommended that a similar table to that attached be included in Section 1.3.2 and discussed. A comparison of the landfill perimeter groundwater concentrations should be made to EPA's National Ambient Water Quality Criteria (AWQC) or the RWQCB Basin Plan levels.

Response: The text has been rewritten to be less subjective and to clarify that analytical data consistently show that there are no plumes of leachate migrating from the landfill that require remediation. The text was also revised to state that the landfill is the likely source of the chemicals that have been infrequently detected in groundwater samples.

EPA's table presents leachate monitoring well detections and corresponding groundwater monitoring well detections in nearby perimeter wells. Presumably, the table postulates that if a chemical detected in groundwater has also been detected in nearby leachate, then leachate migration has occurred. The Navy agrees that, in general, the random low-level detections in groundwater samples likely result from the landfill. However, the specific detection pairs depicted in the table are not necessarily related. The table does not consider time periods between detection pairs. In several cases, the second groundwater detection does not occur until 4, 5, or 6 years after the leachate detection. In several additional cases, the groundwater detection occurs before the leachate detection. As a result, the table is misleading and the postulate that the specific leachate and groundwater detection pairs are related is difficult to substantiate.

The table, however, does indicate that some chemicals detected in groundwater samples may have originated from the landfill. However, the purpose of the FS is to determine whether groundwater remediation is necessary. The Navy believes that discussions in Sections 1.3.3 and 1.3.6 show that there are no plumes of leachate

migrating from the landfill that require remediation. Therefore, the Navy does not believe that a table similar to EPA's should be added to the document. However, text was added to clarify that the landfill is the likely source of the infrequent detections in groundwater. In addition, a comparison of the landfill perimeter groundwater concentrations to waste discharge limits (WDLs) was added to the FS report as requested.

SPECIFIC COMMENTS

Comment 4: Section 1.3.2, Page 27, Paragraph 2. The approximate depth of the stream meander channel should be provided and shown in cross section C-C' in Figure 7.

Response: The text has been revised to state that the stream meander channel has an approximate depth of 1 foot. However, the channel cannot be shown in the cross section because Cross Section C-C' is not drawn through the stream meander channel.

Comment 5: Section 1.3.2, Page 28, Paragraph 2. The designations for the two monitoring points should be provided along with their locations on a figure.

Response: The monitoring point designations (MP1-1, MP1-2) have been provided and their locations have been added to Figures 32 and 33.

Comment 6: Section 1.3.3.5, Page 40, Paragraph 1. It is implied that because the detection of total petroleum hydrocarbon (TPH) did not match the fuel standards, they do not indicate the presence of petroleum related compounds. The laboratory analytical test method 8015 uses gas chromatography which is unlikely to confuse naturally occurring indigenous organic compounds with man-made petroleum compounds. The more likely reason why the detected TPH compounds did not match the fuel standards is because of degradation. This section should be revised to state this.

Response: The document was revised to state that some chromatograms did not match the fuel standard because of either natural degradation of fuels or naturally occurring organic interferences. To avoid future misunderstandings, analytical laboratories

will report TPH data with a "Y" qualifier if the chromatogram is characteristic of petroleum products. In addition, laboratories will use a "Z" qualifier if the chromatogram shows peaks or patterns that are not characteristic of petroleum products.

Comment 7: Figure 23, Page 61. Both burn pits located on Figure 16 should also be placed on Figure 23.

Response: The burn pits have been placed on Figure 23 as requested.

Comment 8: Section 1.3.7.3, Page 78, Paragraph 1. The statement that "Only a few organic compounds..." should be revised to list specific compounds. As indicated on the attached table, there are 10 organic compounds that have been detected. The first sentence of the second paragraph should be revised to reflect this.

Response: The sentence has been revised as suggested.

Comment 9: Section 1.3.7.3, Page 78, Paragraph 5. Please indicate which analytical model was used to estimate leachate migration from Site 1.

Response: The migration of contaminants was modeled using an analytical solution to the advection-dispersion differential equation. This equation was derived based on conservation of mass principles. A reference has been added to the text which describes the equation derivation.

Comment 10: Section 1.4.3.2, Page 102, Paragraph 2. Please indicate which references were used to conclude that water quality criteria for cobalt are not developed.

Response: Several different criteria were reviewed to verify that water quality criteria for cobalt do not exist. These include National EPA AWQC (marine waters), the Water Quality Control Plan, San Francisco Bay Region water quality objectives for salt water, the California Enclosed Bays and Estuaries Plan, and Site-Specific Water Quality Objectives for the South San Francisco Bay. These references have been added to the FS report.

Comment 11: Section 1.5, TBCs. On a few occasions you refer to to be considered (TBC) guidance. Be aware that when you make a statement that a provision is a TBC, it becomes an enforceable standard which must be complied with. The National Oil and Hazardous Substance Pollution Contingency Plan (NCP) makes clear that the selection of TBCs as performance standards is discretionary; not mandatory. Moreover, the selection of a TBC as a requirement to be met as part of the remedy must be justified (and defended) on a case-specific basis. The administrative record must clearly document why a TBC has been chosen.

Response: Comment noted.

Comment 12: Section 1.5.1, Table 9.

(1a) 40 CFR 258.50-258.59: Not an applicable or relevant and appropriate requirement (ARAR) if you can cite with specificity state regulations that are stricter than 40 Code of Federal Regulations (CFR) 258.50-59. Please state which state regulations are more strict. Note: The NCP considers federally authorized state programs to be federal ARARs.

The rationale for selecting State Resource Conservation and Recovery Act (RCRA) Subtitle D over federal regulations that are regulations is incomplete. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires remedies to comply with state requirements that are more stringent than federal requirements. State requirements are more stringent than federal requirements if the state program has federal authorization and the state requirements are "at least" as stringent. In this instance, the state's RCRA program is federally authorized, thus making it more stringent than the federal requirements.

Response: Additional rationale has been provided to support identifying state requirements as more stringent than the federal requirements. The table has been revised to state that, according to EPA, the state's RCRA program is more stringent than the federal requirements because it is federally authorized.

(2) 40 CFR Part 143: Is not an ARAR but not for the reason cited. Secondary drinking water regulations consist primarily of secondary maximum contaminant levels (SMCLs) for specific contaminants or for water characteristics that may affect the aesthetic qualities of drinking water (that is, color, odor, and taste). SMCLs are nonenforceable limits intended as guidelines for use by states in regulating water supplies.

Response: The table has been revised to identify SMCLs as potential TBCs. However, the listed rationale for not considering SMCLs is correct because the groundwater at OUI is not a water supply.

(3) 23 CCR 2510-2601: To be Determined. Please make reference to Appendix J, where the State provisions that apply are identified with specificity.

Response: The reference to Appendix J has been added as suggested.

(4) Basin Plan: Not an ARAR. The Basin Plan is an enabling statute which lays out the Board's authorities. It is not an environmental law that sets out environmental standards. Please clarify that this was included at RWQCB's request.

Response: The basin plan is identified as a TBC in the table because TBCs are nonenforceable standards. The text has been clarified concerning RWQCB requests.

(5) Resolution 92-49: This resolution has been promulgated.

Response: The text has been revised to include Resolution 92-49 as an ARAR and to be consistent with the OUI FS report.

Comment 13: Section 1.5.1, Page 115, Paragraph 1. This paragraph is very confusing. Are you saying the Basin Plan numerical standards were compared with EPA's water quality standards pursuant to Clean Water Act (CWA) Section 303 and that you applied the more stringent standard? Also, why are you considering the Basin Plan a TBC?

Response: The text has been revised to state that Basin Plan numerical standards were compared with EPA's water quality standards and the more stringent (lower) standard was applied.

The basin plan water quality objectives are labeled TBC rather than ARARs because it contains nonenforceable standards.

Comment 14: Section 1.5.1, Page 115, Landfill Gas, Paragraph 1, Sentence 5. Which federal and state regulations are you referring to? Be specific.

Response: The text has been revised to refer to state and federal solid waste landfill regulations.

Comment 15: Section 1.5.3, Page 122, Paragraph 2. Paragraph is confusing. Does Table 12 identify only the capping and post closure monitoring activity ARARs? You cannot circumvent an ARAR (that is, closure requirements) simply because you have requirements of an ARAR, closure activities, incorporated in a federal facility agreement (FFA) schedule. Please reword this section to clarify this point.

Response: The document has been substantially revised to identify Title 14 California Code of Regulations (14 CCR) regulations for capping and post-closure monitoring as applicable. Please see the response to Comment 111.

Comment 16: Section 1.5.3, Tables 11, 12.

(1) California Fish and Game Code: Not an ARAR because it is not stricter than the federal counterpart.

Response: Table 11 does not identify California Fish and Game Code as an ARAR. Revisions are not necessary.

(2) Regulations cited for Capping, Landfill Closure, Post Closure, Groundwater Monitoring, Methane Gas Emission Monitoring, and Waste Management: The statutes and regulations cited as ARARs are very general. Please make reference to

Appendix J, where state citations are more specific and state counterparts to the particular section or sections of the federal statute or regulations are presented. It is important that ARARs are clearly identified because all provisions which have been determined to be ARARs must be complied with or waived.

Response: Please see the response to Comment 111.

(3) 40 CFR Part 403: Publicly owned treatment works (POTWs) are considered offsite for ARAR purposes. Offsite discharges must comply with the universe of laws.

Response: The text has been revised in accordance with EPA guidance (EPA 1988).

(4) California Water Code Division 7, Section 13000 (Porter-Cologne Water Quality Control Act): The statement that the Basin Plan is an ARAR is not correct. While portions of the Basin plan may be ARARs (for example, duly promulgated numeric water quality objectives, Resolution 68-16), the Basin Plan as a whole is not. The specific portions of the Basin Plan proposed to be ARARs should be identified. Please clarify that this was included at RWQCB's request.

Response: The table has been revised to indicate that the Basin Plan is not a potential ARAR. In addition, the table has been revised to identify portions of the Basin Plan as potential ARARs. RWQCB's request did not pertain to surface water discharges. No respective revisions are necessary.

(5) Water Quality Control Plan, San Francisco Bay, Region 2: The specific portions of the plan proposed as ARARs should be identified. Also, provide a citation.

Response: The table has been revised to identify specific portions and citations from the Basin Plan as potential ARARs.

(6) Resolution 92-49: Has been promulgated.

Response: The table has been revised to be consistent with the OUS FS report.

(7) Title 23 CCR Division 3, Chapter 15: Only specific portions of Chapter 15 are ARARs. Identify with a reference to Appendix J.

Response: The table has been revised accordingly.

(8) 40 CFR 52 (Air Emissions): What specific provisions of 40 CFR 52, 60 and 61 are ARARs? If these are not to be determined until the record of decision (ROD), say so.

Response: As indicated in the text on page 122 and on the table, all the action-specific ARARs in the table are identified as potential ARARs. Explicit action-specific ARARs are identified in Appendix J following the alternative analysis according to EPA guidance (EPA 1988).

(9) 40 CFR 230-233 and 320-330: Only substantive requirements of a permit need to be complied with. Many of the provisions cited relate to administrative requirements of a permit. Identify with specificity. If these are not to be determined until the ROD, say so.

Response: As indicated in the text on Page 122 and on the table, all the action-specific ARARs in the table are identified as potential ARARs. Explicit action-specific ARARs are identified in Appendix J following the alternative analysis according to EPA guidance (EPA 1988).

Comment 17: Section 1.5.3, Page 136, Paragraph 2. You state: "The table states that the federal and state nonhazardous solid waste regulations are more appropriate for capping. . ." The rationale for selecting state over federal ARARs is incomplete.

Response: The rationale for selecting state regulations over federal regulations is presented in the third paragraph. The text has been clarified to indicate that the rationale presented in the second paragraph is for selecting solid waste landfill closure regulations as more appropriate than hazardous waste landfill closure regulations.

Comment 18: Section 4.2.3, Page 165, Last Paragraph. Reference to Subchapter 15 is incorrect and should be revised to read Chapter 15.

Response: The reference has been revised.

Comment 19: Table 16, Page 173 and Table 17, Page 175. It is recommended that revision to these tables be considered after remedial action starts to include quarterly sampling of volatile organic compounds (VOCs) in all wells for up to one year. Once the caps are installed, head increases could potentially occur and in turn cause offsite leachate migration. See Comment 2.

Response: The table has been revised as suggested.

Comment 20: Section 5.2.2.2, Page 191, Paragraph 2. The results of the U.S. Army Corps of Engineers (COE) wetlands delineation need to be presented in the final FS report. These results could affect the contingency strategy which involves digging the groundwater collection trench at the northern end of Site 1. If the area is considered a wetland by the COE, this will certainly be an issue during remedial action. It would probably trigger Executive Order 11990 (Protection of Wetlands).

Response: The Navy and regulatory agencies have determined that it is necessary to cap the landfill to protect the environment. Filling small segments of three potential wetlands will be required to cap. Therefore, the Navy is pursuing a Nationwide Permit (NWP) 38 with the COE. This COE permit allows for fill to be placed into wetlands if filling is associated with the remediation of hazardous and toxic waste and should not affect the contingency strategy or the FS. The Navy's preliminary delineation results for the three potential OUI wetland areas are described below along with pertinent COE information.

The first area (Area 1) is approximately 1.25 acres and is southwest of the Site 1 landfill. This area is within the Site 1 fenced area, but is not located on the landfill surface. This area was found to be a wetland with hydrophytic vegetation, appropriate hydrology, and hydric soils. Since the outer edge of this area abuts the landfill, the edge will require fill during capping. The Navy has contacted the COE

San Francisco Office to determine the applicability of the NWP 38 for cleanup of hazardous and toxic waste. The COE agreed that NWP 38 is applicable for OUI and that it should be pursued. The Navy is arranging a site visit with COE representatives. The Navy will submit delineation information to the COE along with design plans that specify the areas proposed for filling. The COE will then make the jurisdictional determination regarding the wetland and the Navy will proceed with the NWP 38 for the proposed capping activity. The NWP process will require input from all agencies deemed appropriate by the COE prior to the permit decision.

The second area (Area 2) considered was a 0.05-acre crescent-shaped area on the landfill, behind the former pistol range. This area was not delineated as a wetland since hydric soils were absent. This is a low-lying area on the landfill where water may pond periodically. This area will be completely filled during capping. Discharges into this area are not expected to require further scrutiny since hydric soils are absent and it is not considered a wetland under the 1987 COE Wetlands Delineation Manual.

The third area is the stormwater retention pond (SWRP). The majority of this site is not vegetated, except for the fringe of vegetation along the pond edges (Area 3). The southern fringe of the SWRP adjacent to the landfill (approximately 0.4 acres) will require filling to construct the subsurface collection trench and cap shoulder. The rest of the fringe would not be affected. The vegetated SWRP fringe may qualify under the technical criteria as a wetland. If the COE deems Area 3 a jurisdictional wetland area, the impacted acreage would also be included under the NWP 38 permit with Area 1. Under the NWP 38 permit, mitigation may be deemed appropriate because of the presence of pickleweed. Mitigation would likely consist of restoration or enhancement of another pickleweed habitat.

Comment 21: Section 6.2, Page 204, Paragraph 1. Statements such as "leachate is not migrating" should be removed. Indications are that leachate is migrating but not at elevated concentrations.

Response: These statements have been removed. The text has been revised to clarify that groundwater remediation is not necessary because leachate plumes are not migrating from the landfill.

Comment 22: Section 7.0, Page 210, Paragraph 1. The first sentence should be revised to read, "Landfill capping combined with an ongoing monitoring and maintenance program, and backed with a contingency plan is protective of the ..."

Response: The text has been revised as suggested.

EDITORIAL COMMENTS

Comment 23: Please submit documents on doubled-sided copies whenever possible.

Response: Comment noted.

Comment 24: Table 2, Page 38. At the bottom of this table, a note says that qualifiers are defined in Appendix C. This is incorrect. Please include qualifiers in Appendix C.

Response: Qualifiers have been included as suggested

Comment 25: Pages 24, 25, 26 (Pages 82, 83, 84). These figures appear mislabelled. Should they have a title above the graph showing "Site 2" instead of "Site 1?"

Response: These figures have been relabeled as suggested.

Comment 26: Section 1.4.1.3, Page 94. In the estimated hazard index (HI) value for a residential child at Site 2, the average HI value is greater than the reasonable maximum exposure (RME) value. This appears counterintuitive. Is this incorrect?

Response: According to Table 7.6-1 in the OUI RI (IT 1993), the average HI is 0.61 and the RME HI is 0.82 for a residential child. The text has been revised accordingly.

Comment 27: Table 9, Page 113. Should this citation be Resolution 92-42 or 92-49?

Response: The resolution citation has been corrected to 92-49.

Comment 28: Table 13, Page 147. Should the title read "Reuse" versus "Refuse?"

Response: The title has been corrected.

Comment 29: Section 4.2.4, Page 174, Paragraph 1. The second sentence is unclear and should be rewritten to read "...gas monitoring wells...".

Response: The sentence has been revised as suggested.

COMMENTS ON THE PROPOSED PLAN

Comment 30: Page 1, Introduction, Paragraph 2. Please mention the contingency plan (subsurface collection trench) in this description of the remedy.

Response: The text has been revised as suggested.

Comment 31: Page 2, Description of the Problem, Paragraph 2. Please be consistent with the FS and use cubic yards as the units to describe the size of the landfill contents, as opposed to tons.

Response: The text has been revised as suggested.

Comment 32: Page 4, Description of the Problem, Paragraph 9. Exposure pathways associated with groundwater did not include ingestion, as stated here. Please correct this.

Response: Exposure pathways associated with groundwater included ingestion of soil irrigated with groundwater. The Proposed Plan has been clarified.

Comment 33: Page 4, Description of the Problem, Paragraph 10. "This remedy strategy does not require thorough sampling of landfill content or an assessment of associated risks." This may be true, but since risks were calculated based on what sampling was performed, these risks should be presented (as shown in the FS, Section 1.4.1.3).

Response: The Proposed Plan states that a risk assessment was completed for OUI and identifies that various exposure pathways were considered when developing the remedy. However, the Proposed Plan also explains that it is difficult and impractical to accurately determine contaminant concentrations at landfills. It then explains that, because of the difficulty associated with characterizing waste, it is difficult to calculate reliable risk values.

Quantified risks were not presented to avoid confusion and to promote the understanding of the presumptive remedy concept. Previously, the quantified risk calculations presented in the RI/FS reports caused much confusion about the basis for remediation at OUI. Discussing these results in the Proposed Plan could cause similar confusion among the public. Therefore, the text was not revised to include calculated risks because these results were not used in the development or evaluation of remedial alternatives.

Comment 34: Page 5, Summary of Alternatives, Paragraph 1. Alternative 2 should include the contingency plan (groundwater collection trench).

Response: The discussion was added as suggested.

Comment 35: Page 5, Summary of Alternatives, Paragraph 3. In describing when corrective actions will occur, exceeding groundwater protection standards should be supplemented with an explanation of increased head pressure and how it is an indication of future accelerated movement of contamination and leachate migration.

Response: The text has been revised to reflect the strategy discussed in the response to Comment 2. In addition, the text has been revised to explain that the potential for elevated head levels is primarily a short-term concern. Over the long term, leachate elevations should fall below prevailing levels because infiltration will be reduced.

3.0 RESPONSES TO RWQCB COMMENTS

GENERAL COMMENTS

Comment 36: The discussion of hydraulic containment of leachate within the Site 1 refuse area should be caveated by the fact that the approximately 4 feet thick silty clay horizon underlying the refuse area is known to be discontinuous (see boring log W1-17, IT 1993a) and, in turn, is underlain by a sandy gravel (Figure 6, Site 1 - cross section B-B'). Horizontal groundwater flow rates based on discrete soil samples with low, $1E-08$ centimeters per second (cm/sec), hydraulic conductivity values in an area of complex interfingering of fine- and course-grained geology may not be representative of the actual hydraulic conditions that may vary by several orders of magnitude. Site 2 containment based on similar hydraulic conductivity values and geology also needs to be caveated.

Response: The boring log from SBI-17 does not show a discontinuous, 4-foot-thick silty clay area underlying the refuse area. As shown in the SBI-17 boring log, there was no recovery from 4 to 14 feet because concrete was jammed in the core barrel (PRC 1993). Even though there was no recovery from this interval, it is extremely likely that bay muds exist between the bottom of refuse (approximately 5 feet below ground surface [bgs]) and the A1-aquifer (14 feet bgs). Bay muds are likely present because hand augering from the SWRP basin to six feet bgs at a location near SBI-17 found 6 feet of native bay muds. This interval corresponds to 5 feet to 11 feet bgs on boring log SBI-17.

The FS report discusses contaminant transport modeling to illustrate migration potential from the Site 1 landfill. To account for potential variation in hydraulic conductivities, a sensitivity analysis was conducted. The model was run with several orders of magnitude variation in hydraulic conductivities as well as differing gradients. These results were presented in the report.

Comment 37a: Please provide an explanation why a slurry wall containment has not been considered as a remedial alternative.

Response: An explanation has been added to the report as suggested. Based on groundwater elevations and analytical data, it appears that adequate containment is currently achieved through the native materials present at the site. However, the Navy is proposing to enhance the natural barrier by installing a subsurface collection trench and liner along the northern boundary of Site 1. The trench, as a contingency, can intercept the leachate before it reaches the SWRP in the unlikely event leachate migrates through the natural clay. An impermeable liner will be installed on the downgradient wall of the trench to enhance containment offered by the surrounding native bay muds.

Comment 37b: Explain why the cap as described in 23 CCR, Division 3, Chapter 15, Article 2581(a)(1) and (2) has not been considered as a remedial alternative, since it would be an intermediate between the proposed native soil cap and the proposed multilayer cap.

Response: The Alternative 3 cap includes the same layers that are specified as minimum requirements in 23 CCR. Two additional, necessary layers have been added to the minimum requirements in 23 CCR. However, the cap described in 23 CCR Chapter 15 is essentially equivalent to Alternative 3.

Both caps are multilayer, low-permeability caps. The 23 CCR Chapter 15 minimum cap requirements consist of a 2-foot-thick foundation layer beneath a 1-foot low permeability clay layer, which is under a 1-foot layer of cover soil. Alternative 3 includes these three layers. In addition, Alternative 3 includes a gas venting layer at Site 1. This layer is necessary to prevent gas pressure from building up beneath the low permeability layer and causing horizontal gas migration. Alternative 3 also includes a drainage layer above the barrier layer. Drainage layers are typically installed above barrier layers to prevent hydraulic head buildup and prevent associated seepage through the layer.

The FS report evaluates the need for low permeability caps, with the understanding that there are several configurations of layer type and design available. Single layer caps were found to be more feasible than low permeability caps for OUI. Rationale for selecting a single layer cap rather than the cap depicted in 23 CCR Chapter 15 (or equivalent) include:

1. *A native, single layer cap reduces infiltration to rates similar to rates achieved by a low permeability layer due to MFA's climate.*
2. *Leachate plumes do not exist and, based on modeling, are not expected to occur in the future. Therefore, minimizing infiltration is not a controlling factor.*
3. *Employing a low permeability cap has the potential for increasing horizontal subsurface gas migration.*
4. *A multilayer, low permeability cap would be more difficult to construct.*
5. *A multilayer, low permeability cap would be more costly.*
6. *At Site 1, leachate will exist regardless of cap type because refuse is below the water table. In addition, since waste is saturated below the water table, other technologies will be required to mitigate leachate migration. If leachate plumes migrate, a multilayer cap would not enhance the effectiveness of hydraulic control or significantly decrease the amount of water requiring extraction and treatment.*
7. *If hydraulic control is implemented, leachate extraction would increase refuse decomposition, gas generation, and settlement since waste is saturated. Settlement can compromise the integrity of the barrier layer.*

Comment 38: Please provide specific time frames for the monitoring of leachate migration and how the monies for operation, maintenance and, if necessary, contingency actions will be secured.

Response: *Time frames are provided in Section 4.2.3 of the report.*

Financial assurance information is not necessary for inclusion in the FS report. The requirement for owners and operators to demonstrate the availability of financial resources to conduct closure and postclosure maintenance activities apply to landfills seeking permits. Therefore, financial responsibility requirements are not applicable, relevant, or appropriate for OUI.

Comment 39: Please clarify the Navy's understanding regarding the classification of the landfills at Site 1 and Site 2. The RWQCB's position is that classification is not applicable if the landfills are not leaking but if leakage is detected the landfill must be classified and closed in accordance with 23 CCR, Division 3, Chapter 15. Additionally, please note that Chapter 15 is an action-specific ARAR for both landfills and that bonding for closure and post closure is required.

Response: The Navy believes that landfill classification is not necessary. Classification relates to landfill siting, design, construction, and operations, which has already occurred at OUI. Classification has no significance to the FS report since closure requirements are the same for all classifications.

Regarding bonding for closure and postclosure, please see the response to Comment 38.

Comment 40: Please clarify soil capping in the area of the former pistol range and if the risk assessment addressed such activities in the future.

Response: The landfill cap will isolate landfill refuse and eliminate exposure pathways to pistol range receptors. Any enclosure placed on the landfill associated with the pistol range will require a methane monitor with alarms to mitigate explosion hazards. Specific uses of the pistol range will be discussed with NASA during the remedial design (RD).

Comment 41: Please present a Groundwater Well Status Table for Sites 1 and 2, including, but not limited to, the following information: identification number, installation dates, phase of investigation, aquifer screened, depth of first encountered water, static water table, total depth explored, bottom of well, screened interval, slot size, diameter, and well function.

Response: This requested information is contained in RI reports, quarterly sampling reports, and additional investigation technical memoranda. The information has been referenced throughout the FS report.

SPECIFIC COMMENTS

Comment 42: Page 3, Section 1.2. This discussion should reference the location of the adjacent Mountain View Landfill.

Response: The location of the Mountain View Landfill does not affect remedy selection.

Comment 43: Page 10, Section 1.3.1, 1st Paragraph. The statement that average ground surface elevations are 1 to 2 feet below mean sea level (msl) does not correlate with the elevation drawn in the cross sections for Site 1, which appear to approximately average around 6 feet above msl.

Response: The text was revised to state the average ground surface elevation is approximately 6 feet above msl.

Comment 44: Page 11, Figure 4. Locate the drainage ditch on this figure. Additionally, please label the channel as formerly located in the position shown.

Response: The figure was revised as suggested.

Comment 45: Page 12, Section 1.3.1, 1st Paragraph. Include a physical description of the pistol range.

Response: A physical description has been added. The pistol range is a U-shaped berm approximately 25 feet high.

Comment 46: Page 16, Site 1, Cross Section C-C'. Cross section line C-C' appears to intersect the pistol range but is not indicated on the cross section.

Response: The cross section was revised to indicate the pistol range.

Comment 47: Page 21, Section 1.3.2, 4th Paragraph. The statement "Water levels in the leachate are greater than any of the surrounding water bodies . . ." seems to contradict any earlier statement on Page 14, Section 1.3.2, 1st Paragraph which states "Water level elevations within the landfill indicate that refuse is saturated with water to about the same elevation as groundwater outside the landfills." Please elucidate.

Response: The text on Page 21 is correct. The text on Page 14 was corrected for consistency.

Comment 48: Page 23, Figure 11. The conceptual model should show the interfingering of the fine and coarse-grained units. Please label the boundary of the "fill soils with refuse." All vertical and horizontal groundwater flow arrows should be labeled as such in a legend.

Response: *The figure was revised as suggested.*

Comment 49: Page 24, Section 1.3.2, 1st Paragraph. Please consider revising impermeable usage with semi-permeable.

Response: *The term "impermeable" has been replaced with "low permeability."*

Comment 50: Page 24, Section 1.3.2, 3rd Paragraph. The statement "In general, groundwater in the A1-aquifer zone in the northern part of MFA flows in the direction of the storm sewer lift station (north to south, in the direction of Building 191)" appears to contradict Figure 13 Site 1 - A1 Aquifer Potentiometric Surface Map, please elucidate.

Response: *The general flow direction indicated on the potentiometric surface map (Figure 13) is consistent with the text.*

Comment 51: Page 25, Section 1.3.2, Figure 12. Please differentiate wells screened in the leachate aquifer from wells screened in other aquifers.

Response: *The figure was revised as suggested.*

Comment 52: Page 26, Section 1.3.2, Figure 13. This figure should include its full title of "Site 1 A1 Aquifer Potentiometric Surface Map." Revise contour lines with equal contour intervals. Please differentiate wells screened in the A1 aquifer from wells screened in other aquifers.

Response: *The figure was revised as suggested.*

Comment 53: Page 27, Section 1.3.2, 1st Paragraph. How was the gradient between the A1 and A2 aquifers "estimated?" As seen in Figure 13, the A1 aquifer potentiometric surface for February 1994 varies over 0.6 feet between the locations of W1-14 (-2.44 feet msl, given) and W1-7 (approximately -1.78 feet msl projected) which is approximately 2.5 times greater than the 0.23 feet difference estimated. The wells are stated as "nearby" and (as with all qualifiers) the measured distance of

approximately 120 feet should be stated. A projected piezometric differentiation between the A1 and A2 aquifers of approximately 0.23 feet based on wells 120 feet away from each other is very questionable. Additionally, the cross sections do not show A1 and A2 delineation. Please revise.

Describe the following: the November 1993 precipitation characterization and dry periods and wet seasons. Page 78, Section 1.3.7.3 states "Approximately 80 percent of the rainfall occurs between the months of November and March with an average of 7 to 10 days of rain each month." If November 1993 is a wet season hydrograph the upward gradient is stated to diminish or disappear, please elucidate.

Response: The vertical gradient was estimated based on data collected in November 1993, which indicated a difference of 0.23 feet between the wells. The 0.6-foot variation discussed in the comment is from February 1994. The February 1994 data also indicate that upward gradients may exist in the area. The A1- and A2-aquifer wells used in the estimation are 120 feet apart and are questionable to use; however, they are the closest A1/A2 well pair at Site 1.

Vertical A1/A2 gradients do not influence the remediation strategy and nested piezometers are not necessary. These calculations were provided as general information only. However, vertical gradient estimates have been removed from the report. The uppermost, A1-aquifer zone will continue to be monitored for any leachate migration.

The cross sections have been revised to show A1 and A2 delineation.

Comment 54: Page 28, Section 1.3.2, 1st Paragraph Please define modeling clay or preferably delete this term.

Response: The term has been deleted.

Comment 55: Page 31, Figure 14. Please indicate the boundaries of Sites 1 and 2.

Response: The figure has been revised as suggested.

Comment 56: Page 33, Table 1. Include the analytical method for each analysis and filter size.

Response: The table has been revised as suggested.

Comment 57: Page 35, Section 1.3.3.2. Please indicate the locations of the collection points for the embankment soil samples on a figure.

Response: The FS has been revised to show collection point locations.

Comment 58: Page 35, Section 1.3.3.3. Please indicate the locations of the collection points for perimeter soil samples on a figure.

Response: The FS has been revised to show collection point locations.

Comment 59: Page 38, Table 2. Include detection limits for each analysis.

Response: This information is contained in RI reports, quarterly sampling reports, and additional investigation technical memoranda and has been referenced throughout the FS report.

Comment 60: Page 39, Section 1.3.3.5, 3rd Paragraph. This statement "Acetone and bis(2-ethylhexyl)phthalate are common laboratory contaminants and were detected frequently during the RI in several media throughout Site 1 as well as in blank samples." appears to be discounting the statement on page 34, Section 1.3.3.2, 2nd Paragraph "Although acetone and 2-butanone are common laboratory contaminants, personnel interviews indicate that these solvents may have been disposed of in the landfill (IT 1993a)."

Response: The above statements are contradictory and are subject to different interpretations. The Navy believes that the widespread RI detections of these compounds are likely the result of lab contamination. However, in response to previous comments, this interpretation has not been presented in the report and replaced by a more objective discussion.

Comment 61: Page 40, Section 1.3.3.5, 5th Paragraph. The statement "Contamination is not migrating past landfill boundaries. . ." should be revised to reflect the unknown source of contamination and that the landfill has not been precluded as a source.

Response: The text has been revised as suggested. Please see the response to Comment 3.

Comment 62: Page 48, Section 1.3.3.6, 4th Paragraph. The statement "In conclusion, landfill contamination has not migrated into the adjacent surface waters of the SWRP and Jagel . . ." should be revised to reflect the unknown source of contamination and that the landfill has not been precluded as a source.

Response: The text has been revised as suggested. Please see the response to Comment 3.

Comment 63: Page 56, Section 1.3.5, 4th Paragraph. A projected piezometric differentiation between the A1 and A2 aquifers of approximately 0.14 feet based on wells 190 feet away from each other is very questionable. Additionally, the cross sections do not show A1 and A2 delineation. Please revise.

Response: Please see the response to Comment 53.

Comment 64: Page 57, Figure 20. Please differentiate wells screened in the A1 aquifer from wells screened in other aquifers.

Response: The figure has been revised as suggested.

Comment 65: Page 62, Table 5. Include the analytical method for each analysis and filter size.

Response: Please see the response to Comment 56.

Comment 66: Page 64, Section 1.3.6.3. Please locate the collection points for perimeter soil samples on a figure.

Response: Please see the response to Comment 58.

Comment 67: Page 66, Table 6. Include detection limits for each analysis.

Response: Please see the response to Comment 59.

Comment 68: Page 68, Section 1.3.6.5, 5th Paragraph. The statement ". . . contaminants are not leaching into the groundwater and subsequently migrating past Site 2 boundaries." should be revised to reflect the unknown source of contamination and that the landfill has not been precluded as a source.

Response: The text has been revised as suggested. Please see the response to Comment 3.

Comment 69: Page 70, Section 1.3.6.5, 4th Paragraph. The statement "The Landfill is not a source of other metal constituents in the downgradient groundwater." should be revised to reflect the unknown source of contamination and that the landfill has not been precluded as a source.

Response: The text has been revised as suggested. Please see the response to Comment 3.

Comment 70: Page 80, Section 1.3.7.3, 42nd Paragraph. The hydraulic conductivity values of the encountered sandy gravels must be used if worst case approximations are stated to be an objective.

Response: The hydraulic conductivity of sandy gravel is not appropriate for the model based on the lithology at OUI. However, the Navy conducted a sensitivity analysis with the model to reflect uncertainties associated with hydraulic conductivity. The results are presented in the FS report. The statement regarding worst case approximations has been deleted.

Comment 71: Page 98, Section 1.4.3.1, 2nd Paragraph. A mitigation plan to offset the negative ecological impacts of capping should be proposed.

Response: The text has been revised to indicate that a mitigation plan will be proposed during the RD phase.

Comment 72: Page 162, Section 4.2.2. Describe the origin of the native soil cap material and include an American Society of Testing Materials (ASTM) soil description of the cap material.

Response: The requested information will be included in RD documents.

Comment 73: Page 163, Figure 31. Please include compass orientation, continuous groundwater table, and groundwater flow arrows.

Response: The figure has been revised to show a continuous groundwater table.

Comment 74: Page 165, Section 4.2.3, 2nd Paragraph. The statement ". . . will intercept any leachate. . ." would be more accurate by stating "will be designed to intercept any leachate."

Response: The text has been revised as suggested.

Comment 75: Page 166, Figure 32. Please include A1 groundwater flow arrows.

Response: Gradient arrows have been added to the cross section.

Comment 76: Page 169, Figure 33. Please include A1 groundwater flow arrows. The location of the proposed monitoring wells appears to be inappropriate due to the nature of the site. The spacing of the wells by distances of 300 feet or more will not provide adequate monitoring for a landfill this size. Along the western perimeter of the refuse area, two additional wells are requested. One at the mid point between wells W1-5 and W1-8 and another at the midpoint between wells W1-8 and W1-16. Along the southern perimeter of the refuse area, one additional monitoring well is requested to be located approximately 250 feet west of monitoring well W1-15. The proposed monitoring well W1-19 is requested to be relocated approximately 280 feet south of the proposed location. The proposed monitoring well W1-18 is requested to be relocated approximately 350 feet east south-east of the proposed location.

Response: Gradient arrows have been added to the figure.

The Navy believes that the two requested wells along the eastern perimeter (between W1-5 and W1-16) are not necessary because Jagel Slough is upgradient of the aquifer and these wells are not along a receptor pathway. The three wells currently located along this perimeter (spaced 400 feet and 450 feet apart) are sufficient to monitor groundwater quality.

The Navy will add an additional shallow monitoring well along the southern perimeter as requested by RWQCB to decrease well spacing to 300 feet along this border. This monitoring well is not along a receptor pathway and, after the first four quarters, will likely be sampled annually or semiannually.

RWQCB has requested to relocate the two additional wells proposed by the Navy to locations at the landfill boundary. The Navy believes that relocating these two wells to the suggested locations would be redundant because the extraction trench and existing monitoring wells will be monitored to assess releases along the northern border. The extraction trench location has been added to the figure to clarify this feature. The two additional monitoring wells (W1-18 and W1-19) are proposed to further assess local inorganic concentrations in groundwater and should not be relocated.

The Navy believes that the final determination of the monitoring network is not critical at the FS stage. The specific monitoring network should be adjusted throughout the life of the program as needed.

Comment 77: Page 170, Figure 34. Please include A1 groundwater flow arrows. The proposed groundwater monitoring network appears to be inadequate due to the nature of the site. Along the southern perimeter of the refuse area, one additional well is requested to be located approximately 200 feet west of monitoring well W2-6.

Response: *Gradient arrows have been added to the figure.*

The Navy does not concur that an additional well is needed 200 feet from monitoring well W2-6 or along the southern perimeter of the landfill. The Navy believes that the current network is sufficient to monitor both upgradient and downgradient water

quality and to assess leachate migration from Site 2. Two monitoring wells are currently located directly downgradient of Site 2 and several wells are located upgradient.

Previous inadequacies and concerns with the monitoring well network were addressed in 1993 and are documented in a field work plan (PRC 1993a) and technical memoranda (PRC 1993b). Additional wells were installed and monitoring results verified previous conclusions that no leachate plumes are migrating from the landfill.

Comment 78: Pages 173 and 175, Tables 16 and 17. Include the analytical method for each analysis and filter size.

Response: This requested level of detail for the groundwater monitoring program is not appropriate or necessary for the FS report.

Comment 79: Page 187, Section 5.2.2.1, 2nd Paragraph. Please include action-specific landfill ARARs.

Response: Section 5.2.2.3 discusses action-specific ARARs.

Comment 80: Page 205, Section 6.3, 1st Paragraph. Please include the specific discussions regarding the reduction of toxicity and volume in this section.

Response: The specific discussions are referenced in Section 6.3.

Comment 81: Page 208, Table 19. The total cost is projected for 30 years, please describe how this length of time was determined and what is the projected life of the monitoring program.

Response: The text has been revised as suggested. The projected life of the monitoring program is 30 years and is based on ARARs. Five-year reviews will be conducted to reassess the monitoring strategy.

Comment 82: Page G-1, Appendix G, 3rd Paragraph. The statement "possible but unrealistic assumption" appears to cast doubt on the sincerity at which the risk assessment is being performed, please consider revising.

Response: The statement has been deleted.

Comment 83: Appendix J, 1 of 37. Please discuss the classification of the OU1 landfills.

Response: Please see the response to Comment 39.

Comment 84: Appendix J, 13 of 37. Please discuss the fund for closure and post-closure maintenance of the OU1 landfills.

Response: Please see the response to Comment 38.

Comment 85: Appendix J, 14 of 37. Please discuss 23 CCR, Division 3, Chapter 15, 2581(a)(1).

Response: Please see the response to Comment 37b.

Comment 86: Appendix J, 15 of 37. Please discuss 23 CCR, Division 3, Chapter 2581(c)(2).

Response: Leachate collection is not required at OU1 for reasons summarized on pages 139 and 140 of the revised draft final FS report. Appendix J was revised to reference these discussions.

4.0 RESPONSES TO DTSC COMMENTS

GENERAL COMMENTS

Comment 87: The State realizes that the complexity of the hydrogeology in the OU1 area and the heterogeneity of the landfill refuse made it very difficult to determine the groundwater flow direction in different seasons, or the leachate offsite migration. Throughout the document, significant efforts were made to conclude that no leachate has migrated to the surrounding water bodies. Based on our observation, the chemical data in Section 1.3.3 and 1.3.6 may not necessarily fully support this

conclusion. The State believes it is appropriate to present the data and list different rationale to explain the findings. However, without concrete evidence, the Navy should not exclude that the landfills are the potential sources of contaminants.

Response: The Navy believes that analytical data consistently show that there are no plumes of leachate migrating from the landfill that require remediation. However, the Navy does not exclude the landfills as potential sources and has proposed a remediation strategy to address them as such. The text was revised to clarify this issue.

Comment 88: It has been mentioned many times in the subject document that OU1 landfills were operated like or similar to municipal landfills. However, it is also stated that OU1 landfills received industrial wastes in the past. In addition, hazardous wastes were detected from OU1 soil/groundwater analyses. Unless the landfills were operated according to municipal landfills by today's definition, these areas should be treated as hazardous waste/substance release sites.

Response: Some of the wastes at the OUI landfills are potentially hazardous waste; however, this circumstance is common to all solid waste and CERCLA landfills. By complying with solid waste monitoring and closure regulations, the intent of analogous hazardous waste regulations will be met. Further, low contaminant concentrations in leachate show that a minimal threat from hazardous substances exists at OUI. Maximum detected concentrations are below maximum concentrations given for the toxicity characteristic in 40 CFR 261.24. In other words, the leachate at OUI does not exhibit the toxicity characteristic and would not be identified as a hazardous waste based on this criterion. This further supports the assumption that OUI landfills were operated like solid waste landfills and received similar types of wastes (solid waste with small amounts of hazardous waste). Also, visible surface debris includes obvious construction and demolition debris, such as concrete rubble with reinforcing steel, asphalt chunks, wire, wood chips, glass, and mounds of dirt overgrown with weeds (possibly street sweepings), which are similar to solid waste landfill waste. For these reasons, the Navy identified 23 CCR groundwater monitoring requirements and Title 14 closure regulations as most appropriate for OUI. CIWMB comments indicate similar conclusions. Please see Comment 111 and the response.

SPECIFIC COMMENTS

Comment 89: Page 12, 1st Paragraph, Section 1.3.1. NASA's reuse plan of operating a pistol range at Site 1 should be further discussed (for example, potential impact on ecological receptors).

Response: NASA has the responsibility for evaluating affects from reusing the pistol range.

Comment 90: Page 14, 2nd Paragraph, Section 1.3.2. It is stated that "water level elevations within the landfill indicate that refuse is saturated with water to about the same elevation as groundwater outside the landfills." This is contradictory to the statement in page 21 "Water levels in the landfill leachate are greater than any of the surrounding water bodies . . ." If the later statement is correct, should the groundwater table in Figure 5, 6, and 7 be revised?

Response: The water table has been revised in the figures as suggested. The statement on Page 21 is correct.

Comment 91: Figure 7 and Figure 8C. The leachate water level in well W1-10 is always higher than msl in Figure 8C. However, in Figure 7, the water level at well W1-10 is lower than msl. Please explain the discrepancy between these two figures.

Response: Figure 7 is inaccurate and has been revised for consistency with Figure 8C.

Comment 92: Page 29, 4th Paragraph, Section 1.3.3.1. The Navy should submit the well abandonment work plan to the state and local regulatory agencies for review and approval.

Response: The Navy will include well abandonment procedures and specifications as part of the RD package.

Comment 93: Page 45, 3rd Paragraph, Section 1.3.3.5. It is inappropriate to eliminate the possibility that the elevated arsenic, antimony, and chromium concentrations found in Site 1 perimeter wells were not migrated from the landfill leachate.

Response: The text has been revised to discuss this possibility.

Comment 94: Page 53, Figure 17. Please explain the inconsistency of the SB2-15 soil boring logs in Figure 17 and Figure 18. In Figure 17, a layer of "fill soils (sand, silt, gravel and clay mixtures)" underlies the "fill soils with refuse" at SB2-15. However, this layer cannot be found in Figure 18.

Response: Figure 17 has been revised for consistency.

Comment 95: Page 67, Last Paragraph, Section 1.3.6.5. Please see Comment 87.

Response: Please see the response to Comment 87.

Comment 96: Page 112, Table 9. It is stated that the OU1 landfills were operated like a municipal solid waste landfill. The Navy should explain how this determination has been made.

Response: Please see the response to Comment 88.

Comment 97: Page 113, Table 9. The resolution 92-49 should be considered applicable since resolution 92-49 has been promulgated.

Response: The text has been revised to be consistent with the OU5 FS report and indicates that this resolution is relevant and appropriate.

Comment 98: Page 124, Table 11. A code section should be listed after "California Fish and Game Code".

Response: Code section 1600-1607 has been added as suggested.

Comment 99: Pages 126, 127, Table 12. If the "comment" section of this page is accurate, then the federal ARARs should drop out because California, as an authorized state, would have regulations that are as stringent, or more stringent, than the federal regulations.

Response: Please see the response to Comment 12.

Comment 100: Page 127, Table 12, 3rd and 4th boxes. If it turns out that there is hazardous waste at OU1, and hazardous waste regulations apply, there are RCRA monitoring requirements that would have to be considered as ARARs as well.

Response: RCRA monitoring requirements are listed in the table and considered potential ARARs. Please see Comment 111 and the response.

Comment 101: Page 128, Table 12, 3rd box. The citation "40 CFR 262 and 264" should be replaced with 22 CCR Chapter 12 and 14.

Response: The table lists both federal and state hazardous waste management regulations as potential ARARs.

Comment 102: Page 133, Table 12, 2nd box. The state regulation is an ARAR only if the waste is subject to land ban.

Response: The table has been revised to include this information.

Comment 103: Page 133, Table 12, 2nd through 7th Boxes, and Page 134, 1st Box, 3rd Requirement. The state and federal regulations should not be listed as ARARs simultaneously. If there is a difference between the two regulatory schemes, California's regulations will be as stringent or more stringent than the federal regulations, and the federal regulations should drop out as ARARs.

Response: Table 12 lists potential ARARs for potential actions. Both state and federal regulations are potential ARARs for the actions in the boxes mentioned in the comment. California regulations are identified as ARARs in Appendix J.

Comment 104: Page 165, 2nd Paragraph, Section 4.2.3. It is mentioned that the collected leachate could be transferred to on-base groundwater treatment systems such as OU5 or Site 9. However, the above treatment system will not remediate inorganic contaminations effectively. Please include the O&M and treatment costs in Alternatives 2 and 3.

Response: The type of treatment required will depend on the type of contamination that migrates, which is unknown at this time. The treatment costs do not affect the FS comparative analysis since they affect each alternative equally.

Comment 105: Page 202, 4th Paragraph, Section 6.2. The State agrees that when refuse is below groundwater table, the leachate may migrate offsite regardless of the types of capping. However, at Site 2, most of the refuse is above groundwater table which is different from Site 1. Therefore, the Navy should explain why native soil cap will provide the same protection of preventing leachate migration at Site 2.

Response: The native soil cap provides the same protection as Alternative 3 based on Hydrologic Evaluation of Landfill Performance (HELP) model results. The HELP model shows that a native, single layer cap reduces infiltration to rates similar to rates achieved by a low permeability layer due to MFA's climate. In addition, there are several other reasons why Alternative 2 was recommended over Alternative 3 for Site 2. These include:

- 1. Leachate plumes are not migrating and, based on contaminant transport modeling, are not expected to migrate in the future. Therefore, minimizing infiltration is not a primary cap function.*
- 2. A multilayer, low permeability cap would be more difficult to construct.*
- 3. A low permeability cap would be more costly.*

The text has been revised to make this distinction.

Comment 106: Page 204, Number 3. Please see Comment 105.

Response: Please see the response to Comment 105.

Comment 107: Appendix I. It is noted that in page "5/24" the average annual precipitation of Moffett Field is 13.05 inches. However, according to the Environmental Science Services Administration, the 30 year (1931 to 1960) annual average precipitation of the San Francisco Airport is 18.69 inches. Please explain the difference between them. Furthermore, the 13.05 inches average precipitation is lower than other Bay

area station records as well. Should the Navy consider using the 18.69 inches average annual precipitation as a reference number? How will it affect the output of the Hydrologic Evaluation of Landfill Performance (HELP) model? In addition, please compare the selected 24-hour peak precipitation data with the storm event on January 9, 1985.

Response: The differences between San Francisco Airport's (and other Bay Area locations) precipitation and MFA's precipitation are likely numerous. However, the most appropriate data for OUI HELP modeling is MFA precipitation data.

For the MFA area, a 24-hour, 100-year storm event corresponds to 4 inches of precipitation (NOAA 1973). It is not known how this compares to precipitation on January 9, 1985; however, the total precipitation reported at MFA for the month of January in 1985 was far less than 4 inches.

EDITORIAL COMMENTS

Comment 108: Page 20, Figure 9. The title of Figure 9 should be renamed as "Slough/Leachate/Aquifer Hydrographs."

Response: The figure has been renamed.

Comment 109: Page 22, Figure 10. The title of Figure 10 should be renamed as "SWRP/Leachate/Aquifer Hydrographs."

Response: The figure has been renamed.

Comment 110: Page 57, Figure 20. Please add a "minus" sign in front of all the water table measurements.

Response: The figure has been revised to indicate elevations are below sea level.

5.0 RESPONSES TO CIWMB COMMENTS

GENERAL COMMENTS

Comment 111: The CIWMB has the following general statutory and regulatory authority:

1. Statutory authority: The Integrated Waste Act of 1989, as embodied in the Public Resources Code Section 40000 et seq.
2. Regulatory authority: Title 14 CCR, Division 7.

Pursuant to Public Resource Code Sections 43021 and 43509, the CIWMB has adopted regulations that include substantive standards for the design, operation, maintenance, closure, and ultimate reuse of solid waste disposal sites. These regulations are contained in 14 CCR Division 7, and were reviewed by U.S. EPA as part of the RCRA Subtitle D Approved State Program.

An attached table (Attachment 2) provides 14 CCR ARARs for closure and postclosure maintenance of solid waste disposal sites. These ARARs are being submitted pursuant to CERCLA section 121(d) and the NCP. Upon reviewing the FS report, CIWMB has determined that Sites 1 and 2 meet the definition of a solid waste disposal site pursuant to Public Resource Code 40122 and have not closed pursuant to the definition 14 CCR 18011, and therefore meet the scope and applicability of closure and postclosure standards in 14 CCR.

Response: The Navy revised the document to identify 14 CCR closure and postclosure standards as applicable instead of relevant and appropriate.

6.0 RESPONSES TO SVTC COMMENTS

GENERAL COMMENTS

Comment 112: I believe that efforts should be made to protect, and wherever possible, enhance existing wetlands, including the storm water retention pond to the north of Site 1.

By enhancing the wetland, possibly by removing or creasing the levees to allow for more tidal flushing, small pickleweed communities which are destroyed as a result of implementation of the cap may become re-established.

Response: Efforts will be made to re-establish pickleweed destroyed during cap construction. A mitigation plan will be submitted during the RD to outline reestablishment efforts.

Comment 113a: I want to compliment the Navy on taking community comments into consideration in the revised draft-final OU1 FS. I am particularly pleased that the preferred alternative has a contingency plan associated with it and that additional containment (subsurface leachate collection trench) has been added to the northern edge of Site 1.

However, while I realize that no leachate has been detected in this area previously, it is important to establish guidelines or criteria for when the leachate system will be mechanically activated. I propose that activation levels be set at a fairly low percentage of the maximum contaminant level (MCL) or the WDL, in combination with an increase in the level detected at existing wells. For example, if the trichloroethene (TCE) MCL is 5 parts per billion (ppb), I would propose that the leachate collection system be triggered when TCE is detected at 25 percent of the MCL, and concentrations have increased over two quarters. In addition, it is not clear from the report how the Navy intends to detect contamination in the leachate collection trench. Please describe how this will be done, and show monitoring points.

Response: The collection trench will be activated when AWQC for the protection of aquatic life are exceeded in groundwater in the trench. This strategy is conservative and protective since trench groundwater contaminant levels would not be representative of groundwater contaminant levels in the surface water. Surface water is downgradient from the trench groundwater and contaminant levels will be reduced by processes such as adsorption and dilution between the trench and surface water. Therefore, if AWQCs are exceeded in the trench, actions can be initiated before AWQCs are exceeded in surface water.

The determination of exceedances will be in accordance with 23 CCR Chapter 15, Article 5. The specific criterion for implementing corrective action are described in Section 4.2.3 of the FS report.

The trench monitoring points will consist of well casing installed in the trench gravel and the locations have been shown in Figures 32 and 33. Groundwater samples will be collected from the monitoring points in the same manner that they are collected from monitoring wells.

Comment 113b: Regarding Site 2, while I recognize that hydraulic control could be maintained by lift station 191, I am concerned that there is no contingency plan if monitoring wells detect leachate migration. The aeration nozzle at Building 191 can only effectively treat some VOCs, and will not treat polychlorinated biphenyls (PCBs) and semivolatile organic compounds (SVOCs), and inorganics. Based on the Technical Memorandum on Building 191, it is not clear that the nozzle treats VOCs adequately. Therefore, I recommend that the Navy develop a contingency plan to treat leachate from Site 2. However, I believe that so long as this is agreed upon, the plan can be developed in the RD phase of the project.

Response: The contingency plan will consist of a treatment strategy that addresses the particular contaminants that are migrating. Groundwater can be extracted prior to reaching the Building 191 lift station and treated for metals, SVOCs, PCBs, or VOCs, if necessary. The Navy will develop a formal contingency plan for Site 2 at the RD phase of the project.

Comment 114: The FS should contain milestones by which the success of the subsequent remediation can be evaluated. The remedy and the accompanying plan should contain firm commitments.

I am not speaking of milestones for Superfund document production, which is what is found in the FFA. Rather, I am looking to the Navy for substantive milestones: for example, when will the remedy be installed, when will monitoring wells be installed, how long will monitoring last? It is important for the community that the OU1 FS contain a measurable schedule and performance standards which can be verified. Broad commitments as to the timing of cleanup activities can and should be spelled out.

Response: The types of milestones mentioned are developed and presented in the Superfund documents cited in the FFA. For example, the remedial design/remedial action (RD/RA) work plan will contain dates for RA construction and will be submitted with the ROD. The Navy is developing a schedule for deliverables beyond the current FFA schedule. This information will be distributed when it becomes available.

SPECIFIC COMMENTS

Comment 115: Referring to page 12, operating the pistol range located in the eastern portion of Site 1 does not appear to be consistent with several remedial action objectives. These include: protect human health and environmental receptors by minimizing exposure pathways; and protection of human health and the environment from subsurface methane. In addition, it does not appear that operating a pistol range at this site would be compatible with placing and revegetating a cap, and returning a diverse ecosystem.

Response: Please see the response to Comment 89.

Comment 116: Referring to pages 12 and 13, and page 100, is it the Navy's intention to attempt to trap Salt Marsh Harvest Mice (SMHM) in the referenced locations? If the answer is no, please explain why this cannot be done. What conditions or circumstances would necessitate trapping prior to the RA implementation?

Response: The Navy has contacted the U.S. Fish and Wildlife Service (FWS) about policy and procedures that address the SMHM. The Navy provided FWS with a site map and photographs of the pickleweed habitat at Site 1. FWS indicated that there is reasonable chance that the SMHM may exist at Site 1. FWS recommended that, instead of trapping, the Navy assume that the SMHM is present and proceed by preparing a mitigation plan. Mitigation would entail replacing each acre of lost habitat. The replacement habitat could either be creation of new habitat or restoration or enhancement of an existing habitat. The mitigation plan will provide the specific procedures and details of the mitigation. The Navy will prepare the mitigation plan in consultation with FWS and provide it to regulators and community groups along with the preliminary RD plans.

Comment 117: Referring to page 24, I recommend changing the sentence that states "This appears to be the case to some extent at Site 1" with "This appears to be the case at Site 1."

Response: The text has been revised as suggested.

Comment 118: The sampling results referred to on pages 37-40 do not show trends. However, TPH from motor oil was detected above agreed upon standards for this compound. Please explain the current theory for these variations in sampling results.

Response: The cause for variation in sampling results is not known. However, the purpose of the FS is to determine whether groundwater requires remediation. Analytical data shows leachate plumes do not exist and remediation is not necessary at this time. However, the groundwater surrounding OUI will continue to be monitored so that any potential contaminants that migrate from the landfill can be addressed.

Comment 119: The weight of evidence does not support the absolute conclusion on page 48 that landfill "contamination has not migrated" to adjacent surface waters of the SWRP. There is a reasonable possibility that the TPH found in the SWRP did originate in the landfill. I remind you that on a site walk last year a team of community members and technical advisors visually observed what appeared to be an oil slick emanating from the northern base of Site 1 flowing into the SWRP.

Response: The text has been revised to clarify that the landfill is not excluded as a potential source of contamination. Analytical results from the SWRP have not indicated that an oil slick has emanated from Site 1. The observed discoloration probably results from natural bioactivity in the surface waters.

Comment 120: Referring to page 103, please do not leave the impression that the native soil cap will be 24-inches. As proposed in Alternative 2, I assume that the Navy is committing to adding a 36-inch native soil cap.

Response: The text has been revised for clarification.

Comment 121: Referring to page 164, because few WDLs are established for organic compounds, it is important that action levels be established for all possible constituents. Furthermore, as is discussed in the general comments, I recommend some fraction of a WDL or other standard be used to trigger remedial action. It is incumbent upon the Navy to delineate these triggering levels prior to implementation of the RA.

Response: WDLs have been identified for over 100 organic compounds, including chlorinated solvents, benzene, toluene, ethylbenzene, PAHs, SVOCs, PCBs, and pesticides. The Navy will continue to update the WDLs as information becomes available. Please see the response to Comment 113a regarding triggering levels.

Comment 122: Referring to page 169, please explain why monitoring well W1-3 is to be abandoned.

Response: An explanation has been added to the text. The well is screened through refuse and the A1-aquifer. This is a potential conduit for contaminant migration to the A1-aquifer. However, monitoring wells at the landfill perimeter do not show that leachate plumes are migrating from the landfill.

Comment 123: Referring to Table 16, please identify where MP-1 and MP-2 will be located.

Response: The report has been revised to show these locations.

Comment 124: Referring to page 170 and 175, please identify where W2-3 is located. (Is it the same as W2-3A shown on page 50?).

Response: Monitoring well W2-3's location was clarified. Well W2-3A on page 50 has been relabeled as W2-3.

Comment 125: It appears that only one downgradient well outside the Site 2 boundary is going to be sampled. I recommend that another well be added, given the fact that recent monitoring of Building 191 influent and effluent has produced some anomalous results, and the fact that sampling of Building 191 influent will not specifically identify contaminants from the landfill.

Response: Monitoring wells W2-6 and W2-14 are both downgradient and will both be sampled as indicated on Table 17.

7.0 RESPONSES TO NASA COMMENTS

Comment 126: The perimeter fencing proposed in the remedies is not required or preferred by NASA. Metal fencing in the area of Site 1 may interfere with the Instrument Landing System (ILS) recently installed. Other metal fencing in the area has already been removed because of this problem.

Response: Fencing has been removed from the remedial alternatives for Site 1.

Comment 127: The large pieces of concrete and debris should be removed from Site 2 and the surface area needs to be smoothed to allow mowing.

Response: The RD specifications package will address this comment.

Comment 128: Any vegetation introduced into Sites 1 and 2 should be low in height, require minimal maintenance and not attract birds, because of the bird aircraft strike hazard.

Response: The RD will incorporate this comment.

Comment 129: Construction in the areas should not occur during the nesting season (February through September) of migratory birds, or other protected species.

Response: The RD will incorporate this comment.

Comment 130: Monitoring well W1-16(?) is not labelled on Figure 12 and 13.

Response: The label was added as suggested.

Comment 131: NASA wants some assurance that the selected remedy would be acceptable to the Bay Conservation and Development Commission (BCDC), or the California Coastal Commission, if in the future the runway landfill site would revert to state ownership. NASA suggests that the Navy prepare a determination of consistency with the San Francisco Bay Plan, and request concurrence from the BCDC.

Response: The Navy has discussed the selected remedy with the BCDC. The BCDC preliminarily indicated that the remedy will be acceptable; but also identified several concerns. The Navy will continue to consult with the BCDC throughout the RD to address concerns. In addition, the Navy is currently investigating the need to prepare a determination of consistency.

8.0 REFERENCES

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National Oceanic and Atmospheric Administration (NOAA) 1973. NOAA Precipitation- Frequency Atlas of the Western United States, Volume XI - California. 1993. U.S. Department of Commerce, Silver Spring, Maryland. 1973.

PRC Environmental Management, Inc. (PRC) 1993a. OU1 Additional Field Investigation Field Work Plan. Naval Air Station, Moffett Field, California. August 1993.

PRC 1993b. OU1 Additional Field Investigation Technical Memorandum. Naval Air Station, Moffett Field, California. December 1993.

U.S. Environmental Protection Agency (EPA) 1988. CERCLA Compliance with Other Laws Manual: Draft Guidance. EPA/540/G-89/006. August 1988.

EPA 1991. Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites, EPA/540/P-91/001, OSWER Directive 9355.3-11. February 1991.