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MOD #

APPROVAL

OTHER

Govt (Agency) Comments "Draft Technical Memorandum" volumes I-IV

**ACTION REQUIRED**

WORK AUTHORIZATION  
(R. Ward)

TITLE: AGENCY COMMENTS "DRAFT TECHNICAL MEMO" VOLUME I-IV

OTHER

AUTHOR: JOE ZARNOCH/DTSC

DATE: 08/20/93

CATEGORY: 3.4

CC: SAN DIEGO

PASADENA

OTHER

- PMO File
- E. BANKS (PM)
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- \_\_\_\_\_ CTO NOTEBOOK

- Lead PjM (for Activity) \_\_\_\_\_ \*
- CTO PjM \_\_\_\_\_ \*
- G. Rumford (Interim MTPQC) (JEG)
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- K. TOMEO (CH2M) (RCM)
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- TR: \_\_\_\_\_ \*

Dist: RFPs-(PM, LRCM, CM, PCM 280 PJM) Fax initial RFP to R. Ward, CM, LRCM, PCM, & PM. They will review for CP funds and dist. further w/WAF

MODs, Stop Work Orders- (RCMs, CM, CA, LPjM, PjM, PCM, CSE, 280 PJM)

COMMENTS-(Full set to LRCM, RCM(s), LPjM, PjM, TR, MTPQC cover sheet to others noted). PM to receive full sets of Code 185 comments/top copy of all others.

CLOSE-OUT LETTERS-PM, RCM(s), CM, CA, PCM, CSE, MTPQC, LPjM, PjM)

\*LOCATION DESIGNATOR: 1-Pasadena 2-Denver 3-CH2M 4-IT 5-San Diego

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### TELEFAX TRANSMITTAL FORM

STATE OF CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY  
 DEPARTMENT OF TOXIC SUBSTANCES CONTROL  
 SITE MITIGATION BRANCH  
 REGION 4 -- LONG BEACH  
 245 West Broadway, Suite 350  
 Long Beach, CA 90802-4444  
 (310) 590-4856

Date: 08/20/93	No. of Pages: (including cover) 22
TO: Yueh Chung	CONTACT NO.: ( )
FROM: Joe Zomach	CONTACT NO.: (310) 590-4878

SUBJECT: Tech Memo Comments

COMMENTS:

Yueh -  
 This latest version includes comments on site 22. Changes/Additions have been marked in left margin. Our geologist will review this draft & submit our comments by 08/27/93. Final version should go out shortly thereafter. No significant As expected.

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## DEPARTMENT OF TOXIC SUBSTANCES CONTROL

Region 4

2701 Broadway, Suite 350

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**DRAFT**

August 20, 1993

Commanding General  
Attn: LCDR L. Serafini  
Environmental Department, 1AU  
Marine Corps Air Station  
El Toro, California 92709-5010

Dear Sir:

**PART ONE COMMENTS ON MARINE CORPS AIR STATION (MCAS) EL TORO, EL TORO, CALIFORNIA, INSTALLATION RESTORATION PROGRAM, PHASE I REMEDIAL INVESTIGATION, DRAFT TECHNICAL MEMORANDUM**

The California Department of Toxic Substances Control (Department) has completed a partial review of the subject *Draft Technical Memorandum (Technical Memorandum)*, Volumes I through IV, dated May 7, 1993. The *Technical Memorandum* presents the results of the Phase I Remedial Investigation (RI) conducted between May 1992 and February 1993 for twenty-two (22) sites at MCAS El Toro.

The objective of the Phase I RI investigation was to collect sufficient data to support informed risk management decisions for subsequent Phase II investigations. The scope of the Phase I RI investigation included evaluating the source of the regional groundwater plume (consisting of volatile organic compounds (VOCs)) migrating to the west of MCAS El Toro and determining as to whether contamination exists and is impacting human health and/or the environment at the 22 sites.

Based on a memorandum from CH2M Hill dated August 17, 1993, the MCAS El Toro RI sites have been grouped and prioritized for review during the Data Quality Objective (DQO) process. In order to provide comments in the order the sites are addressed, the Department's comments on Group 1 Sites (Sites 2 & 12) and Group 2 Sites (Sites 6, 7, 9, 10 & 22) appear below. Some general and specific comments on the *Technical Memorandum* are also provided. The comments consist of four sections: I) General Comments, II) Specific Comments, III) Site-Specific Comments, and IV) DQO Issues for Phase II Investigations. Comments were prepared by: 1) Joe J. Zarnoch, Project Manager, and 2) Kathleen A. Considine, Associate Engineering Geologist, with concurrence from Stephen G. Belluomini, Engineering Geologist # 1334. The DQO issues in Section IV are provided for consideration in determining the scope of work for Phase II investigations.



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It is understood that the *Technical Memorandum* will not be revised into a final version, however, the Department's comments stated herein should be addressed in the DQO process for Phase II investigations and applicable subsequent documents (e.g., the Phase II RI Workplan and/or the comprehensive RI Report).

I. GENERAL COMMENTS:

1. The *Technical Memorandum* presents the results from only one round of groundwater sampling. The Department urges that results from the second round and all subsequent rounds of groundwater sampling be made available in a useful format as soon as possible.
2. The *Technical Memorandum* does not elaborate on previous investigations such as the soil gas screening efforts conducted by James M. Montgomery Engineers, Inc. The Department requests that this information be distributed to regulatory agencies prior to the discussion of potential VOC source areas in the DQO process for Phase II investigations.
3. Based on Phase I soil results, the Department recommends the use of a soil gas survey(s) as an initial screening of applicable sites prior to Phase II conventional fieldwork to determine potential source areas for the VOC groundwater plume. Soil samples can then be located in "hot spots" to assess the levels of soil contamination.
4. Based upon the information presented in the *Technical Memorandum*, the Department agrees that Site 6 is not a likely source of the VOC plume.

Sites 2, 7 (i.e., areas adjacent to Site 7 such as the "refurbishing or rework" hangars), 9 and 10 are likely sources of the VOC plume.

It is unclear if Site 12 is a potential contributor to the regional groundwater plume.

A new Site 24 has been proposed in OU-2 for an expanded groundwater source investigation in the vicinity of Sites 7, 9, 10 and 22. With the exception of possibly Site 12, the Department believes that the new Site 24 (as well as new Site 25) will address potential groundwater source areas in the southwestern quadrant of MCAS El Toro.

5. On page 6-21, and elsewhere in the *Technical Memorandum*, Fuel Farms 2 and 5 are mentioned as potential sources of the

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benzene plumes. More information is needed to determine the potential contribution to groundwater contamination from tank farms/fuel tanks at MCAS El Toro. This information should include spills such as the one at Fuel Farm 5 of 1,100 to 1,200-gallons from an overturned tank. While the investigation of the tank farms may not necessarily be part of the RI, identification of all groundwater contamination sources should be.

Furthermore, the DQO process for Phase II investigations and applicable subsequent documents should include a figure(s) displaying the following: 1) an outline of MCAS El Toro, 2) the location of all RI sites, 3) the location of all tank farms and fuel tanks, and 4) contours of the groundwater plumes potentially associated with the tank farms.

The information should include existing and former tanks at the Exchange Gas Stations, including at Buildings 651, 347, and 637 and the (former?) gas station in the middle of C-pool.

6. For each site, the Phase II RI Workplan and the comprehensive RI Report should include figures displaying not only the well locations, but also the groundwater contaminant data. This will aid in the evaluation of the potential of each site as a contributor to groundwater contamination.
7. Groundwater contours were included for Site 2, but not for any other sites. The contours provide information on site-specific flow direction and aid in evaluating the upgradient and downgradient groundwater quality information. In the DQO process for the Phase II investigations and/or applicable subsequent documents, please include this information for all sites with sufficient wells (three or more) that monitor the same interval.

Moreover, figures indicating sampling locations (e.g., Figure B2-1 for Site 2) should also include the groundwater flow direction.

8. In some cases the *Technical Memorandum* states that there is no vadose zone contamination based on the results from one deep soil boring; in some cases, the deep soil boring is located outside of the actual unit boundaries. Sections in applicable subsequent documents comparable to Section 4.0 (Summary of Nature and Extent of Contamination; OU-2 and OU-3 (Sites 1 Through 17 and Sites 19 Through 22)) should clearly indicate when the vadose zone results are outside

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the suspected boundaries of the actual unit or site. For future investigations, more intermediate depth samples may be needed (possibly based on soil gas survey results).

9. Sections in applicable subsequent documents comparable to the "Results and Conclusions" of Section 4.0 (Summary of Nature and Extent of Contamination: OU-2 and OU-3 (Sites 1 Through 17 and Sites 19 Through 22)) should provide a summary of the results for all required analyses; for example, summaries of the results for pesticides, PCBs, dioxins/furans and sulfides are, at times, excluded in the *Technical Memorandum*. If a certain class of compounds was not detected for a site in a particular medium, then a statement to that effect should appear in the text.
10. The *Technical Memorandum* should have included a section which stated whether or not the holding times for all samples were met. For Phase I and Phase II data, please include such a section in applicable subsequent documents and identify all samples with exceeded holding times.
11. Analyses results indicate that a significant number of trip blanks (used to determine contamination during sample transport) contained detected concentrations of VOCs (often referred to as laboratory contaminants). The trip blank results should be compared to those for method blanks, which are used to determine laboratory contamination.

The *Technical Memorandum* often compares detected sample concentrations to the maximum detected concentrations in trip blanks. It is advised that if blank concentrations are to be subtracted from sample concentrations for Phase II constituent/chemical class screening, an averaged blank value and not a maximum detected concentration be subtracted. Please indicate the approach used in applicable subsequent documents.

## II. SPECIFIC COMMENTS:

### 1. Section 1.3.3.1 (Previous Investigations)

The *Technical Memorandum* states on page 1-11 that an interim groundwater pump and treat system was installed at the Station boundary. These wells are apparently not indicated on any of the maps included in the *Technical Memorandum*. Include/identify the locations of these wells in applicable subsequent documents.

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The comprehensive RI Report should state that the interim groundwater pump and treat system installed at the Station boundary is not currently operating.

2. Section 1.3.3.2 (Ongoing Related Investigations)

There is no discussion in the *Technical Memorandum* concerning any investigation of the tank farms. The comprehensive RI Report should discuss whether the tank farms are under investigation. These tank farms may be a source of benzene plumes present beneath MCAS El Toro.

3. Section 1.3.9.6 (Groundwater Pumpage)

In addition to the wells used for agriculture described in the first paragraph, Plate 1-1 indicates several other irrigation supply wells. Please include these wells in the text of applicable subsequent documents and make all necessary changes.

Sections in applicable subsequent documents comparable to this section should also list and describe the production wells, municipal supply wells (e.g., TIC 117) and industrial supply wells shown in Plate 1-1. The description should include the use of these wells.

Some wells in Plate 1-1 are indicated with a square surrounding a dot, yet this designation does not appear in the legend; please make all necessary changes in applicable subsequent documents.

4. Section 1.4 (Remedial Investigation Site Descriptions) and Appendix B

All units, excluded from further consideration in the RCRA Facility Assessment (RFA) because of their location within the investigation boundaries of a RI site, should be included in subsequent site descriptions (e.g., sections comparable to Section 1.4 and Appendix B). These units have been listed in a memorandum entitled "RFA Sites Requiring Evaluation During the DQO Process" dated Day Month [sic] 1993. The Department concurs that these units should be evaluated during the DQO process for possible investigation in Phase II.

5. Table 2-1 and Plate 2-1

The Site 22 monitoring well in Table 2-1 is indicated as 22\_DBMW22, yet in Plate 2-1 it is indicated as 22\_DBMW47;

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please make the necessary change in applicable subsequent documents.

It appears that monitoring well 21 UGMW21 in Table 2-1 is actually 21 UGMW37; please make the necessary change in applicable subsequent documents.

6. Section 2.2.5.1 (Drilling Procedures)

On page 2-19, under the Direct Mud Rotary subheading, it is stated that the deepest well at each well cluster and multiport well was geophysically logged. In the comprehensive RI Report, please explain how the geophysical logs were correlated to the lithology. It does not appear that any holes were continuously cored (see next comment).

7. Section 2.2.5.2 (Formation Sampling)

It appears that lithologic logging at MCAS El Toro consisted solely of core samples at "regular" intervals and logging of cuttings. Some boreholes should be continuously cored, especially if geophysical methods are used, in order to calibrate the geophysical log. If additional deep borings are planned, the Department recommends that some of them should be continuously cored.

8. Section 2.2.6.1 (Monitoring Well Construction and Pump Installation)

According to the discussion on page 2-24, Monterey #3 sand pack was used in all the monitoring wells. The sand pack should be sized to the formation material present in the screened interval. Monterey #3 may not be adequate for wells screened in fine-grained materials, such as wells 03 DGMW65X, 07 DBMW70, 07 DGMW71, 09 DBMW45, and 13 DBMW49, for example. Turbidity may be elevated in water samples collected from these wells, which may interfere with certain analytical methods (especially metals).

9. Section 2.2.6.5 (Water Source Sampling)

This section states that two samples taken from "... a built-in truck water tank" that was used as a source of water for drilling indicated the presence of TPH [sic]-diesel at 4,110 ug/l and 1,010 ug/L. Is it known at which well locations this drilling water was used? The issue of whether this drilling water potentially affected the results of samples with detected concentrations of TFH-diesel should be addressed during the DQO process for Phase II

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investigations and in applicable subsequent documents.

10. Table 2-2

Table 2-2 in the comprehensive RI Report should be revised to indicate that pesticides and PCBs were added to the analytical suite for soils at Site 1.

11. Section 6.1 (Figures 6-1a through 6-1f)

The locations of Sites 1-22 should be indicated on the groundwater plume maps. This provides visual information on the locations of the sites in relation to the various contaminant plumes in groundwater underlying MCAS El Toro.

12. Section 8.5 (Conclusions)

The first general objective on page 8-32 states that "sufficient samples have been collected to allow a preliminary assessment of the presence and nature of contaminants at the sites." Some of the landfill sites have very limited surface/near surface (0-4 feet deep) sampling and little or no deeper sampling points, except for off-site monitoring well borings. Many sites have good surface/near surface coverage, but may contain only one or two deeper borings. VOCs may not be present at the surface due to downward movement or evaporation. Deeper sample locations may be necessary to define the extent of VOCs (possibly based on soil gas survey results). Many of the deep borings completed as wells have been sampled, but the vadose zone between 5 feet and 30 feet is not well characterized at many of the sites.

The third general objective states that the source of the main area of VOC contamination is uncertain. Clearly, more soil investigations are needed as part of Phase II. As stated above, we recommend the use of a soil gas survey(s) to delineate areas where additional soil sampling is needed.

13. Appendix A, Table A1-10 (Fuel Hydrocarbons Detected in Groundwater)

For wells 18\_BGMW01A, 18\_BGMP08, 18\_BGMP09, and 18\_BGMP10, the discussion column of the table states that TFH-diesel may have been introduced during drilling. Applicable subsequent documents should explain if this is related to the analysis of water from the drilling rig water tank (sample 00\_RIG9) and the water hose sample (00\_HYD103), also shown in Table A1-10. Care should be taken to avoid this

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type of contamination in the future.

### III. SITE-SPECIFIC COMMENTS:

#### Site 2 - Magazine Road Landfill

1. Section 4.2.2 (Results and Conclusions) and Appendix B2.4.2 (Analytical Results)

Section 4.2.2 (on page 4-5) states "No VOCs were detected in surface water samples." Appendix B2.4.2 states "VOCs are the only compounds detected in both sediment and surface water runoff samples." Please make the necessary changes in the comprehensive RI Report.

The varied TRPH results of sample 02\_EF2 (0.153 mg/kg) and its duplicate (4,555 mg/kg) should be addressed in the DQO process for Phase II investigations and/or applicable subsequent documents.

In the text of the comprehensive RI Report, please provide the detected concentrations of the three pesticides (alpha-chlordane, gamma-chlordane, and 4,4'-DDT) for surface sediment sample 02\_MM2 (see page B2-17). Likewise, please provide the 4,4'-DDT concentration in the sediment sample at 02\_WF2 (see page B2-17).

2. Appendix B2.3.3 (Vadose Zone Soils (Soil Borings))

This section mentions that only the 5-foot sample at deep boring 02\_S&DB200 was analyzed for dioxins and furans, yet Table B2-1 indicates 3 other vadose zone sampling locations for dioxins/furans.

3. Appendix B2.5.2.2 (Stratum 1: Landfill Area)

This section states "Toluene was detected in all samples at concentrations of up to 15 ug/kg." Yet Section 4.2.2 (on page 4-4 under "VOCs - Soil") indicates toluene up to 12 ug/kg. Please make the necessary correction in the comprehensive RI Report.

4. Appendix B2.5.3.3 (Stratum 2: Stained Area)

The first paragraph states that a surface and near-surface soil sample was collected from 02\_SA2, yet

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according to Figure B2-1, this location is not in Stratum 2; please make the necessary correction in applicable subsequent documents.

5. Figure B2-2

The geologic cross section (Figure B2-2) raises some questions. The pattern used to represent the uppermost geologic unit (sand) between wells MW-60 and MW-59 is not defined in the legend. Also, the pattern changes on either side of the two wells. The material encountered in these two borings should be uniform between the wells and on either side of the wells, Please correct this in the future. Also, it is unlikely that bedrock would be encountered above unconsolidated units, as indicated in boring MW-60. The cross section line encounters the Vaqueros/Sespe Formation (Tvs) southwest of well MW-25, but this is not reflected in the cross section. Please correct these errors in applicable subsequent documents.

6. Figure B2-2

In the same cross section (Figure B2-2), the inferred fault is shown off-setting Qac against semi-consolidated materials. This is extrapolated over approximately 750 feet. Another interpretation is that the Qac is a channel deposit that pinches out before reaching boring 200 (which is also projected 180 feet). In applicable subsequent documents, explain if the fault is inferred based on a geologic map from the California Division of Mines and Geology, listed as a source for Figure B2-4.

7. Appendix B2.7.1 (Site-Specific Hydrogeology)

Another line of evidence discussed for the fault is the groundwater level elevations. It is stated on page B2-23, "the water elevation at 02 UGMW25 is significantly higher than the elevation at the three downgradient wells." This is most likely because this well is located approximately 2000 feet from the three downgradient wells, which are within 700-800 feet of each other. No evidence for a steep gradient due to water ponding north of the fault is seen; the groundwater contours shown on Figure B2-4 are uniform across the site. If any steepening occurs, it cannot be detected with only one well north of the fault. Please re-evaluate the evidence presented concerning

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the fault.

Site 7 - Drop Tank Drainage Area No. 2

1. Appendix B7.1 (Site Description)

In the Phase II RI Workplan and the comprehensive RI Report, this section or the description of new Site 24 should include the "refurbishing or rework" operations conducted at this site. Solvent releases from the "refurbishing or rework" operations may have contributed to the VOC groundwater plume. A complete description of the operations that are and have been conducted at Buildings 295, 296, 297 and 324 should be presented. The description should include plating operations and solvent management practices and the identification of the locations of all plating tanks, solvent or degreaser tanks, piping, trenches (manmade channels), etc.

2. Figure B7-1

Well 07 DGMW91 is not indicated on Figure B7-1 nor shown on either of the two cross sections.

Site 10 - Petroleum Disposal Area

1. Appendix B10

The *Technical Memorandum* confuses which stratum is the Concrete Apron vs. which is the Aircraft Matting (see Sections B10.1, B10.5.2.1 & B10.5.2.3).

2. Appendix B10.1 (Site Description)

A more complete description of this site is needed (see comments in Section IV, DQO Issues for Phase II Investigations).

Site 12 - Sludge Drying Beds

1. Appendix B12.1 (Site Description)

A more complete description of the sludge drying beds is needed (see comments in Section IV, DQO Issues for Phase II Investigations).

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2. Figure B12-2

This figure displays projected well 18\_BGMW44 which should actually be well 18\_BGMW04A or 18\_BGMW04B.

3. Appendix B12.3.1 (Surface Water and Sediment)

Sediment sampling location "21\_CBBE" is actually 12\_CBBE; 21\_CBBE [sic] is also used in Section B12.4.1 (Description of Surface Water and Sediment Samples).

4. Appendix B12.9 (Summary and Conclusions)

This section is not included in the *Technical Memorandum* for Site 12.

5. Table B12-2

On Sheet 1, results are presented for 12\_1SL3 at 0 depth. On Sheet 2, the heading also indicates the results for at 0 depth; are these actually the 2-foot depth results?

IV. DOO ISSUES FOR PHASE II INVESTIGATIONS:

Site 2 - Magazine Road Landfill (Note: wastes were purportedly not burned)

1. The five-foot depth dioxin/furan sample at 02\_S&DB200 was apparently located outside of the landfill proper; it is unclear whether the *Technical Memorandum* reported the result of the surface soil sample for dioxins/furans as specified by the *Draft Final Sampling and Analysis Plan Amendment (SAP Amendment)*, dated August 26, 1992.
2. Did disposal of radioactive material occur at this landfill that would account for the elevated levels of gross alpha and beta activity in groundwater as well as the elevated levels of gross beta activity in surface water runoff samples?
3. Figure 3-2 of the *Initial Assessment Study of Marine Corps Air Station, El Toro, California (IAS)*, dated May 1986, indicates an EOD Area to the north of Site 2.
4. The *IAS* indicates that supplies with an expired shelf life were disposed of at Site 2 from the early 1970s to

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1979; some of these supplies/wastes may have included liquid chemicals.

5. Phase I soil sampling locations were not necessarily in areas of suspected highest contamination based on aerial photograph results. Site 2 does appear to be a source for VOC contamination in groundwater, based on constituent levels downgradient of the landfill. Few VOCs were detected in the soil samples, but these were mostly surface samples where VOCs would not be expected to remain (apparently deeper soils within the landfill were not characterized). Since only one deep boring was completed in the landfill area (located in the wash and not in the landfill proper), it is unclear what area(s) of the landfill contain VOCs. A soil gas survey may help to define the source areas for VOCs.
6. The need for additional characterization at this site should be evaluated considering the use of institutional controls (e.g., deed restrictions), closure procedures, and groundwater monitoring strategies. The need for additional groundwater data at deeper depths should be considered.

Site 6 - Drop Tank Drainage Area No. 1

1. The *SAP Amendment* states that two vertical tanks were observed in a 1952 aerial photograph. Where were the tanks located and what were the contents?
2. Shallow soil borings were selected on the basis of a statistical method, however, no soil samples were collected in the stained area of Stratum 2 that was persistent in 1970, 1980, and 1981 (see Plate 10 of the *SAP Amendment*).
3. Based on the latest aerial photograph information, the following areas identified in the *SAP Amendment* should be reviewed:
  - a) a possible stained area, located approximately 250 feet west of the site, that was evident in a 1986 photograph; and
  - b) a partially filled triangular-shaped impoundment, located immediately west of the site, that was evident in a 1991 photograph.
4. The Drum Storage Area (RFA Solid Waste Management Unit/

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1979; some of these supplies/wastes may have included liquid chemicals.

5. Phase I soil sampling locations were not necessarily in areas of suspected highest contamination based on aerial photograph results. Site 2 does appear to be a source for VOC contamination in groundwater, based on constituent levels downgradient of the landfill. Few VOCs were detected in the soil samples, but these were mostly surface samples where VOCs would not be expected to remain (apparently deeper soils within the landfill were not characterized). Since only one deep boring was completed in the landfill area (located in the wash and not in the landfill proper), it is unclear what area(s) of the landfill contain VOCs. A soil gas survey may help to define the source areas for VOCs.
6. The need for additional characterization at this site should be evaluated considering the use of institutional controls (e.g., deed restrictions), closure procedures, and groundwater monitoring strategies. The need for additional groundwater data at deeper depths should be considered.

Site 6 - Drop Tank Drainage Area No. 1

1. The *SAP Amendment* states that two vertical tanks were observed in a 1952 aerial photograph. Where were the tanks located and what were the contents?
2. Shallow soil borings were selected on the basis of a statistical method, however, no soil samples were collected in the stained area of Stratum 2 that was persistent in 1970, 1980, and 1981 (see Plate 10 of the *SAP Amendment*).
3. Based on the latest aerial photograph information, the following areas identified in the *SAP Amendment* should be reviewed:
  - a) a possible stained area, located approximately 250 feet west of the site, that was evident in a 1986 photograph; and
  - b) a partially filled triangular-shaped impoundment, located immediately west of the site, that was evident in a 1991 photograph.
4. The Drum Storage Area (RFA Solid Waste Management Unit/

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Area of Concern (SWMU/AOC) 236) at Building 1663 should be evaluated for possible investigation in Phase II.

Site 7 - Drop Tank Drainage Area No. 2

1. The IAS indicates that the fuel drop tanks were emptied and then flushed with water and a detergent. What detergents were used?
2. The Hazardous Waste Storage Area (RFA SWMU/AOC 71) located at the north side of Stratum 1 and the Hazardous Waste Storage Area (RFA SWMU/AOC 72) located at the southeastern end of Stratum 3 should be evaluated for possible investigation in Phase II.
3. Groundwater VOC contamination does appear to increase downgradient of this site; however no close upgradient wells in the flightline are available for comparison.

The VOC plume does appear to originate in this area. The *SAP Amendment* states that "Liquid/stain flows were seen [in a 1980 aerial photograph] contributing to the drainage channels southeast of Buildings 295 and 296; flow from the latter hangar was probably by way of manmade channels. The 1986 photograph indicated that the same flows, by different paths, reached the drainage channels that ultimately contribute to Aqua Chinon Wash." The channelized drainage was also apparently observed in photographs from 1952, 1970 and 1985. In addition, the *SAP Amendment* also states that a "... 1970 photograph indicated that drums and a probable vertical tank were situated on the grassy area northeast of Building 295". Is it probable that the manmade channels and/or the vertical tank contained TCE? Did the "refurbishing or rework" operations at this site use significant quantities of TCE that was eventually discharged via manmade channels to drainage channels and ultimately to Aqua Chinon Wash? Such a scenario could explain the cross-gradient "leg" of the TCE plume towards and actually upgradient of Site 8.

It is interesting that the shallow off-station soil gas investigation performed by Tracer Research Corporation in August 1989 (section of James M. Montgomery (JMM) Report provided by CH2M Hill) detected TCE significantly above ambient levels near Aqua Chinon Wash, near wells 18\_PS3 and 18\_PS4, and south of the railroad tracks and less than 400-feet from the Station boundary. Similarly, significant PCE and DCE soil gas

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concentrations were found within approximately the same area. Three soil gas points located where Agua Chionon Wash leaves the Station apparently did not find TCE at concentrations above its detection limit, although elevated levels of 1,2-DCE and PCE were detected.

The Department recommends that a complete description of the "refurbishing or rework" operations be provided during the DQO process for Phase II investigations (and prior to the DQO process for a soil gas survey); please see the comment concerning the site description for Site 7 under Site-Specific Comments. Furthermore, the Department recommends that MCAS El Toro should interview current and former personnel at Buildings 295, 296, 297 and 324 concerning historic waste handling practices, including those for solvent wastes.

In a recent visit to MCAS El Toro, in which the Department reviewed historic plans, the locations of at least two former plating shops were identified in Buildings 296 and 297. Previously it was apparently thought that the locations of the former plating shops were unknown. The former plating shop locations were not investigated in Phase I. The Department requests a complete description of the former plating shops, including information obtained from reviewing plans such as the locations of specific units (e.g., all degreaser, alkali, acid and plating tanks). This information should be provided as part of the site description for Site 7 or new Site 24.

4. One of the few locations where TCE was actually found in soil at the Station was at Site 7. The 110- and 120-foot depth soil samples of well 07\_DGMW71 had TCE concentrations of 74 and 27 ppb, respectively. The 110-foot depth sample was apparently 4 feet above the water table; these were the only two soil samples collected at this location. During the DQO process for Phase II investigations and in the Phase II RI Workplan, please identify borings and depths (including concentrations) where low levels of TCE were found in nearby soil during the RFA investigation.

#### Site 9 - Crash Crew Pit No. 1

1. The 20-foot depth dioxin/furan sample at 09\_DBMW45 may have been targeted too deep.
2. The Technical Memorandum indicates that the west pit

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was estimated to be 3 to 4 feet deep. Is it likely that the two surface samples collected in the west pit were actually collected in fill material?

3. Analysis for organolead should be considered in future characterizations.
4. None of the Phase I soil samples were located in the areas where liquids were reportedly flowing, i.e., near the northern edge of the pits.
5. A soil gas survey may aid in determining whether Site 9 or an upgradient location(s) is a source of the VOC contamination in groundwater.

#### Site 10 - Petroleum Disposal Area

1. Table B10-1 indicates that the surface and near-surface soil samples at Site 10 were analyzed for pesticides/PCBs. Yet the text of Appendix B10 does not state that pesticides/PCBs were not detected; no pesticide/PCB results for surface or near-surface soil samples are provided. Oil, including hydraulic fluids, and solvents were apparently applied to soil for dust control; aircraft hydraulic fluid may have previously contained PCBs.
2. Plans at MCAS El Toro indicate a well located in the area of Site 10; does this well still exist?
3. In the Phase II RI Workplan, indicate the concrete parking apron; according to the *Draft Final Sampling and Analysis Plan (SAP)*, dated February 28, 1991, all soil beneath the apron to a depth of two feet was excavated in 1971. The SAP also indicates that the disposition of the excavated soil is unknown; this should be investigated further to identify the soil disposal location.

Was fill material used to grade the area back to the original surface elevation? If so, the Phase II RI Workplan should address the source of the fill material and which Phase I surface and near-surface soil samples may have actually been located in fill material (e.g., the 0- and 2-foot depth samples located in Stratum 2).

4. In the Phase II RI Workplan, indicate the piles of material and debris that were visible throughout the years (see *SAP Amendment*), mostly at the eastern

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portion of the site. Also according to the **SAP Amendment**, indicate the locations of probable liquid and trenches that were observed at the western portion of the site in 1952. What types of wastes were likely placed into the trenches (see the following comments)?

5. Phase I soil samples were not located in stained areas identified in aerial photographs.
6. In the Phase II RI Workplan, provide a complete description of the former Heavy Duty Maintenance Shop, Building 1589; include the shop operations and location.

The Department requests that plans at MCAS El Toro be reviewed (including all other available information) to determine the types of units at former Building 1589 as well as to identify other potential contaminant sources at Site 10. The IAS indicates that two 500-gallon tanks were located in Building 1589; please provide the location of the former two 500-gallon tanks in the Phase II RI Workplan. According to the IAS, when a tank was filled, a truck mounted spray bar was used to spray the tank contents for dust suppression; the sprayed wastes consisted primarily of waste crankcase oil but also some solvents. The disposal occurred over a period of approximately 13 years with an estimated maximum volume of 52,00 gallons. The IAS implies that the 500-gallon tanks were placed on the truck for spraying. What areas were selected for this application of waste oils/solvents?

Moreover, the IAS states

"Various dry cleaning solvents have been used in the parts dip tank [at Building 1589], averaging about 75 gallons per year. From 1952 through the mid 1960s, this solvent was used to wash the cement decks once per week (144 gallons per year) and the lube racks daily (240 gallons per year). The rinsings were washed to the storm sewers."

It seems probable that sprayed waste oils and solvents (with the mixture minimizing the volatilization of the solvent fraction) and the activities described above could have contributed to the impact on groundwater at

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Site 10.

The IAS also indicates that Building 1589 had a 20-foot by 20-foot by 60-foot waterfall paint booth and that sludges from the booth were allowed to drain onto the ground. Please identify the location of the paint booth and attempt to identify the location(s) of paint sludge disposal. Were degreasing activities also performed at and/or near the paint booth that resulted in releases of solvents?

7. Additional groundwater information (via Hydropunch, Cone Penetrometer Testing (CPT) or well installation) is probably needed at Site 10 to determine whether the high TCE concentrations detected in 09 DBMW45 are due to Site 9 activities or whether the source is actually upgradient of Site 9.

Site 12 - Sludge Drying Beds

1. The Department requests that SWMU/AOC 90 (Former Sewage Treatment Plant) be included as part of RI Site 12.
2. The Phase II RI Workplan site description should include construction details for the sludge drying beds (and all impoundments). Were the beds (and impoundments) constructed below grade and if so, what were the depths? Were the units lined? If applicable, what was the source of the fill material used to return the area to grade?

The *Technical Memorandum* indicates that the east sludge drying beds may actually have been impoundments. What wastes were placed in these units, if in fact they were impoundments?

Plate 13 of the *SAP Amendment* indicates two impoundments located southeast of Stratum 2; these units were apparently identified in aerial photographs from 1945, 1965, and 1970. Yet these units were not described in the *Technical Memorandum* and apparently not investigated. What wastes were placed in these units?

The Phase II RI Workplan site description should include details on the wastewater treatment plant units. The *SAP Amendment* indicates that at least some of the wastewater treatment plant units were located southeast of the original beds (Stratum 2); these units

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included impoundments and tanks. The Department requests a review of the plans and all other pertinent information for Site 12. Review of plans coupled with aerial photograph information should provide the layout of the former sewage treatment plant. The description should include the wet well, clarifiers, digesters, primary and secondary clarifiers, trickling filters, oil/water separators, impoundments, beds, and all other units at the wastewater treatment plant. The description should indicate which units were constructed below ground surface and how deep below ground surface. The description should indicate if any units were constructed with secondary containment and if so, a description of the containment structures should be provided.

The Department recommends soil samples located beneath former sewage treatment plant units, especially primary units where probable hazardous waste levels were highest. Soil samples should be located deep enough to be below the fill material at this area; this area apparently has been filled in to have a higher ground surface level than surrounding areas.

3. What are the dimensions of the tar-like stain in which sample 12\_DDX was located? Please display this area in a figure in applicable subsequent documents. What are the likely sources of this tar-like substance? The *Technical Memorandum* states "Soil staining is apparent at the south portion of the West Sludge Drying Beds, and appears to be progressing toward the drainage ditch". Is the tar-like substance "oozing" from the subsurface?

PAHs may be present in significant concentrations in the tar-like material at sampling location 12\_DDX. Apparently hydrocarbon contamination in the sample resulted in a 20,000 ppb detection limit for PAHs.

4. Why were numerous Site 12 sampling results for pesticides and PCBs flagged "N" or "R" (restricted)? A discussion of this should have been included in the text of the *Technical Memorandum*. An interpretation of these results should be presented during the DQO process for Phase II investigations and in the Phase II RI Workplan; however, it is likely that a majority of the pesticide/PCB data for Site 12 are uninterpretable. The estimated data for Strata 2 and 3 indicate likely pesticide/PCB contamination.

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5. It is questionable whether sufficient downgradient groundwater monitoring control is provided for this site.
6. Only two deep borings were completed, one in each sludge bed area. The surface and near surface samples may not have been targeted deep enough for former below ground surface units.
7. The shallow off-station soil gas investigation performed by Tracer Research Corporation in August 1989 "... detected a relatively high concentration of TCE and an elevated concentration of 1,2-DCE [near 18\_PS1], which corresponds to VOC contaminants detected in well PS-1 from previous sampling events" (section of JMM report provided by CH2M Hill). Yet TCE or DCE were apparently not detected in 18\_PS1 during the first round of groundwater sampling in Phase I, at least not above regulatory standards anyway. What were the concentrations of VOCs detected in 18\_PS1 from previous sampling events? Was TCE, PCE or DCE detected in 18\_PS1 during the first round of groundwater sampling in Phase I, and if so, at what concentrations?

The shallow off-station soil gas investigation also identified elevated levels of PCE south of the Station near shallow monitoring wells installed and sampled by Gregg and Associates during 1986. The JMM Report suggests that shallow PCE soil contamination may exist east of and immediately adjacent to Bee Canyon Wash [in the area of Site 12?). During the first round of groundwater sampling in Phase I, PCE was detected (18 ppb) in semi-downgradient well 12\_DBMW48 and well 18\_BGMW04B (11 ppb) and not in upgradient (semi-upgradient?) well 12\_UGMW31.

#### Site 22 - Tactical Air Fuel Dispensing System

1. What soil area was cleaned up and how in response to a spill that occurred in 1983 or 1984?
2. Detected TRPH concentrations increase with depth in the 0- and 2-foot depth soil samples at 22\_1FB2 and 22\_1FB3, but TRPH was not detected in the deeper samples, including the 5-foot depth sample, of 22\_DBMW47.

Additional characterization of the area of 22\_2FB3 is warranted-- TFH-gasoline, TFH-diesel and TRPH

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concentrations increase with depth (soil samples were collected at 0-, 2- and 4-feet). Semivolatile organic compounds appear to show a similar trend. Nearby boring 22 2FB2 had the highest OVA headspace concentration (65 ppmv).

3. Similar to Site 9, it is unclear whether Site 22 or an upgradient location(s) is a source of the VOC contamination in groundwater; a records review and a soil gas survey may aid in the determination (see comments for Site 10).

If you have any questions concerning these comments, please contact me at (310) 590-4878.

Sincerely,

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