



April 9, 1997

Pete Wilson  
Governor

James M. Strock  
Secretary for  
Environmental  
Protection

Cal/EPA

Department of  
Toxic Substances  
Control

245 West Broadway,  
Suite 350  
Long Beach, CA  
90802-4444

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

**COMMENTS ON DRAFT QUARTERLY GROUNDWATER MONITORING  
REPORT, MARINE CORPS AIR STATION (MCAS) EI TORO**

Dear Mr. Joyce:

The Department of Toxic Substances Control (DTSC) and the Santa Ana Regional Water Quality Control Board (RWQCB) has completed the review of the above subject report dated February 1997 and received by us on March 6, 1997. The reports, prepared by CDM Federal Programs Corporation, present the results of the November-December 1996 groundwater sampling round from a network of 181 monitoring wells/monitoring ports conducted at MCAS El Toro.

This letter is to transmit DTSC's comments on the document. Please incorporate the changes, where appropriate, and send us a response to comments along with a revised document.

The RWQCB has no comments on the report. If you have any questions, please call me at (562) 590-4891.

Sincerely,

A handwritten signature in black ink, appearing to read "Tayseer Mahmoud".

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

Enclosure

cc: See Next Page

Mr. Joseph Joyce  
April 9, 1997  
Page 2

cc: Mr. Glenn Kistner, SFD-8-2  
Remedial Project Manager  
U. S. Environmental Protection Agency  
Region IX  
Federal Facilities Cleanup Office  
75 Hawthorne Street  
San Francisco, California 94105-3901

Mr. Lawrence Vitale  
Remedial Project Manager  
California Regional Water Quality  
Control Board  
Santa Ana Region  
3737 Main Street, Suite 500  
Riverside, California 92501-3339

Mr. Larry Davidson  
CDM Federal Programs Corporation  
3760 Convoy Street, Suite 210  
San Diego, California 92111

Mr. Andy Piszkin  
Remedial Project Manager  
Naval Facilities Engineering Command  
Southwest Division - Code 1831.AP  
1220 Pacific Highway  
San Diego, California 92132-5187

**DEPARTMENT OF TOXIC SUBSTANCES CONTROL**  
**Comments on**  
**DRAFT QUARTERLY GROUNDWATER MONITORING REPORT,**  
**MARINE CORPS AIR STATION (MCAS) EI TORO**  
**Dated February 1997**

The Department of Toxic Substances Control (DTSC) has reviewed the document entitled Groundwater Monitoring Report November - December 1996 Sampling Round, Volumes I and II, Marine Corps Air Station (MCAS) El Toro, California (the Report), dated February 1997. The document was prepared by CDM Federal Programs Corporation (CDM) for Southwest Division Naval Facilities Engineering Command (Navy).

The Report presents the results from the November-December 1996 groundwater sampling event, fulfilling the stated objectives. However, problems persist in data presentation and sample collection that should be resolved prior to the next sampling event. As previously discussed with the Navy, the format of data presentation makes it difficult to evaluate contaminant plumes and within well trends. The quarterly groundwater reports should continue with a similar format (contingent upon BCT concurrence), including some changes. Annually a report should be submitted which includes a more comprehensive data presentation and evaluation. Please address this comment and others listed below.

**SPECIFIC COMMENTS/ NAVY'S RESPONSE TO DTSC COMMENTS:**

**1. Performance Evaluation (PE) and Split Samples**

The results from the APCL laboratory analytical reports and HML are attached for comparison of the PE and split samples.

**2. Table of Contents, Section 2.4, page iii**

Reference to Defense is a typographical error. The correct reference is dense.

**3. Executive Summary**

A. There is not sufficient data to interpret continuing migration of the regional VOC plume. This type of interpretation should be presented and supported in a future trend analysis report.

B. Low level VOC detections in Site 1 monitoring wells 01\_MW101 and 01\_MW102 and Site 19 monitoring well 19\_DGMW86 imply a release.

The Navy should consider and evaluate inefficient decontamination of sampling equipment as a potential source of VOC detections in the samples. This is a concern since VOCs are detected at Site 1 for the first time and there is a significant increase in the concentration of VOCs at Site 19 (although still low concentrations). The final groundwater sampling workplan should include a section addressing monitoring wells with constituents of concern detected for the first time.

**4. Section 1.1 - Background**

General information about the site history, physical setting, hydrogeology, nature and extent of contamination, and conceptual models of VOC contamination should be derived from the Phase II Remedial Investigation documents instead of Phase I documents.

**5. Section 1.2 - Sampling Plans for Groundwater Monitoring  
Section 8.3 - Site Specific Analysis, Gross Alpha/Gross Beta, page 8-2  
Section 10.2 - Upcoming Monitoring Activities, page 10-2**

In response to DTSC comments on gross alpha and gross beta activity at the landfill sites, the Navy agreed to conduct isotopic analysis of groundwater. The response to comments on the Draft Phase II Feasibility Study Report for Site 2 landfill indicates that isotopic analysis of groundwater is being conducted as part of the current round of groundwater monitoring (i.e., during the fourth sampling round which has been completed). A review of this report shows the results of gross alpha/gross beta only. Please ensure that the isotropic analysis is performed during the fifth sampling round.

**6. Section 1.4 - Hydrogeologic Setting**

The text should state whether ranges of the depth to groundwater are historical highs and lows or if the depths are exclusively from the November-December 1996 sampling event.

**7. Section 1.4 - Hydrogeologic Setting, Figure 1-2 - Location of Groundwater Monitoring Wells and Cross Sections**

The text states Sections A'-A'' and B-B' are provided (Figures 1-4 and 1-5), however Section A-A' is shown on Figure 1-2 yet a cross section is not provided.

Remove the A-A' cross section line from the figure or include cross section A-A'.

**8. Section 2.1 - Water Level Measurements**

There is a typographical error in the first paragraph. Change October 20-31 to October 30-31.

**9. Section 2.2 - Groundwater Sampling and Analysis**

A. Evaluated why pumps in monitoring wells 06 DGMW69 and 13 UGMW32 are inoperative. Both wells were sampled in February 1996.

B. The text states dissolved oxygen was recorded in the field as percent saturation and later converted to milligrams per liter. However, many of the field logs appear to report dissolved oxygen as milligrams per liter (values under 10). Was another meter used besides the YSI 6000 Environmental Monitoring System and was not stated in the text? If so, were the normal procedures followed. Clarify this unit discrepancy.

C. Evaluate why the pump in monitoring well 02 NEW7 was inoperative. Unlike the dedicated pumps installed during the Phase I investigation, this pump was installed during the Phase II investigation and therefore is less than two years old. Corrosion should not be a problem.

D. Remove and repair or replace inoperative pumps in wells 06 DGMW69 and 13 UGMW32 before the next sampling event.

E. Page 2-4, Bullets

Determine why samples and/or analyses were not completed and evaluated and how this problem may be avoided during the next sampling event.

F. Amend the Sampling and Analysis Plan to reflect a mid-day or end of the day calibration check for all field meters.

**10. Section 2.3 - Low-Flow Well Purging**

Change the section header to Low-Flow Well Purging and Sampling.

Provide a list of wells in which low flow well purging and sampling techniques were employed. Also include information on flow rates for each well and how the flow rates are determined.

**11. Section 3.3 - Groundwater Elevation Hydrographs**

The stated objectives of this section is to evaluate the regional groundwater conditions and specific water level trends, however, this section does not achieve this objectives. The evaluation is limited to a few select wells. This section would better lend itself to a complete set of hydrographs coupled with an interpretation of general Station and off-Station trends.

**12. Section 4.6 - Additional VOC Sampling Results**

In the future please present the data in the text or in a separate appendix when specific data is requested, other than what is included the workplan.

**13. Section 8 - General Chemistry and Other Analyses, Table 8-2**

Include an explanation how to interpreted negative turbidity and strontium units.

**14. Section 9.1 - Field and Laboratory Audits**

- A. Page 9-2, first bullet; the BCT should determine if the new packers will be installed.
- B. Page 9-2, forth bulled; the decision to collect filtered or unfiltered metals samples should be documented by the BCT.

**15. Section 9.2 - Quality Assurance/Quality Control (QA/QC) Samples**

Quality Assurance/QC protocol should be reevaluated and or more rigorously applied. Ten percent validation may not be appropriate if unusual circumstances occur, such as VOC detections in wells historically showing non-detects. Additionally, six of the nine equipment rinsate samples include VOC detections. Also provide the definition of a "air contamination blank sample" and the field preparation protocol.

**16. Section 9.3.1 - General Data Review**

Page 9-5, second bullet; the Navy should correct this transposition error.

**17. Appendix C**

- A. Please provide more rigorous QA/QC on the data tables. There are several typographical errors in Table C-1.
- B. Provide an explanation for negative turbidity units.
- C. During groundwater sampling, many of the wells have excessively high turbidity values (over 100 NTUs). High turbidity can greatly influence groundwater analytical data, therefore, the BCT should actively evaluate and resolve this sampling problem.
- D. Some dissolved oxygen (DO) measurements exceed the theoretical maximum saturation values in water for this event and also in previous rounds. Additionally, the redox values should somewhat correlate with the DO values. Generally, as DO increases (reaches saturation) so should redox values. Conversely, as DO decreases redox values should decrease to negative values. Many wells do not follow this expected pattern. The field teams should receive training on the evaluation of field parameters during sample collection. Simple field assessments could have prevented ambiguous data as reported in Table C-1.

**18. Appendix F**

Include in the text a comprehensive discussion regarding the occurrence of air entrainment in groundwater samples observed during collection.

**Recommendations**

There are still numerous problems and issues to discuss before finalizing a groundwater monitoring plan. It is suggested the BCT have a meeting to resolve these concerns. Topics for such a meeting could be as follows: training for field teams, replacement of dedicated pumps, premature failure of dedicated pumps, replacement of packers, contingency plans if wells are not assessable (vehicles parked over the well), filtering of metals samples, air entrainment of samples, DO/redox issue, contingency plans for wells with obstructions, data presentation, and annual reports.

Attachment

MEMORANDUM

TO: Sherrill Beard  
FROM: Pat Russell  
DATE: 04 April 1997  
RE: Spiked VOC Samples

Sent via Fax: (310) 590-5511

Environmental Resources Associates provided CDM Federal with four sets of spiked VOC samples. The sample I.D. numbers are as follows:

<u>Sample I.D.</u>	<u>Date Sent to Lab</u>
18BGMW14-802-1	November 15, 1996
18BGMW14-802-2	November 15, 1996
18BGMW23-802	December 6, 1996
18PS4-802	December 6, 1996

Laboratory results for the samples are included in this fax. Please give me a call with any questions at (619) 268-3383.

c:

Bernie Lindsey  
Larry Davidson  
Contract File



# Certification

California Department of Toxic Substances Quality Control Standards

Catalog # 703: Volatiles Sample #1

Lot # 0916-96-02

18BGMW14-802-1

Whole Volume Standard

Parameter	Certified Value (µg/L)	Performance Acceptance Limits™ (µg/L)
Benzene	5.62	4.50 - 6.74
Carbon tetrachloride	13.0	10.4 - 15.6
Chlorobenzene	6.64	5.31 - 7.97
1,2-Dichlorobenzene	6.17	4.94 - 7.40
1,4-Dichlorobenzene	9.60	7.68 - 11.5
1,2-Dichloroethane	16.3	13.0 - 19.6
1,1-Dichloroethylene	4.08	3.26 - 4.90
cis-1,2-Dichloroethylene	11.7	9.36 - 14.0
trans-1,2-Dichloroethylene	4.39	3.51 - 5.27
1,2-Dichloropropane	9.03	7.22 - 10.8
Ethylbenzene	9.92	7.94 - 11.9
Methylene chloride	15.8	12.6 - 19.0
Styrene	6.97	5.58 - 8.36
Tetrachloroethylene	8.02	6.42 - 9.62
Toluene	3.72	2.98 - 4.46
1,2,4-Trichlorobenzene	18.2	14.6 - 21.8
1,1,1-Trichloroethane	4.06	3.25 - 4.87
1,1,2-Trichloroethane	9.36	7.49 - 11.2
Trichloroethylene	13.1	10.5 - 15.7
Vinyl chloride	4.70	2.82 - 6.58
o-Xylene	4.36	3.49 - 5.23
m-Xylene	6.04	4.83 - 7.25
p-Xylene	2.95	2.36 - 3.54

**Preservative:** These samples are preserved with HCl.

**Storage:** Store @ 4±2°C.

The Certified Values are equal to 100% of the parameters in the indicated standard.

The Performance Acceptance Limits (PALs™) are listed as guidelines for acceptable analytical results given the limitations of the USEPA methodologies commonly used to determine these parameters and closely approximate the 95% confidence interval. The PALs™ are based on the regulated acceptance limits as published by the EPA in the Federal Register, data generated by your peer laboratories in ERA's InterLaB™ program, and data from USEPA methods and WS Interlaboratory studies. If your result falls outside of the PALs™, ERA recommends that you investigate potential sources of error in your preparation and/or analytical procedures. For further technical assistance, call ERA at 1-800-372-0122.

Prepared by: CG

Reviewed by: CR

Date: 11/13/96

Date: 11/22/96



ENVIRONMENTAL  
RESOURCE ASSOCIATES  
ARVADA, COLORADO 1-800-372-0122

# Certification

California Department of Toxic Substances Quality Control Standards

Catalog No 710: Volatiles Sample #2

Lot No 0916-96-02

18BGRM14-812-2

Parameter	Certified Value (µg/L)	Performance Acceptance Limits™ (µg/L)
Benzene	504	388 - 632
Bromodichloromethane	1850	1420 - 2320
Bromoform	2660	1920 - 3460
Carbon tetrachloride	1160	858 - 1460
Chlorobenzene	1500	1170 - 1790
Chlorodibromomethane	2160	1650 - 2860
Chloroform	694	522 - 856
1,2-Dichlorobenzene	688	516 - 836
1,3-Dichlorobenzene	852	646 - 1020
1,4-Dichlorobenzene	618	462 - 758
1,2-Dichloroethane	1580	1220 - 1970
Ethylbenzene	446	332 - 524
Methylene chloride	300	208 - 392
4-Methyl-2-pentanone (MIBK)	1520	852 - 2100
1,1,2,2-Tetrachloroethane	2400	1710 - 3060
Tetrachloroethylene	574	426 - 698
Toluene	914	702 - 1100
1,1,1-Trichloroethane	740	528 - 888
Trichloroethylene	1610	1190 - 1960
m-Xylene	598	380 - 756

Preservation: This sample is preserved with HCl.

Storage: Store @ 4°C.

The Certified Values are equal to 100% of the parameters in the indicated standard.

The Performance Acceptance Limits (PALs™) are listed as guidelines for acceptable analytical results given the limitations of the USEPA methodologies commonly used to determine these parameters and closely approximate the 95% confidence interval. The PALs™ are based on data generated by your peer laboratories in ERA's InterLaB™ program using the same samples you are analyzing and data from USEPA methods, WP, WS and CLP interlaboratory studies. If your result falls outside of the PALs™, ERA recommends that you investigate potential sources of error in your preparation and/or analytical procedures. For further technical assistance, call ERA at 1-800-372-0122.

Prepared by: CPW

Reviewed by: BT

Date: 11/26/96

Date: 11/27/96

Whole Volume Standard

# APCL Analytical Report

Component Analyzed	Method	Unit	CRDL (PQL)	Analysis Result			
				18BGMW11-802- 96-04467-5	18BGMW14-802-2 96-04467-6	18BGMW22-002 96-04467-7	18BGMW48-002 96-04467-8
Alkalinity	310.1	mg-CaCO <sub>3</sub> /L	2	-	-	319	151
Bicarbonate	SM2320B	mg-CaCO <sub>3</sub> /L	2	-	-	319	151
Carbonate	SM2320B	mg-CaCO <sub>3</sub> /L	2	-	-	N.D.	N.D.
Chloride Cl <sup>-</sup> by IC	300.0	mg/L	0.2	-	-	100	268
Nitrate/Nitrite, as N	300.0	mg-N/L	0.1	-	-	1.6	17.1
Solids, Total Dissolved (TDS)	160.1	mg/L	10	-	-	843	915
Sulfate (SO <sub>4</sub> <sup>2-</sup> ), by IC	300.0	mg/L	0.5	-	-	217	93.9
CLP: VOC by GC/MS							
Acetone	CLP-VOC	µg/L	10	N.D.	< 2000	N.D.	N.D.
Benzene	CLP-VOC	µg/L	1	6	554	N.D.	N.D.
Bromodichloromethane	CLP-VOC	µg/L	1	N.D.	2,020	1	N.D.
Bromoform	CLP-VOC	µg/L	1	N.D.	2,980	1	N.D.
Bromomethane	CLP-VOC	µg/L	10	N.D.	< 2000	N.D.	N.D.
2-Butanone (MEK)	CLP-VOC	µg/L	10	N.D.	< 2000	N.D.	N.D.
Carbon disulfide	CLP-VOC	µg/L	10	N.D.	< 2000	N.D.	N.D.
Carbon tetrachloride	CLP-VOC	µg/L	1	16	900	N.D.	N.D.
Chlorobenzene	CLP-VOC	µg/L	10	7.0J	1950J	1.0J	0.6J
Chlorodibromomethane	CLP-VOC	µg/L	1	N.D.	2,280	1	0.7J
Chloroethane	CLP-VOC	µg/L	10	N.D.	< 2000	N.D.	N.D.
Chloroform	CLP-VOC	µg/L	1	N.D.	824	2	N.D.
Chloromethane	CLP-VOC	µg/L	10	N.D.	< 2000	N.D.	N.D.
1,1-Dichloroethane	CLP-VOC	µg/L	1	N.D.	< 200	N.D.	N.D.
1,2-Dichloroethane	CLP-VOC	µg/L	1	16	1,830	0.8J	N.D.
1,1-Dichloroethene	CLP-VOC	µg/L	1	4	< 200	N.D.	N.D.
2-Dichloroethene (Total)	CLP-VOC	µg/L	1	17	< 200	N.D.	0.6J
2-Dichloropropane	CLP-VOC	µg/L	1	9	< 200	N.D.	N.D.
cis-1,3-Dichloropropene	CLP-VOC	µg/L	10	N.D.	< 2000	N.D.	N.D.
trans-1,3-Dichloropropene	CLP-VOC	µg/L	10	N.D.	< 2000	N.D.	N.D.
Ethylbenzene	CLP-VOC	µg/L	1	10	512	N.D.	N.D.
2-Hexanone	CLP-VOC	µg/L	10	N.D.	< 2000	N.D.	N.D.
4-Methyl-2-pentanone (MIBK)	CLP-VOC	µg/L	10	N.D.	612J	N.D.	N.D.
Methylene chloride	CLP-VOC	µg/L	1	16	414	N.D.	N.D.
Styrene	CLP-VOC	µg/L	10	7.0J	< 2000	N.D.	N.D.
1,1,2,2-Tetrachloroethane	CLP-VOC	µg/L	10	N.D.	3,280	1.7J	1.0J
Tetrachloroethene	CLP-VOC	µg/L	1	9	616	N.D.	5
Toluene	CLP-VOC	µg/L	1	4	1,120	N.D.	N.D.
1,1,1-Trichloroethane	CLP-VOC	µg/L	1	5	644	N.D.	N.D.
1,1,2-Trichloroethane	CLP-VOC	µg/L	1	10	< 200	N.D.	N.D.
Trichloroethene	CLP-VOC	µg/L	1	15	1,730	1	6
Vinyl chloride	CLP-VOC	µg/L	1	5	< 200	N.D.	N.D.
Xylenes (total)	CLP-VOC	µg/L	1	14	726	N.D.	N.D.
Freon-113 (A)	CLP-VOC	µg/L	10	N.D.	< 2000	N.D.	N.D.



# APCL Analytical Report

Analysis Result

Component Analyzed	Method	Unit	CRDL	18BGMW23-002	18BGMW23-302	18BGMW23-802	18PS4-002
				96-04656-2	96-04656-3	96-04656-4	96-04656-5
<b>CLP: VOC by GC/MS</b>							
Acetone	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.	N.D.
Benzene	CLP-VOC	µg/L	1	0.7J	N.D.	93	N.D.
Bromodichloromethane	CLP-VOC	µg/L	1	N.D.	N.D.	N.D.	N.D.
Bromoform	CLP-VOC	µg/L	1	N.D.	N.D.	N.D.	N.D.
Bromomethane	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.	N.D.
2-Butanone (MEK)	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.	N.D.
Carbon disulfide	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.	N.D.
Carbon tetrachloride	CLP-VOC	µg/L	1	N.D.	N.D.	383	N.D.
Chlorobenzene	CLP-VOC	µg/L	10	N.D.	N.D.	130	N.D.
Chlorodibromomethane	CLP-VOC	µg/L	1	N.D.	N.D.	N.D.	N.D.
Chloroethane	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.	N.D.
Chloroform	CLP-VOC	µg/L	1	N.D.	N.D.	3	N.D.
Chloromethane	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.	N.D.
1,1-Dichloroethane	CLP-VOC	µg/L	1	N.D.	N.D.	N.D.	N.D.
1,2-Dichloroethane	CLP-VOC	µg/L	1	N.D.	N.D.	330	N.D.
1,1-Dichloroethene	CLP-VOC	µg/L	1	N.D.	N.D.	200	N.D.
1,2-Dichloroethene (Total)	CLP-VOC	µg/L	1	N.D.	N.D.	393	N.D.
1,2-Dichloropropane	CLP-VOC	µg/L	1	N.D.	N.D.	173	N.D.
cis-1,3-Dichloropropene	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.	N.D.
trans-1,3-Dichloropropene	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.	N.D.
Ethylbenzene	CLP-VOC	µg/L	1	N.D.	N.D.	220	N.D.
2-Hexanone	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.	N.D.
4-Methyl-2-pentanone (MIBK)	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.	N.D.
Methylene chloride	CLP-VOC	µg/L	1	3	2	389	2
Styrene	CLP-VOC	µg/L	10	N.D.	N.D.	336	N.D.
1,1,2,2-Tetrachloroethane	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.	N.D.
Tetrachloroethene	CLP-VOC	µg/L	1	0.7J	0.8J	124	11
Toluene	CLP-VOC	µg/L	1	N.D.	N.D.	325	N.D.
1,1,1-Trichloroethane	CLP-VOC	µg/L	1	N.D.	N.D.	201	N.D.
1,1,2-Trichloroethane	CLP-VOC	µg/L	1	N.D.	N.D.	154	N.D.
Trichloroethene	CLP-VOC	µg/L	1	2	2	257	7
Vinyl chloride	CLP-VOC	µg/L	1	N.D.	N.D.	247	N.D.
Xylenes (total)	CLP-VOC	µg/L	1	N.D.	N.D.	707	N.D.
Freon-113 (a)	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.	N.D.



# Certification

## California Department of Toxic Substances Quality Control Standards

Catalog # 703: Volatiles Sample #1

Lot # 1203-96-06

18PS4-802

Parameter	Certified Value (ug/L)	Performance Acceptance Limits™ (ug/L)
Benzene	7.67	6.14 - 9.20
Carbon tetrachloride	10.0	8.00 - 12.0
Chlorobenzene	7.66	6.13 - 9.19
1,2-Dichlorobenzene	2.93	2.34 - 3.52
1,4-Dichlorobenzene	8.00	6.40 - 9.60
1,2-Dichloroethane	15.8	12.6 - 19.0
1,1-Dichloroethylene	15.0	12.0 - 18.0
cis-1,2-Dichloroethylene	5.78	4.62 - 6.94
trans-1,2-Dichloroethylene	14.2	11.4 - 17.0
1,2-Dichloropropane	10.9	8.72 - 13.1
Ethylbenzene	5.59	4.47 - 6.71
Methylene chloride	18.1	14.5 - 21.7
Styrene	4.36	3.49 - 5.23
Tetrachloroethylene	16.7	13.4 - 20.0
Toluene	9.31	7.45 - 11.2
1,2,4-Trichlorobenzene	10.1	8.08 - 12.1
1,1,1-Trichloroethane	17.4	13.9 - 20.9
1,1,2-Trichloroethane	8.87	7.10 - 10.6
Trichloroethylene	5.53	4.42 - 6.64
Vinyl chloride	5.00	3.00 - 7.00
o-Xylene	12.1	9.68 - 14.5
m-Xylene	7.83	6.26 - 9.40
p-Xylene	4.56	3.65 - 5.47

Preservative: These samples are preserved with HCl.

Storage: Store @ 4±2°C.

The Certified Values are equal to 100% of the parameters in the indicated standard.

The Performance Acceptance Limits (PALs™) are listed as guidelines for acceptable analytical results given the limitations of the USEPA methodologies commonly used to determine these parameters and closely approximate the 95% confidence interval. The PALs™ are based on the regulated acceptance limits as published by the EPA in the Federal Register, data generated by your peer laboratories in ERA's InterLaB™ program, and data from USEPA methods and WS Interlaboratory studies. If your result falls outside of the PALs™, ERA recommends that you investigate potential sources of error in your preparation and/or analytical procedures. For further technical assistance, call ERA at 1-800-372-0122.

Prepared by:     COW    

Reviewed by:     OK    

Date:     12/6/96    

Date:     12/6/96    

Whole Volume Standard

# APCL Analytical Report

Component Analyzed	Method	Unit	CRDL	Analysis Result		
				18PS4-302 96-04656-6	18PS4-502 96-04656-7	18PS4-802 96-04656-8
<b>CLP: VOC by GC/MS</b>						
Acetone	CLP-VOC	µg/L	10	N.D.	N.D.	18
Benzene	CLP-VOC	µg/L	1	N.D.	0.5J	9
Bromodichloromethane	CLP-VOC	µg/L	1	N.D.	N.D.	N.D.
Bromoform	CLP-VOC	µg/L	1	N.D.	N.D.	N.D.
Bromomethane	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.
2-Butanone (MEK)	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.
Carbon disulfide	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.
Carbon tetrachloride	CLP-VOC	µg/L	1	N.D.	N.D.	11
Chlorobenzene	CLP-VOC	µg/L	10	N.D.	N.D.	8.3J
Chlorodibromomethane	CLP-VOC	µg/L	1	N.D.	N.D.	N.D.
Chloroethane	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.
Chloroform	CLP-VOC	µg/L	1	N.D.	N.D.	N.D.
Chloromethane	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.
1,1-Dichloroethane	CLP-VOC	µg/L	1	N.D.	N.D.	N.D.
1,2-Dichloroethane	CLP-VOC	µg/L	1	N.D.	N.D.	17
1,1-Dichloroethene	CLP-VOC	µg/L	1	N.D.	N.D.	19
1,2-Dichloroethene (Total)	CLP-VOC	µg/L	1	N.D.	N.D.	23
1,2-Dichloropropane	CLP-VOC	µg/L	1	N.D.	N.D.	12
cis-1,3-Dichloropropene	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.
trans-1,3-Dichloropropene	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.
Ethylbenzene	CLP-VOC	µg/L	1	N.D.	N.D.	6
2-Hexanone	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.
4-Methyl-2-pentanone (MIBK)	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.
Methylene chloride	CLP-VOC	µg/L	1	1	3	22
Styrene	CLP-VOC	µg/L	10	N.D.	N.D.	4.8J
1,1,2,2-Tetrachloroethane	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.
Tetrachloroethene	CLP-VOC	µg/L	1	13	N.D.	19
Toluene	CLP-VOC	µg/L	1	N.D.	0.8J	11
1,1,1-Trichloroethane	CLP-VOC	µg/L	1	N.D.	N.D.	19
1,1,2-Trichloroethane	CLP-VOC	µg/L	1	N.D.	N.D.	9
Trichloroethene	CLP-VOC	µg/L	1	8	N.D.	6
Vinyl chloride	CLP-VOC	µg/L	1	N.D.	N.D.	6
Xylenes (total)	CLP-VOC	µg/L	1	N.D.	N.D.	27
Freon-113	CLP-VOC	µg/L	10	N.D.	N.D.	N.D.

# HAZARDOUS MATERIALS SAMPLE ANALYSIS REQUEST

1. Authorization Number

SCM3063

HML No.

To

2. Page

1 of 1

Requester: Sherrill Beard 4. Phone (818) 355-5528  
Address (To Receive Results): Dep. of Toxic Substances Control  
245 W. Broadway, Suite 350 Long Beach  
CA 90802

5. Priority Level: 1 2 3

a. Authorized by \_\_\_\_\_

6. Date Sampled 11/25/96

7. Time Sampled 11:20 Hours

8. Codes (fill in all applicable codes)

9. Activity:  SEB  SMB  FPB  FMB  HQ  OMF  
 OTHER

a. STC 1040

b. Region 04

c. INDEX 5830

d. PCA 14740

e. MPC N/A

f. SITE 400055

g. County 30

10. SAMPLING LOCATION

a. EPA ID No.

b. Site Marine Corps Air Station EL Toro

Irvine Santa Ana 92709

c. Address

Number

Street

City

Zip

11. SAMPLES

a. ID	b. Collector's No.	c. Lab No.	Sample d. Type	Container e. Type	f. Size	g. Field Information
A	<u>16DBMW52-002</u>	<u>16101</u>	<u>water</u>	<u>G</u>	<u>40 ML</u>	
B	<u>16DBMW52-002D</u>		<u>water</u>	<u>G</u>	<u>40 ML</u>	
C	<u>18PS1-002</u>	<u>16102</u>	<u>water</u>	<u>G</u>	<u>40 ML</u>	
D	<u>18PS1-002D</u>		<u>water</u>	<u>G</u>	<u>40 ML</u>	
E						
F						
G						
H						

ANALYSIS REQUESTED

f.  VOA-8020

i.  Flash Point

a.  pH

g.  VOA-H/S

m.  C1-Pesticides

b.  Metal Scan

h.  VOA-8240

n.  OP-Pesticides

c.  Metals (Spec)

i.  VOA-8260

o.

d.  W.E.T.

j.  SVO-8270

p.

e.  VOA-8010

k.  Diesel/  
Gasoline

q.

13. SPECIAL REMARKS: Detection Limits 1 ppb 1 mg/L

14. SUPPLEMENTAL REQUESTS

Initials

Date

15. CHAIN OF CUSTODY

a.	<u>Pat Russell</u> Signature	<u>Pat Russell</u> Name/Title	<u>CDM Federal</u> <u>TASK MANAGER</u>	<u>11, 25, 96</u> Inclusive Dates
b.	<u>Tayseer Mahmoud</u> Signature	<u>Tayseer Mahmoud</u> Name/Title	<u>HSS</u>	<u>11, 25, 96 - 11, 25, 96</u> Inclusive Dates
c.	<u>Russ Chinn</u> Signature	<u>Russ Chinn</u> Name/Title	<u>PHC III</u>	<u>11, 25, 96</u> Inclusive Dates
d.	_____ Signature	_____ Name/Title		<u>1 2 1</u> Inclusive Dates

LAB REMARKS:

FIELD

LAB

LABORATORY REPORT  
 DEPARTMENT OF TOXIC SUBSTANCES CONTROL  
 HAZARDOUS MATERIALS LABORATORY - SOUTHERN CALIFORNIA  
 1449 WEST TEMPLE STREET, LOS ANGELES 90026  
 TELEPHONE (213) 580-5795

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Operator's Name : SHERRILL BEARD

SCL No. : 16101 &amp; 16102

Sample Location : MARINE CORPS AIR STATION, EL TORO  
IRVINE, SANTA ANA 92709

Date Reported : 12/03/96

Analytical Procedures Used : EPA 8260 VOLATILE ORGANIC COMPOUNDS BY GC/MS

## GC/MS VOLATILE ORGANIC ANALYSIS

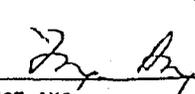
ANALYTE	CAS No.	DETECTION LIMIT				
		SCL NO.	16101	16102	METHOD BLANK	16101 16102
		COL. NO.	160BMW52 -002	18PS1-002		
		MATRIX	WATER	WATER	WATER	WATER
UNIT	ug/L	ug/L	ug/L	ug/L	ug/L	
ACETONE	67-64-1	ND	ND	ND	25	25
1,1-DICHLOROETHENE	75-35-4	ND	ND	ND	1.0	1.0
METHYLENE CHLORIDE	75-09-2	ND	ND	ND	1.0	1.0
trans-1,2-DICHLOROETHENE	156-60-5	ND	ND	ND	1.0	1.0
1,1-DICHLOROETHANE	75-34-3	ND	ND	ND	1.0	1.0
2-BUTANONE (MEK)	78-93-3	ND	ND	ND	25	25
cis-1,2-DICHLOROETHENE	56-59-2	ND	ND	ND	1.0	1.0
2,2-DICHLOROPROPANE	594-20-7	ND	ND	ND	1.0	1.0
CHLOROFORM	67-66-3	ND	ND	ND	1.0	1.0
BROMOCHLOROMETHANE	74-97-5	ND	ND	ND	1.0	1.0
1,1,1-TRICHLOROETHANE	71-55-6	ND	ND	ND	1.0	1.0
1,2-DICHLOROETHANE	107-06-2	ND	ND	ND	1.0	1.0
BENZENE	71-43-2	ND	ND	ND	1.0	1.0
1,1-DICHLOROPROPENE	563-58-6	ND	ND	ND	1.0	1.0
CARBONTETRACHLORIDE	56-23-5	ND	ND	ND	1.0	1.0
1,2-DICHLOROPROPANE	78-87-5	ND	ND	ND	1.0	1.0
TRICHLOROETHENE	79-01-6	ND	ND	7.6	1.0	1.0

Note: ND = NOT DETECTED

ug = microgram

QUANTITATION LIMIT = (CONCENTRATION OF LOWEST CALIBRATION STANDARD) X (DILUTION FACTOR)

ANALYST

  
 INGE ANG

## GC/MS VOLATILE ORGANICS ANALYSIS

COMPOUNDS	SCL NO.  COL.NO.  MATRIX  UNIT	METHOD BLANK  WATER  ug/L	DETECTION LIMIT			
			16101	16102	METHOD BLANK	16101 16102
			16DBMWS2 -002	18PSI- 002		
			ug/L	ug/L	ug/L	ug/L
DIBROMOMETHANE	CAS No. 74-95-3	ND	ND	ND	1.0	1.0
BROMODICHLOROMETHANE	75-27-4	ND	ND	ND	1.0	1.0
4-METHYL-2-PENTANONE (MIBK)	108-10-1	ND	ND	ND	25	25
1,1,2-TRICHLOROETHANE	79-00-5	ND	ND	ND	1.0	1.0
TOLUENE	108-88-3	ND	ND	ND	1.0	1.0
2-HEXANONE (MBK)	591-78-6	ND	ND	ND	25	25
1,3-DICHLOROPROPANE	142-28-9	ND	ND	ND	1.0	1.0
DIBROMOCHLOROMETHANE	124-48-1	ND	ND	ND	1.0	1.0
1,2-DIBROMOETHANE	106-93-4	ND	ND	ND	1.0	1.0
TETRACHLOROETHENE	127-18-4	ND	ND	ND	1.0	1.0
CHLOROBENZENE	108-90-7	ND	ND	ND	1.0	1.0
1,1,1,2-TETRACHLOROETHANE	630-20-6	ND	ND	ND	1.0	1.0
ETHYLBENZENE	100-41-4	ND	ND	ND	1.0	1.0
m & p XYLENES	108-38-3; 106-42-3	ND	ND	ND	1.0	1.0
BROMOFORM	75-25-2	ND	ND	ND	1.0	1.0
STYRENE	100-42-5	ND	ND	ND	1.0	1.0
o-XYLENE	95-47-6	ND	ND	ND	1.0	1.0
1,1,2,2-TETRACHLOROETHANE	79-34-5	ND	ND	ND	1.0	1.0
1,2,3-TRICHLOROPROPANE	96-18-4	ND	ND	ND	1.0	1.0
ISOPROPYLBENZENE	98-82-8	ND	ND	ND	1.0	1.0
BROMOBENZENE	108-86-1	ND	ND	ND	1.0	1.0

Note: ND = NOT DETECTED

ug = microgram

mg = milligram

ANALYST

*J. Ang*  
\_\_\_\_\_  
INGE ANG

LABORATORY REPORT  
 DEPARTMENT OF TOXIC SUBSTANCES CONTROL  
 HAZARDOUS MATERIALS LABORATORY - SOUTHERN CALIFORNIA  
 1449 W. Temple Street, Los Angeles 90026  
 Telephone 213 580-5795

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SCL NO. 16101 TO 16102

## GC/MS VOLATILE ORGANICS ANALYSIS

COMPOUNDS	SCL NO. COL. NO. MATRIX UNIT	METHOD BLANK WATER ug/L	DETECTION LIMIT		DETECTION LIMIT	
			16101	16102	16101	16102
			1608MW52-002	18PS1-002	METHOD BLANK	
			WATER	WATER	WATER	WATER
2-CHLOROTOLUENE	CAS No. 95-49-8	ND	ND	ND	1.0	1.0
n-PROPYLBENZENE	103-65-1	ND	ND	ND	1.0	1.0
4-CHLOROTOLUENE	106-43-4	ND	ND	ND	1.0	1.0
1,3,5-TRIMETHYLBENZENE	108-67-8	ND	ND	ND	1.0	1.0
tert-BUTYLBENZENE	98-06-6	ND	ND	ND	1.0	1.0
1,2,4-TRIMETHYLBENZENE	95-63-6	ND	ND	ND	1.0	1.0
1,3-DICHLOROBENZENE	541-73-1	ND	ND	ND	1.0	1.0
sec-BUTYLBENZENE	135-98-8	ND	ND	ND	1.0	1.0
1,4-DICHLOROBENZENE	104-46-7	ND	ND	ND	1.0	1.0
p-ISOPROPYLTOLUENE	99-87-6	ND	ND	ND	1.0	1.0
1,2-DICHLOROBENZENE	95-50-1	ND	ND	ND	1.0	1.0
n-BUTYLBENZENE	104-51-8	ND	ND	ND	1.0	1.0
1,2,4-TRICHLOROBENZENE	120-80-1	ND	ND	ND	1.0	1.0
NAPHTHALENE	91-20-3	ND	ND	ND	1.0	1.0
1,2,3-TRICHLOROBENZENE	87-61-6	ND	ND	ND	1.0	1.0
HEXACHLOROBUTADIENE	87-68-3	ND	ND	ND	1.0	1.0
METHYL TERT-BUTYL ETHER		ND	ND	ND	1.0	1.0
TENTATIVELY IDENTIFIED COMPOUNDS:						
SCL 16101 & 16102: FREON-113						

Note: ND = NOT DETECTED

ANALYST

*Inge Ang*  
 INGE ANG

SUPERVISING CHEMIST

*Russ Chin* 12/31/96  
 DATE RUSS CHIN DATE