



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

August 17, 1993

Mr. Stephen Chao
Naval Facilities Engineering Command
Western Division
900 Commodore Way, Bldg. 101
San Bruno, CA. 94066

Re: Draft Installation Restoration Program Petroleum Sites Characterization Report,
dated July 2, 1993

Dear Mr. Chao,

The U.S. Environmental Protection Agency (EPA) has reviewed the subject document and provides the following comments. The document was reviewed by SAIC/TSC geologist Richard Brown. Call me at 415-744-2383 if you have any questions.

Sincerely,

A handwritten signature in black ink that reads "Michael D. Gill".

Michael D. Gill
Remedial Project Manager
Federal and Technical Programs Branch

cc: Elizabeth Adams (RWQCB)
Chip Gribble (DTSC)
Josh Marvil (PRC) (Fax)
Fred Molloy (SAIC)

**TECHNICAL REVIEW OF THE DRAFT
INSTALLATION RESTORATION PROGRAM
PETROLEUM SITES CHARACTERIZATION REPORT
NAS MOFFETT FIELD, CALIFORNIA**

GENERAL COMMENTS

1. The Executive Summary and the Introduction state that this report addresses those underground storage tank (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 (1). 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* (2) 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.

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* (2). 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 (3), (4) and (5).

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.

3. Likewise, in Section 2.3, Site 12 is discussed as only having contamination from total petroleum hydrocarbons (TPH) and from toluene and ethylbenzene. The *Site 12 Fire Fighting Training Area Action Memorandum* (6), 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.

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 (2). This was apparently not routinely done or reported in this report, and should be done from the standpoint of protection of human health.
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.

SPECIFIC COMMENTS

1. Executive Summary, Page ES-1, para 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).

2. Section 1.0, page 1, para 2

Same as specific comment #1.

3. Section 1.0, page 2, para 1

Please include the specific CERCLA citation for petroleum exclusion.

4. Section 2.1.2 and Table 2, Pages 7 through 13

According to the remedial investigation (RI) report for Operable Unit (OU) 2 (3), soil borings analyzed near UST No. 26 also contained poly-chlorinated 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 (2). 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 (7).

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 (3). Were those concentrations of phthalates judged to be of no threat to human health or to the environment?

5. Figure 2, Page 12

The contouring on Figure 2 appears to be inaccurate, 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.

6. Section 2.1.2, Page 13, para 3

It is stated here that Tanks 30 and 31 were never put into operation. Please validate this comment with a reference.

7. Section 2.1.3, Page 13, para 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?

8. Section 2.1.3, Page 15, para 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 down gradient from the suspected sources (e.g. Tank 26).

9. Table 4, Page 16

The units of concentration described here conflict with those mentioned in Section 2.1.3. See previous 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 $\mu\text{g/L}$) and degradation by-products, manganese (860 $\mu\text{g/L}$), and selenium (13.5 $\mu\text{g/L}$) were detected in well W56-2(A1), downgradient from UST Nos. 56A and 56B (5). 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.)

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 (i.e., 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 (6). 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.

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* (8) 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.)

13. Section 2.4.1, Page 27, para 1

What rationale is used to determine which inactive sumps are removed and which ones are left in place (e.g. sumps 63/64)?

14. Section 2.4.2, Page 28, para 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?

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.

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.

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.)

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 (5).

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

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. (5)

Also, organic lead was detected in soil borings from monitoring well W53-1(A1) at concentrations of 0.05 and 0.07 mg/kg (from depths of 2.5 to 5.0 feet). (5)

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

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 W2-1(A1) immediately downgradient from the tank contained elevated levels of arsenic, cadmium, chromium, and nickel above maximum contaminant levels (MCLs) during the same period (5).

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.

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 vs. future work (e.g. 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.

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.

23. Section 4.0, Page 51

Tri-Regional Board guidance (2) 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 (9) for potential leaching of contaminants into groundwater in the RI Report for OU2 (3). 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.

REFERENCES

1. *40 Code of Federal Regulations*, Parts 260-299. July 1, 1992.
2. California Regional Water Quality Control Board - San Francisco Bay Region. August 10, 1990. *Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites*.
3. IT Corporation, August 1992. *Remedial Investigation Report Operable Unit 2: Sites 3-11, 13, 14, 16-19 Soils NAS Moffett Field, California*.
4. PRC Environmental Management, Inc. May 2, 1991. *NAS Moffett Field Site 9 Action Memorandum*.
5. PRC Environmental Management, Inc. July 15, 1991. *NAS Moffett Field Tank and Sump Removal Summary Report*, pp. 22 - 96.
6. PRC Environmental Management, Inc. and James M. Montgomery Consulting Engineers, Inc. September 1990. *Site 12 Fire Fighting Training Area Action Memorandum*.
7. U.S. EPA Region IX. March 1, 1993. *Region IX Preliminary Remediation Goals, First Quarter 1993*.
8. ERM-West/Aqua Resources. April 1986. *Final Report Industrial Waste Engineering Study NAS Moffett Field, California*.
9. U.S. EPA, 1989. *Determining Soil Response Action Levels Based on Potential Contaminant Migration to Ground Water: A Compendium of Examples*. EPA/540/2-89/057.