UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
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3 Dec 1991

Mr. Stephen Chao
Naval Facilities Engineering Command
Western Division, Code 18
Office of Environmental Management
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P.O. Box 727
San Bruno, CA 94066-0720

Dear Mr. Chao:

Please find enclosed the comments of the Environmental Protection Agency to Draft Site 9 Field Investigation Technical Memorandum, Naval Air Station Moffett Field.

If you have any questions please contact me at (415) 744-2412.

Sincerely,

Lewis Mitani
Remedial Project Manager

enclosure

cc: Mr. Cyrus Shabahari, Dept. Toxic Substances
Mr. Wilfried Bruhns, RWQCB

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FIN 36

EPA Comments to
Site 9 Field Investigation Technical Memorandum
Naval Air Station Moffett Field

1. **Page 14, 3rd paragraph, Section 3.2, Underground Storage Tank Investigation.**

   "For each tank uncovered, a 1.5-inch diameter sampling pipe was installed to allow for future sampling."

Clarify where the sampling pipes were installed. In the tank? Beneath the tank? In the soil adjacent to the tank? Specify what these sampling pipes will be used to sample. Tank contents? Soil gas vapor? Groundwater?

2. **Page 15, 4th paragraph, Section 3.2.3, Deviations from the Work Plan.**

   "Based on field observations and analysis of previous information, it was determined that investigation of the three northernmost tanks in the northern cluster of oil tanks was not necessary."

State and reference findings of the field observations and analysis of previous information that led to the conclusion that the three northernmost tanks in the northern cluster of six tanks did not warrant investigation.

3. **Page 18, 2nd paragraph, Section 3.3.3, Deviations from the Work Plan.**

   "Sample location 123 was eliminated because the soil gas probe was unable to penetrate the pavement in the area."

Why wasn't the pavement cored to allow for collection of sample 123?

4. **Page 28, 2nd paragraph, Section 3.5.3, Deviations from the Work Plan.**

"Results from the step-drawdown test at W56-2(A1) indicated that another extraction well was needed in the vicinity of Building 31. Boring SB9-107 was drilled and converted into well W9-47(A1) for this purpose."

According to Plate 1, the Boring Log, and the Monitoring Well Installation Record for SB9-105, this boring and not Borings B9-107 was converted into well W9-47(A1).

5. **Page 86, 2nd paragraph, Section 5.2.1, Southwest Quarter.**

"Building 16 previously suspected (IT, 1991a), is not a source of chlorinated VOCs."

Provide supporting evidence for the stated conclusion that Building 16 is not a source of chlorinated VOCs.

6. **Page 86, last paragraph, Section 5.2.1, Southwest Quarter.**

"Similarly, the 1,2-DCE to TCE ratios calculated for southwest quarter ground water samples collected during the July 1991 field investigation and the February 1991 IT sampling event (IT, 1991b) range from 0.1016 to 0.127."

Explain the reason for comparing concentrations of 1,2-DCE and TCE as a ratio. What do these numbers mean?

Further in the same paragraph:

"Based on the limited range of ratios observed in these ground water samples and the correlation with ratios calculated for samples from wells W9-38(A1) and W9-41(A2), the nature of contaminants and hydrogeologic conditions, the contamination in the A1 zone of the southwest quarter is indicative of upgradient sources."

Please include additional information to support this conclusion. What hydrologic conditions and contaminant characteristics are being referred to? Explain why contamination in the A1 zone is compared to 1,2-DCE/TCE ratios for Well W9-41(A2) in the A2 aquifer? Which wells with 1,2-DCE to TCE ratios "within this range" were sampled from the southwest quarter in 1991?

7. **Page 88, 1st paragraph, Section 5.2.1, Southwest Quarter Building 16.**

> **"Generally, TCE and 1,2-DCE are chemically and physically similar, therefore, ratios of these compounds in related ground water samples are not expected to vary considerably, particularly over short distances."**

Please expand the discussion to indicate factors which may affect TCE/1,2-DCE ratios. It would seem that 1,2-DCE (in particular Cis 1,2-DCE) is a degradation product of TCE, and ratios of the two might be used to determine if the sample is close or far away from a possible source of TCE. This is not made clear in the discussion of 1,2-DCE/TCE ratios in this section.

8. **Page 88, last paragraph, Section 5.2.1, Southwest Quarter Building 15.**

> **"...upgradient contamination of the A1 zone in the southwest quarter is attributed to cross-contamination from the A2 zone as suggested by the absence of the A1/A2 confining bed, gradational chemical concentrations, and relative chlorinated VOC ratios."**

Chlorinated VOC ratios relative to what? Please be specific.

9. **Page 89, 1st Paragraph, Section 5.2.1, Southwest Quarter Building 15.**

> **"...the comparison of contaminant ratios presented below for samples from H9-7 and H9-26 suggests the chlorinated VOCs observed in H9-7 are related to upgradient contamination."**

Previous discussion has centered on the relation of concentrations of 1,2-DCE and TCE. Ratios presented here include 1,1-DCA to TCE, 1,1-DCE to TCE and 1,1,1-TCA to TCE as well as 1,2-DCE to TCE. What is the significance of ratios such as 1,1-DCE, 1,1-DCA and 1,1,1-TCA to TCE? Why are the chlorinated VOCs observed in 9-7 related to upgradient contamination? Please be specific.

> **Further: "The low concentrations of Freon 113 and PCE, as well as the slight increase in contaminant ratios observed in HydroPunch™ sample H9-7 compared to HP-26, suggest the majority of the ground water contamination in the Building 15 area is associated with upgradient contamination."**

Explain why this conclusion can be made based on low concentrations of Freon 113 and PCE and a slight increase in contaminant ratios in H9-7 as compared to HP-26.

10. Page 91, last paragraph, Section 5.2.3, Building 88.

> **"A comparison of 1,2-DCE to TCE ratios for ground water samples collected in the Building 88 area to downgradient ground water samples suggest the chlorinated VOC contamination observed in samples from well W9-46(A1) is associated with a release of chlorinated solvents from Building 88."**

Which downgradient groundwater samples are Building 88 groundwater samples being compared with? Again, as stated in the above paragraph, it is not clear how the conclusion that VOC contamination is associated with Building 88 as a source has been made.

> **Further: "In addition to Building 88 sources, a potential source of chlorinated VOCs was identified adjacent to Hangar 1 (near Building 85) when soil samples were found to be contaminated with PCE and TCE. Ground water contamination of the A1 zone downgradient of Building 88 is also attributed to regional contamination originating from off-site sources."**

Provide supporting data or references for this statement.

11. Page 92, last paragraph, Section 5.2.3, Building 88.

> **"Concentrations of PCE in soil borings ERM-B13 and ERM-4 ranged from 350 to 6,900 ug/kg between 12 and 20 feet BLS."**

ERM-4 is evident on Plate 2. However, ERM-B13 seems to be missing from Plate 2. Add Boring ERM-B13 TO Plate 2.

12. Page 94, 2nd paragraph, Section 5.2.3, Building 88.

> **"A soil gas survey conducted in 1990 detected PCE and TCE in a sample (SG96) collected adjacent to Hangar 1 at the intersection of North Akron Road and Cummins Avenue."**

Please indicate the amount of PCE and TCE detected in SG96. Is this the same contamination referred to on page 92 (see comment 10)?

Further, "A HydroPunch™ sample (HP29-100, 15 feet BLS) also was collected 100 feet upgradient of soil gas sample SG96."

HP29-100 has apparently been omitted from Plate 1. Its location should be added to Plate 1.

Further: "The presence of PCE in the unsaturated zone soil and in downgradient soil gas and HydroPunch™ samples suggest the contaminated soil is a source of chlorinated VOCs. The extent of soil contamination in this area and the responsible activity are presently unknown."

Since the soil gas sample SG96, monitoring Well W9-45(A1) (soil boring SB9-102) and HydroPunch™ point HP29-100 are all downgradient of Building 88, and the extent of soil contamination at W9-45(A1) and responsible activity are unknown, the most that can be said about the soil contamination at this location is that it may be a possible or potential source of chlorinated VOCs for contamination in the water downgradient of this area.

13. **Page 94, last paragraph, Section 5.2.4, Building 29.**

"Recent data also indicate that populations of microorganisms capable of reducing the chlorinated VOCs appear to be increasing and becoming more widespread in the Building 29 and downgradient areas."

Provide the data that supports this statement.

14. **Page 95, 3rd paragraph, Section 5.2.4, Building 29.**

"The grab sample and soil boring results indicate the TPH contamination is concentrated at 10 and 19 feet BLS in the area of the USTs near Building 29 with the highest concentrations of TPH in the soils are highest near the northern set of....."

Please amend this sentence so that it reads correctly.

15. **Page 97, 4th bulleted item, Section 5.2.5, Summary of the Nature and Extent of Contamination - Building 88.**

"A previously unidentified source of chlorinated VOCs is present near the southwest side of Hangar 1 in the vicinity of well W9-45(A1)."

This sentence should be amended to read as "a previously unidentified possible (or potential) source...."

16. **Page 97, 5th bulleted item, Section 5.2.5, Summary of the Nature and Extent of Contamination - Southwest Quarter.**

    "This interpretation is based on similarity of chlorinated VOC ratios in water samples from the southwest quarter, gradational chemical changes in water samples from three locations upgradient of the southwest quarter...."

Please identify the three locations upgradient of the southwest quarter.

17. **Page 98, 3rd paragraph, Section 6.0, Effects on Source Control Design.**

    "Soil source controls at other source areas (Buildings 31 and 88) were eliminated from this source control because the nature and extent of soil contamination in these areas has not been sufficiently characterized."

Will other source control options be proposed? What is the plan for performing more field work to further define the nature and extent of soil contamination so that the soil sources can be included in the source control action?

18. **Page 100, 2nd paragraph, Section 6.1.2, Soil Source Control Recommendation.**

    "This source control will not be addressed in the source control design for Site 9."

Provide an explanation as to why this source control will not be addressed in the source control designs for Site 9. The Building 29 area is one of the major areas in need of source control in Site 9.

19. **Page 101, 2nd paragraph, Section 6.2, Ground water Source Control.**

    "The selection of extraction wells is based upon the following criteria (1) the ability of the well to sustain a pumping rate greater than 1.5 gpm; (2) well location downgradient of source areas or in areas of preferential flow...."

Please define "areas of preferential flow."

20. **Page 107, 3rd paragraph, Section 6.3, Source Control at Possible Sources.**

    "...soil source control actions at Building 15 also will not be included in the source control actions at Site 9."

Will future work be planned to further characterize soil contamination at Building 15 so that it can be included in the soil source control actions?