PACIFIC
ENVIRONMENTAL
GROUP, INC.

December 20, 1995
Project 330-109.2B

Mr. Michael Whelan
ARCO Products Company
2025 Gateway Place, Suite 443
San Jose, California 95110

Re: Quarterly Report - Third Quarter 1995
Remedial System Performance Evaluation
ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Dear Mr. Whelan:

This letter, prepared by Pacific Environmental Group, Inc. (PACIFIC) on behalf of ARCO Products Company, presents the results of the third quarter 1995 groundwater monitoring and performance evaluation of the groundwater extraction (GWE) system at the site referenced above. In addition, a summary of work performed and anticipated at the site is included.

QUARTERLY GROUNDWATER MONITORING RESULTS

Groundwater samples were collected from Wells A-2, A-4, A-6, A-8, A-9, and AR-1 through AR-3 by PACIFIC on August 8, 1995 and analyzed for the presence of total purgeable petroleum hydrocarbons calculated as gasoline (TPPH-g), benzene, toluene, ethylbenzene, and xylenes (BTEX compounds). In addition, groundwater samples were analyzed for total methyl t-butyl ether (MTBE). Wells A-3, A-5, A-7, and A-10 through A-12 were not sampled. A groundwater sampling schedule is presented in Table 1. Field and laboratory procedures are presented as Attachment A. Hydrocarbon ranges for positive results of TPPH-g can be found in the certified analytical report. Certified analytical reports, chain-of-custody documentation, and field data sheets are presented as Attachment B. Treatment system certified analytical reports, chain-of-custody documentation, and field data sheets are presented as Attachment C.

Depth to water data collected during the August 1995 sampling event indicated that groundwater elevation changes in site monitoring wells are mixed but, on average, have risen approximately 1.67 feet since May 8, 1995. Groundwater flow is toward the west-southwest. Groundwater elevation data are presented in Table 2. A liquid surface elevation contour map based on the August 1995 data is shown on Figure 1.

The results of groundwater sampling this quarter indicate that TPPH-g and benzene concentrations are generally consistent with previous quarterly data. TPPH-g and benzene were below the detection limit in Wells A-2, A-6, AR-2, and AR-3. TPPH-g and benzene concentrations in remaining site wells ranged from 80 to 20,000, and 2.6 to 2,700 parts per billion (ppb), respectively. Groundwater analytical data are presented in Tables 3 and 4. A TPPH-g and benzene concentration map is shown on Figure 2.

REMEDIAL PERFORMANCE EVALUATION

Remedial action consisting of GWE is currently in progress at this site. The GWE system has been in operation since November 10, 1992. Remedial objectives for the site include: (1) migration control of the impacted groundwater plume, and (2) petroleum hydrocarbon mass reduction. To evaluate GWE system performance, PACIFIC monitors groundwater levels, instantaneous and average flow rates, evaluates and analyzes samples of system influent and effluent for TRPH-g and BTEX compound concentrations. Below is a brief description of the GWE system and an evaluation of its performance from June 9 to September 30, 1995.

GROUNDWATER EXTRACTION SYSTEM

System Description

The treatment system utilizes electric GWE pumps in Wells A-9, AR-1, AR-2, and AR-3, and three 1,500-pound granular activated carbon vessels arranged in series to treat the influent groundwater stream prior to being discharged into the sanitary sewer system. Sample ports are located at the treatment system influent (Sample Point D), between the carbon vessels (Sample Point C at Mid-1, and Sample Point B at Mid-2), and at the effluent (Sample Point A). The treated groundwater is discharged into the sanitary sewer system under East Bay Municipal Utility District (EBMUD) Permit Account No. 502-62131, which expires November 1, 1997.

Migration Control

Progress toward meeting the migration control objective is evaluated by comparison of the groundwater elevation contour map (Figure 1) and TPPH-g and benzene concentration map (Figure 2) from previous and current groundwater monitoring events. The

GWE system was not operational during the third quarterly monitoring event; therefore, groundwater depression in response to GWE was not observed. PACIFIC will initiate semiannual sampling of downgradient Monitoring Wells A-11 and A-12 to assess the stability of the contaminated plume while the GWE system is deactivated.

Mass Reduction

Progress toward meeting the mass reduction objective is determined by evaluating the GWE system mass removal data and the TPPH-g concentration trends in associated groundwater monitoring wells. GWE system flow data are collected monthly. GWE system analytical data are obtained quarterly. The system flow and influent sample analysis data are used to estimate dissolved TPPH-g mass removal values. During the reporting period, the GWE system removed an undetectable amount of TPPH-g and an undetectable amount of benzene from the impacted groundwater beneath the site. To date, GWE has removed approximately 2.74 pounds (0.45 gallon) of TPPH-g and 0.46 pound (0.06 gallon) of benzene from impacted groundwater beneath the site. During this period <0.10 pound (<0.01 gallon) of separate-phase hydrocarbons (SPH) was removed from Well A-8. To date, 23 pounds (3.75 gallons) of SPH have been removed. Mass removal data for the GWE system are presented in Table 4. GWE system analytical data are presented in Table 5. Graphical presentation of mass removal and TPPH-g and benzene data are presented as Figures 3 and 4, respectively. The treatment system certified analytical report, chain-of-custody documentation, and field data sheets are presented as Attachment C. Progress toward site remediation is presented in the following table.

	Mass Removed			
	06/09/95 to 07/05/95		Cumulative	
Analyte	(lbs)	(gal)	(lbs)	(gal)
Groundwater Extraction				
TPPH-g	0.00	0.00	2.74	0.45
Benzene	0.00	0.00	0.46	0.06
SPH	<0.10	<0.01	23	3.75

lbs = Pounds
gal = Gallons
TPPH-g = Total purgeable petroleum hydrocarbons calculated as gasoline
SPH = Separate-phase hydrocarbons
Cumulative mass removed up to 10/31/94 was obtained from available data provided by the previous consultant.

GWE System Operational Data

As indicated in PACIFIC's second quarter 1995 report, the GWE was deactivated on July 5, 1995. Between June 9 and July 5, 1995, the GWE system was 100 percent

operational and discharged treated groundwater at an average operational flow rate of approximately 2.3 gallons per minute (gpm), for a period discharge of 84,787 gallons. Calculations based on 8-percent loading isotherm by weight indicate the primary carbon vessel is approximately 3.4 percent loaded.

During this quarter, the GWE system was in compliance with all conditions stipulated in the discharge permit. Operation and maintenance field data sheets are presented as Attachment C.

CONCLUSIONS

The GWE system was shut down on July 5, 1995. PACIFIC proposes to leave the system shut down for the following reasons:

- Since June 28, 1994, the GWE system has only removed a total of 2.74 and 0.46 pounds of TPPH-g and benzene, respectively (Table 4). Therefore, the GWE system is not an effective means of TPPH-g and benzene mass reduction at the site.
- Concentrations of TPPH-g and benzene in downgradient off-site Wells A-11 and A-12 has remained non-detectable since quarterly monitoring was initiated in January 1988 (Table 2). Therefore, it appears the contamination plume has stabilized and the risk of down-gradient migration is minimal.

It is PACIFIC's intention to maintain quarterly monitoring at the site to verify conditions remain stable; in particular, that the hydrocarbon plume remains stagnant. PACIFIC will initiate a dialogue with the Regional Water Quality Control Board (RWQCB) and Alameda County Health Care Services Agency (ACHCSA) regarding site closure based on site Non-Attainment Zone (NAZ) status.

In addition, based on groundwater analytical data, PACIFIC will reduce the groundwater sampling frequency at site wells beginning with the third quarter 1995 groundwater monitoring and sampling event. The reduction in the sampling frequency of selected wells is based on following:

- interior wells with TPPH-g and benzene below detection limits for more than eight consecutive quarters;
- an off-site well with TPPH-g and benzene below detection limits for eight consecutive quarters;
- an interior well with low or stable TPPH-g and benzene concentrations; and,

- adjacent wells providing duplication of groundwater analytical results.

Based on the above criteria, Wells A-7 and A-13 are sampled annually; Wells A-3, A-5, A-11, and A-12 are sampled semiannually; Well A-10 was removed from the sampling schedule; and Wells A-2, A-4, A-6, A-8, A-9, and AR-1 through AR-3 will continue to be sampled quarterly. Depth to water measurements will be collected quarterly from all site wells. A groundwater sampling schedule is presented in Table 1.

SUMMARY OF WORK

Work Performed Third Quarter 1995

- Monitored and optimized GWE system's performance.
- Prepared and submitted second quarter 1995 groundwater monitoring and remedial system evaluation report.
- Sampled site wells for third quarter 1995 groundwater monitoring program. Sampling performed by PACIFIC.
- Prepare third quarter 1995 groundwater monitoring and remedial system performance evaluation report.
- Installed totalizers in GWE Wells A-9, AR-1, and AR-2.
- Replaced fire extinguisher at site.
- Shut down GWE system.

Work Anticipated Fourth Quarter 1995

- Prepare and submit third quarter 1995 groundwater monitoring and remedial system performance evaluation report.
- Sample site wells for fourth quarter 1995 groundwater monitoring program. Sampling to be performed by PACIFIC.
- Prepare fourth quarter 1995 groundwater monitoring and remedial system performance evaluation report.
- Meet with the ACHCSA to discuss site closure requirements.

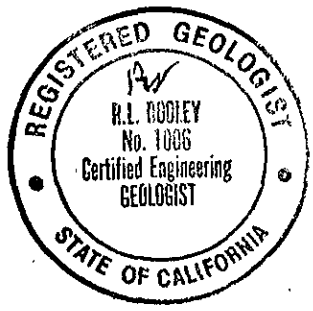
If there are any questions regarding the contents of this letter, please call.

Sincerely,

Pacific Environmental Group, Inc.

Shaw E. Garakani
Project Engineer

R. Lee Dooley
Senior Geologist
CEG 1006



Attachments:
- Table 1 - Groundwater Sampling Schedule
- Table 2 - Liquid Surface Elevation Data
- Table 3 - Groundwater Analytical Data - Total Purgeable Petroleum Hydrocarbons (TPPH as Gasoline and BTEX Compounds)
- Table 4 - Groundwater Analytical Data - Total Methyl t-Butyl Ether
- Table 5 - Groundwater Extraction System Performance Data
- Table 6 - Groundwater Extraction System Analytical Data Total Purgeable Petroleum Hydrocarbons (TPPH as Gasoline and BTEX Compounds)
- Figure 1 - Liquid Surface Elevation Contour Map
- Figure 2 - TPPH-g/Benzene Concentration Map
- Figure 3 - Groundwater Extraction System Mass Removal Trend
- Figure 4 - Groundwater Extraction System Hydrocarbon Concentrations
- Attachment A - Field and Laboratory Procedures
- Attachment B - Certified Analytical Reports, Chain-of-Custody Documentation, and Field Data Sheets
- Attachment C - Treatment System Certified Analytical Reports, Chain-of-Custody Documentation, and Field Data Sheets

cc: Mr. Kevin Graves, Regional Water Quality Control Board - S.F. Bay Region
Ms. Susan Hugo, Alameda County Health Care Services Agency

Table 1
Groundwater Sampling Schedule

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Sampling Frequency
A-1	---------- Destroyed ----------				
A-2	a	a	a	a	Quarterly
A-3		a		a	Semiannually
A-4	a	a	a	a	Quarterly
A-5		a		a	Semiannually
A-6	a	a	a	a	Quarterly
A-7		a			Annually
A-8	a	a	a	a	Quarterly
A-9	a	a	a	a	Quarterly
A-10	---------- Removed from Sampling Program ----------				
A-11		a		a	Semiannually
A-12		a		a	Semiannually
A-13		a			Annually
AR-1	a	a	a	a	Quarterly
AR-2	a	a	a	a	Quarterly
AR-3	a	a	a	a	Quarterly

a. Groundwater samples analyzed for the presence of TPPH-g and BTEX compounds according to EPA Methods 8015 (modified) and 8020.

Table 2
Liquid Surface Elevation Data

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Liquid (feet, TOB)	Depth to Water (feet, TOB)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
A-2	03/20/89	55.38	3.45	3.45	0.00	51.93
	05/24/89		6.80	6.80	0.00	48.58
	08/18/89		10.82	10.82	0.00	44.56
	10/27/89		8.25	8.25	0.00	47.13
	01/15/90		4.87	4.87	0.00	50.51
	04/04/90		7.03	7.03	0.00	48.35
	07/30/90		10.01	10.01	0.00	45.37
	10/29/90		11.60	11.60	0.00	43.78
	01/16/91		9.43	9.43	0.00	45.95
	04/12/91		3.65	3.65	0.00	51.73
	07/10/91		9.57	9.57	0.00	45.81
	10/21/91		11.54	11.54	0.00	43.84
	02/01/92		11.20	11.20	0.00	44.18
	04/29/92		7.18	7.18	0.00	48.20
	07/29/92	55.48	11.81	11.81	0.00	43.67
	10/29/92		11.91	11.91	0.00	43.57
	01/26/93		5.06	5.06	0.00	50.42
	04/01/93		5.15	5.15	0.00	50.33
	08/06/93		15.33	15.33	0.00	40.15
	10/14/93		15.74	15.74	0.00	39.74
	11/16/93		14.61	14.61	0.00	40.87
	12/16/93		5.80	5.80	0.00	49.68
	02/10/94		4.88	4.88	0.00	50.60
	03/21/94		4.94	4.94	0.00	50.54
	05/06/94		---------- Well Inaccessible ----------			
	08/09/94		12.51	12.51	0.00	42.97
	11/17/94		5.24	5.24	0.00	50.24
	02/09/95		6.55	6.55	0.00	48.93
	05/08/95		6.08	6.08	0.00	49.40
	08/08/95		11.50	11.50	0.00	43.98
A-3	03/20/89	54.48	7.51	7.51	0.00	46.97
	05/24/89		10.29	10.29	0.00	44.19
	08/18/89		11.60	11.60	0.00	42.88
	10/27/89		10.16	10.16	0.00	44.32
	01/15/90		8.55	8.55	0.00	45.93
	04/04/90		10.66	10.66	0.00	43.82
	07/30/90		11.26	11.26	0.00	43.22
	10/29/90		11.86	11.86	0.00	42.62
	01/16/91		11.46	11.46	0.00	43.02
	04/12/91		9.28	9.28	0.00	45.20
	07/10/91		11.29	11.29	0.00	43.19
	10/21/91		11.51	11.51	0.00	42.97
	02/02/92		---------- Well Inaccessible ----------			
	04/29/92		---------- Well Inaccessible ----------			
	07/29/92	54.66	11.59	11.59	0.00	43.07
	10/28/92		12.00	12.00	0.00	42.66
	01/26/93		9.82	9.82	0.00	44.84
	04/01/93		10.61	10.61	0.00	44.05
	08/06/93		14.90	14.90	0.00	39.76
	10/14/93		15.11	15.11	0.00	39.55
	11/16/93		14.72	14.72	0.00	39.94
	12/16/93		13.37	13.37	0.00	41.29
	02/10/94		9.20	9.20	0.00	45.46
	05/06/94		10.34	10.34	0.00	44.32
	08/09/94		12.09	12.09	0.00	42.57
	11/17/94		5.85	5.85	0.00	48.81
	02/09/95		9.93	9.93	0.00	44.73
	05/08/95		11.32	11.32	0.00	43.34
	08/08/95		9.80	9.80	0.00	44.86

Table 2 (continued)
Liquid Surface Elevation Data

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Liquid (feet, TOB)	Depth to Water (feet, TOB)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
A-4	03/21/86	54.62	NM	NM	3.50	NM
	01/07/88		NM	NM	0.02	NM
	03/20/89		8.13	8.13	0.00	46.49
	05/24/89		11.40	11.40	0.00	43.22
	08/18/89		11.90	11.91	0.01	42.72
	10/27/89		11.36	11.37	0.01	43.26
	01/15/90		9.73	9.74	0.01	44.89
	04/04/90		11.19	11.19	0.00	43.43
	07/30/90		11.70	11.71	0.01	42.92
	10/29/90		12.18	12.21	0.03	42.44
	01/16/91		11.88	11.89	0.01	42.74
	04/12/91		9.54	9.54	0.00	45.08
	07/10/91		11.55	11.55	0.00	43.07
	09/20/91		12.12	12.12	0.00	42.50
	10/21/91		11.73	11.76	0.03	42.89
	02/02/92		11.16	11.18	0.02	43.46
	04/29/92		10.76	10.78	0.02	43.86
	07/29/92	54.73	11.70	11.74	0.04	43.03
	10/28/92		11.90	11.93	0.03	42.83
	01/26/93		10.55	10.59	0.04	44.18
	04/01/93		10.15	10.17	0.02	44.58
	08/06/93		15.09	15.12	0.03	39.64
	10/14/93		15.37	15.37	0.00	39.36
	11/16/93		14.86	14.86	0.00	39.87
	12/16/93		13.41	13.41	0.00	41.32
	02/10/94		9.30	9.30	0.00	45.43
	05/06/94		10.02	10.02	0.00	44.71
	08/09/94		12.28	12.28	0.00	42.45
	11/17/94		9.44	9.44	0.00	45.29
	02/09/95		10.95	10.95	0.00	43.78
	05/08/95		11.29	11.29	0.00	43.44
	08/08/95		9.81	9.81	0.00	44.92
A-5	03/20/89	54.15	8.09	8.09	0.00	46.06
	05/24/89		11.13	11.13	0.00	43.02
	08/18/89		11.58	11.58	0.00	42.57
	10/27/89		10.68	10.68	0.00	43.47
	01/15/90		9.24	9.24	0.00	44.91
	04/04/90		10.93	10.93	0.00	43.22
	07/30/90		11.48	11.48	0.00	42.67
	10/29/90		11.77	11.77	0.00	42.38
	01/16/91		11.36	11.36	0.00	42.79
	04/12/91		9.64	9.64	0.00	44.51
	07/10/91		11.30	11.30	0.00	42.85
	10/21/91		11.48	11.48	0.00	42.67
	02/02/92		10.73	10.73	0.00	43.42
	04/29/92		10.58	10.58	0.00	43.57
	07/29/92	54.17	11.46	11.46	0.00	42.71
	10/28/92		11.55	11.55	0.00	42.62
	01/26/93		10.32	10.32	0.00	43.85
	04/01/93		10.36	10.36	0.00	43.81
	08/06/93		14.82	14.82	0.00	39.35
	10/14/93		14.99	14.99	0.00	39.18
	11/16/93		14.47	14.47	0.00	39.70
	12/16/93		12.94	12.94	0.00	41.23
	02/10/94		8.94	8.94	0.00	45.23
	05/06/94		10.48	10.48	0.00	43.69
	08/09/94		11.86	11.86	0.00	42.31

Table 2 (continued)
Liquid Surface Elevation Data

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Liquid (feet, TOB)	Depth to Water (feet, TOB)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
A-5	11/17/94		9.49	9.49	0.00	44.68
(cont.)	02/09/95		10.50	10.50	0.00	43.67
	05/08/95		11.15	11.15	0.00	43.02
	08/08/95		9.39	9.39	0.00	44.78
A-6	03/20/89	55.13	6.43	6.43	0.00	48.70
	05/24/89		9.43	9.43	0.00	45.70
	08/18/89		10.10	10.10	0.00	45.03
	10/27/89		9.16	9.16	0.00	45.97
	01/15/90		8.02	8.02	0.00	47.11
	04/04/90		9.29	9.29	0.00	45.84
	07/30/90		9.93	9.93	0.00	45.20
	10/29/90		10.42	10.42	0.00	44.71
	01/16/91		10.15	10.15	0.00	44.98
	04/12/91		8.05	8.05	0.00	47.08
	07/10/91		10.03	10.03	0.00	45.10
	10/21/91		10.30	10.30	0.00	44.83
	02/02/92		9.81	9.81	0.00	45.32
	04/29/92		----------	Well Inaccessible	----------	
	07/29/92	55.17	10.40	10.40	0.00	44.77
	10/28/92		10.55	10.55	0.00	44.62
	01/26/93		7.50	7.50	0.00	47.67
	04/01/93		7.59	7.59	0.00	47.58
	08/06/93		12.32	12.32	0.00	42.85
	10/14/93		12.82	12.82	0.00	42.35
	11/16/93		12.34	12.34	0.00	42.83
	12/16/93		10.40	10.40	0.00	44.77
	02/10/94		7.53	7.53	0.00	47.64
	05/06/94		8.71	8.71	0.00	46.46
	08/09/94		10.57	10.57	0.00	44.60
	11/17/94		7.91	7.91	0.00	47.26
	02/09/95		8.13	8.13	0.00	47.04
	05/08/95		8.85	8.85	0.00	46.32
	08/08/95		8.98	8.98	0.00	46.19
A-7	03/20/89	54.67	6.29	6.29	0.00	48.38
	05/24/89		9.26	9.26	0.00	45.41
	08/18/89		9.97	9.97	0.00	44.70
	10/27/89		9.02	9.02	0.00	45.65
	01/15/90		7.90	7.90	0.00	46.77
	04/04/90		9.15	9.15	0.00	45.52
	07/30/90		9.80	9.80	0.00	44.87
	10/29/90		10.30	10.30	0.00	44.37
	01/16/91		11.35	11.35	0.00	43.32
	04/12/91		7.90	7.90	0.00	46.77
	07/10/91		9.82	9.82	0.00	44.85
	10/21/91		10.12	10.12	0.00	44.55
	02/02/92		9.28	9.28	0.00	45.39
	04/29/92		8.85	8.85	0.00	45.82
	07/29/92	54.71	10.09	10.09	0.00	44.62
	10/28/92		10.31	10.31	0.00	44.40
	01/26/93		7.33	7.33	0.00	47.38
	04/01/93		7.35	7.35	0.00	47.36
	08/06/93		12.67	12.67	0.00	42.04
	10/14/93		12.52	12.52	0.00	42.19
	11/16/93		12.13	12.13	0.00	42.58
	12/16/93		10.18	10.18	0.00	44.53
	02/10/94		7.40	7.40	0.00	47.31
	05/06/94		8.41	8.41	0.00	46.30
	08/09/94		10.57	10.57	0.00	44.14

Table 2 (continued)
Liquid Surface Elevation Data

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Liquid (feet, TOB)	Depth to Water (feet, TOB)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
A-7	11/17/94		7.91	7.91	0.00	46.80
(cont.)	02/09/95		7.85	7.85	0.00	46.86
	05/08/95		8.36	8.36	0.00	46.35
	08/08/95		8.66	8.66	0.00	46.05
A-8	03/21/86	53.61	---------- Well Inaccessible ----------			
	01/07/88		---------- Well Inaccessible ----------			
	03/20/89		7.55	8.21	0.66	46.06
	05/24/89		10.21	11.41	1.20	43.40
	08/18/89		10.11	10.88	0.77	43.50
	10/27/89		10.35	11.66	1.31	43.26
	01/15/90		8.97	9.84	0.87	44.64
	04/04/90		11.10	11.35	0.25	42.51
	07/30/90		8.73	10.48	1.75	44.88
	10/29/90		11.29	11.39	0.10	42.32
	01/16/91		11.10	11.11	0.01	42.51
	04/12/91		9.15	9.16	0.01	44.46
	07/10/91		10.72	10.73	0.01	42.89
	10/21/91		10.87	10.98	0.11	42.74
	02/02/92		9.40	10.80	1.40	44.21
	04/29/92		9.85	11.15	1.30	43.76
	07/29/92	53.77	11.27	11.33	0.06	42.50
	10/28/92		---------- Well Dry ----------			
	01/26/93		---------- Well Dry ----------			
	04/01/93		9.38	9.38	0.00	44.39
	08/06/93		---------- Well Dry ----------			
	10/14/93		13.10	13.10	0.00	40.67
	11/16/93		---------- Well Dry ----------			
	12/16/93		13.40	13.40	0.00	40.37
	02/10/94		8.93	8.94	0.01	44.84
	05/06/94		8.38	8.80	0.42	45.39
	08/09/94		10.13	10.46	0.33	43.64
	11/17/94		9.09	9.41	0.32	44.68
	02/09/95		9.07	9.07	0.00	44.70
	05/08/95		10.60	10.60	<0.01	43.17
	08/08/95		8.87	8.87	0.00	44.90
A-9	03/20/89	52.96	6.28	6.28	0.00	46.68
	05/24/89		10.12	10.12	0.00	42.84
	08/18/89		9.51	9.51	0.00	43.45
	10/27/89		8.56	8.56	0.00	44.40
	01/15/90		7.20	7.20	0.00	45.76
	04/04/90		8.78	8.78	0.00	44.18
	07/30/90		10.16	10.16	0.00	42.80
	10/29/90		10.71	10.71	0.00	42.25
	01/16/91		10.44	10.44	0.00	42.52
	04/12/91		8.69	8.69	0.00	44.27
	07/10/91		10.23	10.23	0.00	42.73
	09/20/91		10.47	10.47	0.00	42.49
	10/21/91		10.39	10.39	0.00	42.57
	02/02/92		9.05	9.05	0.00	43.91
	04/29/92		9.56	9.56	0.00	43.40
	07/29/92	53.04	10.43	10.43	0.00	42.61
	10/28/92		---------- Well Inaccessible ----------			
	01/26/93		---------- Well Inaccessible ----------			
	04/01/93		---------- Well Inaccessible ----------			
	08/06/93		---------- Well Inaccessible ----------			
	10/14/93		---------- Well Inaccessible ----------			
	11/16/93		---------- Well Inaccessible ----------			
	12/16/93		12.10	12.10	0.00	40.94

Table 2 (continued)
Liquid Surface Elevation Data

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Liquid (feet, TOB)	Depth to Water (feet, TOB)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
A-9	02/10/94		8.00	8.00	0.00	45.04
(cont.)	03/21/94		9.62	9.62	0.00	43.42
	05/06/94		9.41	9.41	0.00	43.63
	08/09/94		10.81	10.81	0.00	42.23
	11/17/94		9.89	9.89	0.00	43.15
	02/09/95		9.97	9.97	0.00	43.07
	05/08/95		10.28	10.28	0.00	42.76
	08/08/95		8.33	8.33	0.00	44.71
A-10	03/20/89	54.16	8.52	8.52	0.00	45.64
	05/24/89		11.31	11.31	0.00	42.85
	08/18/89		11.82	11.82	0.00	42.34
	10/27/89		10.94	10.94	0.00	43.22
	01/15/90		9.58	9.58	0.00	44.58
	04/04/90		---------- Well Inaccessible ----------			
	07/30/90		11.57	11.57	0.00	42.59
	10/29/90		12.11	12.11	0.00	42.05
	01/16/91		11.60	11.60	0.00	42.56
	04/12/91		10.04	10.04	0.00	44.12
	07/10/91		11.55	11.55	0.00	42.61
	10/21/91		11.79	11.79	0.00	42.37
	02/02/92		---------- Well Inaccessible ----------			
	04/29/92		10.85	10.85	0.00	43.31
	07/29/92	54.26	11.84	11.84	0.00	42.42
	10/28/92		11.89	11.89	0.00	42.37
	01/26/93		10.81	10.81	0.00	43.45
	04/01/93		10.85	10.85	0.00	43.41
	08/06/93		15.06	15.06	0.00	39.20
	10/14/93		15.22	15.22	0.00	39.04
	11/16/93		14.70	14.70	0.00	39.56
	12/16/93		13.22	13.22	0.00	41.04
	02/10/94		9.61	9.61	0.00	44.65
	05/06/94		10.81	10.81	0.00	43.45
	08/09/94		12.24	12.24	0.00	42.02
	11/17/94		9.89	9.89	0.00	44.37
	02/09/95		11.00	11.00	0.00	43.26
	05/08/95		11.60	11.60	0.00	42.66
	08/08/95		9.65	9.65	0.00	44.61
A-11	03/20/89	53.75	8.11	8.11	0.00	45.64
	05/24/89		10.92	10.92	0.00	42.83
	08/18/89		11.52	11.52	0.00	42.23
	10/27/89		10.63	10.63	0.00	43.12
	01/15/90		9.22	9.22	0.00	44.53
	04/04/90		10.85	10.85	0.00	42.90
	07/30/90		11.29	11.29	0.00	42.46
	10/29/90		11.66	11.66	0.00	42.09
	01/16/91		11.31	11.31	0.00	42.44
	04/12/91		9.55	9.55	0.00	44.20
	07/10/91		11.18	11.18	0.00	42.57
	10/21/91		11.24	11.24	0.00	42.51
	02/02/92		10.70	10.70	0.00	43.05
	04/29/92		10.57	10.57	0.00	43.18
	07/29/92	53.74	11.33	11.33	0.00	42.41
	10/28/92		11.54	11.54	0.00	42.20
	01/26/93		9.90	9.90	0.00	43.84
	04/01/93		10.11	10.11	0.00	43.63
	08/06/93		14.43	14.43	0.00	39.31
	10/14/93		14.72	14.72	0.00	39.02
	11/16/93		NM	NM	NM	NM

Table 2 (continued)
Liquid Surface Elevation Data

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Liquid (feet, TOB)	Depth to Water (feet, TOB)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
A-11	12/16/93		NM	NM	NM	NM
(cont.)	02/10/94		9.30	9.30	0.00	44.44
	05/06/94		9.94	9.94	0.00	43.80
	08/09/94		11.67	11.67	0.00	42.07
	11/17/94		9.32	9.32	0.00	44.42
	02/09/95		10.20	10.20	0.00	43.54
	05/08/95		10.88	10.88	0.00	42.86
	08/08/95		9.37	9.37	0.00	44.37
A-12	03/20/89	52.05	8.00	8.00	0.00	44.05
	05/24/89		10.35	10.35	0.00	41.70
	08/18/89		10.75	10.75	0.00	41.30
	10/27/89		10.06	10.06	0.00	41.99
	01/15/90		8.88	8.88	0.00	43.17
	04/04/90		10.30	10.30	0.00	41.75
	07/30/90		10.66	10.66	0.00	41.39
	10/29/90		10.90	10.90	0.00	41.15
	01/16/91		10.60	10.60	0.00	41.45
	04/12/91		9.45	9.45	0.00	42.60
	07/10/91		10.56	10.56	0.00	41.49
	10/21/91		10.62	10.62	0.00	41.43
	02/02/92		10.10	10.10	0.00	41.95
	04/29/92		10.19	10.19	0.00	41.86
	07/29/92		10.81	10.81	0.00	41.24
	10/28/92		10.81	10.81	0.00	41.24
	01/26/93		9.48	9.48	0.00	42.57
	04/01/93		10.67	10.67	0.00	41.38
	08/06/93		12.95	12.95	0.00	39.10
	10/14/93		13.28	13.28	0.00	38.77
	11/16/93		NM	NM	NM	NM
	12/16/93		NM	NM	NM	NM
	02/10/94		8.66	8.66	0.00	43.39
	05/06/94		9.89	9.89	0.00	42.16
	08/09/94		11.07	11.07	0.00	40.98
	11/17/94		9.17	9.17	0.00	42.88
	02/09/95		9.90	9.90	0.00	42.15
	05/08/95		10.27	10.27	0.00	41.78
	08/08/95		8.47	8.47	0.00	43.58
A-13	07/01/92	55.11	9.93	9.93	0.00	45.18
	07/29/92		11.12	11.12	0.00	43.99
	10/28/92		10.84	10.84	0.00	44.27
	01/26/93		8.99	8.99	0.00	46.12
	04/01/93		9.18	9.18	0.00	45.93
	08/06/93		13.70	13.70	0.00	41.41
	10/14/93		14.02	14.02	0.00	41.09
	11/16/93		NM	NM	NM	NM
	12/16/93		NM	NM	NM	NM
	02/10/94		9.64	9.64	0.00	45.47
	05/06/94		10.29	10.29	0.00	44.82
	08/09/94		11.45	11.45	0.00	43.66
	11/17/94		9.67	9.67	0.00	45.44
	02/09/95		9.38	9.38	0.00	45.73
	05/08/95		10.32	10.32	0.00	44.79
	08/08/95		---------- Well Inaccessible ----------			
AR-1	07/01/92	54.72	10.27	10.27	0.00	44.45
	07/29/92		11.32	11.32	0.00	43.40
	10/28/92		---------- Well Inaccessible ----------			
	01/26/93		---------- Well Inaccessible ----------			
	04/01/93		---------- Well Inaccessible ----------			

Table 2 (continued)
Liquid Surface Elevation Data

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Liquid (feet, TOB)	Depth to Water (feet, TOB)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
AR-1	08/06/93		17.42	17.42	0.00	37.30
(cont.)	10/14/93		----------	Well Inaccessible	----------	
	11/16/93		13.76	13.76	0.00	40.96
	12/16/93		19.44	19.44	0.00	35.28
	02/10/94		9.00	9.00	0.00	45.72
	03/21/94		9.99	10.00	0.01	44.73
	05/06/94		19.61	19.61	0.00	35.11
	08/09/94		17.51	17.59	0.08	37.21
	11/17/94		17.39	17.39	sheen	37.33
	02/09/95		18.83	18.83	0.00	35.89
	05/08/95		10.96	10.96	0.00	43.76
	08/08/95		9.70	9.70	0.00	45.02
AR-2	07/01/92	54.77	11.33	11.33	0.00	43.44
	07/29/92		11.90	11.90	0.00	42.87
	10/28/92		----------	Well Inaccessible	----------	
	01/26/93		----------	Well Inaccessible	----------	
	04/01/93		----------	Well Inaccessible	----------	
	08/06/93		17.16	17.16	0.00	37.61
	10/14/93		18.11	18.11	0.00	36.66
	11/16/93		17.92	17.92	0.00	36.85
	12/16/93		18.02	18.02	0.00	36.75
	02/10/94		9.32	9.32	0.00	45.45
	03/21/94		10.36	10.36	0.00	44.41
	05/06/94		15.14	15.14	0.00	39.63
	08/09/94		18.25	18.25	0.00	36.52
	11/17/94		18.10	18.10	0.00	36.67
	02/09/95		17.10	17.10	0.00	37.67
	05/08/95		18.25	18.25	0.00	36.52
	08/08/95		10.20	10.20	0.00	44.57
AR-3	07/01/92	54.19	10.11	10.11	0.00	44.08
	07/29/92		11.55	11.55	0.00	42.64
	10/28/92		----------	Well Inaccessible	----------	
	01/26/93		----------	Well Inaccessible	----------	
	04/01/93		----------	Well Inaccessible	----------	
	08/06/93		16.12	16.12	0.00	38.07
	10/14/93		----------	Well Inaccessible	----------	
	11/16/93		16.38	16.38	0.00	37.81
	12/16/93		----------	Well Inaccessible	----------	
	02/10/94		9.20	9.20	0.00	44.99
	03/21/94		10.80	10.80	0.00	43.39
	05/06/94		10.54	10.54	0.00	43.65
	08/09/94		11.92	11.92	0.00	42.27
	11/17/94		9.62	9.62	0.00	44.57
	02/09/95		15.90	15.90	0.00	38.29
	05/08/95		17.75	17.75	0.00	36.44
	08/08/95		9.47	9.47	0.00	44.72

MSL = Mean sea level
TOB = Top of box
NM = Not measured

Table 3
Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
A-2	03/21/86	31,000	NA	NA	NA	NA
	01/07/88	12,000	920	1,500	--	4,000
	03/20/89	22,000	1,200	1,800	1,200	7,700
	05/24/89	9,000	460	260	250	2,400
	08/18/89	14,000	900	200	<200	1,300
	10/27/89	16,000	1,200	340	90	3,100
	01/15/90	9,900	1,100	460	150	2,900
	04/04/90	16,000	1,100	400	380	3,900
	07/30/90	16,000	1,400	340	290	3,600
	07/30/90	16,000	1,400	340	290	3,600
	10/29/90	14,000	1,100	210	66	2,700
	01/16/91	15,000	1,200	800	190	4,600
	04/12/91	16,000	640	290	280	2,600
	10/21/91	26,000	1,100	560	81	3,900
	02/02/92	11,000	150	13	91	94
	04/29/92	5,400	120	16	129	19
	07/30/92	590	10	<2.0	<2.0	9
	10/29/92	77	0.56	<0.50	<0.50	0.51
	01/26/93	390	0.87	<0.50	<0.50	4.3
	04/01/93	16,000	<10	<10	<10	<10
	08/06/93	---------- Well Dry ----------				
	10/14/93	350	<0.5	<0.5	<0.5	<0.5
	02/10/94	---------- Well Dry ----------				
	03/21/94	66	<0.5	<0.5	<0.5	<0.5
	05/06/94	---------- Well Inaccessible ----------				
	08/09/94	<50	1.1	<0.5	<0.5	<0.5
	11/17/94	<50	<0.5	<0.5	<0.5	<0.5
	02/09/95	50	1.7	2.0	<0.5	1.6
	05/08/95	<50	1.4	1.4	<0.50	0.50
	08/08/95	<50	<0.50	<0.50	<0.50	<0.50
A-3	03/21/86	1,000	NA	NA	NA	NA
	01/07/88	250	2.3	8	NA	21
	03/20/89	230	1.6	<1	3	3
	05/24/89	170	0.9	2	1	<3
	08/18/89	180	0.7	1	<1	<3
	10/27/89	120	<0.5	<0.5	<0.5	<1
	01/15/90	<50	<0.5	<0.5	<0.5	<1
	04/04/90	88	1.2	2.0	0.8	4
	07/30/90	120	8.3	2.9	2.3	12
	10/29/90	780	10	27	18	85
	01/16/91	69	2.0	3.5	<0.5	9.6
	04/12/91	<30	<0.30	<0.30	<0.30	<0.30
	07/10/91	59	<0.30	<0.30	0.50	0.51
	10/21/91	56	0.44	0.77	0.41	1.3
	02/01/92	---------- Well Inaccessible ----------				
	04/29/92	---------- Well Inaccessible ----------				
	07/30/92	<50	<0.50	<0.50	<0.50	<0.50
	10/28/92	<50	<0.50	<0.50	<0.50	<0.50
	01/26/93	<50	<0.50	<0.50	<0.50	<0.50
	04/01/93	<50	<0.50	<0.50	<0.50	<0.50
	08/06/93	<50	<0.5	<0.5	<0.5	<0.5
	10/14/93	<50	<0.5	<0.5	<0.5	<0.5
	02/10/94	<50	<0.5	<0.5	<0.5	<0.5
	05/06/94	<50	<0.5	<0.5	<0.5	<0.5
	08/09/94	<50	<0.5	<0.5	<0.5	<0.5

Table 3 (continued)
Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
A-3	11/17/94	<50	<0.5	<0.5	<0.5	<0.5
(cont.)	02/09/95	90	0.9	<0.5	0.7	1.3
	05/08/95	<50	<0.50	<0.50	<0.50	<0.50
	08/08/95	NS	NS	NS	NS	NS
A-4	03/21/86	---------- 3.50 feet of Separate-Phase Hydrocarbons ----------				
	01/07/88	---------- 0.02 foot of Separate-Phase Hydrocarbons ----------				
	03/20/89	360,000	1,500	3,700	6,500	35,000
	05/24/89	1,500,000	1,000	2,000	6,000	23,000
	08/18/89	---------- 0.01 foot of Separate-Phase Hydrocarbons ----------				
	10/27/89	---------- 0.01 foot of Separate-Phase Hydrocarbons ----------				
	01/15/90	---------- 0.01 foot of Separate-Phase Hydrocarbons ----------				
	04/04/90	40,000	680	320	1,400	4,900
	07/30/90	---------- 0.01 foot of Separate-Phase Hydrocarbons ----------				
	10/29/90	---------- 0.03 foot of Separate-Phase Hydrocarbons ----------				
	01/16/91	---------- 0.01 foot of Separate-Phase Hydrocarbons ----------				
	04/12/91	1,800	<60	90	650	1,700
	07/10/91	61,000	2,700	8,500	1,700	8,200
	09/20/91	NA	1,200	5,300	1,500	11,000
	02/01/92	---------- 0.02 foot of Separate-Phase Hydrocarbons ----------				
	04/29/92	---------- 0.02 foot of Separate-Phase Hydrocarbons ----------				
	07/29/92	---------- 0.04 foot of Separate-Phase Hydrocarbons ----------				
	10/28/92	---------- 0.03 foot of Separate-Phase Hydrocarbons ----------				
	01/26/93	---------- 0.04 foot of Separate-Phase Hydrocarbons ----------				
	04/01/93	---------- 0.02 foot of Separate-Phase Hydrocarbons ----------				
	08/06/93	---------- 0.03 foot of Separate-Phase Hydrocarbons ----------				
	10/14/93	160,000	1,200	<250	4,100	950
	02/10/94	56,000	220	68	790	700
	05/06/94	18,000	210	<30	200	101
	08/09/94	20,000	800	<20	200	270
	11/17/94	3,900	420	11	38	92
	02/09/95	14,000	2,900	7.5	420	440
	05/08/95	5,100	700	<10 b	79	160
	08/08/95	4,200	240	17	88	110
A-5	03/21/86	88	NA	NA	NA	NA
	01/07/88	<50	0.5	1	NA	4
	03/20/89	60	0.5	1	2	10
	05/24/89	<50	0.5	<1	<1	<3
	08/18/89	<50	<0.5	<1	<1	<3
	10/27/89	<50	<0.50	<0.50	<0.50	<1
	01/15/90	<50	<0.5	<0.5	<0.5	<1
	04/04/90	<50	<0.5	<0.5	<0.5	<1
	07/30/90	<50	<0.5	<0.5	<0.5	<0.5
	10/29/90	280	<0.5	<0.5	<0.5	<0.5
	01/16/91	<50	<0.5	<0.5	<0.5	<0.5
	04/12/91	<30	<0.30	<0.30	<0.30	0.84
	07/10/91	<30	<0.30	<0.30	<0.30	<0.30
	10/21/91	<30	<0.30	<0.30	<0.30	<0.30
	02/01/92	<30	1.7	<0.30	<0.30	<0.30
	04/29/92	<30	<0.30	<0.30	<0.30	<0.30
	07/30/92	<50	<0.50	<0.50	<0.50	<0.50
	10/28/92	<50	<0.50	<0.50	<0.50	<0.50
	01/26/93	<50	<0.50	<0.50	<0.50	<0.50
	04/01/93	<50	<0.50	<0.50	<0.50	<0.50
	08/06/93	<50	<0.5	<0.5	<0.5	<0.5
	10/14/93	<50	<0.5	<0.5	<0.5	<0.5
	02/10/94	<50	<0.5	<0.5	<0.5	<0.5
	05/06/94	<50	<0.5	<0.5	<0.5	<0.5

Table 3 (continued)
Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
A-5	08/09/94	<50	<0.5	<0.5	<0.5	<0.5
(cont.)	11/17/94	<50	<0.5	<0.5	<0.5	<0.5
	02/09/95	<50	<0.5	<0.5	<0.5	<0.5
	05/08/95	<50	<0.50	<0.50	<0.50	<0.50
	08/08/95	NS	NS	NS	NS	NS
A-6	03/21/86	<10	NA	NA	NA	NA
	01/07/88	390	54	89	NA	110
	03/20/89	220	33	21	9	39
	05/24/89	110	13	6	3	13
	08/18/89	<50	2.1	1	<1	<3
	10/27/89	55	3.8	1.6	1.7	6
	01/15/90	100	12	2.5	5.5	18
	04/04/90	100	17	7.1	5.5	18
	07/30/90	<50	2.6	<0.5	<0.5	1.2
	10/29/90	<50	0.7	<0.5	<0.5	<0.5
	01/16/91	<50	<0.5	<0.5	<0.5	<0.5
	04/12/91	430	24	5.1	9.4	32
	07/10/91	<30	1.4	0.39	0.47	1.5
	10/21/91	<30	<0.30	<0.30	<0.30	<0.30
	02/01/92	<30	2.0	0.40	0.58	1.7
	04/29/92	---------- Well Inaccessible ----------				
	07/30/92	<50	0.64	<0.50	<0.50	<0.50
	10/28/92	<50	<0.50	<0.50	<0.50	<0.50
	01/26/93	1,600	4.8	1.2	14	46
	04/01/93	310	4.8	0.74	3.3	8.7
	08/06/93	<50	<0.5	<0.5	<0.5	<0.5
	10/14/93	<50	<0.5	<0.5	<0.5	<0.5
	02/10/94	140	2.8	<0.5	2.4	5.6
	05/06/94	61	1.7	<0.5	0.6	1.4
	08/09/94	<50	<0.5	<0.5	<0.5	<0.5
	11/17/94	53	<0.5	<0.5	<0.5	<0.5
	02/09/95	90	17	0.8	1.2	6.0
	05/08/95	100	7.9	<0.50	4.1	8.6
	08/08/95	<50	<0.50	<0.50	<0.50	<0.50
A-7	01/07/88	<50	<0.5	1	NA	4
	03/20/89	<50	0.9	<1	<1	<3
	05/24/89	<50	<0.5	<1	<1	<3
	08/18/89	<50	<0.5	<1	<1	<3
	10/27/89	<50	<0.5	<0.5	<0.5	<1
	01/15/90	<50	<0.5	<0.5	<0.5	<1
	04/04/90	<50	<0.5	<0.5	<0.5	<1
	07/30/90	<50	<0.5	<0.5	<0.5	<0.5
	10/29/90	<50	2.7	7.6	1.1	3.0
	01/16/91	<50	<0.5	<0.5	<0.5	<0.5
	04/12/91	<30	<0.30	<0.30	<0.30	0.48
	07/10/91	<30	<0.30	0.49	<0.30	1.2
	10/21/91	<30	<0.30	<0.30	<0.30	<0.30
	02/01/92	<30	<0.30	<0.30	<0.30	<0.30
	04/29/92	<30	<0.30	<0.30	<0.30	<0.30
	07/29/92	<50	<0.50	<0.50	<0.50	<0.50
	10/28/92	<50	<0.50	<0.50	<0.50	<0.50
	01/26/93	<50	<0.50	<0.50	<0.50	<0.50
	04/01/93	<50	<0.50	<0.50	<0.50	<0.50
	08/06/93	<50	<0.5	<0.5	<0.5	<0.5
	10/14/93	<50	<0.5	<0.5	<0.5	<0.5
	02/10/94	<50	<0.5	<0.5	<0.5	<0.5
	05/06/94	<50	<0.5	<0.5	<0.5	<0.5

Table 3 (continued)
Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
A-7	08/09/94	<50	<0.5	<0.5	<0.5	<0.5
(cont.)	11/17/94	<50	<0.5	<0.5	<0.5	<0.5
	02/09/95	<50	3.7	<0.5	<0.5	<0.5
	05/08/95	<50	<0.50	<0.50	<0.50	<0.50
	08/08/95	NS	NS	NS	NS	NS
A-8	03/21/86	Well Inaccessible				
	01/07/88	Well Inaccessible				
	03/20/89	0.66 foot of Separate-Phase Hydrocarbons				
	05/24/89	1.20 feet of Separate-Phase Hydrocarbons				
	08/18/89	0.77 foot of Separate-Phase Hydrocarbons				
	10/27/89	1.31 feet of Separate-Phase Hydrocarbons				
	01/15/90	0.87 foot of Separate-Phase Hydrocarbons				
	04/04/90	0.25 foot of Separate-Phase Hydrocarbons				
	07/30/90	1.75 feet of Separate-Phase Hydrocarbons				
	10/29/90	0.10 foot of Separate-Phase Hydrocarbons				
	01/16/91	0.01 foot of Separate-Phase Hydrocarbons				
	04/12/91	0.01 foot of Separate-Phase Hydrocarbons				
	07/10/91	0.01 foot of Separate-Phase Hydrocarbons				
	10/21/91	0.11 foot of Separate-Phase Hydrocarbons				
	02/01/92	1.40 feet of Separate-Phase Hydrocarbons				
	04/29/92	1.30 feet of Separate-Phase Hydrocarbons				
	07/29/92	0.06 foot of Separate-Phase Hydrocarbons				
	10/28/92	Well Dry				
	01/26/93	Well Dry				
	04/01/93	Well Inaccessible				
	08/06/93	Well Dry				
	10/14/93	Well Inaccessible				
	12/10/93	29,000,000	16,000	12,000	19,000	99,000
	02/10/94	NS	NS	NS	NS	NS
	05/06/94	NS	NS	NS	NS	NS
	08/09/94	0.33 foot of Separate-Phase Hydrocarbons				
	11/17/94	0.32 foot of Separate-Phase Hydrocarbons				
	02/09/95	68,000	2,400	500	960	5,000
	05/08/95	23,000	3,600	560	520	2,100
	08/08/95	20,000	2,700	140	730	1,600
A-9	01/07/88	300	45	14	NA	43
	03/21/89	50	2.8	1	1	3
	05/24/89	120	26	12	4	79
	08/18/89	14,000	400	800	400	2,000
	10/27/89	1,700	150	36	30	110
	01/15/90	860	140	58	38	140
	04/04/90	620	36	13	9.4	32
	07/30/90	180	77	1.6	2.1	4.2
	10/29/90	110	30	3.7	4.1	8.3
	01/16/91	<50	15	<0.5	<0.5	0.6
	04/12/91	130	52	0.83	5.3	6.0
	07/10/91	<30	7.8	<0.30	<0.30	<0.30
	09/20/91	NA	21	<2.0	<2.0	<0.20
	10/21/91	240	63	0.65	5.1	1.6
	02/01/92	320	77	0.95	11	6.5
	04/29/92	170	52	<0.30	5.6	1.4
	07/30/92	<50	14	<0.50	1.7	6.0
	10/28/92	Well Inaccessible				
	01/26/93	Well Inaccessible				
	04/01/93	Well Inaccessible				
	08/06/93	Well Inaccessible				
	10/14/93	Well Inaccessible				

Table 3 (continued)
Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
A-9	12/10/93	<50	<0.5	<0.5	<0.5	<0.5
(cont.)	02/10/94	---------- Well Inaccessible ----------				
	03/21/94	<50	<0.5	<0.5	<0.5	<0.5
	05/06/94	<50	<0.5	<0.5	<0.5	<0.5
	08/09/94	<50	<0.5	<0.5	<0.5	<0.5
	11/17/94	<50	2.5	<0.5	0.9	3.3
	02/09/95	<50	<0.5	<0.5	<0.5	<0.5
	05/08/95	<50	<0.50	<0.50	<0.50	<0.50
	08/08/95	80	2.6	<0.50	<0.50	<0.50
A-10	01/07/88	<50	0.6	11	NA	4
	03/20/89	<50	<0.5	<1	<1	<3
	05/24/89	<50	<0.5	<1	<1	<3
	08/18/89	<50	<0.5	<1	<1	<3
	10/27/89	<50	<0.5	<0.5	<0.5	<1
	01/15/90	<50	<0.5	<0.5	<0.5	<1
	04/04/90	---------- Well Inaccessible ----------				
	07/30/90	<50	<0.5	<0.5	<0.5	<0.5
	10/29/90	<50	2.3	6.9	1.2	3.0
	01/16/91	<50	<0.5	<0.5	<0.5	<0.5
	04/12/91	<30	0.67	0.55	<0.30	0.90
	07/10/91	<30	<0.30	<0.30	<0.30	<0.30
	10/21/91	<30	<0.30	<0.30	<0.30	<0.30
	02/02/92	---------- Well Inaccessible ----------				
	04/29/92	<30	<0.30	<0.30	<0.30	<0.30
	07/29/92	<50	25	<0.50	<0.50	1.8
	10/28/92	<50	<0.50	<0.50	<05.0	<0.50
	01/26/93	<50	<0.50	<0.50	<0.50	<0.50
	04/01/93	<50	<0.50	<0.50	<0.50	<0.50
	08/06/93	<50	<0.5	<0.5	<0.5	<0.5
	10/14/93	<50	<0.5	<0.5	<0.5	<0.5
	02/10/94	<50	<0.5	<0.5	<0.5	<0.5
	05/06/94	<50	<0.5	<0.5	<0.5	<0.5
	08/09/94	<50	<0.5	<0.5	<0.5	<0.5
	11/17/94	<50	<0.5	<0.5	<0.5	<0.5
	02/09/95	60	<0.5	<0.5	<0.5	<0.5
	05/08/95	<50	<0.50	<0.50	<0.50	<0.50
	08/08/95	NS	NS	NS	NS	NS
A-11	01/07/88	<50	1.1	2	NA	5
	03/20/89	<50	<0.5	<1	<1	<3
	05/24/89	<50	<0.5	<1	<1	<3
	08/18/89	<50	<0.5	<1	<1	<3
	10/27/89	<50	<0.5	<0.5	<0.5	<1
	01/15/90	<50	<0.5	<0.5	<0.5	<1
	04/04/90	<50	<0.5	<0.5	<0.5	<1
	07/30/90	<50	<0.5	0.6	<0.5	0.5
	10/29/90	<50	0.6	2.4	0.6	1.5
	01/16/91	<50	<0.5	<0.5	<0.5	<0.5
	04/12/91	<30	<0.30	0.37	<0.30	<0.30
	07/10/91	<30	0.61	0.46	<0.30	1.0
	10/21/91	<30	<0.30	<0.30	<0.30	<0.30
	02/01/92	<30	<0.30	<0.30	<0.30	<0.30
	04/29/92	<30	<0.30	<0.30	<0.30	<0.30
	07/30/92	<50	<0.50	<0.50	<0.50	<0.50
	10/28/92	<50	<0.50	<0.50	<0.50	<0.50
	01/26/93	<50	<0.50	<0.50	<0.50	<0.50
	01/04/93	<50	<0.50	<0.50	<0.50	<0.50
	08/06/93	<50	<0.5	<0.5	<0.5	<0.5

Table 3 (continued)
Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
A-11	10/14/93	<50	<0.5	<0.5	<0.5	<0.5
(cont.)	02/10/94	<50	<0.5	<0.5	<0.5	<0.5
	05/06/94	<50	<0.5	<0.5	<0.5	<0.5
	08/09/94	<50	<0.5	<0.5	<0.5	<0.5
	11/17/94	<50	<0.5	<0.5	<0.5	<0.5
	02/09/95	<50	<0.5	<0.5	<0.5	<0.5
	05/08/95	<50	<0.50	<0.50	<0.50	<0.50
	08/08/95	NS	NS	NS	NS	NS
A-12	01/07/88	<50	<0.5	2	NA	<4
	03/20/89	<50	<0.5	<1	<1	<3
	05/24/89	<50	<0.5	<1	<1	<3
	08/18/89	<50	<0.5	<1	<1	<3
	10/27/89	<50	<0.5	<0.5	<0.5	<1
	01/15/90	<50	<0.5	<0.5	<0.5	<1
	04/04/90	<50	<0.5	<0.5	<0.5	<1
	07/30/90	<50	<0.5	<0.5	<0.5	<0.5
	10/29/90	<50	<0.5	<0.5	<0.5	<0.5
	01/16/91	<50	<0.5	<0.5	<0.5	<0.5
	04/12/91	<30	<0.30	<0.30	<0.30	<0.30
	07/10/91	<30	<0.30	<0.30	<0.30	<0.30
	10/21/91	<30	<0.30	<0.30	<0.30	<0.30
	02/01/92	<30	<0.30	<0.30	<0.30	<0.30
	04/29/92	<30	<0.30	<0.30	<0.30	<0.30
	07/30/92	<50	<0.50	<0.50	<0.50	<0.50
	10/28/92	<50	<0.50	<0.50	<0.50	<0.50
	01/26/93	<50	<0.50	<0.50	<0.50	<0.50
	04/01/93	<50	<0.50	<0.50	<0.50	<0.50
	08/06/93	<50	<0.5	<0.5	<0.5	<0.5
	10/14/93	<50	<0.5	<0.5	<0.5	<0.5
	02/10/94	<50	<0.5	<0.5	<0.5	<0.5
	05/06/94	<50	<0.5	<0.5	<0.5	<0.5
	08/09/94	<50	<0.5	<0.5	<0.5	<0.5
	11/17/94	<50	<0.5	<0.5	<0.5	<0.5
	02/09/95	<50	<0.5	<0.5	<0.5	<0.5
	05/08/95	<50	<0.50	<0.50	<0.50	<0.50
	08/08/95	NS	NS	NS	NS	NS
A-13	07/01/92	<50	<0.50	<0.50	<0.50	<0.50
	07/30/92	<50	<0.50	<0.50	<0.50	<0.50
	10/28/92	<50	<0.50	<0.50	<0.50	<0.50
	01/26/93	<50	<0.50	<0.50	<0.50	<0.50
	04/01/93	<50	<0.50	<0.50	<0.50	<0.50
	08/06/93	<50	<0.5	<0.5	<0.5	<0.5
	10/14/93	<50	<0.5	<0.5	<0.5	<0.5
	02/10/94	<50	<0.5	<0.5	<0.5	<0.5
	05/06/94	<50	<0.5	<0.5	<0.5	<0.5
	08/09/94	<50	<0.5	<0.5	<0.5	<0.5
	11/17/94	<50	<0.5	<0.5	<0.5	<0.5
	02/09/95	<50	<0.5	<0.5	<0.5	<0.5
	05/08/95	<50	<0.50	<0.50	<0.50	<0.50
	08/08/95	---------- Well Inaccessible ----------				
AR-1	07/01/92	2,300	260	150	38	470
	07/29/92	1,600	340	180	52	320
	10/28/92	---------- Well Inaccessible ----------				
	01/26/93	---------- Well Inaccessible ----------				
	04/01/93	---------- Well Inaccessible ----------				
	08/06/93	---------- Well Inaccessible ----------				

Table 3 (continued)
Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
AR-1	10/14/93	---------- Well Inaccessible ----------				
(cont.)	12/10/93	3,400	<25	<25	<25	250
	02/10/94	---------- Well Inaccessible ----------				
	03/21/94	NS	NS	NS	NS	NS
	05/06/94	NS	NS	NS	NS	NS
	08/09/94	--------- 0.08 foot of Separate-Phase Hydrocarbons ---------				
	11/17/94	---------- Sheen of Separate-Phase Hydrocarbons ----------				
	02/09/95	670	1.5	1.0	0.7	33
	05/08/95	3,700	19	<2.5 b	5.7	47
	08/08/95	12,000	560	180	82	1,000
AR-2	07/01/92	<50	<0.50	<0.50	<0.50	<0.50
	07/29/92	350	130	8.5	<10	<10
	10/28/92	---------- Well Inaccessible ----------				
	01/26/93	---------- Well Inaccessible ----------				
	04/01/93	---------- Well Inaccessible ----------				
	08/06/93	---------- Well Inaccessible ----------				
	10/14/93	---------- Well Inaccessible ----------				
	12/10/93	<50	<0.5	<0.5	<0.5	<0.5
	02/10/94	---------- Well Inaccessible ----------				
	03/21/94	<50	<0.5	<0.5	<0.5	<0.5
	05/06/94	<50	<0.5	<0.5	<0.5	<0.5
	08/09/94	<50	<0.5	<0.5	<0.5	<0.5
	11/17/94	<50	<0.5	<0.5	<0.5	<0.5
	02/09/95	60	<0.5	<0.5	<0.5	<0.5
	05/08/95	<50	<0.50	<0.50	<0.50	<0.50
	08/08/95	<50	<0.50	<0.50	<0.50	<0.50
AR-3	07/01/92	<50	1.8	0.86	<0.50	2.2
	07/29/92	<50	1.6	<0.50	<0.50	<0.50
	10/28/92	---------- Well Inaccessible ----------				
	01/26/93	---------- Well Inaccessible ----------				
	04/01/93	---------- Well Inaccessible ----------				
	08/06/93	---------- Well Inaccessible ----------				
	10/14/93	---------- Well Inaccessible ----------				
	12/10/93	<50	<0.5	<0.50	<0.50	<0.50
	02/10/94	---------- Well Inaccessible ----------				
	03/21/94	<50	<0.5	<0.5	<0.5	<0.5
	05/06/94	<50	<0.5	<0.5	<0.5	<0.5
	08/09/94	<50	<0.5	<0.5	<0.5	<0.5
	11/17/94	<50	<1.3 a	<0.5	<0.5	<0.5
	02/09/95	50	<0.5	<0.5	<0.5	<0.5
	05/08/95	<50	<0.50	<0.50	<0.50	<0.50
	08/08/95	<50	<0.50	<0.50	<0.50	<0.50

ppb = Parts per billion
NA = Not analyzed
NS = Not sampled
a. = Laboratory raised MRL due to matrix interference
b. = Laboratory raised MRL due to high analyte concentration requiring sample dilution.
Prior to June 1995, TPPH as gasoline was reported as TPH as gasoline.

Table 4
Groundwater Analytical Data
Total Methyl t-Butyl Ether

ARCO Service Station 4931
731 West MacArtur Boulevard at West Street
Oakland, California

Well I.D.	Date Sampled	Methyl t-Butyl Ether (ppb)
A-2	08/08/95	<2.5
A-3	08/08/95	NS
A-4	08/08/95	210
A-5	08/08/95	NS
A-6	08/08/95	<2.5
A-7	08/08/95	NS
A-8	08/08/95	1,200
A-9	08/08/95	17
A-10	08/08/95	NS
A-11	08/08/95	NS
A-12	08/08/95	NS
A-13	08/08/95	NS
AR-1	08/08/95	220
AR-2	08/08/95	<2.5
AR-3	08/08/95	<2.5

ppb = Parts per billion
NS = Not sampled

Table 5
Groundwater Extraction System Performance Data

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Sample I.D.	Date Sampled	Totalizer Reading (gallons)	Net Volume (gallons)	Average Flow Rate (gpm)	TPPH as Gasoline: Influent Concentration (µg/L)	TPPH as Gasoline: Net Removed (lbs)	TPPH as Gasoline: Removed to Date (lbs)	Benzene: Influent Concentration (µg/L)	Benzene: Net Removed (lbs)	Benzene: Removed to Date (lbs)	Primary Carbon Loading (percent)
INFL	06/28/94 a	4,120,050	N/A	0.9	740	0.000	1.61	38	0.000	0.38	2.0
INFL	07/15/94	4,143,150	23,100	0.9	ND	0.071	1.68	ND	0.004	0.38	2.1
INFL	08/18/94	4,175,310	32,160	0.7	NS	0.099	1.78	NS	0.005	0.39	2.2
INFL	09/30/94	4,243,295 b	67,985	1.1	NS	0.210	1.99	NS	0.011	0.40	2.5
INFL	10/31/94 c	4,311,280	67,985	1.5	ND	0.000	1.99	ND	0.000	0.40	2.5
INFL	11/04/94	4,330,500	19,220	3.3	56	0.004	2.00	ND	0.000	0.40	2.5
INFL	12/16/94	4,352,780	22,280	0.4	NS d	0.005	2.00	NS d	0.000	0.40	2.5
INFL	01/05/95	4,382,610	29,830	1.0	1,000	0.131	2.13	87	0.011	0.41	2.7
INFL	02/07/95	4,430,130 e	47,520	1.0 e	NS d	0.209	2.34	NS d	0.017	0.43	2.9
INFL	03/03/95	4,464,690 e	34,560	1.0 e	NS d	0.152	2.49	NS d	0.013	0.44	3.1
INFL	04/13/95	23 f	59,040	1.0 e	ND	0.246	2.74	ND	0.021	0.46	3.4
INFL	05/01/95	12,138	12,115	0.5	ND	0.000	2.74	ND	0.000	0.46	3.4
INFL	06/09/95	36,412	24,274	0.4	ND	0.000	2.74	ND	0.000	0.46	3.4
INFL	07/05/95 g	121,199	84,787	2.3	ND	0.000	2.74	0.59	0.000	0.46	3.4

REPORTING PERIOD: 06/09/95 - 09/30/95 (g)						
TOTAL POUNDS REMOVED:			**2.74**			**0.46**
TOTAL GALLONS REMOVED:			**0.45**			**0.06**
PERIOD POUNDS REMOVED:		**0.00**			**0.00**	
PERIOD GALLONS REMOVED:		**0.00**			**0.00**	
TOTAL GALLONS EXTRACTED:	**4,843,696 (e)**					
PERIOD GALLONS EXTRACTED:	**84,787**					
PERIOD AVERAGE FLOW RATE (gpm):	**2.3**					
PRIMARY BED CAPACITY REMAINING (%):	**96.6**					

TPPH = Total purgeable petroleum hydrocarbons
gpm = Gallons per minute
µg/L = Micrograms per liter
lbs = Pounds
N/A = Not available
ND = Not detected
NS = Not sampled

a. Data prior to October 1, 1994 provided by prior consultant.
b. No operational or analytical data available; totalizer reading, flow rate, and sample estimated from prior event July 15, 1994.
c. Pacific Environmental Group became consultant for the site as of October 1, 1994.
d. Sampled quarterly; concentrations assumed from prior sampling event.
e. Totalizer broken; volume estimated using 1.0 gpm based on prior sampling event.
f. Totalizer replaced and recalibrated on April 13, 1995.
g. System shut down for review, due to low concentrations and removal rates.

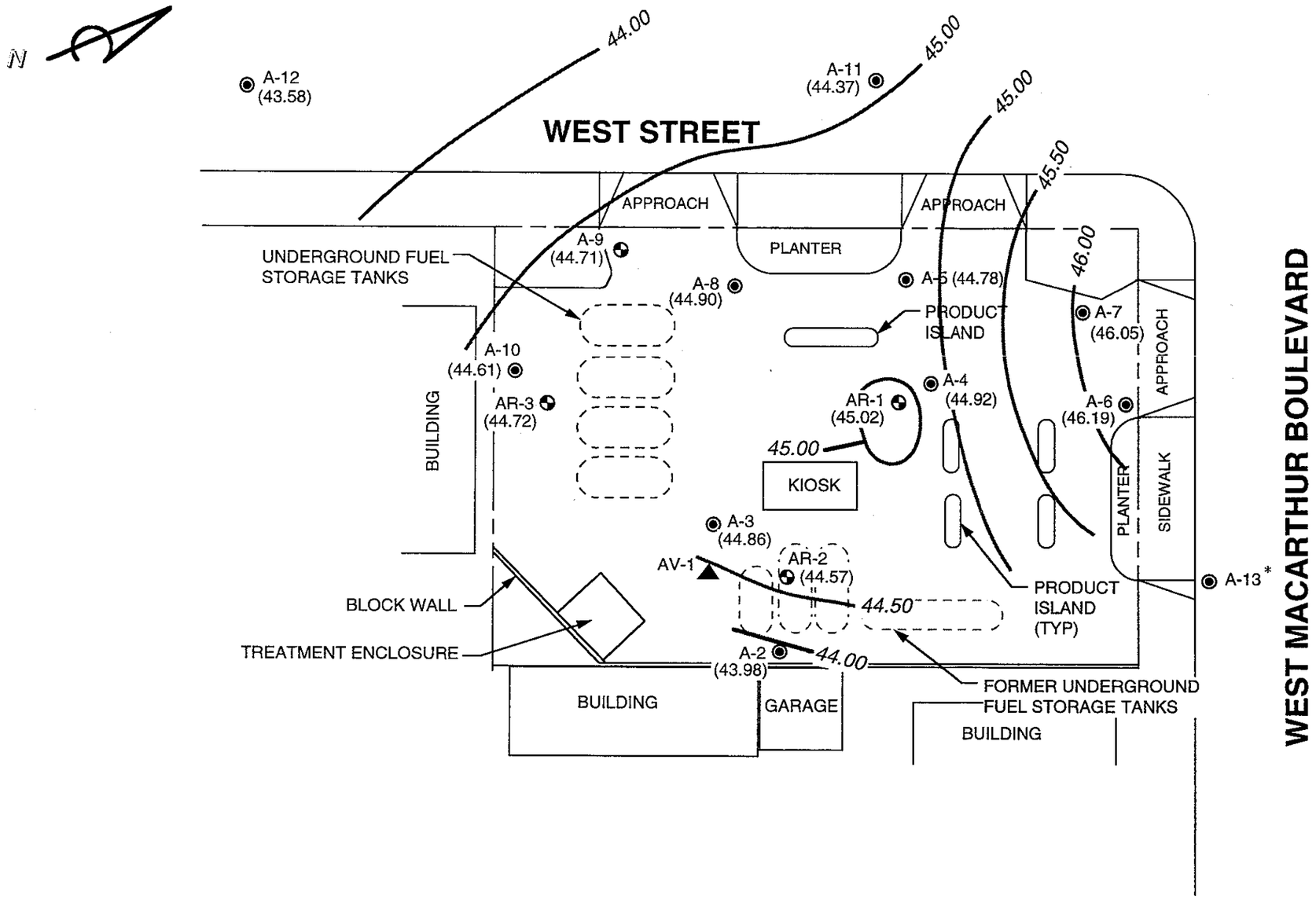
Carbon loading assumes an 8% isotherm.
Mass removed is an approximation calculated using averaged concentrations.
Pounds of hydrocarbons removed to date provided by prior consultant.
Prior to June 1995, TPPH as gasoline was reported as TPH calculated as gasoline.
See certified analytical reports for detection limits.

Table 6
Groundwater Extraction System Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

Sample I.D.	Date Sampled	TPPH as Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)
INFL	10/31/94	ND	ND	ND	ND	ND
	11/09/94	56	ND	ND	ND	2.7
	01/05/95	1,000	87	9	ND	160
	04/13/95	ND	ND	ND	ND	ND
	05/01/95	ND	ND	ND	ND	ND
	06/09/95	ND	ND	ND	ND	ND
	07/05/95	ND	0.59	ND	ND	ND
MID-1	11/09/94	ND	ND	ND	ND	ND
	01/05/95	ND	ND	ND	ND	ND
	04/13/95	ND	ND	ND	ND	ND
	05/01/95	ND	ND	ND	ND	ND
MID-2	11/09/94	ND	ND	ND	ND	ND
	01/05/95	ND	ND	ND	ND	ND
	04/13/95	ND	ND	ND	ND	ND
	05/01/95	ND	ND	ND	ND	ND
	06/09/95	ND	ND	ND	ND	ND
	07/05/95	ND	ND	ND	ND	ND
EFFL	10/31/94	ND	ND	ND	ND	ND
	11/09/94	ND	ND	ND	ND	ND
	01/05/95	ND	ND	ND	ND	ND
	04/13/95	ND	ND	ND	ND	ND
	05/01/95	ND	ND	ND	ND	ND
	06/09/95	ND	ND	ND	ND	ND
	07/05/95	ND	ND	ND	ND	ND

µg/L = Micrograms per liter
ND = Not detected above detection limits
Pacific Environmental Group, Inc. became consultant to site 10/01/94.
Prior to June 1995, TPPH as gasoline was reported as TPH calculated as gasoline.
See certified analytical reports for individual detection limits.



LEGEND

A-7 ◉ GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

AR-3 ◉ GROUNDWATER EXTRACTION WELL LOCATION AND DESIGNATION

AV-1 ▲ SOIL VAPOR WELL LOCATION AND DESIGNATION

(46.19) GROUNDWATER ELEVATION IN FEET - MSL, 8-8-95

44.50 GROUNDWATER ELEVATION CONTOUR IN FEET - MSL, 8-8-95

* WELL NOT MEASURED

APPROXIMTE DIRECTION OF
HISTORICAL GROUNDWATER FLOW

SOURCE: MAP FROM GEO STRATEGIES INC. DATED 6-94

PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE
0 30 60 FEET

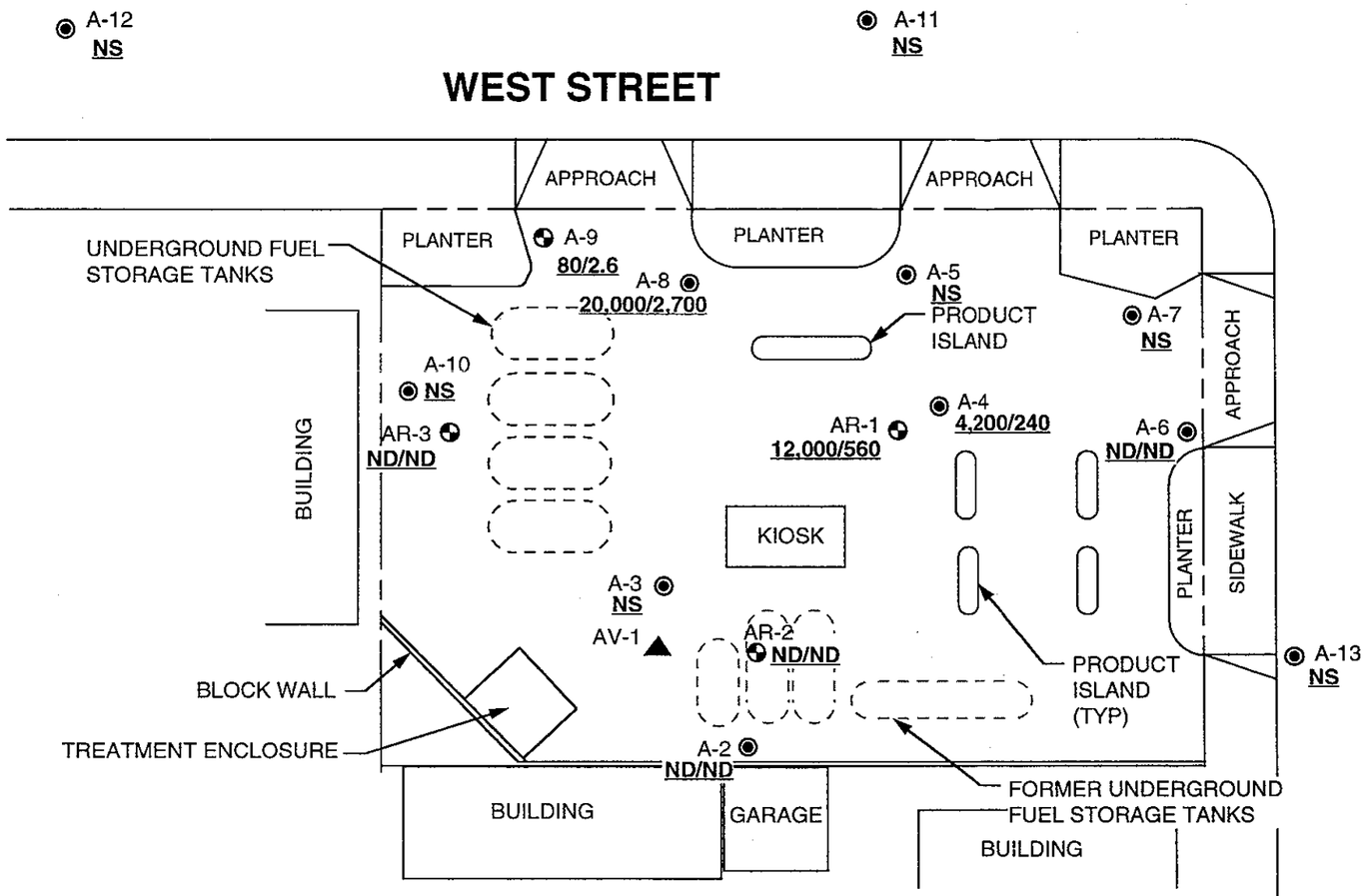
ARCO SERVICE STATION 4931
731 West MacArthur Boulevard at West Street
Oakland, California

GROUNDWATER ELEVATION CONTOUR MAP

FIGURE:
1

PROJECT:
330-109.2B

N



LEGEND

A-7 ◉ GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

AR-3 ⊕ GROUNDWATER EXTRACTION WELL LOCATION AND DESIGNATION

AV-1 ▲ SOIL VAPOR WELL LOCATION AND DESIGNATION

3,700/19 TPPH-g/BENZENE CONCENTRATION IN GROUNDWATER, IN PARTS PER BILLION, 8-8-95 (LABORATORY SAMPLED PER 8015M/8020)

ND NOT DETECTED

NS NOT SAMPLED

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

SOURCE: MAP FROM GEO STRATEGIES INC. DATED 6-94

PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE
0 30 60 FEET

ARCO SERVICE STATION 4931
731 West MacArthur Boulevard at West Street
Oakland, California

TPPH-g/BENZENE CONCENTRATION MAP

FIGURE: **2**
PROJECT: 330-109.2B

Figure 3
Groundwater Extraction System Mass Removal Trend

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California

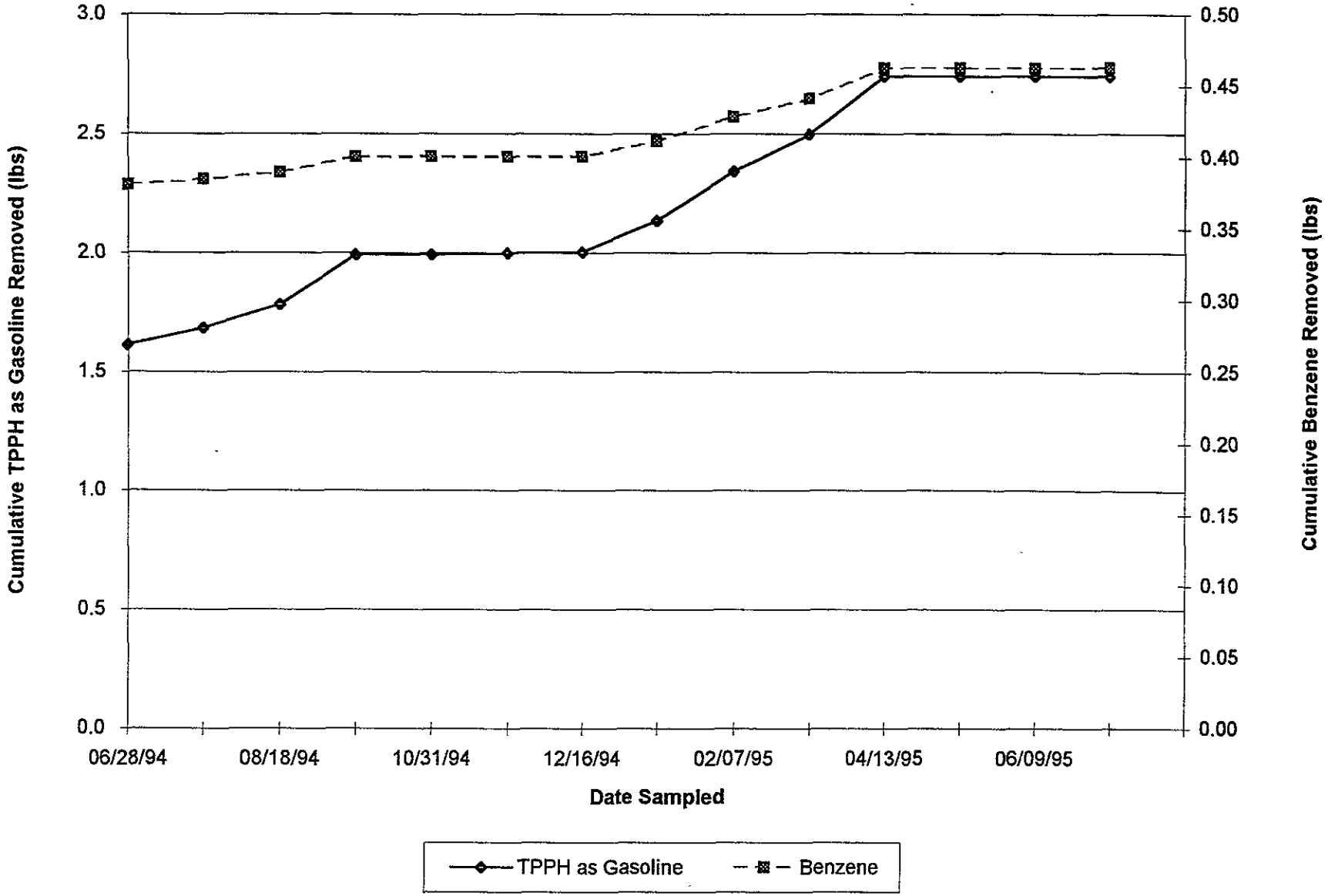
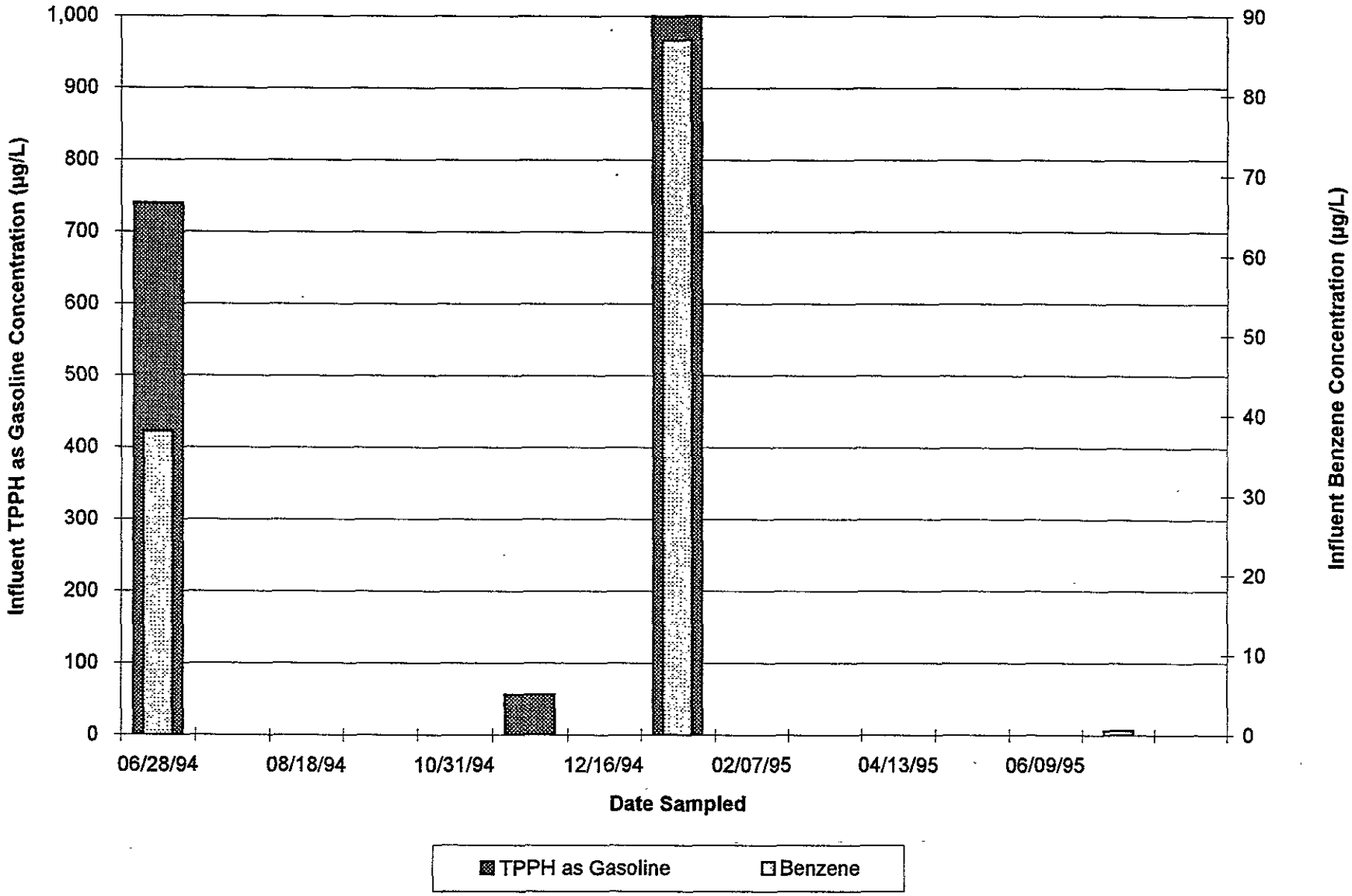


Figure 4
Groundwater Extraction System Hydrocarbon Concentrations

ARCO Service Station 4931
731 West MacArthur Boulevard at West Street
Oakland, California



ATTACHMENT A

FIELD AND LABORATORY PROCEDURES

ATTACHMENT A
FIELD AND LABORATORY PROCEDURES

Sampling Procedures

The sampling procedure for each well consists first of measuring the water level and checking for the presence of separate-phase hydrocarbons (SPH), using either an electronic indicator and a clear Teflon® bailer or an oil-water interface probe. Wells not containing SPH are then purged of approximately four casing volumes of water (or to dryness) using a centrifugal pump, gas displacement pump, or bailer. Equipment used for the current sampling event is noted on the attached field data sheets. During purging, temperature, pH, and electrical conductivity are monitored in order to document that these parameters are stable prior to collecting samples. After purging, water levels are allowed to partially recover. Groundwater samples are collected using a Teflon® bailer, placed into appropriate EPA-approved containers, labeled, logged onto chain-of-custody documents, and transported on ice to a California State-certified laboratory.

Laboratory Procedures

The groundwater samples were analyzed for the presence of total purgeable petroleum hydrocarbons calculated as gasoline, benzene, toluene, ethylbenzene, and xylenes. The analyses were performed according to EPA Methods 8015 (modified), 8020, and 5030 utilizing a purge-and-trap extraction technique. Final detection was by gas chromatography using flame- and photo-ionization detectors. The methods of analysis for the groundwater samples are documented in the certified analytical report. The certified analytical report, chain-of-custody documentation, and field data sheets are presented as Attachment B.

ATTACHMENT B

CERTIFIED ANALYTICAL REPORTS, CHAIN-OF-CUSTODY DOCUMENTATION, AND FIELD DATA SHEETS

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Maree Doden

Project: 330-109.2C/4931, Oakland

Enclosed are the results from samples received at Sequoia Analytical on August 9, 1995. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
950874601	LIQUID, A-2	8/8/95	TPHGB Purgeable TPH/BTEX
950874602	LIQUID, A-4	8/8/95	TPHGB Purgeable TPH/BTEX
950874603	LIQUID, A-6	8/8/95	TPHGB Purgeable TPH/BTEX
950874604	LIQUID, A-8	8/8/95	TPHGB Purgeable TPH/BTEX
950874605	LIQUID, A-9	8/8/95	TPHGB Purgeable TPH/BTEX
950874606	LIQUID, AR-1	8/8/95	TPHGB Purgeable TPH/BTEX
950874607	LIQUID, AR-2	8/8/95	TPHGB Purgeable TPH/BTEX
950874608	LIQUID, AR-3	8/8/95	TPHGB Purgeable TPH/BTEX
950874609	LIQUID, TB-1	8/8/95	TPHGB Purgeable TPH/BTEX

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

B Fletcher

Brucie Fletcher
Project Manager

Quality Assurance Department

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
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Pacific Environmental Group	Client Proj. ID: 330-109.2C/4931,Oakland	Sampled: 08/08/95
2025 Gateway Place, Suite 440	Sample Descript: A-2	Received: 08/09/95
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 08/16/95
Attention: Maree Doden	Lab Number: 9508746-01	Reported: 08/18/95

QC Batch Number: GC081695BTEX07A
Instrument ID: GCHP07

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	81

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

B Fletcher

Brucie Fletcher
Project Manager

Sequoia Analytical

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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110

Attention: Maree Doden

Client Proj. ID: 330-109.2C/4931,Oakland
Sample Descript: A-4
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9508746-02

Sampled: 08/08/95
Received: 08/09/95

Analyzed: 08/16/95
Reported: 08/18/95

QC Batch Number: GC081695BTEX07A
Instrument ID: GCHP07

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	1000	4200
Methyl t-Butyl Ether	50	210
Benzene	10	240
Toluene	10	17
Ethyl Benzene	10	88
Xylenes (Total)	10	110
Chromatogram Pattern:		Gas

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	85

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

B Fletcher

Brucie Fletcher
Project Manager

Sequoia Analytical

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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110

Attention: Maree Doden

Client Proj. ID: 330-109.2C/4931,Oakland
Sample Descript: A-6
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9508746-03

Sampled: 08/08/95
Received: 08/09/95

Analyzed: 08/16/95
Reported: 08/18/95

QC Batch Number: GC081695BTEX07A
Instrument ID: GCHP07

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	104

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

B Fletcher

Brucie Fletcher
Project Manager

Sequoia Analytical

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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110

Attention: Maree Doden

Client Proj. ID: 330-109.2C/4931,Oakland
Sample Descript: A-8
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9508746-04

Sampled: 08/08/95
Received: 08/09/95

Analyzed: 08/16/95
Reported: 08/18/95

QC Batch Number: GC081695BTEX07A
Instrument ID: GCHP07

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	5000	20000
Methyl t-Butyl Ether	250	1200
Benzene	50	2700
Toluene	50	140
Ethyl Benzene	50	730
Xylenes (Total)	50	1600
Chromatogram Pattern:		Gas

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	111

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

B Fletcher

Brucie Fletcher
Project Manager

Sequoia Analytical

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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110

Attention: Maree Doden

Client Proj. ID: 330-109.2C/4931,Oakland
Sample Descript: A-9
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9508746-05

Sampled: 08/08/95
Received: 08/09/95

Analyzed: 08/17/95
Reported: 08/18/95

QC Batch Number: GC081795BTEX07A
Instrument ID: GCHP07

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	**50**	**80**
Methyl t-Butyl Ether	**2.5**	**17**
Benzene	**0.50**	**2.6**
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		**Gas**

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	96

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

R. Fletcher

Brucie Fletcher
Project Manager

Sequoia Analytical

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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110

Attention: Maree Doden

Client Proj. ID: 330-109.2C/4931,Oakland
Sample Descript: AR-1
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9508746-06

Sampled: 08/08/95
Received: 08/09/95

Analyzed: 08/16/95
Reported: 08/18/95

QC Batch Number: GC081695BTEX07A
Instrument ID: GCHP07

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	2000	12000
Methyl t-Butyl Ether	100	220
Benzene	20	560
Toluene	20	180
Ethyl Benzene	20	82
Xylenes (Total)	20	1000
Chromatogram Pattern:		Gas

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	110

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

B Fletcher

Brucie Fletcher
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110

Attention: Maree Doden

Client Proj. ID: 330-109.2C/4931,Oakland
Sample Descript: AR-2
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9508746-07

Sampled: 08/08/95
Received: 08/09/95

Analyzed: 08/17/95
Reported: 08/18/95

QC Batch Number: GC081695BTEX07A
Instrument ID: GCHP07

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	85

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

B Fletcher

Brucie Fletcher
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group	Client Proj. ID: 330-109.2C/4931,Oakland	Sampled: 08/08/95
2025 Gateway Place, Suite 440	Sample Descript: AR-3	Received: 08/09/95
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 08/17/95
Attention: Maree Doden	Lab Number: 9508746-08	Reported: 08/18/95

QC Batch Number: GC081695BTEX07A
Instrument ID: GCHP07

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	87

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

B Fletcher

Brucie Fletcher
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group	Client Proj. ID: 330-109.2C/4931,Oakland	Sampled: 08/08/95
2025 Gateway Place, Suite 440	Sample Descript: TB-1	Received: 08/09/95
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 08/17/95
Attention: Maree Doden	Lab Number: 9508746-09	Reported: 08/18/95

QC Batch Number: GC081695BTEX07A
Instrument ID: GCHP07

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	94

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

B Fletcher

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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Maree Doden

Client Project ID: 330-109.2C/4931, Oakland
Matrix: LIQUID
Work Order #: 9508746 01-04, 06-09

Reported: Aug 21, 1995

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes
QC Batch#:	GC081695BTEX07A	GC081695BTEX07A	GC081695BTEX07A	GC081695BTEX07A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	A. Miraftab	A. Miraftab	A. Miraftab	A. Miraftab
MS/MSD #:	950887903	950887903	950887903	950887903
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Prepared Date:	8/16/95	8/16/95	8/16/95	8/16/95
Analyzed Date:	8/16/95	8/16/95	8/16/95	8/16/95
Instrument I.D.#:	GCHP7	GCHP7	GCHP7	GCHP7
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Result:	9.8	9.8	9.7	29
MS % Recovery:	98	97	97	97
Dup. Result:	9.7	9.7	9.7	29
MSD % Recov.:	97	97	97	97
RPD:	1.0	0.0	0.0	0.0
RPD Limit:	0-50	0-50	0-50	0-50

LCS #:				
Prepared Date:				
Analyzed Date:				
Instrument I.D.#:				
Conc. Spiked:				
LCS Result:				
LCS % Recov.:				

MS/MSD LCS Control Limits	71-133	72-128	72-130	71-120

SEQUOIA ANALYTICAL

B Fletcher

Brucie Fletcher
Project Manager

Please Note:
The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

** MS = Matrix Spike, MSD = MS Duplicate, RPD = Relative % Difference

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Maree Doden

Client Project ID: 330-109.2C/4931, Oakland
Matrix: LIQUID
Work Order #: 9508746 05

Reported: Aug 21, 1995

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes
QC Batch#:	GC081795BTEX07A	GC081795BTEX07A	GC081795BTEX07A	GC081795BTEX07A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	A. Miraftab	A. Miraftab	A. Miraftab	A. Miraftab
MS/MSD #:	950888606	950888606	950888606	950888606
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Prepared Date:	8/17/95	8/17/95	8/17/95	8/17/95
Analyzed Date:	8/17/95	8/17/95	8/17/95	8/17/95
Instrument I.D.#:	GCHP7	GCHP7	GCHP7	GCHP7
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Result:	11	11	11	32
MS % Recovery:	110	110	110	107
Dup. Result:	9.6	9.9	9.4	28
MSD % Recov.:	96	99	94	93
RPD:	14	11	16	13
RPD Limit:	0-50	0-50	0-50	0-50
LCS #:				
Prepared Date:				
Analyzed Date:				
Instrument I.D.#:				
Conc. Spiked:				
LCS Result:				
LCS % Recov.:				
MS/MSD LCS Control Limits	71-133	72-128	72-130	71-120

SEQUOIA ANALYTICAL

B Fletcher

Brucie Fletcher
Project Manager

Please Note:
The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

** MS = Matrix Spike, MSD = MS Duplicate, RPD = Relative % Difference

SEQUOIA ANALYTICAL SAMPLE RECEIPT LOG

CLIENT NAME: PEG
REC. BY (PRINT): JB

WORKORDER: 9508746
DATE OF LOG-IN: 8/11/95

CIRCLE THE APPROPRIATE RESPONSE

1. Custody Seal(s): Present / (Absent)
   Intact / Broken*
2. Custody Seal Nos.: Put in Remarks Section
3. Chain-of-Custody Records: (Present) / Absent*
4. Traffic Reports or Packing List: Present / (Absent)
5. Airbill: Airbill / Sticker
   Present / (Absent)
6. Airbill No.: ____
7. Sample Tags: (Present) / Absent*
   Sample Tag Nos.: (Listed) / Not Listed on Chain-of-Custody
8. Sample Condition: (Intact) / Broken* / Leaking*
9. Does information on custody reports, traffic reports and sample tags agree? (Yes) / No*
10. Proper preservatives used: (Yes) / No*
11. Date Rec. at Lab: 8-9-95
12. Temp. Rec. at Lab: 15°
13. Time Rec. at Lab: 1217

LAB SAMPLE #	DASH #	CLIENT IDENTIFICATION	CONTAINER DESCRIPTION	SAMPLE MATRIX	DATE SAMP.	REMARKS: CONDITION(ETC.)
1	A	A-2	3 VOAs	Li	8-8-95	
2		A-4				
3		A-6				
4		A-8				
5		A-9				
6		AR-1				
7		AR-2				
8		AR-3				
9	↓	TB-1	2 VOAs	↓	↓	

8-9-95 JB

* if Circled, contact Project manager and attach record of resolution

ARCO Products Company Division of AtlanticRichfieldCompany — 305-109.2C — Task Order No. 1707600 — **Chain of Custody**

ARCO Facility no. 4931	City (Facility) OAKLAND	Project manager (Consultant) Kelly Brown	Laboratory name SEQUOIA
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) (408) 4917500	Fax no. (Consultant) (408) 441 7539	Contract number 07-073
Consultant name PACIFIC ENVIRONMENTAL	Address (Consultant) 2025 GATEWAY Pl. #440 SAN JOSE CA		Method of shipment

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
A-2	•	3		X		YES	HCL	8-8-95	13:50		X											
A-4	•								14:10													
A-6	•								12:50													
A-8	•								14:21													
A-9	•								11:40													
AR-1	•								14:00													
A-R2	•								13:40													
AR3	•								12:03													
TB-1	•	2							N/A													

Remarks: ~~A~~ ADD MTBE TO ANALYSES OF ALL SAMPLES

Special detection Limit/reporting

Special QA/QC

Lab number 9508746

Turnaround time
- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☒

Condition of sample:

Temperature received:

	Date	Time		Date	Time
Relinquished by sampler: Paul Wemhardt	8-8-95	15:15	Received by:	8/8/95	1515
Relinquished by:	8/9/95	11:35	Received by:		
Relinquished by:	8/9	12:21	Received by laboratory: T. Daug	8-9-95	1217

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant
APC-3292 (2-91)

W/O # 9535614

FIELD SERVICES / O & M REQUEST

SITE INFORMATION FORM

Initials	Date
F/S RH	8/9/95
Copy/Dist. RH	↓

Project #:330-109.2G

☐ 1st time visit

Station #:4931

☐ 1st ☐ 2nd ☒ 3rd ☐ 4th

Date of Request:8/3/95

Site Address:731 McArthur Bl
Oakland, California

☐ Monthly

Ideal Field Date:8/8/95

☐ Semi-Monthly

FILE COPY

County: Alameda

☐ Weekly

Budget Hrs._____

Project Manager: Kelly Brown

☐ One time Event

Actual Hrs. 6½ } 8½

Requestor: Chuck Graves

☐ Other._____

Mob de Mob 2

Client: Arco

Client P.O.C.: Mike Whelan

Prefield contacts:

Field Tasks: For General Description

Third Quarter groundwater sampling event: DTW/DTL from TOB/TOC; sample all wells for GAS/BTEX. / MTBE

Comments, remarks, from Field Staff (include problems encountered

A-13 WAS NOT FOUND MacArthur Blvd WAS recently PAVED. IT APPEAR THAT THEY PAVED OVER THE well

Completed by: Paul W Date: 8-8-95

Checked by:_____

WELL SAMPLING REQUEST

SAMPLING PROTOCOL								
Project No.	Station #	Project Name	SEQUENCE	Project Manager	Approval	Date/s	Laboratory:	Client Engineer:
330-109.2G	4931	731 McArthur BL Oakland	1Q2/3Q2	Kelly Brown	KB	8/8/95	Sequoia	Mike Whelan

Well Number	Ideal Sampling Order	Sample I.D.	Sampling Frequency	Analyses	TOB TOC	Well Depth	Casing Diameter	Well goes Dry?	Comments
A-2			QLY	GAS/BTEX MTBE	TOB/TOC	20	4"	yes	
A-4			QLY	GAS/BTEX "	TOB/TOC	20	4"	yes	
A-6			QLY	GAS/BTEX "	TOB/TOC	25.5	3"	no	
A-8			QLY	GAS/BTEX "	TOB/TOC	18	3"	no	
A-9			QLY	GAS/BTEX "	TOB/TOC	19	6"	no	
AR-1			QLY	GAS/BTEX "	TOB/TOC	31.5	6"	no	
AR-2			QLY	GAS/BTEX "	TOB/TOC	27.5	6"	no	
AR-3			QLY	GAS/BTEX "	TOB/TOC	27	6"	no	
TB-1			QLY	GAS/BTEX "					

ARCO Products Company
Division of AtlanticRichfieldCompany

305 109 2C **Task Order No.** 1707600

Chain of Custody

ARCO Facility no. 4931	City (Facility) OAKLAND	Project manager (Consultant) Kelly Brown	Laboratory name SEQUOIA
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) 408 4417500	Fax no. (Consultant) 408 441 7539
Consultant name PACIFIC ENVIRONMENTAL	Address (Consultant) 2025 GATEWAY Pl. #440 SAN JOSE CA		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	
A-2		3		X		YES	HCL	8-8-95	13:50		X										
A-4									14:10												
A-6									12:50												
A-8									14:21												
A-9									11:40												
AR-1									14:00												
A-R2									13:40												
AR3									12:03												
TB-1		2							N/A												

Special detection Limit/reporting

Special QA/QC

Remarks
ADD MTBE TO ALL ANALYSIS OF ALL SAMPLES

Lab number

Turnaround time
- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☒

Condition of sample:		Temperature received:	
Relinquished by sampler: Paul Weinbrandt	Date 8-8-95 Time 15:15	Received by	
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory	Date Time

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant
APC-3292 (2-91)

FIELD REPORT

PTH TO WATER/SEPARATE-PHASE HYDROCARBON SURVEY

PROJECT No.: 330 109 26 LOCATION: 731 McArthur Blvd DATE: 8-8-95

CLIENT/STATION NO.: 4931 FIELD TECHNICIAN: PW DAY OF WEEK: TUES

PROBE TYPE/ID No.
- ☐ Oil/Water IF/ _____
- ☒ H_2O level indicator _____
- ☐ Other: _____

Dtw Order	Well ID	Time	Surface Seal	Lid Secure	Gasket	Lock	Expanding Cap	Total Depth (feet)	First Depth to Water (feet) TOB/TOC	Second Depth to Water (feet) TOB/TOC	SEPARATE-PHASE HYDROCARBONS (SPH): SPH Depth (feet) TOB/TOC	SPH Thickness (feet)	COLOR: Fresh	Weathered	Gas	Oil	VISCOSITY: Lite	Medium	Heavy	LIQUID REMOVED (gallons): SPH / H_2O
	A-12	10:24	✓	✓	✓	✓	✓	29.35	7.89 / 7.89	8.47 / 8.47										
	A-13							NOT Found BURIED under NEW Asphalt												
	AR-1	10:37	✓	✓	✓	✓	✓	29.35	9.20 / 9.20	9.70 / 9.70										
	AR-2	10:58	✓	✓	✓	✓	✓	27.81	9.27 / 9.27	10.20 / 10.20										
	AR-3	10:17	✓	✓	✓	✓	✓	26.17	8.80 / 8.80	9.47 / 9.47										
	AV-1							NOT Found												
	A-3	10:14	✓	✓	✓	✓	✓	16.15	8.85 / 8.85	9.80 / 9.80										

Comments: _____

FIELD REPORT

TH TO WATER/SEPARATE-PHASE HYDROCARBON SURVEY

PROJECT No.: 330 10926 LOCATION: 731 McArthur Blvd OAKLAND DATE: 8-8-95

CLIENT/STATION NO.: 4931 FIELD TECHNICIAN: PW DAY OF WEEK: TUES

PROBE TYPE/ID No.
- ☐ Oil/Water IF/ ____
- ☑ H_2O level indicator #2
- ☐ Other: ____

Dtw Order	Well ID	Time	Surface Seal	Lid Secure	Gasket	Lock	Expanding Cap	Total Depth (feet)	First Depth to Water (feet) TOB/TOC	Second Depth to Water (feet) TOB/TOC	SEPARATE-PHASE HYDROCARBONS (SPH): SPH Depth (feet) TOB/TOC	SPH Thickness (feet)	COLOR: Fresh	Weathered	Gas	Oil	VISCOSITY: Lite	Medium	Heavy	LIQUID REMOVED (gallons): SPH / H_2O
	A-2	10:53	✓	✓	✓	✓	✓	19.45	11.17 / 11.17	11.50 / 11.50										/
	A-4	10:41	✓	✓	✓	✓	✓	19.05	8.68 / 8.68	9.81 / 9.81										/
	A-5	10:48	✓	✓	✓	✓	✓	23.80	8.77 / 8.77	9.39 / 9.39										/
	A-6	10:43	✓	✓	✓	✓	✓	24.75	8.35 / 8.35	8.98 / 8.98										/
	A-7	10:46	✓	✓	✓	✓	✓	22.29	8.18 / 8.18	8.66 / 8.66										/
	A-8	10:34	✓	✓	✓	✓	✓	19.25	8.37 / 8.37	8.87 / 8.87										/
	A-9	10:05	✓	✓	✓	✓	✓	19.68	7.78 / 7.78	8.33 / 8.33										/
	A-10	10:10	✓	✓	✓	✓	✓	26.95	9.20 / 9.20	9.65 / 9.65										/
	A-11	10:50	✓	✓	✓	✓	✓	29.75	9.23 / 9.23	9.37 / 9.37										/

Comments: ____

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330109.26 LOCATION: 731 McArthur Blvd Oakland WELL ID #: A-2

CLIENT/STATION No.: 4931 FIELD TECHNICIAN: PW

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 11.50 TOB 11.17 TOC
Total depth: — TOB 19.45 TOC
Date: 8-8-95 Time (2400): 10:53

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic Indicator # 2
- ☐ Other:

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☐	3	0.38
☒	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☒ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other:

TD 19.45 - DTW 11.17 = 8.28 x Gal/Linear Foot .66 = 5.46 x Number of Casings 3 = Calculated Purge 16.39

DATE PURGED: 8-8-95 START: 12:23 END (2400 hr): 12:31 PURGED BY: PW

DATE SAMPLED: 8-8-95 START: 13:42 END (2400 hr): 13:57 SAMPLED BY: PW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
12:27	5.50	7.16	790	81.6	Brown	Heavy	none
12:29	11.0	6.88	810	79.7	cloudy	Mod	none
12:31	14.50	6.74	790	78.8	cloudy	Mod	none
			DRY AT	14.50 gal			

Pumped dry (Yes) / No

Cobalt 0-100: Clear, Cloudy, Yellow, Brown
NTU 0-200: Heavy, Moderate, Light, Trace
Strong, Moderate, Faint, None

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW	TOB/(TOC)		E.C.	TEMPERATURE	COLOR	TURBIDITY	ODOR
18.85	(TOC)	6.81	780	79.1	Brown	Heavy	none

PURGING EQUIPMENT/I.D. #
- ☒ Bailer: 23-
- ☒ Centrifugal Pump: #15
- ☐ Other:
- ☐ Airlift Pump:
- ☐ Dedicated:

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 23-3
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-2	8.8.95	13:56	3	40ML	VOA	HCC	GAS BTEX / MTBE

REMARKS:

SIGNATURE: Paul Wennhold

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330109.26 LOCATION: 731 McArthur Blvd Oakland WELL ID #: A-4

CLIENT/STATION No.: 4931 FIELD TECHNICIAN: PW

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 9.81 TOB 8.68 TOC
Total depth: — TOB 19.05 TOC
Date: 8-8-95 Time (2400): 10:41

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic indicator #2
- ☐ Other:

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☐	3	0.38
☒	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☒ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other:

TD 19.05 - DTW 8.68 = 10.37 x Gal/Linear Foot .66 = 6.84 x Number of Casings 3 = Calculated Purge 20.53

DATE PURGED: 8-8-95 START: 13:15 END (2400 hr): 13:23 PURGED BY: PW

DATE SAMPLED: 8-8-95 START: 14:04 END (2400 hr): 14:11 SAMPLED BY: PW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
13:20	6.75	7.14	2650	81.0	cloudy	MOD	none
13:22	10.0	7.01	2610	79.1	cloudy	MOD	none
			DRY AT 10.0 GAL				

Pumped dry (Yes) No

Cobalt 0-100: Clear, Cloudy, Yellow, Brown
NTU 0-200: Heavy, Moderate, Light, Trace
Strong, Moderate, Faint, None

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW:	TOB/TOC						
11.41	7.27	2410	81.7	cloudy	MOD	none	

PURGING EQUIPMENT/I.D. #
- ☒ Bailer: 23-
- ☒ Centrifugal Pump: #15
- ☐ Airlift Pump:
- ☐ Dedicated:
- ☐ Other:

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 23-6
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-4	8.8.95	14.10	3	40ML	VOA	HCL	GAS BTEX / MTBE

REMARKS:

SIGNATURE

PACIFIC ENVIRONMENTAL

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330109.26 LOCATION: 731 McArthur Blvd Oakland WELL ID #: A-6

CLIENT/STATION No.: 4931 FIELD TECHNICIAN: PW

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 8.98 TOB 8.35 TOC
Total depth: — TOB 24.75 TOC
Date: 8-8-95 Time (2400): 10:43

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic indicator #2
- ☐ Other:

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☒	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☒ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other:

TD 24.75 - DTW 8.35 = 16.40 x Gal/Linear Foot .38 = 6.23 x Number of Casings 3 = Calculated Purge 18.69

DATE PURGED: 8-8-95 START: 12:35 END (2400 hr): 12:44 PURGED BY: PW

DATE SAMPLED: 8-8-95 START: 12:44 END (2400 hr): 12:52 SAMPLED BY: PW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
12:38	6.25	6.62	1240	78.5	cloudy	MOD	none
12:41	12.50	6.94	1230	75.2	cloudy	MOD	none
12:44	18.75	6.97	1210	73.5	cloudy	MOD	none

Cobalt 0-100: Clear, Cloudy, Yellow, Brown
NTU 0-200: Heavy, Moderate, Light, Trace
Strong, Moderate, Faint, None

Pumped dry Yes / (No)?

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: ____ TOB/TOC ____

PURGING EQUIPMENT/I.D. #
- ☒ Bailer: 23-
- ☒ Centrifugal Pump: #15
- ☐ Airlift Pump:
- ☐ Dedicated:
- ☐ Other:

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 23-3
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-6	8.8.95	12:50	3	40ML	VOA	HCL	GAS BTEX / MTBE

REMARKS:

PACIFIC ENVIRONMENTAL

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330109.26 LOCATION: 731 McArthur Blvd Oakland WELL ID #: A-8

CLIENT/STATION No.: 4931 FIELD TECHNICIAN: PW

WELL INFORMATION

Depth to Liquid:	—	TOB —	TOC
Depth to water:	8.87	TOB 8.37	TOC
Total depth:	—	TOB 19.25	TOC
Date: 8-8-95	Time (2400): 10:34		

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic indicator #2
- ☐ Other;

CASING DIAMETER / GAL/LINEAR FT.

☐	2	0.17
☒	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☒ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other;

TD 19.25 - DTW 8.37 = 10.88 x Gal/Linear Foot .38 = 4.13 x Number of Casings 3 = Calculated Purge 12.40

DATE PURGED: 8-8-95 START: 13:25 END (2400 hr): 13:30 PURGED BY: PW

DATE SAMPLED: 8-8-95 START: 14:15 END (2400 hr): 14:23 SAMPLED BY: PW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
13:28	4.25	7.12	2590	80.6	cloudy	MOD	strong
13:30	8.0	7.14	2610	80.3	cloudy	MOD	strong
			DRY AT 8.0 GAL				

Pumped dry (Yes) / No

Cobalt 0-100: Clear, Cloudy, Yellow, Brown
NTU 0-200: Heavy, Moderate, Light, Trace
Strong: Moderate, Faint, None

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW:	TOB/TOC					
9.41	7.25	2000	76.4	cloudy	mod	strong

PURGING EQUIPMENT/I.D. #
- ☒ Bailer: 23-
- ☒ Centrifugal Pump: #15
- ☐ Airlift Pump:
- ☐ Dedicated:
- ☐ Other:

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: ~~23~~ DISP
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-8	8.8.95	14:21	3	40ML	VOA	HCL	GAS BTEX / MTBE

REMARKS: NO MEASURABLE SPH

BUT SHEEN ON WATER IN BAILER WHEN SAMPLE WAS TAKEN

SIGNATURE

PACIFIC ENVIRONMENTAL

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330109.26 LOCATION: 731 McArthur Blvd Oakland WELL ID #: A-9

CLIENT/STATION No.: 4931 FIELD TECHNICIAN: PW

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 8.33 TOB 7.78 TOC
Total depth: — TOB 19.68 TOC
Date: 8-8-95 Time (2400): 10:05

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic indicator #2
- ☐ Other;

CASING DIAMETER / GAL/LINEAR FT.

☐	2	0.17
☐	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☒	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☒ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other;

TD 19.68 - DTW 7.78 = 11.90 x Gal/Linear Foot 1.5 = 17.85 x Number of Casings 3 = Calculated Purge 53.55

DATE PURGED: 8-8-95 START: 11:20 END (2400 hr): 11:35 PURGED BY: PW

DATE SAMPLED: 8-8-95 START: 11:35 END (2400 hr): 11:42 SAMPLED BY: PW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
11:27	17.75	6.64	1560	78.9	clear	Trace	none
11:30	35.50	6.95	1330	75.3	clear	Trace	none
11:34	53.50	7.00	1300	74.1	clear	Trace	none

Pumped dry Yes / (No)

Color: Cobalt 0-100, Clear, Cloudy, Yellow, Brown
Turbidity: NTU 0-200, Heavy, Moderate, Light, Trace
Odor: Strong, Moderate, Faint, None

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: , TOB/TOC

PURGING EQUIPMENT/I.D. #
- ☒ Bailer: 23-
- ☒ Centrifugal Pump: #15
- ☐ Airlift Pump:
- ☐ Dedicated:
- ☐ Other:

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 23-1
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-9	8.8.95	11:40	3	40ML	VOA	HCL	GAS BTEX / MTBE

REMARKS:

PACIFIC ENVIRONMENTAL

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330109.26 LOCATION: 731 McArthur Blvd Oakland WELL ID #: AR-1

CLIENT/STATION No.: 4931 FIELD TECHNICIAN: PW

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 9.20 TOB 9.20 TOC
Total depth: — TOB 29.35 TOC
Date: 8-8-95 Time (2400): 10:37

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic indicator #2
- ☐ Other:

CASING DIAMETER / GAL/LINEAR FT.

☐	2	0.17
☐	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☒	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☒ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other:

TD 29.35 - DTW 9.20 = 20.15 x Gal/Linear Foot 1.5 = 30.22 x Number of Casings 3 = Calculated Purge 90.67

DATE PURGED: 8-8-95 START: 13:00 END (2400 hr): 13:12 PURGED BY: PW

DATE SAMPLED: 8-8-95 START: 13:53 END (2400 hr): 14:02 SAMPLED BY: PW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
13:08	30.25	7.25	1710	73.8	cloudy	MOD	none
13:10	36.0	7.19	1620	71.9	cloudy	MOD	none
			DRY AT	36.0 gal			

Pumped dry (Yes) / No

Cobalt 0-100: Clear, Cloudy, Yellow, Brown
NTU 0-200: Heavy, Moderate, Light, Trace
Strong, Moderate, Faint, None

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW	TOB (TOC)	pH	E.C.	TEMPERATURE	COLOR	TURBIDITY	ODOR
11.38	TOC	7.11	1640	77.9	cloudy	MOD	none

PURGING EQUIPMENT/I.D. #
- ☒ Bailer: 23-
- ☒ Centrifugal Pump: #15
- ☐ Other:
- ☐ Airlift Pump:
- ☐ Dedicated:

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 23-5
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
AR-1	8.8.95	14:00	3	40ML	VOA	HCL	GAS BTEX / MTBE

REMARKS:

PACIFIC ENVIRONMENTAL

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330109.26 LOCATION: 731 McArthur Blvd Oakland WELL ID #: AR-2

CLIENT/STATION No.: 4931 FIELD TECHNICIAN: PW

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 10.20 TOB 9.27 TOC
Total depth: — TOB 27.81 TOC
Date: 8-8-95 Time (2400): 10:58

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic indicator # 2
- ☐ Other;

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☐	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☒	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☒ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other;

TD 27.81 - DTW 9.27 = 18.54 x Gal/Linear Foot 1.5 = 27.81 x Number of Casings 3 = Calculated Purge 83.43

DATE PURGED: 8-8-95 START: 12:08 END (2400 hr): 12:17 PURGED BY: PW

DATE SAMPLED: 8-8-95 START: 13:34 END (2400 hr): 13:41 SAMPLED BY: PW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
12:15	27.75	7.76	1450	79.8	Brown	Heavy	none
			13				
			DRY AT 28.09AL				

Pumped dry (Yes) / No

Color: Cobalt 0-100, Clear, Cloudy, Yellow, Brown
Turbidity: NTU 0-200, Heavy, Moderate, Light, Trace
Odor: Strong, Moderate, Faint, None

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW	TOB/(TOC)				COLOR	TURBIDITY	ODOR
8.99	TOC	7.72	1380	78.6	clear	Trace	none

PURGING EQUIPMENT/I.D. #
- ☒ Bailer: 23-
- ☒ Centrifugal Pump: #15
- ☐ Other:
- ☐ Airlift Pump:
- ☐ Dedicated:

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 23-4
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
AR-2	8.8.95	13:40	3	40ML	VOA	HCL	GAS Btex / MTBE

REMARKS:

PACIFIC

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330109.26 LOCATION: 731 McArthur Blvd Oakland WELL ID #: AR-3

CLIENT/STATION No.: 4931 FIELD TECHNICIAN: PW

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 9.47 TOB 8.80 TOC
Total depth: — TOB 26.17 TOC
Date: 8-8-95 Time (2400): 10:17

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic indicator #2
- ☐ Other:

CASING DIAMETER / GAL/LINEAR FT.

☐	2	0.17
☐	3	0.38
☒	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☒ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other:

TD 26.17 - DTW 8.80 = 17.37 x Gal/Linear Foot .166 = 11.46 x Number of Casings 3 = Calculated Purge 34.39

DATE PURGED: 8-8-95 START: 11:50 END (2400 hr): 11:58 PURGED BY: PW

DATE SAMPLED: 8-8-95 START: 11:58 END (2400 hr): 12:05 SAMPLED BY: PW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 2 5°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR
11:50	11.50	7.76	1300	75.3	clear	Trace	none
11:53	23.00	7.61	1230	71.1	clear	Trace	none
11:56	34.50	7.41	1300	70.6	clear	Trace	none

Color: Cobalt 0-100, Clear, Cloudy, Yellow, Brown
Turbidity: NTU 0-200, Heavy, Moderate, Light, Trace
Odor: Strong, Moderate, Faint, None

Pumped dry Yes / (No)

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: , TOB/TOC

PURGING EQUIPMENT/I.D. #
- ☒ Bailer: 23-
- ☒ Centrifugal Pump: #15
- ☐ Airlift Pump:
- ☐ Dedicated:
- ☐ Other:

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 23-2
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
AR-3	8.8.95	12:03	3	40ML	VOA	HCL	GAS Btex / MTBE

REMARKS: AR-3 IS A 4" WELL NOT 6" AS NOTED ON SAMPLING REQUEST
THIS WELL HAS A 6" WELL CASING IN A COUPLING BUT REDUCES TO A 4" well AFTER COUPLING.

SIGNATURE: [signature]

PACIFIC ENVIRONMENTAL

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330109 2G LOCATION: 731 McArthur Blvd Oakland WELL ID #: TB-1

CLIENT/STATION No.: 4931 FIELD TECHNICIAN: PW

WELL INFORMATION

Depth to Liquid: — TOB ____ TOC
Depth to water: ____ TOB ____ TOC
Total depth: ____ TOB ____ TOC
Date: 8-8-95 Time (2400): ____

Probe Type and I.D. #
- ☐ Oil/Water interface ____
- ☒ Electronic indicator #2
- ☐ Other; ____

CASING DIAMETER	GAL/ LINEAR FT.
☐ 2	0.17
☐ 3	0.38
☐ 4	0.66
☐ 4.5	0.83
☐ 5	1.02
☐ 6	1.5
☐ 8	2.6

SAMPLE TYPE
- ☒ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☒ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other; ____

TD ____ - DTW ____ = ____ x Gal/Linear Foot ____ = ____ x Number of Casings 3 = Calculated Purge ____

DATE PURGED: 8-8-95 START: ____ END (2400 hr): ____ PURGED BY: PW
DATE SAMPLED: 8-8-95 START: ____ END (2400 hr): ____ SAMPLED BY: PW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
		TRIP BLANK					

Pumped dry Yes / No

COLOR	TURBIDITY	ODOR
Cobalt 0-100	NTU 0-200	Strong
Clear	Heavy	Moderate
Cloudy	Moderate	Faint
Yellow	Light	None
Brown	Trace	

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: ____ TOB/TOC ____

PURGING EQUIPMENT/I.D. #
- ☒ Bailer: 23-
- ☒ Centrifugal Pump: #15
- ☐ Other: ____
- ☐ Airlift Pump: ____
- ☐ Dedicated: ____

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 23-
- ☐ Dedicated: ____
- ☐ Other: ____

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
TB-1	8.8.95	N/A	3	40ML	VOA	HCL	GAS Btex / MTBE

REMARKS: ____

[signature]

PACIFIC ENVIRONMENTAL

ATTACHMENT C

TREATMENT SYSTEM
CERTIFIED ANALYTICAL REPORTS,
CHAIN-OF-CUSTODY DOCUMENTATION,
AND FIELD DATA SHEETS

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Maree Doden

Project: 330-109.5B/4931, Oakland

Enclosed are the results from samples received at Sequoia Analytical on June 12, 1995. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
950669001	LIQUID, A EFFL	6/9/95	TPHGB Purgeable TPH/BTEX
950669002	LIQUID, B MID 2	6/9/95	TPHGB Purgeable TPH/BTEX
950669003	LIQUID, D INFL	6/9/95	TPHGB Purgeable TPH/BTEX

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

Quality Assurance Department

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group	Client Proj. ID: 330-109.5B/4931,Oakland	Sampled: 06/09/95
2025 Gateway Place, Suite 440	Sample Descript: A	Received: 06/12/95
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 06/14/95
Attention: Maree Doden	Lab Number: 9506690-01	Reported: 06/23/95

QC Batch Number: GC061495BTEX06A
Instrument ID: GCHP06

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	93

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Bruce Fletcher for

Eileen Manning
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110

Attention: Maree Doden

Client Proj. ID: 330-109.5B/4931,Oakland
Sample Descript: B
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9506690-02

Sampled: 06/09/95
Received: 06/12/95

Analyzed: 06/14/95
Reported: 06/23/95

QC Batch Number: GC061495BTEX06A
Instrument ID: GCHP06

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	95

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Bruce Fletcher for

Ei. .i Manning
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110

Attention: Maree Doden

Client Proj. ID: 330-109.5B/4931,Oakland
Sample Descript: D
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9506690-03

Sampled: 06/09/95
Received: 06/12/95

Analyzed: 06/14/95
Reported: 06/23/95

QC Batch Number: GC061495BTEX06A
Instrument ID: GCHP06

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	92

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Eileen Manning
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Maree Doden

Project: 330-109.5D/4931, Oakland

Enclosed are the results from samples received at Sequoia Analytical on July 6, 1995.. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
950729901	LIQUID, D	7/5/95	TPHGB Purgeable TPH/BTEX
950729902	LIQUID, B	7/5/95	TPHGB Purgeable TPH/BTEX
950729903	LIQUID, A	7/5/95	TPHGB Purgeable TPH/BTEX

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Brucie Fletcher
Project Manager

Quality Assurance Department

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110

Attention: Maree Doden

Client Proj. ID: 330-109.5D/4931,Oakland
Sample Descript: D
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9507299-01

Sampled: 07/05/95
Received: 07/06/95

Analyzed: 07/11/95
Reported: 07/18/95

QC Batch Number: GC071095BTEX02A
Instrument ID: GCHP02

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Benzene	**0.50**	**0.59**
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	96

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Brucie Fletcher
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group	Client Proj. ID: 330-109.5D/4931,Oakland	Sampled: 07/05/95
2025 Gateway Place, Suite 440	Sample Descript: B	Received: 07/06/95
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 07/11/95
Attention: Maree Doden	Lab Number: 9507299-02	Reported: 07/18/95

QC Batch Number: GC071095BTEX02A
Instrument ID: GCHP02

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	91

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Brucie Fletcher

Brucie Fletcher
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group	Client Proj. ID: 330-109.5D/4931,Oakland	Sampled: 07/05/95
2025 Gateway Place, Suite 440	Sample Descript: A	Received: 07/06/95
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 07/11/95
Attention: Maree Doden	Lab Number: 9507299-03	Reported: 07/18/95

QC Batch Number: GC071095BTEX02A
Instrument ID: GCHP02

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	89

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Brucie Fletcher
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Maree Doden

Client Project ID: 330-109.5D/4931, Oakland
Matrix: LIQUID
Work Order #: 9507299 01-03

Reported: Jul 19, 1995

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes
QC Batch#:	GC071095BTEX02A	GC071095BTEX02A	GC071095BTEX02A	GC071095BTEX02A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	J. Minkel	J. Minkel	J. Minkel	J. Minkel
MS/MSD #:	950713903	950713903	950713903	950713903
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Prepared Date:	7/10/95	7/10/95	7/10/95	7/10/95
Analyzed Date:	7/10/95	7/10/95	7/10/95	7/10/95
Instrument I.D.#:	GCHP2	GCHP2	GCHP2	GCHP2
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Result:	8.4	8.4	8.3	25
MS % Recovery:	84	84	83	83
Dup. Result:	8.8	9.0	8.8	27
MSD % Recov.:	88	90	88	90
RPD:	4.7	6.9	5.8	7.7
RPD Limit:	0-50	0-50	0-50	0-50

LCS #:				
Prepared Date:				
Analyzed Date:				
Instrument I.D.#:				
Conc. Spiked:				
LCS Result:				
LCS % Recov.:				

MS/MSD LCS Control Limits	71-133	72-128	72-130	71-120

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Brucie Fletcher
Project Manager

Please Note:
The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

** MS = Matrix Spike, MSD = MS Duplicate, RPD = Relative % Difference

ARCO Products Company
Division of AtlanticRichfieldCompany

330-1050 **Task Order No.** 170700

Chain of Custody

ARCO Facility no. 4931	City (Facility) OAKLAND	Project manager (Consultant) SHAW GARAKANI	Laboratory name SEQUOIA
ARCO engineer mike whelan	Telephone no. (ARCO)	Telephone no. (Consultant) 408 441 7500	Fax no. (Consultant) 408 441 7539
Consultant name PACIFIC ENV GROUP	Address (Consultant) 2025 Gateway Pl #440 San Jose		Contract number 07-073

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015 GAS	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
D	1A-C	3		X		X	HCL	7-5-95	14 10		X											
B	2	↓		↓		↓	X	↓	↓		↓											
A	3	↓		↓		↓	X	↓	↓		↓											

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number 9507299

Turnaround time

- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☒

Condition of sample:

Temperature received:

	Date	Time		Date	Time
Relinquished by sampler	7-6-95	700	Received by	7/6/95	0730
Relinquished by	7/6/95	11:15	Received by		
Relinquished by			Received by laboratory	7.6.95	13:17

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

Work Order # 953449

FIELD SERVICES / ROUTINE O&M REQUEST

Identification

Project #	330-109.5B
Station #	4931
Site Address:	731 West Mac Arthur @ West Street
County:	Alameda
Project Manager:	Shaw Garakani
Requestor:	Steve Johnston
Client:	ARCO
Client P.O.C.:	Michael Whelan
Revision Date:	June 1, 1995
Laboratory:	Sequoia Analytical

Request Frequency: Monthly

	Initials	Date
F/S	RJ	7/6/95
Copy/Dist.	RJ	↓

Site Remedial Technologies:

Groundwater Extration (GWE) [X]

Complete attached Data Sheets as prescribed in the following table:

Scheduling Table

Data Sheet Section(s) / Part(s)	To be Completed	Budgeted Hrs	Actual Hrs	Mob-de Mob	Completed
GWE(A, B, C, D, E)	monthly†		2.5	1.5	Y=S
GWE (F)	quarterly				

† = sampling to be performed

Definition of frequencies:

weekly = N/A
semi-monthly = N/A
monthly = once every month on week 1
quarterly = once every quarter in months 3, 6, 9,12 on week 1
semi-annually = N/A

Field Technician Response:

Completed by: JV
Date: 7-5-95
Arrival time: 1235
Departure time: 1430
Sample this visit?: Yes
Engineer contacted? Yes

Date:_____

Groundwater Extraction & Treatment System
ARCO Service Station 4931
731 West MacArthur
330-109.5B
May 30, 1995

System Description:

Groundwater Pumps

Well	Type	Size	Control	Set Depth (TOB)
A-9				
AR-1				
AR-2				
AR-3				

Carbon Vessels: Westates 1200 pound vessels (3)
Filter: Rosedale 6-18-2P-2-150 CBNB

PART A: SYSTEM DATA

System on upon arrival? Yes (if no, specify reason in comments)

ELECTRIC METER READING (kw hrs)	82051		

MEASUREMENT	ON ARRIVAL	ON DEPARTURE
TOTALIZER (gallons)	121199	121361
FILTER INLET PRESSURE (psig)	10	(ideal range <10 psig) 10
CARBON #1 INLET PRESSURE (psig)	9	(ideal range <10 psig) 9
CARBON #2 INLET PRESSURE (psig)	4	(ideal range <6 psig) 4
CARBON #3 INLET PRESSURE (psig)	2	(ideal range <3 psig) 2
DISCHARGE PRESSURE (psig)	0	(ideal range 0 to 1 psig) 0
DISCHARGE FLOW RATE (gpm)	~~0~~ 12.8	12.6
LEVEL OF PRODUCT STORAGE DRUM	½ Full	½ Full

PART B: COMMENTS System WAS Sampled and Shut down AS PER Shaw

PART C: WELL DATA

* ALLOW SYSTEM TO RUN 1 HOUR BEFORE OBTAINING DTW READINGS

WELL	DTW (TOB)	BAIL SPH	AMOUNT SPH BAILED	COMMENTS/ ADJUSTMENTS
AR-1	1910	Yes	½ gal	
AR-2	1986	N/A	N/A	
AR-3	1950	N/A	N/A	
A-9	19.99	N/A	N/A	
A-8	1960	Yes	1 gal	

WELL	DTW (TOB)	WELL	DTW (TOB)	WELL	DTW (TOB)	WELL	DTW (TOB)
A-4	1968	A-10	Not able to find well	A-5	1970	A-2	1678

PART D: SAMPLING

SAMPLE	ANALYSIS	COMPLETED
SAMPLE POINT D (INFLUENT)	TPH-gasoline/BTEX compounds	Yes
SAMPLE POINT A (EFFLUENT)	TPH-gasoline/BTEX compounds	Yes
SAMPLE POINT B (MID 2)	TPH-gasoline/BTEX compounds	Yes

PART E: SYSTEM MAINTENANCE I

NUMBER OF SPARE FILTERS ON SITE?		CHANGE FILTERS? (if necessary)	Yes
DOES THE DIGITAL COMMUNICATOR WORK?	Yes	ALL VISIBLE LEAKS REPAIRED?	Yes
SEWER LEVEL OVERFLOWING?	NO	SYSTEM ENCLOSURE SWEPT?	Yes
PROPOSITION 65 SIGN ON-SITE?	Yes	FIRE EXTINGUISHER ON-SITE?	Yes

PART F: SYSTEM MAINTENANCE II

TEST ALARM/FLOAT SWITCHES		BACKFLUSH CARBONS	
CLEAN TOTALIZERS		PULL PUMPS & CLEAN/INSPECT	

ARCO Products Company — Division of AtlanticRichfieldCompany — 330-109.50 — Task Order No. 1703700 — **Chain of Custody**

ARCO Facility no. 4931	City (Facility) OAKLAND	Project manager (Consultant) SHAW GARAKANI	Laboratory name SEQUOIA
ARCO engineer mike whelan	Telephone no. (ARCO)	Telephone no. (Consultant) 408 441 7500	Fax no. (Consultant) 408 441 7539
Consultant name PACIFIC ENV GROUP	Address (Consultant) 2025 GATEWAY PL #440 SAN JOSE		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
D		3		X		X	HCL	7-5-93	1410		X											
B		↓		↓		↓	X	↓	↓		↓											
A		↓		↓		↓	X	↓	↓		↓											

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number

Turnaround time

- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☒

Method of shipment

Condition of sample:		Temperature received:
Relinquished by sampler: Joe VanVan	Date 7-6-93 Time 700	Received by
Relinquished by	Date Time	Received by
Relinquished by	Date Time	Received by laboratory / Date / Time

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

APC-3292 (2-91)

Work Order # 953347

FIELD SERVICES / ROUTINE O&M REQUEST

Identification

Project #	330-109.5B
Station #	4931
Site Address:	731 West Mac Arthur @ West Street
County:	Alameda
Project Manager:	Shaw Garakani
Requestor:	Steve Johnston
Client:	ARCO
Client P.O.C.:	Michael Whelan
Revision Date:	June 1, 1995
Laboratory:	Sequoia Analytical

Request Frequency: Monthly

	Initials	Date
F/S	RY	6/12/95
Copy/Dist.	RY	↓

Site Remedial Technologies:

Groundwater Extration (GWE) [X]

Complete attached Data Sheets as prescribed in the following table:

Scheduling Table

Data Sheet Section(s) / Part(s)	To be Completed	Budgeted Hrs	Actual Hrs	Mob-de Mob	Completed
GWE(A, B, C, D, E)	monthly†		2	2	yes
GWE (F)	quarterly				kaj

† = sampling to be performed

Definition of frequencies:

weekly = N/A
semi-monthly = N/A
monthly = once every month on week 1
quarterly = once every quarter in months 3, 6, 9,12 on week 1
semi-annually = N/A

Field Technician Response:

Completed by: JV
Date: 6-9-95
Arrival time: 930
Departure time: 1630
Sample this visit?: Yes
Engineer contacted? Yes

Date: 6-9-95

Groundwater Extraction & Treatment System
ARCO Service Station 4931
731 West MacArthur
330-109.5b
May 30, 1995

System Description:

Groundwater Pumps

Well	Type	Size	Control	Set Depth (TOB)
A-9				
AR-1				
AR-2				
AR-3				

Carbon Vessels: Westates 1200 pound vessels (3)
Filter: Rosedale 6-18-2P-2-150 CBNB

PART A: SYSTEM DATA

System on upon arrival? UP (if no, specify reason in comments)

MEASUREMENT	ON ARRIVAL	ON DEPARTURE
TOTALIZER (gallons)	36412	36487
FILTER INLET PRESSURE (psig)	8	(ideal range <10 psig) 8
CARBON #1 INLET PRESSURE (psig)	5	(ideal range <10 psig) 5
CARBON #2 INLET PRESSURE (psig)	3	(ideal range <6 psig) 3
CARBON #3 INLET PRESSURE (psig)	0	(ideal range <3 psig) 0
DISCHARGE PRESSURE (psig)	0	(ideal range 0 to 1 psig) 0
DISCHARGE FLOW RATE (gpm)	6.1	6.1

PART B: COMMENTS

PART C: WELL DATA

WELL	DTW (TOB)	TOTALIZER (gallons)	FLOWRATE (gpm)	COMMENTS/ ADJUSTMENTS
AR-1	17.90	N/A	N/A	
AR-2	17.70	N/A		
AR-3	18.32	N/A		
A-9	18.20	N/A		

PART D: SAMPLING & READINGS I

SAMPLE	ANALYSIS	COMPLETED
SAMPLE POINT D (INFLUENT)	TPH-gasoline/BTEX compounds	Yes
SAMPLE POINT A (EFFLUENT)	TPH-gasoline/BTEX compounds	Yes
SAMPLE POINT B (MID 2)	TPH-gasoline/BTEX compounds	Yes

PART E: SYSTEM MAINTENANCE

NUMBER OF SPARE FILTERS ON SITE?	4	CHANGE FILTERS? (if necessary)	Yes
ELECTRIC METER READING (kw hrs)	81469	AR-3 PUMP OPERATING	Yes
CLEAN TOTALIZERS	Yes	AR-2 PUMP OPERATING	Yes
A-9 PUMP OPERATING	Yes	AR-1 PUMP OPERATING	Yes
DOES THE DIGITAL COMMUNICATOR WORK?	Yes	DO FLOAT SWITCHES WORK?	Yes
SEWER LEVEL OVERFLOWING?	NO	WHAT IS THE FREE PRODUCT LEVEL IN STORAGE TANK?	1/4 Full
SUMP PUMP OPERATIONAL?	NO Sump	TEST ALARM SWITCHES	Yes
WAS AR-1 OR A-8 BAILED, IF SO, HOW MUCH?	Yes NO SPH	HIGH LEVEL ALARM TRIPPED?	N/A
ALL VISIBLE LEAKS REPAIRED?	Yes	SYSTEM ENCLOSURE SWEPT?	Yes
PROPOSITION 65 SIGN ON-SITE?	Yes	FIRE EXTINGUISHER ON-SITE?	Yes

ARCO Products Company — Division of AtlanticRichfieldCompany

330-109.5B Task Order No. 1703700

Chain of Custody

ARCO Facility no. 4931	City (Facility) OAKLAND	Project manager (Consultant) SHAW GRAHAM	Lab name SEQUOIA
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) 408 441 7500	Fax no. (Consultant) 408 441 7539
Consultant name PACIFIC ENV GROUP	Address (Consultant) 2025 Gateway Pl #440 San Jose		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
A		3		X		X	HCl	6-9-95			X											
B		↓		X		X	HCl	↓			X											
D		↓		X		X	HCl	↓			X											

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number

Turnaround time

- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☒

Condition of sample:

Temperature received:

	Date	Time	
Relinquished by sampler	6-12-95	7:00	Received by
Relinquished by			Received by
Relinquished by			Received by laboratory

Date: Time:

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

PC-3292 (2-91)