



Chevron U.S.A. Inc.

2410 Camino Ramon, San Ramon, California • Phone (415) 842-9500
Mail Address: P.O. Box 5004, San Ramon, CA 94583-0804

no deposit return

Marketing Operations

D. Moller
Manager, Operations
S. L. Patterson
Area Manager, Operations
C. G. Trimbach
Manager, Engineering

November 19, 1990

Mr. Rafat Shahid
Alameda County
Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

210 Grand Ave

Re: Former Chevron Service Station #9-0019
Grand Ave/Montecito
Oakland, CA *94612*

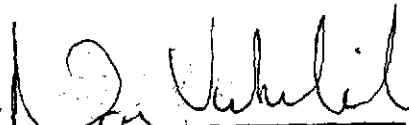
Dear Mr. Shahid:

Enclosed we are forwarding the Quarterly Groundwater Sampling report dated November 12, 1990, conducted by our consultant Western Geologic Resources, Inc., for the above referenced site. As indicated in the report, hydrocarbon contaminant levels remain consistent with previous sampling results.

Chevron will continue to monitor this site and report findings on a quarterly basis.

If you have any questions or comments please do not hesitate to call me at (415) 842 - 9581.

Very truly yours,
C. G. Trimbach

By 
Nancy Vukelich

NLV/jmr
Enclosure

cc: Mr. Lester Feldman
RWQCB-Bay Area
1800 Harrison Street
Suite # 700
Oakland, CA 94612

06



WESTERN GEOLOGIC RESOURCES INC.

2169 E. FRANCISCO BLVD., SUITE B / SAN RAFAEL
CALIFORNIA 94901 / FAX 415.457.8521
TELE 415.457.7595

12 November 1990

Ms. Nancy Vukelich
Chevron USA
2410 Camino Ramon
San Ramon, California 94583-0804

Re: Quarterly Groundwater Monitoring
Sampled October 1990
Chevron Service Station #90019
Oakland, California
WGR Project #1-101.03

Dear Ms. Vukelich:

This letter report presents the results of the quarterly groundwater monitoring performed on 3 October 1990 by Western Geologic Resources, Inc. (WGR) at the subject site (Figure 1).

GROUNDWATER SAMPLING

On 3 October 1990, WGR staff measured depth to water and purged monitor wells MW-1 and MW-3 through MW-5 with dedicated sampling systems, and wells MW-6 through MW-9 with PVC bailers. Monitor wells MW-1, MW-3 through MW-5, and MW-8 were purged dry before three well-casing volumes could be evacuated and the wells were allowed to recover; monitor wells MW-1 and MW-3 through MW-5 were sampled after recovering to 71%, 62%, 90%, and 23% of their original static water levels, respectively. The percent recovery for well MW-8 was not determined at the time of sampling. At least three well-casing volumes of groundwater were evacuated from monitor wells MW-6, MW-7, and MW-9. Monitor well MW-2 was buried during site demolition work and was not accessible for groundwater sampling. All groundwater samples were collected according to the WGR standard operating procedure for groundwater sampling included as Attachment A; field sampling and monitoring forms are included as Attachment B.

All purged water was temporarily stored on-site in 55-gallon drums pending analytic results. The groundwater samples and a laboratory-supplied travel blank, consisting of deionized water, were shipped under chain-of-custody to GTEL Environmental Laboratories, Inc. of Concord, California.

GROUNDWATER FLOW

Figure 2 shows the potentiometric surface of shallow groundwater, based on depth-to-water measurements taken on 3 October 1990. Groundwater-elevation data are presented in Table 1.



N. Vukelich/12 November 1990

3

FIGURES

1. Site Location Map
2. Potentiometric Surface of Shallow Groundwater, 3 October 1990

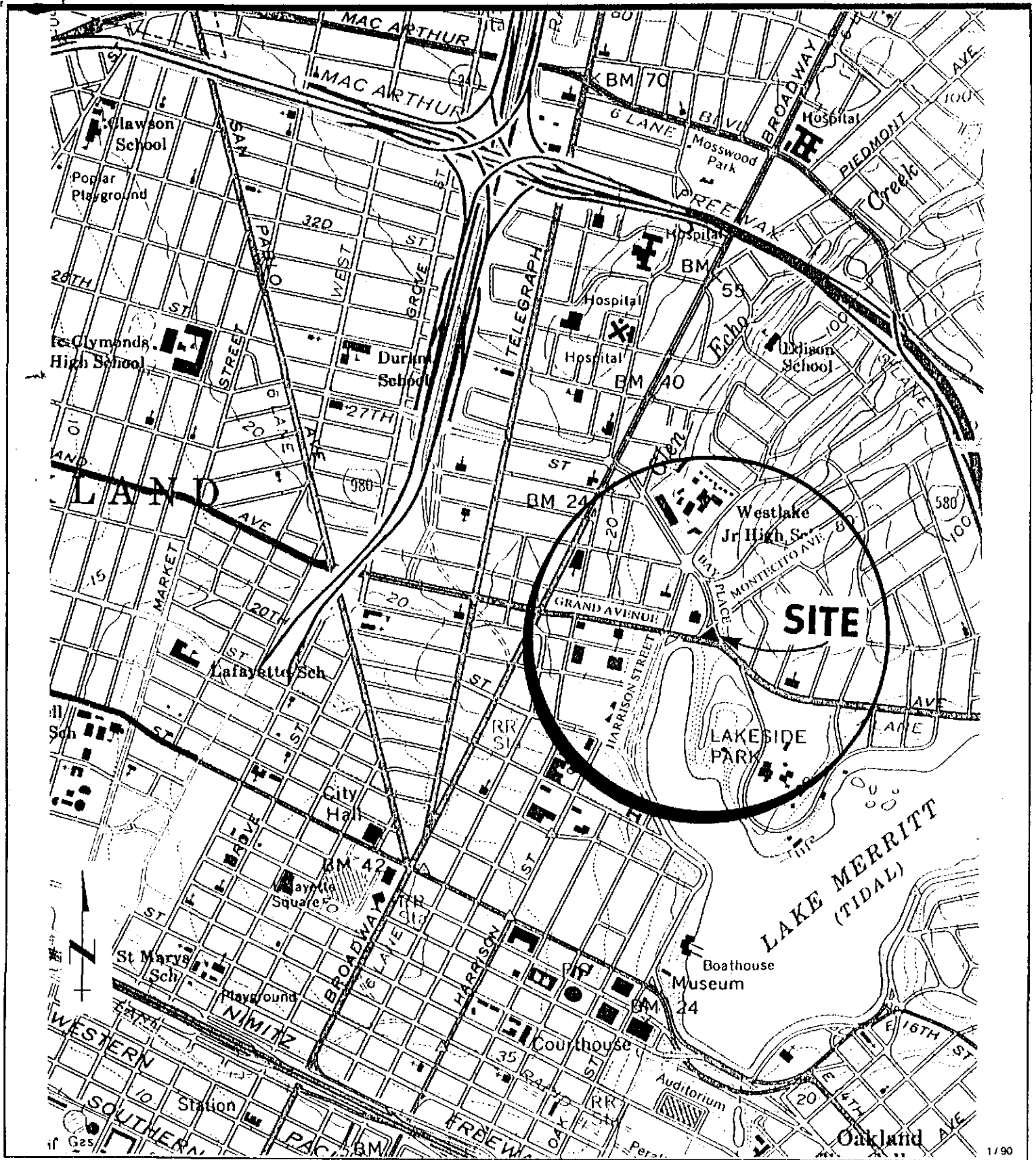
TABLES

1. Groundwater-Elevation Data
2. Analytic Results: Groundwater Samples

ATTACHMENTS

- A. SOP-4: Groundwater Purging and Sampling
- B. Field Sampling and Monitoring Forms
- C. Chain-of-Custody Form
- D. Laboratory Analytic Reports with Quality Assurance/Quality Control Documents

101Q1OC0.va

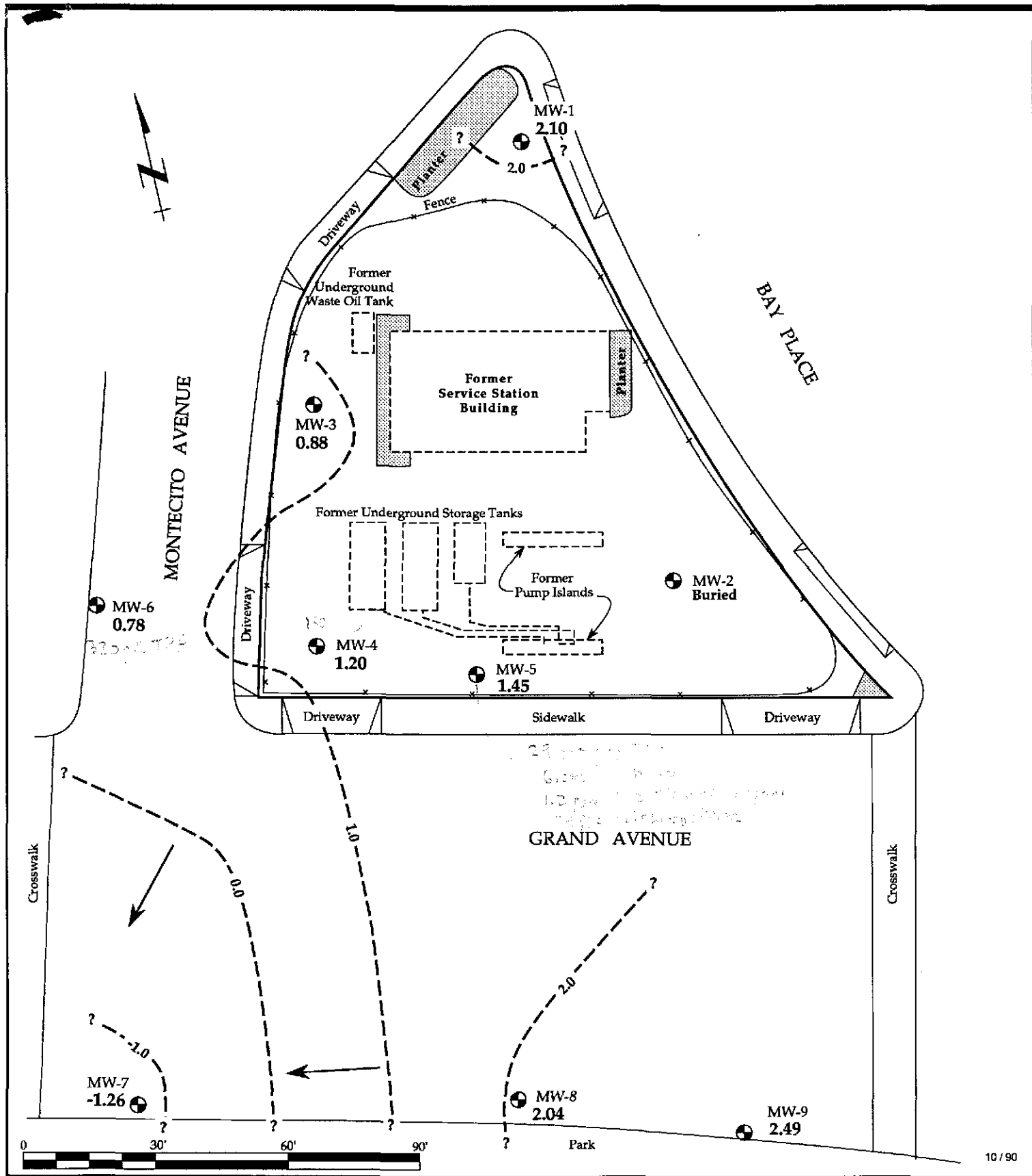


NOT TO SCALE




Site Location Map
Chevron Service Station #90019,
Oakland, California

FIGURE

1



EXPLANATION

- 
**MW-8
2.04** Monitor Well location and groundwater elevation, feet above mean sea level
- 
1.0 - - - ? Groundwater elevation contour, feet above mean sea level, dashed where inferred, queried where uncertain
- 
← Estimated direction of groundwater flow

Potentiometric Surface of Shallow Groundwater
 3 October 1990
 Former Chevron Service Station #90019
 210 Grand Avenue
 Oakland, California

FIGURE

2



TABLE 1. Groundwater-Elevation Data
 Former Chevron Service Station #90019
 210 Grand Avenue
 Oakland, California

Well ID #	Date	TOC	DTW ←-----ft----->	Elev.-W
MW-1	14 Mar 89	9.63	6.74	2.89
MW-1	8 Jun 89	9.63	7.14	2.49
MW-1	14 Sep 89	9.63	7.21	2.42
MW-1	8 Dec 89	9.63	7.29	2.34
MW-1	19 Mar 90	9.63	7.00	2.63
MW-1	6 Jul 90	9.63	7.13	2.50
MW-1	3 Oct 90	9.63	7.53	2.10
MW-2	14 Mar 89	8.99	6.08	2.91
MW-2	8 Jun 89	8.99	5.22	3.77
MW-2	14 Sep 89	8.99	5.95	3.04
MW-2	8 Dec 89	8.99	9.25	-0.26
MW-2	19 Mar 90	8.99	5.92	3.07
MW-2	6 Jul 90	9.01	6.79	2.22
MW-2	3 Oct 90	9.01	---	---
MW-3	14 Mar 89	8.18	6.02	2.16
MW-3	8 Jun 89	8.18	5.88	2.30
MW-3	14 Sep 89	8.18	6.30	1.88
MW-3	8 Dec 89	8.18	9.52	-1.34
MW-3	19 Mar 90	8.18	6.17	2.01
MW-3	6 Jul 90	8.19	7.52	0.67
MW-3	3 Oct 90	8.19	7.31	0.88
MW-4	14 Mar 89	7.60	5.52	2.08
MW-4	8 Jun 89	7.60	4.19	3.41
MW-4	14 Sep 89	7.60	4.80	2.80
MW-4	8 Dec 89	7.60	4.86	2.74
MW-4	19 Mar 90	7.60	4.65	2.95
MW-4	6 Jul 90	7.59	6.42	1.17
MW-4	3 Oct 90	7.59	6.39	1.20
MW-5	14 Mar 89	8.35	6.98	1.37
MW-5	8 Jun 89	8.35	4.73	3.62
MW-5	14 Sep 89	8.35	5.37	2.98
MW-5	8 Dec 89	8.35	9.13	-0.78
MW-5	19 Mar 90	8.35	5.12	3.23
MW-5	6 Jul 90	8.35	5.81	2.54
MW-5	3 Oct 90	8.35	6.90	1.45

1-101.04/G10C0.WK1



TABLE 1. Groundwater-Elevation Data (continued)
Former Chevron Service Station #90019
210 Grand Avenue
Oakland, California

Well ID #	Date	TOC	DTW ft	Elev.-W
MW-6	6 Jul 90	6.56	9.09*	-2.53*
MW-6	3 Oct 90	6.56	5.78	.78
MW-7	6 Jul 90	4.99	5.85	-0.86
MW-7	3 Oct 90	4.99	6.25	-1.26
MW-8	6 Jul 90	6.77	3.98	2.79
MW-8	3 Oct 90	6.77	4.73	2.04
MW-9	6 Jul 90	7.63	4.61	3.02
MW-9	3 Oct 90	7.63	5.14	2.49

NOTES:

DTW = Depth to Water

TOC = Top-of-Casing elevation, re-surveyed 30 July 1990

Elev.-W = Elevation of Water

ft = feet

--- = Well not accessible (buried)

* = Anomalous data, not used in contouring

Elevation Datum: Mean sea level



Table 2. Analytic Results: Groundwater Samples (continued)
 Former Chevron Service Station #90019
 210 Grand Avenue
 Oakland, California

Well ID #	Date	Lab	EPA/CS Method	O&G <ppm>	←-----ppb----->								
					TPPH/TPH	Benzene	Toluene	E-Benzene	Xylenes	Chlor	1,2-DCA	f113	TCA
MW-4	14 Mar 89	CCAS	8260/503E	<3.0	3,000	810.0	200.0	30.0	130.0	<20.0	<5.0	<20.0	<5.0
MW-4	9 Jun 89	CCAS	8260	---	900	440.0	13.0	22.0	40.0	<20.0	<5.0	60.0	<5.0
MW-4	14 Sep 89	CCAS	8260	---	540	220.0	2.0	6.1	9.3	<1.0	2.3	<1.0	<0.2
MW-4	8 Dec 89	GTEL	8015/8020/601	---	150	18	<0.3	1.0	<0.6	<0.5	1.9	---	<0.5
MW-4	19 Mar 90	GTEL	8015/8020/601	---	270	50	<0.3	0.7	<0.6	<0.5	0.8	---	<0.5
MW-4	6 Jul 90	GTEL	8015/8020/601	---	140	0.7	<0.3	0.5	<0.6	<0.5	0.79	---	<0.5
MW-4	3 Oct 90	GTEL	8015/8020/601	---	180	<0.3	<0.3	2	<0.6	<0.5	<0.5	---	<0.5
MW-5	14 Mar 89	CCAS	8260/503E	<3.0	20,000	6,600.0	1,600.0	270.0	1,100.0	<100.0	<20.0	<20.0	<20.0
MW-5	9 Jun 89	CCAS	8260	---	15,000	>2,800.0*	270.0	240.0	640.0	<20.0	28.0	<20.0	<5.0
MW-5D	9 Jun 89	CCAS	8260	---	12,000	5,100.0	300.0	240.0	700.0	<200.0	<50.0	<20.0	<50.0
MW-5	14 Sep 89	CCAS	8260	---	15,000	>730.0*	>320.0*	>290.0	440.0	<10.0	<2.0	<20.0	<2.0
MW-5D	14 Sep 89	CCAS	8260	---	15,000	3,300	450	490	730	<100	<20	<100	<20
MW-5T	14 Sep 89	CCAS	8260	---	16,000	3,100	550	400	690	<50	<10	<50	<10
MW-5	8 Dec 89	GTEL	8015/8020/601	---	20,000	4,600	640	390	1,300	<0.5	27	---	<0.5
MW-5	19 Mar 90	GTEL	8015/8020/601	---	25,000	6,500	1,200	450	2,200	<0.5	10	---	0.7
MW-5+	6 Jun 90	GTEL	8015/8020/601	---	30,000	5,600	890	210	1,400	<0.5	<0.5	---	<0.5
MW-5++	3 Oct 90	GTEL	8015/8020/601	---	29,000	6,000	790	270	1,500	<0.5	<0.5	---	<0.5
MW-6	6 Jul 90	GTEL	8015/8020/601	---	210	<0.3	<0.3	3	7	<0.5	<0.5	---	<0.5
MW-6	3 Oct 90	GTEL	8015/8020/601	---	320	<0.3	0.3	1	<0.6	<0.5	<0.5	---	<0.5
MW-7	6 Jul 90	GTEL	8015/8020/601/413.2	<1	<50	<0.3	<0.3	<0.3	<0.6	<0.5	<0.5	---	<0.5
MW-7	3 Oct 90	GTEL	8015/8020/601	---	<50	<1.5	<1.5	<1.5	<3	<0.5	<0.5	---	<0.5



Table 2. Analytic Results: Groundwater Samples (continued)
 Former Chevron Service Station #90019
 210 Grand Avenue
 Oakland, California

Well ID #	Date	Lab	EPA/CS Method	O&G	TPPH/TPH	Benzene	Toluene	E-Benzene	Xylenes	Chlor	1,2-DCA	f113	TCA
				<ppm>	-----ppb----->								
MW-8	6 Jul 90	GTEL	8015/8020/601/413.2	<1	<50	<0.3	<0.3	<0.3	<0.6	<0.5	<0.5	---	<0.5
MW-8	3 Oct 90	GTEL	8015/8020/601	---	<50	<0.3	<0.3	<0.3	<0.6	<0.5	<0.5	---	<0.5
MW-9	6 Jul 90	GTEL	8015/8020/601/413.2	<1	<50	<0.3	<0.3	<0.3	<0.6	<0.5	<0.5	---	<0.5
MW-9	3 Oct 90	GTEL	8015/8020/601	---	<50	<0.3	<0.3	<0.3	<0.6	<0.5	<0.5	---	<0.5
TB	8 Dec 89	CCAS	8260	---	<100	<0.1	<0.2	<0.1	<0.2	<0.5	<0.1	---	<0.1
TB	9 Jun 89	CCAS	8260	---	<50	<0.5	<0.5	<0.1	<0.2	<0.5	<0.1	<20.0	<0.1
TB	14 Sep 89	CCAS	8260	---	<50	<0.1	<0.5	<0.1	<0.2	<0.5	<0.1	<0.5	<0.1
TB	8 Dec 89	GTEL	8015/8020/601	---	<50	<0.3	<0.3	<0.3	<0.6	4.4	<0.5	---	1.9
TB	19 Mar 90	GTEL	8015/8020	---	<50	<0.3	<0.3	<0.3	<0.6	<0.5	<0.5	---	<0.5
TB	6 Jul 90	GTEL	8015/8020/601	---	<50	<0.3	<0.3	<0.3	<0.6	<0.5	<0.5	---	<0.5
TB	3 Oct 90	GTEL	8015/8020/601	---	<50	<0.3	<0.3	<0.3	1	<0.5	<0.5	---	<0.5

es collected from wells MW-1 through MW-9 were analyzed by GTEL for 3015, BTEX by EPA Method 8020 and halocarbons by EPA Method 601. In wells MW-7, MW-8 and MW-9 were analyzed for oil and grease by EPA Method 8015, and total Cd, Cr, Zn and Pb by EPA Method 6010. Groundwater samples from well MW-10 were not analyzed for oil and grease, Cd, Cr, Pb and Zn due to insufficient quantity of groundwater in well during sampling.

TPPH and aromatic hydrocarbons were detected in groundwater samples collected from wells MW-4, MW-5 and MW-6, downgradient from the former underground storage tanks. A maximum concentration of 30,000 parts-per-billion (ppb) TPPH characterized as gasoline, 5,600 ppb benzene, 890 ppb toluene, 210 ppb ethylbenzene and 1,400 ppb total xylenes were detected in a groundwater sample collected from well MW-5. The halocarbon 1,2-dichloroethane (1,2-DCA) was detected in a sample from well MW-4 at 0.79 ppb. A groundwater sample collected from well MW-5 contained 1.2 ppb 1,2-dichloropropane (DCP).

The metals Cd, Cr, Pb and Zn were detected at maximum total threshold limit concentrations of 79 ppb, 960 ppb, 100 ppb, and 790 ppb in groundwater samples collected from wells MW-7 through MW-9, with the highest concentrations detected in samples from well MW-8. Lower concentrations of these metals detected in groundwater samples collected from on-site wells during the initial round of groundwater sampling in March 1989 suggest that concentrations in samples from the off-site wells MW-7 through MW-9 are not associated with an on-site source and may be naturally occurring (reference: WGR Subsurface Investigation Report date June 1989).

	SILC	TTL C
Cd	1.0	100.0
Cr	5.0	500.0
Pb	3.0	100.0
Zn	250.0	500.0



Table 2. Analytic Results: Groundwater Samples (continued)
 Former Chevron Service Station #90019
 210 Grand Avenue
 Oakland, California

NOTES:

TPPH = Total Purgeable Petroleum Hydrocarbons characterized as gasoline
 TPH = Total Petroleum Hydrocarbons as gasoline
 E-Benzene = Ethylbenzene
 Chlor = Chloroform
 1,2-DCA = 1,2-Dichloroethane
 f113 = Trichlorotrifluoroethane
 TCA = 1,1,1-Trichloroethane
 O&G = Oil and Grease
 ppb = parts-per-billion
 ppm = parts-per-million
 D = Duplicate Analysis
 T = Triplicate Analysis

+ = 6 Jul 1990: 1,2-Dichloropropane detected at 1.2 ppb
 in samples from MW-5.
 ++ = 3 Oct 1990: 1,2-Dichloropropane detected at 2 ppb
 and trichloroethene at 0.74 ppb in samples from MW-5.
 TB = Travel Blank
 --- = Not analyzed
 * = Saturated Column
 CCAS = Central Cost Analytic Services, San Luis Obispo, CA
 GTEL = GTEL Environmental Laboratories, Inc., Concord, CA



STANDARD OPERATING PROCEDURES
RE: GROUNDWATER PURGING AND SAMPLING
SOP-4

Prior to water sampling, each well is purged by evacuating a minimum of three well-casing volumes of groundwater or until the discharge water temperature, conductivity, and pH stabilize. The groundwater sample should be taken when the water level in the well recovers to 80% of its static level.

The sampling equipment used consists of either a teflon bailer or a stainless steel bladder pump with a teflon bladder. If the sampling system is dedicated to the well, then the bailer is made of teflon, but the bladder pump is PVC with a polypropylene bladder. Forty milliliter (ml) glass volatile-organic-analysis (VOA) vials, with teflon septa, are used as sample containers.



The groundwater sample is decanted into each VOA vial in such a manner that there is a meniscus at the top of the vial. The cap is quickly placed over the top of the vial and securely tightened. The VOA vial is then inverted and tapped to see if air bubbles are present. If none are present, the sample is labeled and refrigerated for delivery under chain-of-custody to the laboratory. Label information should include a sample identification number, job identification number, date, time, type of analysis requested, and the sampler's name.

For quality control purposes, a duplicate water sample is collected from each well. This sample is put on hold at the laboratory. A trip blank is prepared at the laboratory and placed in the transport cooler. It remains with the cooler and is analyzed by the laboratory along with the groundwater samples. A field blank is prepared in the field when sampling equipment is not dedicated. The field blank is prepared after a pump or bailer has been steam-cleaned, prior to use in a second well, and is analyzed along with the other samples. The field blank demonstrates the quality of in-field cleaning procedures to prevent cross-contamination.

To minimize the potential for cross-contamination between wells, all the well-development and water-sampling equipment that is not dedicated to a well is steam-cleaned between each well. As a second precautionary measure, wells will be sampled in order of least to highest concentrations as established by previous analyses.

LIQUID-LEVEL DATA SHEET

Project No. 1-101 C3	Project Name BAY/GRAND OAKLAND	Date OCT 21, 1990	Initials DOLFB
-------------------------	--------------------------------------	----------------------	-------------------

Well No.	HISTORIC DATA/DATE:			CURRENT DATA:			METHOD WLP, PB, IP*	TIME	COMMENTS	
	DTLH	DTW	LHT	DTLH	DTW	LTH				
MW-1					7.53	—		7:28		
MW-2									7:30	BURIED
MW-3					7.31				7:30	
MW-4					6.39				7:32	
MW-5					6.90				7:34	
MW-6					5.78				7:36	
MW-7					6.25				7:38	
MW-8					4.73				7:40	
MW-9					5.14				7:42	

* WLP = Water-Level Probe
 PB = Product Boiler
 IP = Interface Probe

WATER SAMPLING DATA

Project No. <u>1-101.03</u>	Project Name <u>OAKLAND</u>	Well Name <u>rw. 1</u>	Date <u>10/3/90</u>	Time <u>800</u>	Initials <u>BB</u>
-----------------------------	-----------------------------	------------------------	---------------------	-----------------	--------------------

WELL DATA		
Well Depth (ft.) <u>12</u>	Sounded Depth (ft.) <u> </u>	Well Type <input checked="" type="checkbox"/> Monitor Well <input type="checkbox"/> Sampling Port <input type="checkbox"/> Other (describe)
DTW (ft.) <u>7.53</u>	Date/Time <u> </u>	
Well Diam. (in.) <u>4</u>	LHC Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	LHC Thickness <u> </u>

CHEMICAL DATA				
Time	Ph Probe No.	Temp Probe No.	Cond Probe No.	
1	_____	_____	_____	umhos
2	_____	_____	_____	
3	_____	_____	_____	

EVACUATION		
Initial Height of Water in Casing (ft.) <u>4.47</u>	Formulas and Conversions $r = \text{well radius in ft.}$ $h = \text{ht. of water column in ft.}$ $\text{vol. of column} = \pi r^2 h$ 7.48 gal / ft^3	Sampling Equipment <input checked="" type="checkbox"/> Bladder Pump <input type="checkbox"/> Bailer PVC Bailer <input type="checkbox"/> 1/2 in. <input type="checkbox"/> 1 1/4 in. <input type="checkbox"/> 3 in.
Volume (gal) <u>2.92</u>		Sampling Port No. <u> </u>
Volume to be Evacuated <input checked="" type="checkbox"/> x 3 <input type="checkbox"/> x 4 <u>8.76</u>	V_1 casing = 0.163 gal / ft. V_2 casing = 0.367 gal / ft. V_3 casing = 0.653 gal / ft. $V_{4.5}$ casing = 0.826 gal / ft. V_5 casing = 1.470 gal / ft. V_6 casing = 2.610 gal / ft. V_{10} casing = 4.080 gal / ft.	Volume (gal) <u> </u> Rate (gpm) <u> </u>

SAMPLING	
Point of Collection <input checked="" type="checkbox"/> PE Hose <input type="checkbox"/> End of Bailer <input type="checkbox"/> Other:	Time Samples Taken <u>1027</u> Date <u>10 3 90</u>
Depth to Water (ft.) <u>11.38</u>	Refrigerated? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Color <u>CLEAR</u>	Odor <u>NONE</u>
Sediment / Foreign Matter <u>NONE</u>	
Sampling Sequence	

Evacuation				
Evacuated	Evacuated	Evacuated	Evacuated	
Stop Time <u>8:13</u>	_____	_____	_____	_____
Start Time <u>8:08</u>	_____	_____	_____	_____
Minutes <u>5</u>	_____	_____	_____	_____
Amt Evac'd <u>5.5</u> gal	_____ gal	_____ gal	_____ gal	_____ gal
Total Evac'd _____ gal	_____ gal	_____ gal	_____ gal	_____ gal
Total Minutes _____ min	_____ min	_____ min	_____ min	_____ min
Evac Rate <u>1.1</u> gpm	_____ gpm	_____ gpm	_____ gpm	_____ gpm

Pumped Dry? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	After (gal) <u>5.5</u>	Recovery	
Depth to Water During Pumping (ft.) <u> </u>	Time <u> </u>	1 <u>8:14</u>	DTW <u>11.57</u>
Depth to Water for 80% Recovery <u>8.42</u>	Recovery Rate (gpm) <u>0.025</u>	2 <u>8:19</u>	<u>11.38</u>
Sampled After: <input type="checkbox"/> 80% Rec. <input checked="" type="checkbox"/> 2 hours	% Recovery at Time of Sampling <u>71</u>	3 <u>10:17</u>	<u>10.95</u>
		4 _____	_____
		5 _____	_____

Sample ID No.	Volume (ml)	Container	Preservative	Analysis	Lab
<u>10030-01A</u>	<u>40</u>	<u>✓</u>	<u>HCl</u>	<u>EPA 602/8015</u>	<u>GTEL</u>
<u>B</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>
<u>C</u>	<u>↓</u>	<u>↓</u>	<u>NONE</u>	<u>EPA 601</u>	<u>↓</u>
<u>D</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>

Container Codes: P = Plastic Bottle V = VOA B = Brown Glass C = Clear Glass Other: Describe

COMMENTS
<u>glnr evac'd 2 1/2, B</u>

WATER SAMPLING DATA

Project No. <u>1-101.03</u>	Project Name <u>OAKLAND</u>	Well Name <u>MW-2</u>	Date <u>10.3.90</u>	Time	Initials
-----------------------------	-----------------------------	-----------------------	---------------------	------	----------

WELL DATA		
Well Depth (ft.) <u>15</u>	Sounded Depth (ft.)	Well Type <input type="checkbox"/> Monitor Well <input type="checkbox"/> Sampling Port <input type="checkbox"/> Other (describe)
DTW (ft.)	Date/Time	
Well Diam. (in.) <u>4</u>	LHC Present? <input type="checkbox"/> Yes <input type="checkbox"/> No	LHC Thickness

CHEMICAL DATA			
Time	Ph Probe No.	Temp Probe No.	Cond Probe No.
1 _____	_____	_____	_____ umhos
2 _____	_____	_____	_____
3 _____	_____	_____	_____

EVACUATION		
Initial Height of Water in Casing (ft)	Formulas and Conversions $r = \text{well radius in ft.}$ $h = \text{ft. of water column in ft.}$ $\text{vol. of column} = \pi r^2 h$ 7.48 gal / ft^3	Sampling Equipment <input checked="" type="checkbox"/> Bladder Pump <input type="checkbox"/> Bailor Dedicated System PVC Bailor <input type="checkbox"/> 1/2 in. <input type="checkbox"/> 1 1/4 in. <input type="checkbox"/> 3 in.
Volume (gal)	V_1^2 casing = 0.163 gal / ft. V_2^2 casing = 0.367 gal / ft. V_3^2 casing = 0.653 gal / ft. V_4^2 casing = 0.826 gal / ft. $V_{4.5}^2$ casing = 1.470 gal / ft. V_6^2 casing = 2.610 gal / ft. V_{10}^2 casing = 4.080 gal / ft.	Sampling Port No.
Volume to be Evacuated <input checked="" type="checkbox"/> x 3 <input type="checkbox"/> x 4		Volume (gal) Rate (gpm)

SAMPLING	
Point of Collection <input checked="" type="checkbox"/> PE Hose <input type="checkbox"/> End of Bailor <input type="checkbox"/> Other:	Time Samples Taken Date
	Depth to Water (ft) Refrigerated? <input type="checkbox"/> Yes <input type="checkbox"/> No
Sample Color	Odor
Sediment / Foreign Matter	
Sampling Sequence	

Evacuation	Evacuated	Evacuated	Evacuated	Evacuated
Stop Time	_____	_____	_____	_____
Start Time	_____	_____	_____	_____
Minutes	_____	_____	_____	_____
Amt Evac'd	_____ gal	_____ gal	_____ gal	_____ gal
Total Evac'd	_____ gal	_____ gal	_____ gal	_____ gal
Total Minutes	_____ min	_____ min	_____ min	_____ min
Evac Rate	_____ gpm	_____ gpm	_____ gpm	_____ gpm

Sample ID No.	Volume (ml)	Container	Preservative	Analysis	Lab
<u>10030.02A</u>	<u>40</u>	<u>V</u>	<u>HCl</u>	<u>EPA 602/8015</u>	<u>G.TEC</u>
<u>B</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>
<u>C</u>	<u>↓</u>	<u>↓</u>	<u>None</u>	<u>EPA 601</u>	<u>↓</u>
<u>P</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>

Pumped Dry? <input type="checkbox"/> Yes <input type="checkbox"/> No	After (gal)	Recovery	
		Time	DTW
Depth to Water During Pumping (ft)	Time	1 _____	_____
Depth to Water for 80% Recovery	Recovery Rate (gpm)	2 _____	_____
Sampled After: <input type="checkbox"/> 80% Rec. <input type="checkbox"/> 2 hours	% Recovery at Time of Sampling	3 _____	_____
		4 _____	_____
		5 _____	_____

Container Codes: P = Plastic Bottle, V = VOA B = Brown Glass, C = Clear Glass Other: Describe	COMMENTS
	NO SAMPLE TAKEN - WELL IS BURIED

WATER SAMPLING DATA

Project No: <u>1-101.07</u>	Project Name: <u>OAKLAND</u>	Well Name: <u>MW-3</u>	Date: <u>10.3.90</u>	Time: <u>830</u>	Initials: <u>BS</u>
-----------------------------	------------------------------	------------------------	----------------------	------------------	---------------------

WELL DATA	Well Depth (ft.) <u>16.5</u>	Sounded Depth (ft.)	Well Type <input checked="" type="checkbox"/> Monitor Well <input type="checkbox"/> Sampling Port <input type="checkbox"/> Other (describe)
DTW (ft.) <u>7.31</u>	Date/Time		
Well Diam. (in.) <u>4</u>	LHC Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	LHC Thickness	

CHEMICAL DATA			
Time	Ph Probe No.	Temp Probe No.	Cond Probe No.
1 _____	_____	_____	_____ umhos
2 _____	_____	_____	_____
3 _____	_____	_____	_____

EVACUATION	Initial Height of Water in Casing (ft.) <u>9.19</u>	Formulas and Conversions <small>r = well radius in ft. h = ht. of water column in ft. vol. of column = $\pi r^2 h$ 7.48 gal / ft³</small>	Sampling Equipment <input checked="" type="checkbox"/> Bladder Pump <input type="checkbox"/> Dedicated System <input type="checkbox"/> Boiler PVC Bailer <input type="checkbox"/> 1/2 in. <input type="checkbox"/> 1 1/4 in. <input type="checkbox"/> 3 in.
Volume (gal) <u>6.00</u>	Volume to be Evacuated <input checked="" type="checkbox"/> x3 <input type="checkbox"/> x4 <u>18.0</u>		Sampling Port No.
		Volume (gal)	Rate (gpm)

SAMPLING	
Point of Collection <input checked="" type="checkbox"/> PE Hose <input type="checkbox"/> End of Bailer <input type="checkbox"/> Other:	Time Samples Taken <u>1057</u> Date <u>10.3.90</u> Depth to Water (ft.) <u>11.28</u> Refrigerated? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Color <u>CC&AR</u>	Odor <u>None</u>
Sediment / Foreign Matter <u>None</u>	
Sampling Sequence	

Evacuation	Evacuated	Evacuated	Evacuated	Evacuated
Stop Time	<u>852</u>	_____	_____	_____
Start Time	<u>835</u>	_____	_____	_____
Minutes	<u>17</u>	_____	_____	_____
Amt Evac'd	<u>15</u> gal	_____ gal	_____ gal	_____ gal
Total Evac'd	_____ gal	_____ gal	_____ gal	_____ gal
Total Minutes	_____ min	_____ min	_____ min	_____ min
Evac Rate	_____ gpm	_____ gpm	_____ gpm	_____ gpm

Sample ID No.	Volume (ml)	Container	Preservative	Analysis	Lab
<u>10030-03A</u>	<u>40</u>	<u>V</u>	<u>HCl</u>	<u>EPA 602 for 5</u>	<u>GTEL</u>
<u>B</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>
<u>C</u>	<u>↓</u>	<u>↓</u>	<u>None</u>	<u>EPA 601</u>	<u>↓</u>
<u>D</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>

Pumped Dry? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	After (gal) <u>15</u>	Recovery
Depth to Water During Pumping (ft.) <u>12.55</u>	Time <u>8:46</u>	1 <u>853</u> DTW <u>15.75</u>
Depth to Water for 80% Recovery <u>9.15</u>	Recovery Rate (gpm) <u>0.068</u>	2 <u>858</u> <u>15.23</u>
Sampled After: <input type="checkbox"/> 80% Rec. <input checked="" type="checkbox"/> 2 hours	% Recovery at Time of Sampling <u>62</u>	3 <u>1016</u> <u>11.71</u>
		4 <u>1053</u> <u>10.78</u>
		5 _____

Container Codes: P = Plastic Bottle, V = VOA, B = Brown Glass, C = Clear Glass, Other: Describe	COMMENTS <u>GLNS & VAC'D</u> <u>5, 5, 5</u>
---	---

WATER SAMPLING DATA

Project No. 1-101.03	Project Name OAKLAND	Well Name MW-4	Date 10.3.90	Time 9:00	Initials BZ
-----------------------------	-----------------------------	-----------------------	---------------------	------------------	--------------------

WELL DATA		
Well Depth (ft.) 14.5	Sounded Depth (ft.)	Well Type <input checked="" type="checkbox"/> Monitor Well <input type="checkbox"/> Sampling Port <input type="checkbox"/> Other (describe)
DTW (ft.) 6.39	Date/Time	LHC Thickness
Well Diam. (in.) 4	LHC Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

CHEMICAL DATA			
Time	Ph Probe No.	Temp Probe No.	Cond Probe No.
1 _____	_____	_____	_____ umhos
2 _____	_____	_____	_____
3 _____	_____	_____	_____

EVIACUATION		
Initial Height of Water in Casing (ft.) 8.11	Formulas and Conversions r = well radius in ft. h = ht. of water column in ft. vol. of column = $\pi r^2 h$ 7.48 gal / ft ³ V_{10} casing = 0.163 gal / ft. V_{12} casing = 0.367 gal / ft. V_{14} casing = 0.653 gal / ft. V_{16} casing = 0.826 gal / ft. V_{18} casing = 1.470 gal / ft. V_{20} casing = 2.610 gal / ft. V_{22} casing = 4.080 gal / ft.	Sampling Equipment Dedicated System <input type="checkbox"/> Bladder Pump <input type="checkbox"/> Bailer PVC Bailer <input type="checkbox"/> 1/2 in. <input type="checkbox"/> 1 1/4 in. <input type="checkbox"/> 3 in.
Volume (gal) 5.30		Sampling Port No.
Volume to be Evacuated <input checked="" type="checkbox"/> x 3 <input type="checkbox"/> x 4 15.89	Volume (gal)	Rate (gpm)

SAMPLING	
Point of Collection <input checked="" type="checkbox"/> PE Hose <input type="checkbox"/> End of Bailer <input type="checkbox"/> Other:	Time Samples Taken 11:13 Date 10.3.90
Depth to Water (ft.) 8.69	Refrigerated? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Color CLEAR	Odor NONE
Sediment / Foreign Matter NONE	
Sampling Sequence 6 FIVE SEVENTH	

Evacuation	Evacuated	Evacuated	Evacuated	Evacuated
Stop Time	9:10	_____	_____	_____
Start Time	9:02	_____	_____	_____
Minutes	8	_____	_____	_____
Amt Evac'd	10 gal	_____ gal	_____ gal	_____ gal
Total Evac'd	_____ gal	_____ gal	_____ gal	_____ gal
Total Minutes	_____ min	_____ min	_____ min	_____ min
Evac Rate	_____ gpm	_____ gpm	_____ gpm	_____ gpm

Sample ID No.	Volume (ml)	Container	Preservative	Analysis	Lab
10030.04A	40	V	HCl	EPAG02/8015	GTCL
B	↓	↓	↓	↓	↓
C	↓	↓	NONE	EPAG01	↓
D	↓	↓	R	↓	↓

Container Codes: P = Plastic Bottle V = VOA B = Brown Glass C = Clear Glass Other: Describe

Pumped Dry? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	After (gal) 10	Recovery	
Depth to Water During Pumping (ft.) 13.05	Time 9:09	Time	DTW
Depth to Water for 80% Recovery 8.01	Recovery Rate (gpm) 0.085	1 9:10	13.63
Sampled After: <input type="checkbox"/> 80% Rec. <input type="checkbox"/> 2 hours	% Recovery at Time of Sampling 90	2 9:15	12.98
		3 10:13	9.54
		4 11:10	7.23
		5 _____	_____

COMMENTS
CLNS EVAC'D 5

WATER SAMPLING DATA

Project No. <u>1-101.03</u>	Project Name <u>OAKLAND</u>	Well Name <u>OW-5</u>	Date <u>10-3-90</u>	Time <u>9:15</u>	Initials <u>BB</u>
-----------------------------	-----------------------------	-----------------------	---------------------	------------------	--------------------

WELL DATA	Well Depth (ft.) <u>15</u>	Sounded Depth (ft.)	Well Type <input checked="" type="checkbox"/> Monitor Well <input type="checkbox"/> Sampling Port <input type="checkbox"/> Other (describe)
DTW (ft.) <u>6.90</u>	Data/Time		
Well Diam. (in.) <u>4</u>	LHC Present? <input type="checkbox"/> Yes <input type="checkbox"/> No	LHC Thickness	

CHEMICAL DATA			
Time	Ph Probe No.	Temp Probe No.	Cond Probe No.
1			umhos
2			
3			

EVACUATION	Initial Height of Water in Casing (ft.) <u>8.1</u>	Formulas and Conversions $r = \text{well radius in ft.}$ $h = \text{ht. of water column in ft.}$ $\text{vol. of column} = \pi r^2 h$ 7.48 gal / ft^3	Sampling Equipment Dedicated System <input checked="" type="checkbox"/> Bladder Pump <input type="checkbox"/> Bailer PVC Bailer <input type="checkbox"/> 1/2 in. <input type="checkbox"/> 1 1/4 in. <input type="checkbox"/> 3 in.
Volume (gal) <u>5.29</u>	Volume to be Evacuated <input checked="" type="checkbox"/> x3 <input type="checkbox"/> x4 <u>15.87</u>		Sampling Port No.
		Volume (gal) Rate (gpm)	

SAMPLING	Point of Collection <input checked="" type="checkbox"/> PE Hose <input type="checkbox"/> End of Bailer <input type="checkbox"/> Other:	Time Samples Taken <u>1133</u>	Date <u>10-3-90</u>
		Depth to Water (ft.) <u>14.00</u>	Refrigerated? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Color <u>CLEAR</u>		Odor <u>STRONG</u>	
Sediment / Foreign Matter <u>NONE</u>			
Sampling Sequence <u>PTH</u>			

Evacuation	Evacuated	Evacuated	Evacuated	Evacuated
Stop Time	<u>9:27</u>			
Start Time	<u>9:17</u>			
Minutes	<u>10</u>			
Amt Evac'd	<u>11</u> gal			
Total Evac'd				
Total Minutes				
Evac Rate				

Sample ID No.	Volume (ml)	Container	Preservative	Analysis	Lab
<u>1003005A</u>	<u>40</u>	<u>V</u>	<u>HCl</u>	<u>EPA 602/8015</u>	<u>GTCL</u>
<u>B</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>
<u>C</u>	<u>↓</u>	<u>↓</u>	<u>NONE</u>	<u>EPA 601</u>	<u>↓</u>
<u>D</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>

Pumped Dry? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	After (gal) <u>11</u>	Recovery Time DTW 1 <u>9:28</u> <u>14.20</u> 2 <u>9:33</u> <u>13.95</u> 3 <u>10:12</u> <u>13.52</u> 4 <u>11:28</u> <u>13.14</u> 5 _____	
Depth to Water During Pumping (ft.) <u>12.40</u>	Time <u>9:24</u>		
Depth to Water for 80% Recovery <u>8.52</u>	Recovery Rate (gpm) <u>0.633</u>		
Sampled After: <input type="checkbox"/> 80% Rec. <input checked="" type="checkbox"/> 2 hours	% Recovery at Time of Sampling <u>23</u>		

Container Codes:	P = Plastic Bottle V = VOA	B = Brown Glass C = Clear Glass	Other: Describe
COMMENTS			

WATER SAMPLING DATA

Project No. <u>1-10103</u>	Project Name <u>OAKLAND</u>	Well Name <u>Match</u>	Date <u>10-3-90</u>	Time <u>8:00</u>	Initials <u>VO</u>
----------------------------	-----------------------------	------------------------	---------------------	------------------	--------------------

WELL DATA		
Well Depth (ft.) <u>9.15</u>	Sounded Depth (ft.)	Well Type <input checked="" type="checkbox"/> Monitor Well <input type="checkbox"/> Sampling Port <input type="checkbox"/> Other (describe)
DTW (ft.) <u>5.78</u>	Date/Time	LHC Thickness
Well Diam. (in.) <u>2</u>	LHC Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

CHEMICAL DATA			
Time	Ph Probe No.	Temp Probe No.	Cond Probe No.
1			umhos
2			
3			

EVACUATION		
Initial Height of Water in Casing (ft.) <u>3.67</u>	Formulas and Conversions <small>r = well radius in ft. h = ft. of water column in ft. vol. of column = $\pi r^2 h$ 7.48 gal / ft³</small> V ₁ casing = 0.163 gal / ft. V ₂ casing = 0.367 gal / ft. V ₃ casing = 0.653 gal / ft. V ₄ casing = 0.826 gal / ft. V ₅ casing = 1.470 gal / ft. V ₆ casing = 2.610 gal / ft. V ₁₀ casing = 4.080 gal / ft.	Sampling Equipment Dedicated System <input type="checkbox"/> Bladder Pump <input type="checkbox"/> Bailer PVC Bailer <input type="checkbox"/> 1/2 in. <input checked="" type="checkbox"/> 1 1/4 in. <input type="checkbox"/> 3 in.
Volume (gal) <u>.598</u>		Sampling Port No. <u>/</u>
Volume to be Evacuated <input checked="" type="checkbox"/> x3 <input type="checkbox"/> x4 <u>1.79 gal.</u>		Volume (gal) <u>/</u> Rate (gpm) <u>/</u>

SAMPLING	
Point of Collection <input type="checkbox"/> PE Hose <input checked="" type="checkbox"/> End of Bailer <input type="checkbox"/> Other:	Time Samples Taken <u>0.25</u> Date <u>10/3/90</u> Depth to Water (ft.) <u>8.37</u> Refrigerated? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Color <u>SLIGHTLY CLOUDY</u>	Odor <u>NONE</u>
Sediment / Foreign Matter <u>SMALL AMOUNT OF BROWN SLT</u>	
Sampling Sequence	

Evacuation	Evacuated	Evacuated	Evacuated
Stop Time <u>8:20</u>	<u>/</u>	<u>/</u>	<u>/</u>
Start Time <u>8:07</u>	<u>/</u>	<u>/</u>	<u>/</u>
Minutes <u>13</u>	<u>/</u>	<u>/</u>	<u>/</u>
Amt Evac'd <u>2</u> gal	<u>/</u> gal	<u>/</u> gal	<u>/</u> gal
Total Evac'd <u>2</u> gal	<u>/</u> gal	<u>/</u> gal	<u>/</u> gal
Total Minutes <u>13</u> min	<u>/</u> min	<u>/</u> min	<u>/</u> min
Evac Rate <u>.15</u> gpm	<u>/</u> gpm	<u>/</u> gpm	<u>/</u> gpm

Sample ID No.	Volume (ml)	Container	Preservative	Analysis	Lab
<u>10030-06A</u>	<u>AC</u>	<u>V</u>	<u>HCl</u>	<u>EPA 602/8015 CTEL</u>	
<u>-06B</u>	<u>↓</u>	<u>↓</u>	<u> </u>	<u> </u>	<u>↓</u>
<u>-06C</u>	<u>↓</u>	<u>↓</u>	<u>NONE</u>	<u>EPA 601</u>	<u>↓</u>
<u>-06D</u>	<u>↓</u>	<u>↓</u>	<u> </u>	<u> </u>	<u>↓</u>

Pumped Dry? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	After (gal)	Recovery
Depth to Water During Pumping (ft.) <u>7.82 @ 8:10</u>	Time	Time
Depth to Water for 80% Recovery	Recovery Rate (gpm)	DTW
Sampled After: <input type="checkbox"/> 80% Rec. <input type="checkbox"/> 2 hours	% Recovery at Time of Sampling	

Container Codes: P = Plastic Bottle, V = VOA, B = Brown Glass, C = Clear Glass, Other: Describe	COMMENTS

WATER SAMPLING DATA

Project No. <u>1-101.03</u>	Project Name <u>OAKLAND</u>	Well Name <u>MW 7</u>	Date <u>10-3-90</u>	Time <u>9:35</u>	Initials <u>DO</u>
-----------------------------	-----------------------------	-----------------------	---------------------	------------------	--------------------

WELL DATA	Well Depth (ft.) <u>9.89</u>	Sounded Depth (ft.) <u>/</u>	Well Type <input checked="" type="checkbox"/> Monitor Well <input type="checkbox"/> Sampling Port <input type="checkbox"/> Other (describe)
DTW (ft.) <u>6.25</u>	Date/Time <u>/</u>		
Well Diam. (in.) <u>2</u>	LHC Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	LHC Thickness	

CHEMICAL DATA			
Time	Ph Probe No.	Temp Probe No.	Cond Probe No.
1 _____	_____	_____	_____ umhos
2 _____	_____	_____	_____
3 _____	_____	_____	_____

EVACUATION	Initial Height of Water in Casing (ft.) <u>5.004</u>	Formulas and Conversions <small>r = well radius in ft. h = ht. of water column in ft. vol. of column = $\pi r^2 h$ 7.48 gal / ft³</small>	Sampling Equipment Dedicated System <input type="checkbox"/> Bladder Pump <input type="checkbox"/> Bailer PVC Bailer <input type="checkbox"/> 1/2 in. <input checked="" type="checkbox"/> 3 in.
Volume (gal) <u>159</u>	V ₂ casing = 0.163 gal / ft. V ₃ casing = 0.367 gal / ft. V ₄ casing = 0.653 gal / ft. V ₅ casing = 0.826 gal / ft. V ₆ casing = 1.470 gal / ft. V ₈ casing = 2.610 gal / ft. V ₁₀ casing = 4.080 gal / ft.		Sampling Port No. <u>/</u>
Volume to be Evacuated <input checked="" type="checkbox"/> x3 <input type="checkbox"/> x4 <u>177 GAL</u>			Volume (gal) _____ Rate (gpm) _____

SAMPLING	Point of Collection <input type="checkbox"/> PE Hose <input checked="" type="checkbox"/> End of Bailer <input type="checkbox"/> Other:	Time Samples Taken <u>9:50</u>	Date <u>10/3/90</u>
Sample Color <u>Cloudy</u>		Depth to Water (ft.) <u>9.20</u>	Refrigerated? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sediment / Foreign Matter <u>VERY SMALL AMOUNTS OF BROWN SLT</u>		Odor <u>NONE</u>	
Sampling Sequence			

Evacuation	Evacuated	Evacuated	Evacuated	Evacuated
Stop Time	<u>9:40</u>	_____	_____	_____
Start Time	<u>9:40</u>	_____	_____	_____
Minutes	<u>0</u>	_____	_____	_____
Amt Evac'd	<u>2</u> gal	_____ gal	_____ gal	_____ gal
Total Evac'd	<u>2</u> gal	_____ gal	_____ gal	_____ gal
Total Minutes	<u>0</u> min	_____ min	_____ min	_____ min
Evac Rate	<u>0.25</u> gpm	_____ gpm	_____ gpm	_____ gpm

Sample ID No.	Volume (ml)	Container	Preservative	Analysis	Lab
<u>10030-09A</u>	<u>40</u>	<u>V</u>	<u>HCl</u>	<u>EPA 602/8015</u>	<u>CTZ</u>
<u>-07B</u>	↓	↓	"	"	↓
<u>-07C</u>	↓	↓	<u>NONE</u>	<u>EPA 601</u>	↓
<u>-07D</u>	↓	↓	"	"	↓

Pumped Dry? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	After (gal)	Recovery	Time	DTW
Depth to Water During Pumping (ft.) <u>8.80</u>		Time <u>9:40</u>		
Depth to Water for 80% Recovery		Recovery Rate (gpm)		
Sampled After: <input type="checkbox"/> 80% Rec. <input type="checkbox"/> 2 hours		% Recovery at Time of Sampling		

Container Codes:	P = Plastic Bottle V = VOA	B = Brown Glass C = Clear Glass	Other: Describe
------------------	-------------------------------	------------------------------------	-----------------

COMMENTS

WATER SAMPLING DATA

Project No. <i>1-10103</i>	Project Name <i>OAKLAND</i>	Well Name <i>MW-8</i>	Date <i>10.3.90</i>	Time <i>8:45</i>	Initials <i>DO</i>
-------------------------------	--------------------------------	--------------------------	------------------------	---------------------	-----------------------

WELL DATA		
Well Depth (ft.) <i>7.65</i>	Sounded Depth (ft.)	Well Type <input checked="" type="checkbox"/> Monitor Well <input type="checkbox"/> Sampling Port <input type="checkbox"/> Other (describe)
DTW (ft.) <i>4.73</i>	Date/Time	
Well Diam. (in.) <i>2</i>	LHC Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	LHC Thickness

CHEMICAL DATA			
Time	Ph Probe No.	Temp Probe No.	Cond Probe No.
1			
2			
3			

umhos

EVAUATION		
Initial Height of Water in Casing (ft.) <i>7.92</i>	Formulas and Conversions <small>r = well radius in ft. h = ht. of water column in ft. vol. of column = $\pi r^2 h$ 7.48 gal / ft³</small>	Sampling Equipment Dedicated System <input type="checkbox"/> Bladder Pump <input type="checkbox"/> Bailer PVC Bailer <input type="checkbox"/> 1/2 in. <input checked="" type="checkbox"/> 1 1/4 in. <input type="checkbox"/> 3 in.
Volume (gal) <i>47</i>	V_1 casing = 0.163 gal / ft. V_2 casing = 0.367 gal / ft. V_3 casing = 0.653 gal / ft. V_4 casing = 0.826 gal / ft. V_5 casing = 1.470 gal / ft. V_6 casing = 2.610 gal / ft. V_{10} casing = 4.080 gal / ft.	Sampling Port No.
Volume to be Evacuated <input checked="" type="checkbox"/> x 3 <input type="checkbox"/> x 4 <i>142 gal</i>		Volume (gal) Rate (gpm)

SAMPLING	
Point of Collection <input type="checkbox"/> PE Hose <input checked="" type="checkbox"/> End of Bailer <input type="checkbox"/> Other:	Time Samples Taken <i>10:53</i> Date <i>10/3/90</i>
	Depth to Water (ft.) <i>7.55</i> Refrigerated? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Color <i>cloudy (tan)</i>	Odor <i>NONE</i>
Sediment / Foreign Matter <i>BROWN SILT</i>	
Sampling Sequence	

Evacuation	Evacuated	Evacuated	Evacuated	Evacuated
Stop Time	<i>8:53</i>			
Start Time	<i>8:50</i>			
Minutes	<i>3</i>			
Amt Evac'd	<i>75</i> gal			
Total Evac'd	<i>75</i> gal			
Total Minutes	<i>3</i> min			
Evac Rate				

Sample ID No.	Volume (ml)	Container	Preservative	Analysis	Lab
<i>10030-C8A</i>	<i>400</i>	<input checked="" type="checkbox"/>	<i>HCl</i>	<i>EPA 604/8015</i>	<i>CFZL</i>
<i>-C8B</i>			<i>"</i>	<i>"</i>	
<i>-C8C</i>			<i>NONE</i>	<i>EPA 604</i>	
<i>-C8D</i>			<i>"</i>	<i>"</i>	

Pumped/Dry? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	After (gal) <i>75</i>	Recovery	
Depth to Water During Pumping (ft.) <i>NA</i>	Time	Time	DTW
Depth to Water for 80% Recovery <i>5.314</i>	Recovery Rate (gpm) <i>0.002</i>	<i>8:53</i>	<i>7.55</i>
Sampled After: <input type="checkbox"/> 80% Rec. <input checked="" type="checkbox"/> 2 hours	% Recovery at Time of Sampling	<i>8:58</i>	<i>7.49</i>

Container Codes:	P = Plastic Bottle V = VOA	B = Brown Glass C = Clear Glass	Other: Describe
------------------	-------------------------------	------------------------------------	-----------------

COMMENTS

WATER SAMPLING DATA

Project No: <u>1-10103</u>	Project Name: <u>OAKLAND</u>	Well Name: <u>MW-9</u>	Date: <u>10-3-90</u>	Time: <u>9:05</u>	Initials: <u>JD</u>
----------------------------	------------------------------	------------------------	----------------------	-------------------	---------------------

WELL DATA	Well Depth (ft.): <u>8.42</u>	Sounded Depth (ft.): <u>/</u>	Well Type: <input checked="" type="checkbox"/> Monitor Well <input type="checkbox"/> Sampling Port <input type="checkbox"/> Other (describe)
DTW (ft.): <u>5.14</u>	Date/Time: <u>/</u>		
Well Diam. (in.): <u>2</u>	LHC Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	LHC Thickness: <u>/</u>	

CHEMICAL DATA			
Time	Ph Probe No.	Temp Probe No.	Cond Probe No.
1			umhos
2			
3			

EVACUATION	Initial Height of Water in Casing (ft.): <u>3.20</u>	Formulas and Conversions: $r = \text{well radius in ft.}$ $h = \text{ht. of water column in ft.}$ $\text{vol. of column} = \pi r^2 h$ 7.48 gal / ft^3	Sampling Equipment: Dedicated System <input type="checkbox"/> Bladder Pump <input type="checkbox"/> Bailer PVC Bailer <input type="checkbox"/> 1/2 in. <input checked="" type="checkbox"/> 1 1/4 in. <input type="checkbox"/> 3 in.
Volume (gal): <u>53</u>	Sampling Port No.: <u>/</u>		
Volume to be Evacuated <input checked="" type="checkbox"/> x3 <input type="checkbox"/> x4 <u>1.600 gal</u>	Volume (gal): <u>/</u> Rate (gpm): <u>/</u>		
V_2 casing = 0.163 gal / ft. V_4 casing = 0.367 gal / ft. V_6 casing = 0.653 gal / ft. $V_{1.5}$ casing = 0.826 gal / ft. V_3 casing = 1.470 gal / ft. V_6 casing = 2.610 gal / ft. V_{18} casing = 4.080 gal / ft.			

SAMPLING	Point of Collection: <input type="checkbox"/> PE Hose <input checked="" type="checkbox"/> End of Bailer <input type="checkbox"/> Other:	Time Samples Taken: <u>9:20</u>	Date: <u>10/3/90</u>
Sample Color: <u>cloudy</u>	Depth to Water (ft): <u>7.82</u>	Refrigerated? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Odor: <u>none</u>			
Sediment / Foreign Matter: <u>VERY SMALL AMOUNT OF BROWN SILT</u>			
Sampling Sequence: <u>/</u>			

Evacuation	Evacuated	Evacuated	Evacuated	Evacuated
Stop Time	<u>9:15</u>	<u>/</u>	<u>/</u>	<u>/</u>
Start Time	<u>9:07</u>	<u>/</u>	<u>/</u>	<u>/</u>
Minutes	<u>8</u>	<u>/</u>	<u>/</u>	<u>/</u>
Amt Evac'd	<u>2</u> gal	<u>/</u> gal	<u>/</u> gal	<u>/</u> gal
Total Evac'd	<u>2</u> gal	<u>/</u> gal	<u>/</u> gal	<u>/</u> gal
Total Minutes	<u>8</u> min	<u>/</u> min	<u>/</u> min	<u>/</u> min
Evac Rate	<u>125</u> gpm	<u>/</u> gpm	<u>/</u> gpm	<u>/</u> gpm

Sample ID No.	Volume (ml)	Container	Preservative	Analysis	Lab
<u>10030-09A</u>	<u>40</u>	<u>V</u>	<u>HCl</u>	<u>EPA 602/805</u>	<u>G-RT</u>
<u>-09B</u>	<u>/</u>	<u>/</u>	<u>"</u>	<u>"</u>	<u>/</u>
<u>-09C</u>	<u>/</u>	<u>/</u>	<u>none</u>	<u>EPA 601</u>	<u>/</u>
<u>-09D</u>	<u>/</u>	<u>/</u>	<u>"</u>	<u>"</u>	<u>/</u>

Pumped Dry? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	After (gal): <u>/</u>	Recovery
Depth to Water During Pumping (ft): <u>6.90</u>	Time: <u>@ 9:12</u>	Time: <u>/</u> BTW
Depth to Water for 80% Recovery: <u>/</u>	Recovery Rate (gpm): <u>/</u>	1 <u>/</u>
Sampled After: <input type="checkbox"/> 80% Rec. <input type="checkbox"/> 2 hours	% Recovery at Time of Sampling: <u>/</u>	2 <u>/</u>
		3 <u>/</u>
		4 <u>/</u>
		5 <u>/</u>

Container Codes: P = Plastic Bottle, V = VOA, B = Brown Glass, C = Clear Glass, Other: Describe

COMMENTS

WATER SAMPLING DATA

Project No. <u>1-10103</u>	Project Name <u>OAKLAND</u>	Well Name <u>T B'S</u>	Date <u>10-3-90</u>	Time _____	Initials <u>DO</u>
----------------------------	-----------------------------	------------------------	---------------------	------------	--------------------

WELL DATA	Well Depth (ft.)	Sounded Depth (ft.)	Well Type <input type="checkbox"/> Monitor Well <input type="checkbox"/> Sampling Port <input type="checkbox"/> Other (describe)
DTW (ft.)	Date/Time		
Well Diam. (in.)	LHC Present? <input type="checkbox"/> Yes <input type="checkbox"/> No	LHC Thickness	

CHEMICAL DATA			
Time	Ph Probe No.	Temp Probe No.	Cond Probe No.
1 _____	_____	_____	_____ umhos
2 _____	_____	_____	_____
3 _____	_____	_____	_____

EVACUATION	Initial Height of Water in Casing (ft)	Formulas and Conversions $r = \text{well radius in ft.}$ $h = \text{ht. of water column in ft.}$ $\text{vol. of column} = \pi r^2 h$ 7.48 gal / ft^3	Sampling Equipment Dedicated System <input type="checkbox"/> Bladder Pump <input type="checkbox"/> Bailer PVC Bailer <input type="checkbox"/> 1/2 in. <input type="checkbox"/> 1 1/4 in. <input type="checkbox"/> 3 in.
Volume (gal)	Volume to be Evacuated <input type="checkbox"/> x 3 <input type="checkbox"/> x 4		Sampling Port No.
			Volume (gal) Rate (gpm)

SAMPLING	
Point of Collection <input type="checkbox"/> PE Hose <input type="checkbox"/> End of Bailer <input type="checkbox"/> Other: _____	Time Samples Taken _____ Date _____ Depth to Water (ft) _____ Refrigerated? <input type="checkbox"/> Yes <input type="checkbox"/> No
Sample Color _____	Odor _____
Sediment / Foreign Matter _____	
Sampling Sequence _____	

Evacuation	Evacuated	Evacuated	Evacuated	Evacuated
Stop Time	_____	_____	_____	_____
Start Time	_____	_____	_____	_____
Minutes	_____	_____	_____	_____
Amt Evac'd	_____ gal	_____ gal	_____ gal	_____ gal
Total Evac'd	_____ gal	_____ gal	_____ gal	_____ gal
Total Minutes	_____ min	_____ min	_____ min	_____ min
Evac Rate	_____ gpm	_____ gpm	_____ gpm	_____ gpm

Sample ID No.	Volume (ml)	Container	Preservative	Analysis	Lab
<u>10030-10A</u>	<u>100</u>	<u>V</u>	<u>None</u>	<u>EPA 602/8015</u>	<u>GTCL</u>
<u>↓ B</u>	<u>↓</u>	<u>↓</u>	<u>"</u>	<u>EPA 601</u>	<u>↓</u>

Pumped Dry? <input type="checkbox"/> Yes <input type="checkbox"/> No	After (gal)	Recovery	
		Time	DTW
Depth to Water During Pumping (ft)	Time	1 _____	_____
Depth to Water for 80% Recovery	Recovery Rate (gpm)	2 _____	_____
Sampled After: <input type="checkbox"/> 80% Rec. <input type="checkbox"/> 2 hours	% Recovery at Time of Sampling	3 _____	_____
		4 _____	_____
		5 _____	_____

Container Codes:	P = Plastic Bottle V = VOA	B = Brown Glass C = Clear Glass	Other: Describe _____
------------------	-------------------------------	------------------------------------	-----------------------

COMMENTS

Chain-of-Custody Record

Chevron U.S.A. Inc.
 P.O. Box 5004
 San Ramon, CA 94583
 FAX (415) 842-9591

Chevron Facility Number 90019
 Consultant Release Number — Consultant Project Number 1-101.03
 Consultant Name WC-R
 Address 2109 E. FRANCISCO BLVD STE 501, RICHMOND, CA
 Fax Number 415-457-4521
 Project Contact (Name) W. K. SPALDING / L. NILES
 (Phone) 415-457-7595

Chevron Contact (Name) Darcy Vukelich
 (Phone) 842-9581
 Laboratory Name GTEL
 Contract Number 3522720
 Samples Collected by (Name) D. OSAKI / B. BARKER
 Collection Date 10/3/90
 Signature Duan X. Osaki

Sample Number	Lab Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite	Time	Sample Preservation	Iced	Analyses To Be Performed										Remarks
								Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline + Diesel	503 Oil and Grease	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Arom. Volatiles - BTXE Soil: 8240/Wtr.: 624	Total Lead DHS-Luft	EDB DHS-AB 1803	GC/MS	GC/MS	GC/MS	
10C3C-CIA,BCD	4	4	W		10:27	none	X	X	X				X	X				A, B - 5 vials Per EPA 601/602/605 (HCl preserv.)
10C3C-CIA,BCD						none												
-C3A,BCD					11:54	see												
-C4A,BCD					11:13													
-C5A,BCD					11:33	Per EPA 601/602/605												
-C6A,BCD					8:25													
-C7A,BCD					7:50													C, D - Samples Per EPA 601/602/605 (HCl preserv.)
-C8A,BCD					8:53													
-C9A,BCD					9:20													
-10A,BCD	2	2	W				X	X	X				X	X				

Temp
18.3C.

Relinquished By (Signature) <u>Duan X. Osaki</u>	Organization <u>WC-R</u>	Date/Time <u>10/3/90</u>	Received By (Signature) <u>W. K. Spalding</u>	Organization <u>WC-R</u>	Date/Time <u>10/3/90</u>	Turn Around Time (Circle Choice) 24 Hrs 48 Hrs 5 Days <u>10 Days</u>
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time	
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature) <u>W. K. Spalding</u>	Organization	Date/Time <u>10-4 12:00</u>	



GTEL

ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region

4080-C Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California
(415) 825-0720 (FAX)

Project Number: SFB-175-0204.72
Consultant Project Number: 1-101.03
Contract Number: N46CWC0244-9-X
Facility Number: 90019
Work Order Number: C010156, C010157
Report Issue Date: October 18, 1990

K. Spala
Western Geologic Resources
2169 E. Franciso Blvd.
San Rafael, CA 94901

Dear Mr. Spala

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories on 10/04/90.

A formal quality control/quality assurance program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to approved protocols.

If you have any questions concerning this analysis, or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,

GTEL Environmental Laboratories, Inc.

Emma P. Popek
Laboratory Director

Project Number: SFB-175-0204.72
 Consultant Project Number: 1-101.03
 Contract Number: N46CWC0244-9-X
 Facility Number: 90019
 Work Order Number: C010156
 Report Issue Date: October 18, 1990

Table 1
 ANALYTICAL RESULTS

Purgeable Aromatics and Total Petroleum Hydrocarbons
 as Gasoline in Water
 EPA Method 8020/8015¹

GTEL Sample Number		01	02	03	04
Client Identification		10030 01A,B,C,D	10030 03A,B,C,D	10030 04A,B,C,D	10030 05A,B,C,D
Date Sampled		10/03/90	10/03/90	10/03/90	10/03/90
Date Analyzed		10/10/90	10/10/90	10/10/90	10/10/90
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	<0.3	<0.3	<0.3	6000
Toluene	0.3	<0.3	<0.3	<0.3	790
Ethylbenzene	0.3	<0.3	<0.3	2	270
Xylene (total)	0.6	<0.6	<0.6	<0.6	1500
TPH as Gasoline	50	<50	<50	180	29000

GTEL Sample Number		05	06*	07	08
Client Identification		10030 06A,B,C,D	10030 07A,B,C,D	10030 08A,B,C,D	10030 09A,B,C,D
Date Sampled		10/03/90	10/03/90	10/03/90	10/03/90
Date Analyzed		10/10/90	10/10/90	10/10/90	10/10/90
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	<0.3	<1.5	<0.3	<0.3
Toluene	0.3	0.3	<1.5	<0.3	<0.3
Ethylbenzene	0.3	1	<1.5	<0.3	<0.3
Xylene (total)	0.6	<0.6	<3	<0.6	<0.6
TPH as Gasoline	50	320	<50	<50	<50

¹ = Extraction by EPA Method 5030

*Detection limits raised due to surfactants in sample.

Project Number: SFB-175-0204.72
 Consultant Project Number: 1-101.03
 Contract Number: N46CWC0244-9-X
 Facility Number: 90019
 Work Order Number: C010156
 Report Issue Date: October 18, 1990

Table 1(continued)

ANALYTICAL RESULTS

Purgeable Aromatics and Total Petroleum Hydrocarbons
 as Gasoline in Water
 EPA Method 8020/8015¹

GTEL Sample Number		09			
Client Identification		10030 10A,B,			
Date Sampled		10/03/90			
Date Analyzed		10/10/90			
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	<0.3			
Toluene	0.3	<0.3			
Ethylbenzene	0.3	<0.3			
Xylene (total)	0.6	1			
TPH as Gasoline	50	<50			

1 = Extraction by EPA Method 5030

Project Number: SFB-175-0204.72
Consultant Project Number: 1-101.03
Contract Number: N46CWC0244-9-X
Facility Number: 90019
Work Order Number: C010156
Report Issue Date: October 18, 1990

QA Conformance Summary

Purgeable Aromatics and Total Petroleum Hydrocarbons as Gasoline in Water EPA Method 8020/8015

1.0 Blanks

Five of 5 target compounds were below detection limits in the reagent blank as shown in Table 2.

2.0 Independent QC Check Sample

The control limits were met for 4 out of 4 QC check compounds as shown in Table 3.

3.0 Surrogate Compound Recoveries

Percent recovery limits were met for the surrogate compound (naphthalene) for all samples as shown in Table 4.

4.0 Matrix Spike (MS) Accuracy

Percent recovery limits were met for 4 of 4 compounds in the MS as shown in Table 5.

5.0 Reagent Water Spike (WS) and Reagent Water Spike (WSD) Duplicate Precision

Relative percent difference (RPD) criteria was met for 4 of 4 analytes in the WS and WSD as shown in Table 6.

6.0 Sample Handling

6.1 Sample handling and holding time criteria were met for all samples.

6.2 There were no exceptional conditions requiring dilution of samples.

Project Number: SFB-175-0204.72
Consultant Project Number: 1-101.03
Contract Number: N46CWC0244-9-X
Facility Number: 90019
Work Order Number: C010156
Report Issue Date: October 18, 1990

Table 2

REAGENT BLANK DATA

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Water
EPA Method 8020/8015

Date of Analysis: 10/10/90

Analyte	Concentration, ug/L
Benzene	<0.3
Toluene	<0.3
Ethylbenzene	<0.3
Xylene (total)	<0.6
Gasoline	<50

<# = Not detected at the indicated detection limit.

Project Number: SFB-175-0204.72
 Consultant Project Number: 1-101.03
 Contract Number: N46CWC0244-9-X
 Facility Number: 90019
 Work Order Number: C010156
 Report Issue Date: October 18, 1990

Table 3

INDEPENDENT QC CHECK SAMPLE RESULTS

Purgeable Aromatics and Total Petroleum Hydrocarbons
 as Gasoline in Water
 EPA Method 8020/8015

Date of Analysis: 10/08/90

Analyte	Expected Result, ug/L	Observed Result, ug/L	Recovery, %	Acceptability Limits, %
Benzene	50	53	106	85 - 115
Toluene	50	53	106	85 - 115
Ethylbenzene	50	53	106	85 - 115
Xylene (total)	150	157	105	85 - 115

Table 3a

INDEPENDENT QC CHECK SAMPLE SOURCE

Purgeable Aromatics and Total Petroleum Hydrocarbons
 as Gasoline in Water
 EPA Method 8020/8015

Analyte	Lot Number	Source
Benzene	LA18042	Supelco
Toluene	LA18042	Supelco
Ethylbenzene	LA18042	Supelco
Xylene (total)	LA18042	Supelco

Project Number: SFB-175-0204.72
 Consultant Project Number: 1-101.03
 Contract Number: N46CWC0244-9-X
 Facility Number: 90019
 Work Order Number: C010156
 Report Issue Date: October 18, 1990

Table 4
 SURROGATE COMPOUND RECOVERY

Naphthalene

Purgeable Aromatics and Total Petroleum Hydrocarbons
 as Gasoline in Water
 EPA Method 8020/8015

Acceptability Limits¹: 70 - 130 %

GTEL No.	Expected Result, ug/L	Surrogate Result, ug/L	Surrogate Recovery, %
Blank	200	184	92
01	200	184	92
02	200	200	100
03	200	197	99
04	200	173	87
05	200	199	100
06	200	174	87
07	200	188	94
08	200	188	94
09	200	165	83
MS	200	237	119
WS	200	166	83
WSD	200	158	79

MS = Matrix Spike
 WS = Reagent Water Spike
 WSD = Reagent Water Spike Duplicate
 1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

Project Number: SFB-175-0204.72
 Consultant Project Number: 1-101.03
 Contract Number: N46CWC0244-9-X
 Facility Number: 90019
 Work Order Number: C010156
 Report Issue Date: October 18, 1990

Table 5

MATRIX SPIKE (MS) RECOVERY REPORT

Purgeable Aromatics and Total Petroleum Hydrocarbons
 as Gasoline in Water
 EPA Method 8020/8015

Date of Analysis: 10/10/90
 Sample Spiked: C010144

Client ID: MW6
 Units: ug/L

Analyte	Sample Result	Concentration Added	Concentration Recovered	MS Result	MS, % Recovery	Acceptability Limits ¹ , %
Benzene	<0.3	25	28.4	28.4	114	71 - 123
Toluene	<0.3	25	27.5	27.5	110	69 - 120
Ethylbenzene	<0.3	25	28.2	28.2	113	72 - 121
Xylene (total)	<0.6	75	85.2	85.2	114	75 - 123

<# = Not detected at the indicated detection limit.

1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

Project Number: SFB-175-0204.72
 Consultant Project Number: 1-101.03
 Contract Number: N46CWC0244-9-X
 Facility Number: 90019
 Work Order Number: C010156
 Report Issue Date: October 18, 1990

Table 6

REAGENT WATER SPIKE (WS) AND REAGENT WATER SPIKE DUPLICATE (WSD)
 RECOVERY AND RELATIVE PERCENT DIFFERENCE (RPD) REPORT

Purgeable Aromatics and Total Petroleum Hydrocarbons
 as Gasoline in Water
 EPA Method 8020/8015

Date of Analysis: 10/10/90

Units: ug/L

Analyte	Concentration Added	WS Result	WS, % Recovery	WSD Result	WSD, % Recovery
Benzene	25	25.7	103	25.5	102
Toluene	25	25	100	24.6	98
Ethylbenzene	25	25.3	101	24.4	98
Xylene (total)	75	76.6	102	75.7	101

Analyte	RPD, %	Maximum RPD, %	Acceptability Limits ¹ % Recovery
Benzene	1	30	76 - 120
Toluene	2	30	72 - 117
Ethylbenzene	3	30	73 - 123
Xylene (total)	1	30	81 - 125

1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

Project Number: SFB-175-0204.72
 Consultant Project Number: 1-101.03
 Contract Number: N46CWC0244-9-X
 Facility Number: 90019
 Work Order Number: C010157
 Report Issue Date: October 16, 1990

Table 1
 ANALYTICAL RESULTS
 Purgeable Halocarbons in Water
 EPA Method 601

	Date Sampled	10/03/90	10/03/90	10/03/90	10/03/90
	Date Analyzed	10/11/90	10/11/90	10/11/90	10/11/90
	Client Identification	10030-01 ABCD	10030-03 ABCD	10030-04 ABCD	10030-05 ABCD
	GTEL Sample Number	01	02	03	04
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Chloromethane	0.5	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	0.5	<0.5	<0.5	<0.5	<0.5
Vinyl chloride	1	<1	<1	<1	<1
Chloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Methylene chloride	0.5	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethene	0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethene	0.5	<0.5	<0.5	<0.5	<0.5
Chloroform	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5	<0.5	0.83	<0.5	<0.5
1,1,1-Trichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5	<0.5	<0.5	<0.5	2.0
trans-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	0.5	<0.5	<0.5	<0.5	0.74
Dibromochloromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	<0.5
2-Chloroethylvinyl ether	1	<1	<1	<1	<1
Bromoform	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5

1 = Extraction by EPA Method 5030

Project Number: SFB-175-0204.72
 Consultant Project Number: 1-101.03
 Contract Number: N46CWC0244-9-X
 Facility Number: 90019
 Work Order Number: C010157
 Report Issue Date: October 16, 1990

Table 1 (continued)

ANALYTICAL RESULTS

Purgeable Halocarbons in Water
 EPA Method 601

	Date Sampled	10/03/90	10/03/90	10/03/90	10/03/90
	Date Analyzed	10/11/90	10/11/90	10/11/90	10/11/90
	Client Identification	10030-06 ABCD	10030-07 ABCD	10030-08 ABCD	10030-09 ABCD
	GTEL Sample Number	05	06	07	08
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Chloromethane	0.5	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	0.5	<0.5	<0.5	<0.5	<0.5
Vinyl chloride	1	<1	<1	<1	<1
Chloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Methylene chloride	0.5	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethene	0.5	<0.5	<0.5	<0.5	<0.5
Chloroform	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	<0.5
2-Chloroethylvinyl ether	1	<1	<1	<1	<1
Bromoform	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5

1 = Extraction by EPA Method 5030

Project Number: SFB-175-0204.72
 Consultant Project Number: 1-101.03
 Contract Number: N46CWC0244-9-X
 Facility Number: 90019
 Work Order Number: C010157
 Report Issue Date: October 16, 1990

Table 1(continued)

ANALYTICAL RESULTS

Purgeable Halocarbons in Water
 EPA Method 601

Date Sampled		10/03/90			
Date Analyzed		10/11/90			
Client Identification		10030-10 AB			
GTEL Sample Number		09			
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Chloromethane	0.5	<0.5			
Bromomethane	0.5	<0.5			
Dichlorodifluoromethane	0.5	<0.5			
Vinyl chloride	1	<1			
Chloroethane	0.5	<0.5			
Methylene chloride	0.5	<0.5			
Trichlorofluoromethane	0.5	<0.5			
1,1-Dichloroethene	0.2	<0.2			
1,1-Dichloroethane	0.5	<0.5			
trans-1,2-Dichloroethene	0.5	<0.5			
Chloroform	0.5	<0.5			
1,2-Dichloroethane	0.5	<0.5			
1,1,1-Trichloroethane	0.5	<0.5			
Carbon tetrachloride	0.5	<0.5			
Bromodichloromethane	0.5	<0.5			
1,2-Dichloropropane	0.5	<0.5			
trans-1,3-Dichloropropene	0.5	<0.5			
Trichloroethene	0.5	<0.5			
Dibromochloromethane	0.5	<0.5			
1,1,2-Trichloroethane	0.5	<0.5			
cis-1,3-Dichloropropene	0.5	<0.5			
2-Chloroethylvinyl ether	1	<1			
Bromoform	0.5	<0.5			
1,1,2,2-Tetrachloroethane	0.5	<0.5			
Tetrachloroethene	0.5	<0.5			
Chlorobenzene	0.5	<0.5			
1,3-Dichlorobenzene	0.5	<0.5			
1,2-Dichlorobenzene	0.5	<0.5			
1,4-Dichlorobenzene	0.5	<0.5			

1 = Extraction by EPA Method 5030

QA Conformance Summary
Purgeable Halocarbons in Water
EPA Method 601

1.0 Blanks

Zero of 29 target compounds found in Reagent blank as shown in Table 2.

2.0 Independent QC Check Sample

The control limits were met for 8 out of 8 QC check compounds as shown in Table 3.

3.0 Surrogate Compound Recoveries

Percent recovery limits were met for the surrogate compound (Bromofluorobenzene) for all samples as shown in Table 4.

4.0 Matrix Spike (MS) Accuracy

Percent recovery limits were met for 3 of 3 compounds in the MS as shown in Table 5.

5.0 Reagent Water Spike (WS) and Reagent Water Spike Duplicate (WSD) Precision

Relative percent difference (RPD) criteria was met for 3 of 3 compounds in the WS and WSD as shown in Table 6.

6.0 Sample Handling

6.1 Sample handling and holding time criteria were met for all samples.

6.2 There were no exceptional conditions requiring dilution of samples.

Project Number: SFB-175-0204.72
 Consultant Project Number: 1-101.03
 Contract Number: N46CWC0244-9-X
 Facility Number: 90019
 Work Order Number: C010157
 Report Issue Date: October 16, 1990

Table 2
 REAGENT BLANK DATA
 Purgeable Halocarbons in Water
 EPA Method 601

Date of Analysis: 10/11/90

Analyte	Observed Result, ug/L
Chloromethane	<0.5
Bromomethane	<0.5
Dichlorodifluoromethane	<0.5
Vinyl chloride	<1
Chloroethane	<0.5
Methylene chloride	<0.5
Trichlorofluoromethane	<0.5
1,1-Dichloroethene	<0.2
1,1-Dichloroethane	<0.5
trans-1,2-Dichloroethene	<0.5
Chloroform	<0.5
1,2-Dichloroethane	<0.5
1,1,1-Trichloroethane	<0.5
Carbon tetrachloride	<0.5
Bromodichloromethane	<0.5
1,2-Dichloropropane	<0.5
trans-1,3-Dichloropropene	<0.5
Trichloroethene	<0.5
Dibromochloromethane	<0.5
1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.5
2-Chloroethylvinyl ether	<1
Bromoform	<0.5
1,1,2,2-Tetrachloroethane	<0.5
Tetrachloroethene	<0.5
Chlorobenzene	<0.5
1,3-Dichlorobenzene	<0.5
1,2-Dichlorobenzene	<0.5
1,4-Dichlorobenzene	<0.5

<# = Not Detected at the indicated detection limit.

Project Number: SFB-175-0204.72
 Consultant Project Number: 1-101.03
 Contract Number: N46CWC0244-9-X
 Facility Number: 90019
 Work Order Number: C010157
 Report Issue Date: October 16, 1990

Table 3
 INDEPENDENT QC CHECK SAMPLE RESULTS

Purgeable Halocarbons in Water
 EPA Method 601

Date of Analysis: 10/05/90

Analyte	Expected Result, ug/L	Observed Result, ug/L	Recovery, %	Acceptability Limits, %
Vinyl Chloride	50	46.1	92	85 - 115
1,1-Dichloroethene	50	55.0	110	85 - 115
1,1-Dichloroethane	50	51.9	104	85 - 115
1,1,1-Trichloroethane	50	55.1	110	85 - 115
1,2-Dichloroethane	50	52.2	104	85 - 115
Trichloroethene	50	50.1	100	85 - 115
Tetrachloroethene	50	50.9	102	85 - 115
1,1,2,2-Tetrachloroethane	50	51.9	104	85 - 115

Table 3a
 INDEPENDENT QC CHECK SAMPLE SOURCE

Purgeable Halocarbons in Water
 EPA Method 601

Analyte	Lot Number	Source
Vinyl Chloride	LA22122	Purgeable C Supelco
1,1-Dichloroethene	LA16110	Purgeable A Supelco
1,1-Dichloroethane	LA16110	Purgeable A Supelco
1,1,1-Trichloroethane	LA16078	Purgeable B Supelco
1,2-Dichloroethane	LA16078	Purgeable B Supelco
Trichloroethene	LA16110	Purgeable A Supelco
Tetrachloroethene	LA16110	Purgeable A Supelco
1,1,2,2-Tetrachloroethane	LA16078	Purgeable B Supelco

Project Number: SFB-175-0204.72
 Consultant Project Number: 1-101.03
 Contract Number: N46CWC0244-9-X
 Facility Number: 90019
 Work Order Number: C010157
 Report Issue Date: October 16, 1990

Table 4
 SURROGATE COMPOUND RECOVERY
 Bromofluorobenzene
 Purgeable Halocarbons in Water
 EPA Method 601

Acceptability Limits¹: 63 - 131 %

GTEL No.	Expected Result, ug/L	Surrogate Result, ug/L	Surrogate Recovery, %
Blank	50	47	94
01	50	46	93
02	50	49	98
03	50	51	102
04	50	50	100
05	50	56	112
06	50	55	110
07	50	51	102
08	50	53	106
09	50	54	108
MS	50	53	106
WS	50	47	94
WSD	50	52	104

MS = Matrix Spike
 WS = Reagent Water Spike
 WSD = Reagent Water Spike Duplicate
 1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

Project Number: SFB-175-0204.72
Consultant Project Number: 1-101.03
Contract Number: N46CWC0244-9-X
Facility Number: 90019
Work Order Number: C010157
Report Issue Date: October 16, 1990

Table 5
MATRIX SPIKE (MS) RECOVERY REPORT
Purgeable Halocarbons in Water
EPA Method 601

Date of Analysis: 10/10/90
Sample Spiked: C010030-01

Units: ug/L

Analyte	Sample Result	MS Result	Concentration Added	MS, % Recovery	Acceptability Limits, % ¹
1,1-Dichloroethene	<0.2	55.8	50	112	64 - 114
Chlorobenzene	<0.5	53.5	50	107	58 - 123
Trichloroethene	<0.5	59.8	50	120	66 - 120

<# = Not detected at the indicated detection limit.

1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

Project Number: SFB-175-0204.72
 Consultant Project Number: 1-101.03
 Contract Number: N46CWC0244-9-X
 Facility Number: 90019
 Work Order Number: C010157
 Report Issue Date: October 16, 1990

Table 6

REAGENT WATER SPIKE (WS) AND REAGENT WATER SPIKE DUPLICATE (WSD) RESULTS
 AND RELATIVE PERCENT DIFFERENCE (RPD) REPORT

Purgeable Halocarbons in Water
 EPA Method 601

Date of Analysis: 10/11/90

Units: ug/L

Analyte	Concentration Added	WS Result	WSD Result	WS, % Recovery	WSD, % Recovery
1,1 Dichloroethene	50	47.5	54.6	95	109
Chlorobenzene	50	43.7	47.4	87	95
Trichloroethene	50	51.0	55.3	102	111

Analyte	RPD, %	Maximum RPD, %	Acceptability Limits % Recovery ¹
1,1 Dichloroethene	14	30	72 - 116
Chlorobenzene	9	30	58 - 126
Trichloroethene	9	30	79 - 119

1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.