



Cal/EPA

Department of
Toxic Substances
Control

245 West Broadway,
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October 11, 1996

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MCAS EL TORO
SSIC # 5090.3



Mr. Joseph Joyce
BRAC Environmental Coordinator
U.S. Marine Corps Air Station - El Toro
P. O. Box 95001
Santa Ana, California 92709-5001

Pete Wilson
Governor

James M. Strock
Secretary for
Environmental
Protection

**COMMENTS ON DRAFT PHASE II FEASIBILITY STUDY FOR SITE 24,
OPERABLE UNIT 2A, MARINE CORPS AIR STATION (MCAS) EL TORO**

Dear Mr. Joyce:

The California Environmental Protection Agency (Cal/EPA) has completed the review of the above subject document dated August 9, 1996, prepared by Bechtel National, Inc. The report presents the results of a feasibility study (FS) conducted to identify and evaluate potential remedial action alternatives for volatile organic compounds (VOC)-contaminated soil and groundwater at Site 24. Site 24 is designated as potential VOC Source Area at MCAS El Toro. It is one of two OU-2A sites. Investigation of the other OU-2A site, the Major Drainages (Site 25), has been completed but not formally submitted to the agencies for review. We suggest that you add an addendum to this FS for the evaluation of Site 25 to conclude all OU-2A sites.

This letter is to transmit the enclosed Department of Toxic Substances Control (DTSC) comments and the Regional Water Quality Control Board comments dated October 8, 1996 on the report. The report is well written. A few clarifications and modifications are needed as outlined in the enclosed comments. Please incorporate the comments, where appropriate, and send us a response to comments along with a revised document. Thank you for your cooperation. If you have any questions, please call me at (310) 590-4891.

Sincerely,

Tayseer Mahmoud
Remedial Project Manager
Base Closure Unit
Office of Military Facilities
Southern California Operations

Enclosures

cc: See Next Page



Mr. Joseph Joyce
October 11, 1996
Page 2

cc: Ms. Bonnie Arthur
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Mr. Lawrence Vitale
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Fountain Valley, California 92728-8300

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
Comments on
Draft Phase II Feasibility Study Report For Site 24, OU-2A
Marine Corps Air Station-El Toro
Dated August 9, 1996

The lists of comments below were prepared by Mr. Tayseer Mahmoud, Remedial Project Manager, and Ms. Sherrill Beard, Engineering Geologist from the Department of Toxic Substances Control. The comments are directed to MCAS El Toro and their consultants. The report is well written. A few clarifications and modifications are needed as outlined in the comments below. Please incorporate the comments, where appropriate, into the revised document.

General Comments:

1. An alternative should be added to the FS which includes only the active remediation of Site 24 and excludes OU-1.
2. An alternative should be added to the FS which includes active remediation on-site and insitu remediation (natural attenuation) in the principal aquifer because it is unclear whether or not Alternative 11 proposes no action or natural attenuation of the principal aquifer.
3. The data and analysis generated by the SVE, air sparging, and aquifer pump test pilot studies should be included in the final draft of the FS and appropriate review time should be allotted. Additionally, in the future there should be a consensus with the BCT regarding submittal dates for work plans and reports concerning pilot studies.

Specific Comments:

1. **Executive Summary, Development of Remedial Alternatives, page v**

The text is unclear whether or not Alternative 11 proposes no action or natural attenuation of the principal aquifer. If Alternative 11 proposes no action for the principal aquifer then the cost for groundwater monitoring should not be included.

2. Section 1.3.2 Relationship Between OU-2A and OU-1

The title should be revised because this section contains information regarding OU-2B, OU-2C, and OU-3.

3. Section 1.4.4.2, Stratigraphy, Figure 1-7

Cross-section B-B' on this figure should show a 1000 ppb contour.

4. Section 1.4.6.2, Saturated Zone, page 1-28

The text states that during the Phase II RI the horizontal characterization of VOCs were completed in groundwater. DTSC disagrees with this conclusion. Further horizontal delineation of VOCs in groundwater is needed down-gradient of Building 296. Also, further vertical delineation is needed in the area of 09_DGMW45. These data could be collected through pilot studies during the design phase.

5. Section 1.4.6.2, Saturated Zone, page 1-38

Regarding 24HCPT83, did the geologic material from which TCE was detected at 3100 ppb differs from the geologic material 16 feet deeper where the TCE was detected 26 ppb?

6. Section 1.4.7.3, Chemical Persistence, page 1-45

Although DTSC agrees that chemical and biological degradation of TCE is a minor component contributing to mass reduction, the rationale as to why the comparison of a field measured concentration to the regulatory concentration of TCE is used as an indicator of chemical and biological degradation should be provided.

7. Section 2.1, Development of Remedial Action Objectives

The National Contingency Plan (NCP) states that the "point of departure for excess cancer risk is 1E-06 and that risks estimated to fall in the range of 1E-06 up to 1E-04 should be managed on a case-by-case basis. The language in this section seems to state risks between 1E-06 and 1E-04 are always acceptable. Please change this section to conform with the NCP.

8. Section 2.1.4, Remedial Action Objectives, page 2-5

The fourth bullet under the Groundwater heading, as written, is not an RAO for Site 24. It is suggested to delete the fourth bullet and then modify the second bullet to include the fourth bullet.

9. Section 2.1.5.3, Cleanup to Background Level, page 2-9

Please provide further explanation as to the intended meaning of the last sentence in this section.

10. Section 2.4, Identification and Screening of Technology Types and Process Options, Table 2-8

Given the available information received at the BCT meetings Process Options - Oxygen enhancement and Air sparging should be identified as Not Applicable. As shown from the preliminary information generated from the pilot study, air sparging is not a feasible technology, therefore oxygen enhancement is not either. Furthermore, the known lithologies underlying Site 24 indicate clay and silt layers throughout the area similar to the lithologies where the air sparging pilot study took place.

11. Section 3.2, Alternative Screening Methodology, Table 3-1

This table should state "yes" in the column Retained for Evaluation for Alternative 2a because further evaluation of this alternative was provided in the document.

12. Section 4.2, Groundwater Modeling, page 4-4

Model input parameters resulting from the aquifer pump pilot study is not substantiated. Please include the field data and analyses from the aquifer pump tests in the draft final.

13. Section 4.3.1, In Situ Soil Vapor Extraction Description, page 4-6

This section cannot be reviewed with regard to the SVE well field design until the field data generated from the SVE pilot study is submitted to the agencies.

14. Section 4.4, Individual Evaluation of Remedial Alternatives, Figures 4-4 and 4-5

Show the location of Culver Drive on these figures to give the reviewer a better feel of where the model predicts the plumes to reach.

15. Section 4.4.2.1, Description of Shallow Groundwater Unit & Principal Aquifer, Figures 4-6 and 4-7

The presentation of the extraction and injection well fields are considered conceptual. It is assumed that there will be changes in the design phase. Also, as shown on the figures, it is difficult to evaluate the locations of the wells because the map scales are too small.

16. Section 4.4.3.2, Long-Term Effectiveness and Performance for Alter. 6a, page 4-38 & Section 4.4.5.2, Long-Term Effectiveness and Performance for Alter. 10, page 4-50

According to the model, shallow groundwater unit will be dewatered in approximately 17 years. This would cause downward hydraulic gradients to develop and mobilize TCE into deeper units. The BCT should discuss, at the design stage, the possibility of partial groundwater reinjection to flush the aquifer. Also, SVE treatment after the aquifer is dewatered.

17. Section 4.4.6. 2, Evaluation of Alternative 11 for Compliance with ARARS

Alternative 11 does not have an active component for remediation of the principal aquifer. This subsection should discuss compliance with ARARS for the principal aquifer.

18. Section 4.5.2, Compliance with ARARS, page 4-63

Reference to Alternative 61 is a typographical error. The correct reference is 6a. Also, the 1st sentence suggests that alternatives 2a, 6a, 9, 10, and 11 generally comply with their respective ARARS. See comment #17 above regarding Alternative 11.

19. Section 5, Pilot Testing

Please provide the SVE, air sparging, and groundwater extraction/injection pilot test reports for the testing conducted at Site 24 during Phase II RI/FS.

20. Section 6.1, Results of Remedial Alternatives Evaluation, page 6-2

The text states "Alternative 11 also facilitates natural attenuation of TCE in the principal aquifer in OU-1." but in Figure 3-1 it states "no action" for Alternative 11. No action does not equate to natural attenuation, although the terms are used interchangeable throughout the FS. The usage of these terms should be clarified and corrected as appropriate.

21. Section 6.2, Results of the Draft OU-1 IAFS

Reference to off-Station TCE highest concentration of 34 $\mu\text{g/L}$ is not accurate. OCWD data reflects higher numbers up to 47.8 $\mu\text{g/L}$. Please make the corrections.

22. Section 6.3.2, Horizontal Groundwater Extraction/Injection, page 6-4

DTSC agrees that a horizontal groundwater extraction/injection well may be a viable remedial technology, however, further information is needed before a pilot study is initiated. Information related to cost may be the determining factor as to the appropriateness of this alternative. This information can be compiled before initiating any field activities. Information should include, but not be limited to, comparative cost of vertical wells to horizontal well(s), additional piezometers needed to measure the influence of the horizontal well(s), and approach to capture zone analysis. The Navy may want to check with personnel associated with Sacramento Army Depot, where horizontal wells were successfully installed.

23. Section 6.3.3, Air Sparging Using Ozone, page 6-5

Given the preliminary results from the air sparging pilot studies, DTSC does not agree that a pilot study which involves air sparging using ozone should be conducted. Air sparging test results, as reported at the BCT meetings, showed that this remedial technology is not appropriate at Site 24, therefore it is reasonable to conclude that air sparging with ozone is also not appropriate for this site.

24. Appendix A, Table A2-3, Chemical-Specific ARARS

Some chemicals in this table did not have risk base concentrations (RBCs). The following information on three chemicals might be useful:

- a. **Dichlorodifluoromethane:** This compound is also known as Freon 12. As of August 1996, USEPA Region IX gives residential Preliminary Remediation Goals (PRG) of 94 mg/kg in soil and 390 $\mu\text{g/L}$ in water. These are based on an oral reference dose (RfD_o) of 0.2 mg/kg-day and an inhalation reference dose (RfD_i) of 0.057 mg/kg-day.
- b. **2-Butanone:** This compound is also known as methyl ethyl ketone. As of August 1996, USEPA Region IX gives residential PRGs of 7,100 mg/kg in soil and 1,900 $\mu\text{g/L}$ in water. These are based on an RfD_o of 0.6 mg/kg-day and an RfD_i of 0.6 mg/kg-day.
- c. **2-Hexanone:** This compound is also known as methyl-n-butyl ketone. No PRGs or reference doses are published for this chemical. However, *n*-hexane is metabolized in mammals first to 2-hexanone then to the neurotoxic 2, 5-hexanedi-one. Therefore, *n*-hexane is an adequate surrogate compound. As of August 1996, USEPA Region IX gives residential PRGs for *n*-hexane of 110 mg/kg in soil and 350 $\mu\text{g/L}$ in water. The PRG in soil is the saturating concentration, while the PRG for tap water is based on an RfD_o of 0.06 mg/kg-day and an RfD_i of 0.057 mg/kg-day.

Table 4-1 in the Draft Final Risk Assessment gives the same RfD_o and RfD_i for dichlorodifluoromethane and 2-butanone, but his table shows no values for 2-hexanone. Risk-based concentrations for chemicals of potential concern are not shown in the human health risk assessment. PRGs are risk-based concentrations which do not contain any site-specific information.

25. Appendix A, Section A3.1.1, ARARS, Floodplains, page A3-8

The paragraph discussed the ARAR relevancy of section 66264.18(b), CCR, Title 22. Although the concentration of TCE in groundwater may not be classified as hazardous waste when managed, OU-2A addresses a situation where a pollutant is being remediated to prevent environmental degradation as is the purpose of the RCRA regulation. Discharging of contaminated groundwater to surface or injection would not be allowed if the groundwater was hazardous.

Also, for this non-hazardous groundwater, the contaminated groundwater should be handled like hazardous waste. That is why 66264.18(b) would be relevant. That section requires proper construction.

26. Appendix A, Section A4.2.1.1, ARARS, page A4-21

Reference to 22 CCR 66364.193 is a typographical error. The correct reference is 22 CCR 66264.193. Section 66264.193(c) requires leak detection if the unit cannot be inspected visually. The leak detection for underground piping can be placed in the annual of the double-walled pipe.

27. Appendix E, Table E2.31, page E-4

A footnote text is not provided for footnote letter (c) shown in the table. Also, the number of SVE samples calculated may not be accurate. Please explain how you arrived at the number.

Memorandum

To: Mr. Tayseer Mahmoud
Department of Toxic Substances Control
245 West Broadway, Suite 350
Long Beach, CA 90802-4444

Date: October 8, 1996

From: CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD - SANTA ANA REGION
3737 MAIN STREET, SUITE 500, RIVERSIDE, CALIFORNIA 92501-3339
Telephone: CALNET 632-4130 Public (909) 782-4130

Subject: DRAFT FEASIBILITY STUDY REPORT (FS) SITE 24 OU-2A MARINE CORPS AIR STATION (MCAS) EL TORO

We have reviewed the subject report dated August 9, 1996 and received by us on August 9, 1996. We have the following comments:

EXECUTIVE SUMMARY

Page iii. Nature and Extent of Contamination

The 4th paragraph, last sentence states, " Off-station, the maximum reported TCE concentration is 35 micrograms per liter. However, TCE in the principal aquifer has been detected at levels near 50 micrograms per liter in well MCAS -7 on 12/22/95, and above 34 micrograms per liter in various other wells; please explain these findings.

Page iv. Remedial Action Objectives

The second objective states, " minimize the off-station migration of VOC - contaminated groundwater in the shallow groundwater unit." Please define "minimize". We recommend control of off-station migration such that the contamination is contained and /or reduced through natural attenuation or treatment. The goal should be no migration beyond the established plume boundary.

SECTION 2 IDENTIFICATION AND SCREENING OF TECHNOLOGIES

Table 2-8 Page 2-47

The first process option, on page 2-47, Natural Attenuation, states no action to implement and no direct cost. However, natural attenuation would incur costs to measure/evaluate if natural attenuation is effective. In addition, natural attenuation may require the additional installation of monitoring wells in strategic locations to aid in demonstrating its effectiveness.

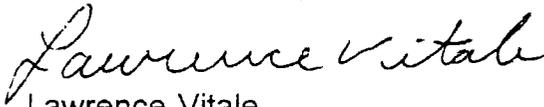
SECTION 6 CONCLUSIONS AND RECOMMENDATIONS

Page 6-1

The second paragraph states, "the natural attenuation alternative requires implementation of a detailed groundwater monitoring plan to monitor the progress of remediation". In addition to monitoring natural attenuation progress, the alternative should also include a contingency plan to address the possibility that natural attenuation may not be progressing satisfactorily and active intervention may be necessary.

If you have any questions, please call me at (909) 782-4998.

Sincerely,

A handwritten signature in cursive script that reads "Lawrence Vitale".

Lawrence Vitale
DoD Section