RESPONSE TO AGENCY COMMENTS ON

NAS MOFFETT FIELD
DRAFT INSTALLATION RESTORATION PROGRAM
PETROLEUM SITES CHARACTERIZATION REPORT

October 1, 1993

This report presents point-by-point responses to the San Francisco Bay Regional Water Quality Control Board (RWQCB) and the U.S. Environmental Protection Agency (EPA) comments on the Draft Installation Restoration Program (IRP) Petroleum Sites Characterization Report prepared July 2, 1993 by PRC Environmental Management, Inc. (PRC) for Naval Air Station (NAS) Moffett Field, California. Ms. Elizabeth Adams (RWQCB) submitted comments on August 4, 1993 and Mr. Micheal Gill (EPA) submitted comments on August 17, 1993.

The response to agency comments is divided into three sections: Section 1.0 presents responses to RWQCB comments; Section 2.0 presents responses to EPA comments; and Section 3.0 presents references. In Sections 1.0 and 2.0, agency comments are restated, followed by responses. Sections 1.0 and 2.0 are subdivided into sections for general and specific comments.

1.0 RESPONSE TO RWQCB COMMENTS

1.1 GENERAL COMMENTS

Comment 1. This document refers to the tank closures and cleanup as Resource Conservation and Recovery Act (RCRA) activities, occurring under RCRA guidelines. These statements do not fully reflect the agreement that the regulatory agencies and the Navy have negotiated for the Federal Facilities Agreement (FFA) amendment which describes the separation of the petroleum related sites from the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) activities. The Department of Toxic Substance Control (DTSC) staff clearly stated that, at this point in the project, the petroleum sites should not be brought into the formal RCRA program due to the administrative and program requirements which would hinder the progress of the clean up at these sites. All parties agreed that the petroleum sites should fall primarily under the jurisdiction of State petroleum regulations and that all petroleum cleanup "shall be conducted in a manner consistent with Sections 6001,

7003, and 9007 of RCRA; 40 Code of Federal Regulations part 280; California Health and Safety Code Division 20, Chapters 6.5, 6.7, 6.75, and 6.8; California Water Code Division 7; California Code of Regulations Title 23, Division 3, Chapter 16; and Water Quality Control Plans, as applicable." Therefore, all documents related to petroleum cleanup or petroleum site closures should include the emphasis of our agreement which is that activities at petroleum sites must be consistent with both specific sections of RCRA and the listed State requirements and guidelines. Specific guidance documents for investigation and closure of underground tank sites have been developed from regulations outlined in California Code of Regulations (CCR) Title 23, such as the Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites, 1990 which is routinely implemented within the San Francisco Bay region. Any future investigations at the petroleum sites should be consistent with the requirements outlined in these documents. In addition, obtaining regulatory approval for closures of tank sites need to follow the State guidelines. We will gladly supply the Navy with copies of any of these documents if they are needed.

Response: *The Navy agrees that all documents related to tank closures and petroleum cleanup should be consistent with the specific sections of the Resource Conservation and Recovery Act (RCRA) and the listed state requirements and guidelines. A discussion of these requirements and guidance has been included in Section 1.0.*

Comment 2: Some, but not all, of the guidelines for tank excavations and investigations are as follows:

- Visible inspection of the tank systems and soils is required to determine if there was an unauthorized release. The condition of the soils and tank needs to be documented.
- Samples of soil and groundwater from excavations must be analyzed in a State certified lab.
- For tanks, 10,000 gallons or less, at least two soil samples from within the first two feet of native soil under the tank must be collected and analyzed, as well as sidewall samples to verify that no lateral movement of contamination has occurred. For tanks greater than 10,000 gallons, four soil samples from the bottom of the excavation are needed.

- At least one water sample is required if water is present in the excavation.
- Samples are to be analyzed for the appropriate parameters, dependent on the contents of the tank, listed in the enclosed Table 2.
- Piping needs to be excavated and soil must be sampled, for laboratory analysis, every 20 feet.
- If soil contamination is present, groundwater quality must be confirmed by a monitoring well no more than ten feet from the tank site in the confirmed downgradient direction.
- Monitor wells need to be screened to include the seasonally high water level in order to detect the contamination. Often wells constructed to define solvent plumes will not be screened in the appropriate zone to evaluate petroleum contamination.
- Impact to groundwater is evaluated by reviewing the soil contamination within the soil depth that represents the seasonally high water level.
- Laboratory data sheets for all soil and groundwater analyses must be submitted to Regional Board staff.

Response: *The Navy will continue to adhere to these guidelines when conducting tank investigations and removals at NAS Moffett Field. Previously, items such as laboratory data sheets have not been submitted due to the large volume of data. However, copies of available laboratory data sheets can be provided on an individual basis.*

Comment 3. Though many of these tank investigations have been conducted in the past, and may not have followed State guidelines, it is essential that any of the information above be included in this characterization report if it is available. For instance, this report should state whether groundwater was present in the bottom of the excavations, and if so, whether or not the groundwater was sampled, the documented condition of the tank, and the screened intervals of the monitoring wells at the tank site. All laboratory sheets corresponding to the soil and groundwater data need to be submitted as an attachment to this report.

Response: *All available information has been either summarized from other reports or provided if not included elsewhere. References cited in this report, such as the Tank and Sump Removal Summary Report (PRC 1991), contain specific data (such as field boring logs, well completion records, and laboratory analytical data) for some of the tanks and sumps described in the characterization report. These references should be reviewed together with the characterization report. For sites where data have been previously submitted, the appropriate references have been provided so the agencies can evaluate the data contained in the references. For sites not included in previous reports, all available data have been provided. As new data become available or are collected, ongoing status reports will be provided. Finally, copies of laboratory data sheets and boring logs can be provided on an individual basis, if available.*

Some of the tank or sump sites described in the report are still active or are temporarily inactive (for example, the Site 5 tanks), some of them have been removed (such as the tanks at Sites 9 and 19), and some are inactive awaiting closure (such as most of the sumps at Site 15). For the tanks and sumps previously removed, groundwater samples have been collected when groundwater was observed in the excavation and sidewall samples were collected at the soil/groundwater interface. If groundwater was not present, soil samples have been collected from the bottom of the excavation. Tank and soil conditions have also been described in previous reports, in addition to being described in the official notices of inspection prepared by Santa Clara County inspectors during removal oversight. Copies of available inspection notices can be provided on an individual basis.

Comment 4: All future investigations must follow the guidelines outlined in the Tri-Regional guidelines. A work plan needs to be submitted and reviewed by the regulatory agencies before any future field work occurs.

Response: *Future investigations and removal actions will follow state regulations and guidelines and will be documented in work plans prepared for agency review.*

Comment 5: Groundwater levels may be much higher than they have been in the recent past due to the return of our normal winter rains. The evaluation of these sites needs to include the most recent groundwater data to meet the intent of the Tri-Regional guidelines.

Response: *Available groundwater elevation data for wells downgradient of tanks and sumps with identified soil contamination have been provided in the form of tables and hydrographs.*

Comment 6: Please include figures which show the tank sites and the soil boring and monitoring well locations associated with the site. This is done for some sites and would be useful for Site 19 also. Quarterly monitoring events at Moffett Field do not always include all the wells within a site. It would be helpful, if when the text refers to a sampling event, that either the monitoring well locations which were sampled are included, or it is made clear that all the wells in the vicinity of the tank were sampled.

Response: *Figures have been revised to include all soil boring and monitoring well locations. Well locations have been added to the descriptions of sampling events.*

Comment 7: Boring logs for the monitor wells which are being used to evaluate groundwater impact at a site need to be included in this report. It is essential that information such as the screened interval and the location of the saturated and unsaturated zones within a boring be presented in order to evaluate the data. As mentioned earlier, many wells which are designed to detect solvent contamination may be screened at the bottom of the saturated zone instead of the top of the saturated zone, which is the proper zone to detect hydrocarbon contamination.

Response: *Please see the response to RWQCB general comment 3 regarding boring logs. Well screen data for relevant wells have been provided along with groundwater elevation data.*

1.2 SPECIFIC COMMENTS

Comment 1: Page 1, Paragraph 2. Please state in the text that clean up of petroleum contaminated sites will also follow State guidelines.

Response: *Section 1.0 has been revised to specify that cleanup will follow state guidance. Please see the response to RWQCB general comment 1.*

Comment 2: Page 6, Section 2.0, Table 4, Table 9, Table 15. The tables showing the groundwater analyses from monitoring wells near the tank sites need to include the screened interval, the downgradient distance from the tank site, and the date that the samples were taken. There are data from several different monitoring events presented in this report. What criteria is being used to determine which groundwater data are being presented?

Response: *The requested data (well screen interval, downgradient distance, and sample date) have been provided. As described in Section 1.1, groundwater data are being presented only for petroleum sites located on the eastern portion of NAS Moffett Field. Groundwater in this area has also been evaluated by the OU5 RI, which estimates risks to human health and the environment from all contaminants. Groundwater on the western portion is not addressed in this report, but will continue to be addressed by the expanded Navy source controls for the westside aquifers and the regional remediation system. Groundwater data presented in the report include all events in which detections were observed at relevant wells downgradient from tank and sump sites.*

Comment 3: Section 2.1. Are the above-ground french drain inlets at Site 5 still open, or are they sealed?

Response: *Many of the tanks at Site 5 have an ancillary sump and a discharge pipe. The discharge pipes are located next to the tanks and are used to remove waste products (such as sediment, water, and some contaminated petroleum products) from the bottoms of the tanks. Previous operating practices at Site 5 included discharging these waste products from the sumps on to the ground next to the tanks or in to dry wells located near the tanks. The standard operation was to pump the tank bottom to draw off water and sediments from the fuel. About 500 to 600 gallons of water were drawn off at a time. Thus, varying quantities of fuel may have been included in the discharged water, although the total quantity of fuel discharged to the ground or dry wells is unknown. The inlets to the sumps and the dry wells are covered, but not permanently sealed.*

The sump discharge pipes and dry wells have previously been thought to be part of a french drain system. However, no evidence of this system has been found. The original design drawings for the fuel facilities do not show a french drain system. Regardless of the existence of this system, investigations are intended to evaluate all potential contamination at Site 5.

Comment 4: Table 1. What is the difference between a "receiving" and a "working" tank?

Response: *Tanks described as receiving tanks are connected to a pipeline and receive petroleum products from a barge. Working tanks dispense petroleum products for base activities.*

Comment 5: Page 13, Section 2.1.3. Please include the soil boring locations where free phase fuel was detected. The text states that free phase product was detected in the Site 5 wells originally but has not returned. When were the wells last checked for free product? Please include this information in the text. The TPH detections, which did not depict a typical JP5 signature, should be included in Table 4. In evaluating the groundwater for the site, Regional Board staff needs to review the analytical results. Statements such as "sampled collected in November 1992....indicated much lower levels of TPH" need to be backed up with analytical results and the laboratory data sheets.

Response: *Most soil borings where free product was detected were completed as free product wells and the locations are shown in Figure 3 (designated as FP-series wells) of the report. The free product wells have not been sampled for groundwater quality analysis. However, these wells have been scheduled for sampling during the September-October 1993 sampling event. The results will be provided in the quarterly sampling report and ongoing status reports. Groundwater data for other relevant wells downgradient of the tank sites have been provided. Copies of available laboratory data sheets have not been provided in the characterization report, but if required, can be provided on an individual basis.*

Comment 6: Table 5 and Table 7. Without soil data to evaluate, no conclusions can be made regarding the remaining tanks which are scheduled to be removed. These removals should follow the Tri-Regional guidelines.

Response: *Conclusions regarding tanks scheduled to be removed have been avoided. Tank removals scheduled by the Navy are not necessarily based on soil data, but rather they are based on tank status. For example, the Navy is conducting tank removals rather than tank upgrades required by state underground storage tank (UST) regulations for tanks that are no longer active. Removals will follow state guidance.*

Comment 7: Page 19. Were any soil samples taken from the bottom of the excavations for tanks 56C and 56D? If so, please include the analytical results.

Response: *Tanks 56C and 56D were located in the same area and removed from the same excavation. One sample, TN56CD-SFX, was collected from the bottom of the Tank 56C and 56D excavation, as directed by the Santa Clara County inspector. Analytical results are summarized in Table 7. The references cited in this section (for example, the July 1991 Tank and Sump Removal Summary Report prepared by PRC) contain detailed descriptions of the sample locations and results and these reports should be reviewed along with the characterization report.*

Comment 8: Page 27, Section 2.4.1. Any sample results from the removal of Tank 54 should be included in the text.

Response: *Sample locations and results from the Tank 54 removal have been provided.*

Comment 9: Page 28, Paragraph 3. There is a potential for metals contamination at Sump 65. Soil and groundwater samples collected during the removal of this sump should be analyzed for metals.

Response: *During a recent site visit, Sump 65 could not be located. It is assumed that the sump has been removed or is still in place, but covered. An inspection will be made to verify the existance of the sump. If the sump is still in place, removal and sampling are recommended to close the sump. If Sump 65 has been removed, soil sampling is recommended for closure (including metals analysis). Also, please see the response to EPA general comment 2 regarding the status of nonpetroleum tanks and sumps.*

Comment 10: Section 2.4.2. Soil data will be required in order to fully evaluate and close these sump sites.

Response: *Soil samples will be collected during removal activities or if visual inspections indicate a release. Also, please see the response to EPA general comment 2.*

Comment 11: Page 30, Section 2.4.3. In order to evaluate and close these sites in accordance with State regulations, groundwater data within approximately ten feet of the potential source area will need to be collected, if soil contamination is found at the site. "Hydropunch" techniques can be used as a screening tool and to evaluate the most appropriate location for wells.

Response: *If soil contamination is found at a UST site, groundwater investigations will be conducted in accordance with state guidance. Please see the response to RWQCB specific comment 12.*

Comment 12: Table 9. Most of the downgradient wells presented in this table are too far away from the potential source to be used as an indicator of groundwater quality. In addition, please include the screened intervals of the wells within approximately ten feet of the source?

Response: *The distances from the sumps to the nearest downgradient well have been provided in the groundwater tables. Many of the distances exceed the 10 feet specified in state guidance. However, evaluation of groundwater data is required only if soil contamination is found. As indicated in the response to EPA general comment 2, insufficient data exist to evaluate whether soil contamination is present. Therefore, groundwater investigations will be conducted if soil contamination is identified and these investigations will follow state guidance. If groundwater evaluations are required, however, the Navy will use existing well locations, to the extent possible, to maximize the use of existing data sources. Well screen intervals have been summarized for wells used in groundwater evaluations.*

Comment 13: Page 35, Section 2.5.2. Were any soil samples taken from the bottom of the excavation? If so, what were the results? Was groundwater present in the bottom of the excavation, and was it sampled? Please include this information if it is available.

Response: *Groundwater was encountered in the Tank 14 excavation and a groundwater sample, GW14-1, was collected in addition to sidewall samples collected at the soil/groundwater interface. The only detection in sample GW14-1 was 5.6 milligram per liter (mg/L) total petroleum hydrocarbons (TPH) extractable as diesel (PRC 1991). Groundwater was also encountered and samples collected from the excavations for Tanks 2, 43, and 53. However, it is not the purpose of this report to restate existing data. Information regarding groundwater in tank excavations and sampling results can be reviewed in existing reports (PRC 1991).*

Comment 14: Figure 7. Please include the location of boring #TP43-16Y on the figure.

Response: *Boring number TP43-16Y was incorrectly added to Table 13. Boring number TP43-16Y does not exist.*

Comment 15: Page 45, Section 3.0. The text needs to state that these tanks and sumps will be closed under State guidelines and consistent with the RCRA sections stated in the FFA.

Response: *Section 3.0 has been revised to include closing tank and sump sites consistent with state regulations and guidance and the RCRA requirements stated in the FFA.*

Comment 16: Page 47, Section 3.1. The work plans for further investigations at Site 5, and any other sites, need to be reviewed by the regulatory agencies.

Response: *Section 3.1 has been revised to include preparing field work plans for agency review when additional investigations are required.*

Comment 17: Page 49, Section 3.2. The removals of Tanks 32 and 87, as well as any other removals, are required to follow the Tri-Regional guidelines as well as the regulations

cited. Confirmatory soil samples from the bottom of the excavation will need to be collected and analyzed for Tank 54.

Response: *Section 3.2 has been revised to include closing USTs following state and federal regulations and guidance. Sampling data for Tank 54 have been provided in the characterization report and include analytical results from a sample collected from the bottom of the excavation.*

Comment 18: Page 50. Have any soil samples been collected adjacent to Sump 59 to confirm that it is not leaking? Regional Board staff strongly urge the Navy to investigate the soils surrounding Sumps 63 and 64 to determine if there has been a historic release. There are not enough data on Sumps 54, 59, 63, and 65 to close the sites in accordance with State guidelines. Soils data is required for these sumps, and then depending on the soil quality, groundwater may need to be further evaluated.

Response: *The Navy recommends, in accordance with state guidance (RWQCB general comment 2), conducting visual inspections of active sumps (Sumps 59, 63, and 64) to evaluate whether releases have occurred. If evidence of a release is identified, soil investigations will be conducted. The Navy will collect the required soil data from sumps that are inactive and scheduled for removal (Sumps 25, 58, 62, and 65). If soil contamination is identified, groundwater impacts will be evaluated. Data for Tank 54 have been provided and analytical results from the Sump 42 soils indicate that no further action is warranted. Also, please see the response to EPA general comment 2.*

Comment 19: Page 51, Tank 14. More data is required in order to fully evaluate and determine if groundwater has been impacted at Tank 14. Was there groundwater in the excavation? Were samples taken from the bottom of the excavation, or only from the sidewalls? How large was the excavation after completion? What soil was used to backfill the excavation? Please provide as much information as available regarding this tank.

Response: *Data regarding the Tank 14 removal have been fully described in tank and sump reports (PRC 1991 and 1993). These reports note that groundwater was observed in*

the excavation and sampled. Bottom samples were not collected because groundwater was present. Sidewall samples were collected as directed by the Santa Clara County inspector. The excavation measured approximately 10 feet across, 20 feet long, and 13 feet deep, and was backfilled with clean material. The reports conclude that only a minor isolated area of TPH contamination exists and that no further action is warranted for the nearby soils (PRC 1991 and 1993). Therefore, closure approval is requested for Tank 14.

2.0 RESPONSE TO EPA COMMENTS

2.1 GENERAL COMMENTS

Comment 1: The Executive Summary and the Introduction state that this report addresses those UST and sump sites with petroleum and petroleum-related constituents that are specifically exempt from CERCLA. Part 280, Subparts A through H, contained in 40 Code of Federal Regulations (CFR) regulates USTs. It is not clear why these regulations were chosen rather than the *Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites* normally followed in California at UST sites, particularly since this state guidance is to be followed in determining the cleanup levels according to Section 4.0 of this report. Please explain the rationale.

Response: *The Navy agrees that all documents related to petroleum cleanup or site closures should be consistent with state requirements and guidelines. Please see the response to RWQCB general comment 1.*

Comment 2: Petroleum-contaminated soils and groundwater that are mixed with other regulated hazardous wastes are not exempt from CERCLA. Several of the USTs and sumps are listed as containing or having contained waste oils or wastewater that are not exempt from CERCLA: UST No. 26 at Site 5; UST No. 56A at Site 9; UST Nos. 2 and 43 at Site 19; and Sumps 25, 54, 58, 59, 62, 63, 64, and 65 at Site 15. Previous investigations at some of these locations have properly included analyses for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and metals per Tri-Regional Board Staff Recommendations. While this investigatory work has

been included in the extensive references, those results are neither included nor discussed in the text of this report. A review of the referenced reports confirms that VOCs, SVOCs, and metals have been detected in soils and in groundwater at some of these locations.

Since soils surrounding these waste oil tanks and sumps contain hazardous wastes regulated both federally and by the state of California, the soils should additionally be investigated under CERCLA. It appears that petroleum exclusion does not apply to these sites.

Please supply recommendations, per CERCLA requirements, for the cleanup of soils contaminated with nonexcluded hazardous wastes where they are above action levels for each of the impacted sites.

Response: *Based on the recorded contents of Tank 26 at Site 5, Tank 56A at Site 9, Tanks 2 and 43 at Site 19, and Sumps 25, 54, 58, 59, 62, 63, 64, and 65 at Site 15, the Navy agrees that these sites should not be removed from the CERCLA process. One purpose of the characterization report was to summarize existing data for these sites. These data revealed that these tanks and sumps have contained substances other than petroleum products.*

Rather than remove these sites from this report, however, the Navy recommends that these sites remain in this report, but be distinguished from the petroleum sites. The rationale is that the above tanks and sumps must undergo a similar investigation and closure process as the petroleum tanks. Rather than creating a separate process to address these tanks and sumps, they should remain in this report and subsequent reports to expedite closure. To clarify that the report addresses all IRP tanks and sumps, and not just petroleum-related tanks and sumps, the Navy has retitled the report "IRP Petroleum Sites (and Wastewater Tanks and Sumps) Characterization Report."

Tanks and sumps, regardless of previous contents, will be investigated and closed in a consistent manner, following state and federal regulations and guidance. Some differences exist, however, between the state and federal regulations and guidance for

petroleum- and nonpetroleum-related contamination. For example, petroleum tanks must be investigated and closed in a manner consistent with state and federal UST and petroleum regulations and requirements. Sumps or tanks that handled waste oils and waters should be investigated and cleaned up in a manner consistent with CERCLA requirements at NAS Moffett Field (such as following the Middlefield-Ellis-Whisman [MEW] record of decision for contaminated soils overlying the regional groundwater VOC contamination plume). However, sites addressed through the CERCLA process must also use state and federal regulations and guidance as applicable or relevant and appropriate requirements (ARARs), which will make site closures consistent, whether CERLCA or non-CERCLA regulations. These differences will be addressed on a site-by-site basis.

For consistency with the CERCLA actions currently being conducted at NAS Moffett Field, groundwater contamination resulting from tank or sump releases on the western portion of NAS Moffett Field will be addressed through the Navy's west side aquifer source control activities and long-term remdiation, whether related to petroleum or other hazardous substances. Groundwater contamination on the eastern portion of NAS Moffett Field will be addressed in this report if it is related to petroleum only. If groundwater contamination in the eastern portion is related to other hazardous substances, the groundwater will be addressed through the operable unit (OU) 5 CERCLA activities.

Additionally, recommendations for the Site 15 sumps are contained in the response to RWQCB specific comment 18. Recommendations for the additional tanks referenced above are contained in Section 3.0 of the report.

Comment 3: Likewise, in Section 2.3, Site 12 is discussed as only having contamination from TPH and from toluene and ethylbenzene. The *Site 12 Fire Fighting Training Area Action Memorandum*, however, shows that Site 12 also has contamination to soils from SVOCs including polynuclear aromatic hydrocarbons (PAHs), for which no remediation was recommended. These PAHs were likely created from burning of the waste fuels in the area. (Waste fuels are themselves California-regulated hazardous wastes.) It appears that soils contamination at Site 12 should also fall under CERCLA regulation.

Either provide recommendations for remediation of these hazardous constituents or explain why it is unnecessary.

Response: *The Navy agrees that Site 12 should be investigated and remediated following CERCLA requirements. The actions that are currently being implemented at Site 12 address petroleum contamination only (PAHs are also constituents that make up petroleum products). It can be assumed that the remedy currently being employed at Site 12 (catalytic oxidation) will remove most VOCs and SVOCs. However, this reduction has not been specifically evaluated, since the remediation primarily targeted petroleum. To meet CERCLA requirements, Site 12 will be included in the site-wide risk assessment to assess the risks posed by any remaining contaminantes.*

Comment 4: Lead, probably in the form of tetraethyl lead, was a component of virtually all gasolines prior to the mid-1970s. Lead is a known poison to the central nervous system and an experimental teratogen. It is common investigatory practice to sample the surrounding soil and groundwater for lead at those USTs that stored gasoline prior to the mid-1970s. State guidance also requires that soil and groundwater samples be analyzed for lead. This was apparently not routinely done or reported in this report, and should be done from the standpoint of protection of human health.

Response: *Tank summary tables for Sites 5, 9, 15, and 19 describe tank capacity, contents, use, and status. These tables indicate that tanks or sumps at Site 9 (Tanks 56B, 56C, and 56D) and Site 15 (Sump 42) contained gasoline products. The remaining tanks and sumps handled diesel, JP-5 or avgas, unleaded gasoline, waste oil, or wastewater. Tanks 56B, 56C, and 56D and Sump 42 have been removed (PRC 1991). State petroleum guidance requires closure samples from tanks that contained leaded gasoline products to be analyzed for lead.* During removal activities, soil samples were analyzed for metals (including lead) and organic metals. Analytical results indicate only minor detections (PRC 1991). Therefore, tanks and sumps included in this report that contained gasoline products have been adequately sampled for lead. Future investigations and closures of tanks and sumps that contained gasoline products will continue to address lead.

Comment 5: EPA finds it difficult to discern what areas of contaminated soils and groundwater require remediation since that information is not explicitly presented in this report. It would be extremely helpful to have maps showing contamination to soils and to groundwater (Figure 2, although inaccurate, is an example). EPA believes that such maps should be presented in this site characterization report.

Response: *Figure 2 has been corrected. Extent of contamination maps for soils and groundwater (where applicable) have been provided in Figures 2, 3, 4, and 5. More detailed concentration maps will be provided in the final corrective action plan.*

2.2 SPECIFIC COMMENTS

Comment 1: Executive Summary, Page ES-1, paragraph 1. Include the additional RCRA and state law information with which the petroleum cleanup must be consistent as stated in the FFA amendment language (as yet not signed).

Response: *The executive summary has been revised to include state and federal regulations and guidance (consistent with the FFA). Please see the response to RWQCB general comment 1.*

Comment 2: Section 1.0, Page 1, paragraph 2. Same as specific comment #1.

Response: *Section 1.0 has been revised to include applicable state and federal regulations and guidance. Please see the response to RWQCB general comment 1.*

Comment 3: Section 1.0, Page 2, paragraph 1. Please include the specific CERCLA citation for petroleum exclusion.

Response: *Section 1.0 has been revised to include the specific CERCLA citation for the petroleum exclusion (Section 101, Part 14 of CERCLA).*

Comment 4: Section 2.1.2 and Table 2, Pages 7 through 13. According to the remedial investigation (RI) report for OU 2, soil borings analyzed near UST No. 26 also contained polychlorinated biphenyls (PCBs) and SVOCs (phthalates) and virtually no

TPH compounds, concentrations of some metals were also determined to be above site background levels, as might be expected near a leaking waste oil tank. Total concentrations of PCBs in soils (920 mg/kg) exceeded EPA Region IX's recently published tables of preliminary remediation goals (PRGs) for soils, air, and groundwater. These PRGs were designed to be protective of human health for anyone directly exposed to these soils.

It is unclear whether these soils near UST No. 26 that are contaminated with non-TPH hazardous wastes have been properly remediated. If not, please include a recommendation for remediation of this UST under CERCLA response actions (See General Comment No. 2)

Please note that some phthalate compounds have elevated concentrations in soils near other USTs at Site 5. Were those concentrations of phthalates judged to be of no threat to human health or to the environment?

Response: *The Navy agrees that Tank 26 should be investigated through the CERCLA process. Please see the response to EPA general comment 2. Recommendations contained in the report include additional sampling near Tank 26 to determine the nature and extent of contamination. The appropriate CERCLA guidelines will be followed.*

Risks associated with Site 5 have been included in the OU2 RI risk assessment. The OU2 RI concluded that chemical concentrations at Site 5 including phthalates and PCbs do not pose a threat to human health and the environment. Future investigations will include sampling for analytes consistent with tank use.

Comment 5: Figure 2, Page 12. The contouring on Figure 2 appears to be accurate, when compared to the values presented in Table 2. The highest concentrations of TPH in soils as shown in Table 2 are 1,460 mg/kg at SB05-07; 1,190 mg/kg at SB05-06; and 1,000 mg/kg at a soil boring from the well W05-07. None of these values has been honored in the contouring.

This map needs to be redrawn. For completeness, it is suggested that analytical values be posted on the map alongside representative soil borings.

Response: *Data contours in Figure 2 have been redrawn to include the data values noted above. Analytical values have also been provided. Analytical values are also provided in the tables.*

Comment 6: Section 2.1.2, Page 13, paragraph 3. It is stated here that Tanks 30 and 31 were never put into operation. Please validate this comment with a reference.

Response: *The requested reference has been provided.*

Comment 7: Section 2.1.3, Page 13, paragraph 1. Please elaborate on the "significant volume of free phase fuel" that was recovered at Site 5. How much is a significant volume? How many gallons of fuel remain?

Response: *The quantity of fuel recovered from free product wells at Site 5 was not recorded. Subsequent sampling of wells in the Site 5 area has not revealed the presence of any free product. The free product wells, however, have not been sampled since installation. These wells will be sampled during the September-October 1993 sampling event. Analytical results from samples collected from the free product wells will be submitted in ongoing status reports.*

Comment 8: Section 2.1.3, Page 15, paragraph 1. This paragraph discusses toluene detected in two wells at 1 microgram per liter, yet Table 4 shows units of mg/L. Please clarify which units are correct. Also, please describe whether the wells described here are upgradient or downgradient from the suspected sources (for example, Tank 26).

Response: *Table 4 (now Table 6) has been corrected to show units in micrograms per liter (µg/L). A description of the downgradient well locations has been included for Site 5. For example, well W05-06 is downgradient of Tank 26, wells W05-15 and W05-20 are downgradient of Tanks 10 and 11, and well W05-14 is downgradient of Tanks 12 and 13.*

Comment 9: Table 4, Page 16. The units of concentration described here conflict with those mentioned in Section 2.1.3. See previous comment.

Response: *The table has been corrected to include units of µg/L, consistent with Section 2.1.3.*

Comment 10: Section 2.2.2 and Table 5, Pages 18 and 19, First Paragraph. UST No. 56A is listed on Table 5 as having contained waste oils. Sludge samples taken from an oil/water separator at this tank contained elevated levels of several SVOCs: naphthalene, 2-methylnaphthalene, fluoranthene, phenanthrene, pyrene, and bis(2-ethylhexyl)phthalate (BEHP). Concentrations of lead (1,120 mg/kg) were also elevated in the same sludge sample. Elevated groundwater concentrations of trichloroethene (TCE: 2,100 µg/L) and degradation by-products, manganese (860 µg/L), and selenium (135 µg/L) were detected in well W56-2(A1), downgradient from UST Nos. 56A and 56B. These compounds were detected at levels potentially harmful to human health and/or the environment. Has this source area been properly remediated? (No remediation for this area of contaminated soils was recommended in the *NAS Moffett Field Tank and Sump Removal Summary Report.*) These hazardous constituents must be properly remediated under CERCLA.

It would be most helpful for review, if actual concentrations of contaminants in soils (TPH, or otherwise) be posted on maps. (See General Comment No. 5)

Response: *The Navy agrees that Tank 56A may have contained materials other than petroleum products and should be addressed through CERCLA. Please see the response to EPA general comment 2. Additionally, although sludge samples give good indications of previous tank contents, they do not provide specific information on releases and potential impacts. Analysis of samples collected during the removal of Tank 56A indicate only petroleum-related contaminants in the soils. Groundwater under Tank 56A (and under all Site 9 tanks and sumps) is being addressed by the west side aquifer source control and long-term remediation activities being conducted by the Navy and is not included in this report.*

Please see the response to EPA specific comment 5 regarding posting data values on the figures.

Comment 11: Section 2.3, Page 25, Second Paragraph. The statement is made that "sufficient data have been acquired through the investigations to adequately characterize the nature

and extent of petroleum contamination at Site 12." EPA believes that a similar statement cannot be made for non-TPH hazardous wastes. A soil sample from Site 12 (boring SB12-12, 1.0 foot below ground surface), contained benzo(a)pyrene and other PAHs at levels potentially injurious to human health (that is, above Region IX PRGs); SVOCs were detected in other soil borings in the Site 12 area. Several tentatively identified SVOCs were also detected in soil samples and in groundwater samples downgradient from the burn pit in 1988. SVOCs were also detected in soil samples from 1990. The extent of contamination from SVOCs including PAHs has not been defined. Overall site remediation must properly address these hazardous (non-TPH) compounds in soil and in groundwater.

Please explain whether Site 12 requires remediation of hazardous compounds other than petroleum compounds.

Response: *The Navy agrees that Site 12 may contain contaminants other than petroleum and that remedial activities should follow CERCLA guidance. The statement has been revised. Please see the response to EPA general comment 3.*

Comment 12: Sections 2.4.1, 2.4.2, and Table 7, Pages 26 through 30. According to the information presented in Table 7, all of the sumps and oil/water separators at Site 15 except for Sump 42 contain hazardous wastes not product and are therefore regulated federally or by the state of California, or both. The ERM report *Final Report Industrial Waste Engineering Study* as referenced in this section suggests that hazardous metals and chlorinated VOCs have been managed at these sumps in addition to TPH components.

Please explain the rationale for including these sumps under the TPH exclusion. EPA finds that, with the exception of sump 42, contaminated soils and groundwater associated with these sumps should be remediated under CERCLA, unless they are otherwise regulated. (See General Comment No. 2)

Response: *The Navy agrees that all of the Site 15 sumps, except Sump 42, contained substances other than only petroleum products. Please see the response to EPA general comment 2.*

Comment 13: Section 2.4.1, Page 27, paragraph 1. What rationale is used to determine which inactive sumps are removed and which ones are left in place (for example, Sumps 63/64)?

Response: *The Navy decides which sumps should be removed and which sumps should be left in place based on the status of the specific sump. Sumps no longer active and no longer needed are scheduled for closure and sumps that are currently active or temporarily inactive are left in place.*

Comment 14: Section 2.4.2, Page 28, paragraph 1. Will analytical data for soils surrounding Sumps 25, 58, 62, 63, 64 and 65 ever be collected? Why is the Navy not collecting soil data here?

Response: *Analytical data will be collected when evidence of a release is identified or when closure activities occur. Please see the responses to RWQCB specific comment 18 and EPA general comment 2.*

Comment 15: Section 2.4.2, Page 30, First Paragraph, Last Sentence. Section 2.4.2, states "no petroleum-related hydrocarbons were detected in the two soil samples collected from the Tank 54 excavation." Table 7 (page 26) lists Sump 54 as having contained wastewater. Please discuss what analytes, if any, were found in the excavation for Sump 54 if not petroleum-related constituents.

The words "Tank 54" and "Sump 54" are used interchangeably in this report. It is unclear to the reviewer if one or two pieces of equipment are being referenced. Please clarify.

Response: *Samples were collected from the Tank 54 excavation and analyzed for VOCs and TPH. Sample locations and analytical results have been provided in the report. "Tank 54" is the correct designation. "Sump 54" is incorrect and used inadvertantly in the report.*

Comment 16: Section 2.4.3, Page 30. Groundwater analytical results in downgradient wells should be investigated, for contamination from VOCs, SVOCs, and metals as well as for

TPH and benzene, toluene, ethylbenzene, and xylene (BTEX) components. If any of these analytes have been detected, please report them. (See General Comment No. 2.)

This section presents Site 15 groundwater analytical results. Maps of the site showing all sumps and oil/water separators in relation to soil borings and monitoring well locations should be included for completeness.

Response: *Groundwater data for sumps located on the eastern portion of NAS Moffett Field will be evaluated if soil contamination is identified. Groundwater under the western portion of NAS Moffett Field is being addressed by the west side aquifer source control and long-term remediation activities being conducted by the Navy. Please see the response RWQCB specific comment 12.*

Comment 17: Table 10, Page 34. UST Nos. 2 and 43 contained waste oils and should not be included under the TPH exclusion. (See General Comment No. 2)

Response: *The Navy agrees that Tanks 2 and 43 contained other substances in addition to petroleum products and that remedial activities should follow CERCLA guidance. Please see the response to EPA general comment 2.*

Comment 18: Section 2.5.2 and Table 11, Pages 35 and 36. TCE and SVOCs including 4-methylphenol were detected in soil boring samples around the location of UST No. 2 and associated piping in 1990.

Characterization of all hazardous waste contaminated soil around UST No. 2 should be included for completeness.

Response: *The Navy agrees that other contaminants were identified at Tank 2. Please see the responses to EPA general comment 2 and EPA specific comment 17.*

Comment 19: Section 2.5.2, and Table 13, Pages 40 and 41. Tetrachloroethene (PCE), TCE, styrene and SVOCs were detected in soil borings near the location of UST No. 43 and

associated piping in 1990. Some of the soil boring samples contained elevated levels of arsenic and lead.

Also, organic lead was detected in soil borings from monitoring wells W53-1(A1) at concentrations of 0.05 and 0.07 mg/kg (from depths of 2.5 to 5.0 feet).

The hazardous waste-contaminated soil in these locations requires proper characterization of all hazardous constituents.

Response: *The Navy agrees that other contaminants were identified at Tank 43. Please see the response to EPA general comment 2 and EPA specific comment 17.*

Comment 20: Section 2.5.3, Page 45. TCE, PCE, and BEHP were detected in 1990 groundwater samples, in addition to TPH constituents, downgradient from the location of UST No. 2. Also, groundwater samples taken from well WT2-1(A1) immediately downgradient from the tank contained elevated levels of arsenic, cadmium, chromium, and nickel above maximum contaminant levels (MCLs) during the same period.

PCE, TCE, vinyl chloride, and other VOCs and SVOCs were detected in groundwater samples downgradient from the location of UST No. 43 in 1990. Also, groundwater concentrations of arsenic, barium, cadmium, chromium, lead, and nickel in downgradient wells exceeded the MCLs (5).

This hazardous waste-contaminated groundwater requires further characterization and may be necessary to be remediated under CERCLA.

Response: *The Navy agrees that Tanks 2 and 43 contained other constituents in addition to petroleum products. However, Tanks 2 and 43 are located on the eastern portion of NAS Moffett Field. Groundwater under the eastern portion has been evaluated by the OU5 RI, including the evaluation of risks to human health and the environment. Therefore, CERCLA requirements for the groundwater are being followed.*

Comment 21: Section 3.0, Pages 45 through 51. The Navy should take into consideration all of the foregoing comments in developing their corrective action plans. All of the hazardous

constituents not just the TPH (CERCLA-exempt) wastes must be properly remediated whether under RCRA utilizing Tri-Regional Board guidelines or under CERCLA.

EPA is not satisfied with the Conclusions and Recommendations, as presented. In part, 40 CFR § 280.66 (b) states that "the implementing agency should consider the following factors as appropriate:

(1) The physical and chemical characteristics of the regulated substance, including its toxicity, persistence, and potential for migration....."

After a more thorough characterization of all hazardous waste-impacted sites, please present a complete corrective action plan addressing all concerns as discussed. A table set up to show site versus future work (for example, corrective action) would be a helpful addition to this document. The latest Federal Facilities Agreement Amendment schedule proposes that a Final Petroleum Cleanup Closure/Post-Closure Report be submitted to the regulatory agencies by August 5, 1994. This assumes that all of the work recommended in this document will be completed prior to this date. If this is not the case, then the Navy will have to provide ongoing status reports after this date. Details can be discussed in the future if necessary.

Response: *The Navy agrees that tanks and sumps that contained other substances in addition to petroleum products should be remediated under CERCLA (please see the response to EPA general comment 2). Corrective action plans for these sites will follow the appropriate state and federal regulations and guidance.*

Additionally, recommendations in the characterization report include conducting additional investigations at some sites. These investigations must be conducted before corrective action plans can be developed. Therefore, the Navy recommends that the corrective action plan address only sites that have been adequately characterized (for example, Tank 53 at Site 19). Additionally, a work plan will be prepared for agency review for sites requiring additional investigation. Once additional investigations are complete, an amended corrective action plan will be scheduled and prepared for those sites investigated.

Comment 22: Section 3.4, Pages 49 and 50. In Section 2.4.2 on page 28, it states that "sampling results are available only for soils surrounding Sump 42 and Tank 54." What analytical results (other than those at Sump 42 and Tank 54) are then being referenced in Section 3.4 if this statement is correct?

Please clarify and present these analytical results, if any.

Response: *The discussions of analytical results in Sections 2.4.2 and 3.4 are correct. Analytical results referenced in Section 2.4.2 refer to surrounding soil samples (soil samples have been collected only at Sump 42 and Tank 54). The analytical data referenced in Section 3.4 (for Sumps 25, 58, and 59) refer to samples collected from the sump contents (for example, sludge samples). Section 3.4 has been revised to clarify the analytical results.*

Comment 23: Section 4.0, Page 51. Tri-Regional Board guidance recommends sampling and analysis for total lead (and optionally for organic lead and ethylene dibromide) for those USTs that have contained leaded gasoline. This guidance also recommends analysis for VOCs, SVOCs, and metals for those USTs (and sumps) that contained waste oils or unknown contents. These recommendations should be followed. (See also General Comment Nos. 2 and 4).

The Navy utilized the Summer's Model for potential leaching of contaminants into groundwater in the RI report for OU2. For consistency, it is suggested that the same leaching model be used for these contaminated UST and sump locations, or present the rationale for utilizing an alternate leaching model.

Response: *Please see the response to EPA general comments 2 and 4 regarding analysis for lead and other constituents. A modified version of the Summer's Model has been proposed in the corrective action plan to estimate the fate and transport of constituents in soils.*

3.0 REFERENCES

PRC 1991. Tank and Sump Removal Summary Report. NAS Moffett Field, California. PRC Environmental Management, Inc. July.

PRC 1993. Additional Tank and Sump Investigation Technical Memorandum. NAS Moffett Field, California. PRC Environmental Management, Inc. March.

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October 5, 1993

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Subject: **Response to Agency Comments on the Draft Installation Restoration Program Petroleum Sites Characterization Report, Naval Air Station Moffett Field CLEAN Contract Number N62474-88-D5086, Contract Task Order 0236**

Dear Stephen and Camille:

Enclosed please find two copies of the above referenced response to agency comments prepared by PRC Environmental Management, Inc. (PRC). Agency comments have been addressed and incorporated into the final characterization report. By cover of this letter, copies of the responses have been sent to the appropriate project personnel and regulatory agencies.

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

Sincerely,

Brian Werle
Project Engineer

For Joshua D. Marvil
Project Manager

Enclosure

cc: Michael Gill, EPA
Elizabeth Adams, RWQCB
Lt. Susanne Openshaw, NASMF
Don Chuck, NASMF

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