



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

December 17, 1993

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

Re: Draft Additional Investigation of Inferred Sources Technical Memorandum,
dated November 22, 1993

Dear Mr. Chao,

The U.S. Environmental Protection Agency (EPA) has received and reviewed the subject document. The document was reviewed by EPA and Ken Eichstaedt of URS Consultants, Inc. Call me at 415-744-2383 if you have any questions.

Sincerely,

Michael D. Gill
Remedial Project Manager
Federal Facilities Cleanup Office

cc: Elizabeth Adams (RWQCB)
C. Joseph Chou (DTSC)
Ken Eichstaedt (URS)
Josh Marvil (PRC) (Fax)

REVIEW COMMENTS
DRAFT ADDITIONAL INVESTIGATION OF INFERRED
SOURCES TECHNICAL MEMORANDUM
NAVAL AIR STATION MOFFETT FIELD, CALIFORNIA

GENERAL COMMENTS

1. **Section 2.2: Screening Results**
Section 3.0 (inclusive of all subsections): Field Activities Summary
Section 4.0 (inclusive of all subsections): Results

The above sections reference investigation areas, buildings, and soil and groundwater sampling locations; however, there are no figures presented in these sections, nor are there references to figures presented in other sections that show information discussed in the text. Figures or figure references, such as in a grid, should be provided for clarity. Plate 1 presents locations of buildings and investigation areas; however, neither the regional VOC groundwater plume nor the adjacent MEW site boundaries are shown on Plate 1.

2. Several sections of the report provide only general discussion of sample locations related to a specific investigation area (i.e., Section 3.3.2, page 21, paragraph 1 states "After drilling and sampling, four of the soil borings were converted into A1 zone groundwater monitoring wells," and Section 4.1.1, page 25, paragraph 2 states "Of the three soil borings at the transportation yard..."). The report should provide more concise descriptions of sample locations for clarity (i.e. "After drilling and sampling, soil borings SBSI-1 through 4 were converted into A1 zone groundwater monitoring wells," and "Of the three soil borings (SBSI-1 through 3) at the transportation yard...").

SPECIFIC COMMENTS

1. **Table 1 - Site Screening Activities, Page 12**

Building 341 is identified as used for Pest Control Storage and is slated to have been demolished. It is cross-referenced to Building 184 (Landscape Equipment Storage) but no investigative work is slated for either building. No basis for the lack of further investigative work is stated; the extent of any pesticide contamination of soil or potential for groundwater contamination is not mentioned. Further investigation is considered necessary in the area of the prior Building 341. Note: Appendix A, page A-9 states that Building 341 could not be located, and Building 184 was inspected instead, since it was within the transportation yard.

The boundaries of the yard should be clearly delineated on Figure A-11, and Table 1 should be amended to reflect that the area coinciding with the probable location of

Building 341 will be addressed by sampling efforts conducted in the transportation yard.

Table 1 is intended to summarize the screening of the investigation sites. It identifies the potential for groundwater impact from the site by identifying the closest downgradient monitoring well. Table 1 should identify if a well is cross gradient and also how far downgradient the well is. It was noted that some monitoring wells were greater than 500 feet away from buildings under investigation (e.g., Building 10, 500 ft.; Building 15, 700 ft.; Building 117, 750 ft.; Building 118, 600 ft.; Building 127, 600 ft.; Building 258, 700 ft.; Building 400, 400 ft.; and Building 438, 650 ft.). The effectiveness of these wells is questioned when the distances from a potential source is so great. It was also noted that some investigated buildings had wells located upgradient even though they were identified as downgradient (e.g., Building 95, Building 96, and Building 161).

2. Table 1 - Site Screening Activities, page 13

It is stated in Section 2.2, page 8, paragraph 3 that Building 503 will still be undergoing further petroleum investigation. Even though this investigation is not related to the inferred sources issue, please clarify this in Table 1.

3. Section 3.0: Field Activities Summary, Pages 17 - 24

It is recommended that the report include a brief discussion of containment or disposal of RI-derived waste.

4. Section 3.2: Cone Penetrometer Testing and HydroPunch® Sampling, Page 18, Paragraph 1

The paragraph discusses the use of the HydroPunch® sampler and sample hole abandonment. The type of HydroPunch® sampler used, HydroPunch I® or HydroPunch II® should be stated. The paragraph states that the samples were bailed from the probe suggesting that the HydroPunch II® was utilized in the 'hydrocarbon mode'. If that was the case, the sampling method is appropriate only for collection of groundwater samples for semi-volatile hydrocarbon analyses due to potential volatilization of a sample which is bailed from the probe. If the HydroPunch II® was used in the 'groundwater mode', the probe itself becomes the sample chamber which would allow for the collection of volatile and semi-volatile groundwater samples since any potential sample volatilization occurs when the sample is transferred from the probe to the sample vial. As described in the paragraph, the latter example may not be the case. This issue should be clarified.

5. Section 3.2.2: Sampling, Page 18

The average thickness of the A1 aquifer zone should be stated in this paragraph. Also, reference should be made to the type of analyses conducted for the HydroPunch®

groundwater samples.

6. Section 3.3.1: Locations, Page 20

This section generally describes field activities, including sampling locations. The rationale for sample location selection should also describe the groundwater flow directions and investigation area of interest (i.e., upgradient, crossgradient, downgradient), and the objective of each sample location.

The second sentence of the second paragraph should be edited to state that the sand thickness recorded in HSI-3 was the greatest of the three CPT locations discussed in the previous sentence (HSIs-1, 2, and 3). The sentence, as presented, does not distinguish the three CPT locations used as criteria for the selection of WSI-1 from any of the seven CPT locations completed during the investigation.

7. Section 3.3.2: Field Activities, Page 21, First full sentence

The sentence indicates that photoionization detector (PID) screening was completed on soil cores. The sentence should also state that the results of the PID field screening appear on the individual soil boring logs included as an appendix.

8. Section 3.3.2: Field Activities, Page 21, Paragraph 1

The fourth sentence should indicate what type of bentonite seal was used (pellets, slurry, etc.)

9. Section 3.3.2: Field Activities, Page 21, Paragraph 2

The fifth sentence in this paragraph should be rewritten to read, 'Each well was developed until at least three borehole volumes had been removed from the well and the monitored parameters stabilized.'

10. Section 3.3.3: Sampling, Page 23

This section discusses sampling procedures but does not include references to the type of sample containers, the preservation methods, analytical methods, chain of custody procedures, or rationale for individual boring and sample locations. The report should either reference approved work plan/field sampling plan methods, or this information should be provided in this text.

11. Section 3.4.2: Sampling, Pages 23 and 24

This section describes groundwater sampling procedures but does not include references

to sample containers, preservation methods, analytical methods, or chain of custody procedures. Additionally, performance standards for considering well parameters stabilized should be referenced.

12. Section 4.0: Results, Page 24, Paragraph 2

The description of EPA CLP SOWs should include the SOW number and indicate whether the SOW is Routine or Special Analytical Services (RAS or SAS).

13. Section 4.1: Soil Sampling, Pages 24 and 25

TCE results of less than 10 $\mu\text{g/L}$ are quoted and found to correspond to the following sample locations (Appendix D: SBSI-2, 7 $\mu\text{g/L}$; SBSI-4, 9 $\mu\text{g/L}$; SBSI-7, 8 $\mu\text{g/L}$). All of these results are flagged J in Appendix D, because they are below the method reporting limit (typically 12 $\mu\text{g/L}$) but above the instrument detection limit. These data are considered qualitative evidence only and should be qualified in the text on page 25.

No QA/QC data are presented or discussed in either Section 4.1 or Appendix D.

14. Table 4 - Soil Sample Results, Page 26

Sample results flagged J in Appendix D are not qualified in this table (see URS comments for Section 4.1). The table is footnoted stating that only the U qualifier is shown; however, the omission of the J qualifier is misleading.

15. Table 4 - Soil Sample Results, page 26

Please indicate in the footnotes when validated data will be available.

16. Section 4.2.1.1: Chlorinated Volatile Organic Compounds, Page 28

There should be a discussion of QA/QC data in the groundwater section, as in the Soil Sampling section.

17. Section 5.1: Page 37, Paragraphs 1, 2 and 3, and Figure 4

These paragraphs indicate that a minor release of VOCs may have occurred at the location of SBSI-3, but that TCE concentrations in monitoring well WSI-3 (390 micrograms per liter; $\mu\text{g/L}$) are consistent with upgradient TCE levels as detected in monitoring wells W60-1, WSI-1, and R32A. The report indicates that the closest monitoring well to WSI-3 (W60-1) has relatively low concentrations of TCE (38 $\mu\text{g/L}$), and indicates that this low level is due to dilution from being screened in the shallow A1 unit soils as well as the deeper portion of the A1 aquifer. It should be noted that the logs

and screened intervals for W60-1 and WSI-3 are nearly identical, and that the increased TCE levels in WSI-3 may be partially due to the TCE soil contamination detected in SBSI-3. It seems that TCE soil contamination detected at SBSI-3 is a source of local increases in TCE concentrations in the A1 aquifer. Closer investigation of this area is necessary to attempt to conclude the origin of the TCE contamination.

- 18. Figure 3: Transportation Yard Investigation Locations, Page 33**
Figure 6: Site 8 Area Investigation Locations, Page 40

Groundwater flow directions as shown by approximate groundwater flow arrows vary by approximately 45° between figures, with the groundwater flow direction in Figure 3 shown as approximately due north, and the flow direction in Figure 6 shown as approximately N45°E. Additionally, the groundwater flow direction shown on Plate 1 is approximately due north. The report should discuss these differences in flow directions and support the interpretation with data. It is recommended that groundwater be represented with contours of equal elevation to clarify groundwater flow directions at each investigations area and to support the selection of sampling locations.

- 19. Figure 4: Transportation Yard Geologic Cross Section A-A', Page 34**

The figure utilized information derived from previous investigations but does not include that information in the appendices (soil boring logs for 74A, W60-1, W60-2, and R32A). The depiction of the top of the filter pack interval for WSI-1 (22 feet) is incorrect according the vertical scale included on the figure.

- 20. Figure 4: Transportation Yard Geologic Cross Section A-A', Page 34**
Figure 5: Transportation Yard Geologic Cross Section B-B', Page 35

These figures should present water levels at each well location.

- 21. Figure 5: Transportation Yard Geologic Cross Section B-B', Page 35**

This figure also utilized information derived from previous investigations but does not include that information in the appendices (soil boring logs for HSIs-1 through 7, 64A, and CPT log for CPTU4-2). HSIs-5 and 3 are mislabeled as HS1-5 and HS1-3.

- 22. Section 5.1: Transportation Yard**
Groundwater TCE Concentrations at the Transportation Yard, Page 38

Data for wells W14-2, W14-3, W14-4, W14-10, W14-11, and W14-12 are not presented in Appendix E. Therefore, it is unknown whether any of the data are J qualified, or otherwise problematic.

23. Section 5.2: Pages 39 and 40

This section describes the results and interpretation of the investigation at Site 8 but does not include a discussion of upgradient and downgradient regional VOC concentrations in the wells presented on Figure 6 for comparison. It is recommended that this discussion be incorporated into the report, including discussion of groundwater sample results at all monitoring wells shown on Figure 6.

Paragraph 2 indicates soil boring SBSI-5 soil samples detected significant concentrations of VOCs and that these concentrations may be related to VOCs detected in the soil boring at NASA's monitoring well location 11M04A; however, the report does not present data for 11M04A soil sample results. The report indicates that this contamination may be related to activities inside the Site 8 storage area or may be related to contamination at the location of 11M04A on NASA property. Additionally, the report indicates that TCE concentrations detected in monitoring well WSI-4 (96 µg/L) may be related to activities in the western portion of Site 8 or dispersion from high concentrations detected in 11M04A; however, the report does not present data for monitoring well 11M04A. Furthermore, the report indicates that seven HydroPunch® groundwater samples were collected during a previous investigation, and that these HydroPunch® samples did not detect TCE at concentrations greater than 25 micrograms per liter. However, these HydroPunch® locations are not shown on Figure 6.

Based on a review of the presented data, there appears to be a clear source of VOC groundwater contamination near Site 8. In order to fully understand the implications of the results of the Site 8 investigation and determine the extent of impact to the soil and groundwater, it is recommended the report address the above issues. Additionally, the use of geologic cross sections should be considered for Site 8.

24. Appendix C: Soil Boring Logs and Well Completion Records

The logs do not include an indication (signature) that they were reviewed by a registered professional (RG, CEG, or PE). The graphic logs do not include a graphic symbol for the assigned Unified Soil Classification System designation. The logs do not include information regarding the type of drilling equipment used to complete the boreholes and monitoring wells. In some cases, density/consistency values appear in sample descriptions when blow count data are not provided, and in some instances, blow count data are presented without an assignment of the appropriate density or consistency classification.

Monitoring Well Completion Diagrams: The diagram depictions should be to scale and depict the silt trap with stainless steel centralizers.

25. Appendix D: Soil Sample Analytical Data

The tables should be modified to include data qualifier descriptions.