PACIFIC
ENVIRONMENTAL
GROUP, INC.

December 30, 1994
Project 330-109.2A

Mr. Michael Whelan
ARCO Products Company
P.O. Box 5811
San Mateo, California 94402

Re: Quarterly Report - Third Quarter 1994
Remedial System Performance Evaluation
ARCO Service Station 4931
731 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 (ARCO), presents the results of the third quarter 1994 groundwater monitoring and performance evaluation of the groundwater extraction (GWE) system at the site referenced above. In addition, a summary of work completed and anticipated at the site is included.

QUARTERLY GROUNDWATER MONITORING RESULTS

Groundwater samples were collected by Integrated Wastestream Management, Inc. (IWM) on August 9, 1994, and analyzed for the presence of total petroleum hydrocarbons calculated as gasoline (TPH-g), and benzene, toluene, ethylbenzene, and xylenes (BTEX compounds). IWM's certified analytical reports, chain-of-custody documentation, and field data sheets are presented as Attachment A. IWM's groundwater sampling procedures 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 on August 9, 1994, indicate that groundwater elevations in site monitoring wells have fallen approximately 1.46 feet since May 6, 1994. Groundwater flow is toward the south-southwest. Liquid surface elevation data are presented in Table 1. A liquid surface elevation contour map based on the data of August 9, 1994, is shown on Figure 1.

The results of groundwater sampling this quarter indicate that TPH-g and benzene concentrations are generally consistent with previous quarterly data. Wells A-3, A-5 through A-7, A-9 through A-13, AR-2, and AR-3 were non-detect for TPH-g and benzene. Well A-2 was non-detect for TPH-g and contained 1.1 parts per billion (ppb) benzene. Well A-4 contained 20,000 ppb TPH-g and 800 ppb benzene. Separate-phase hydrocarbons (SPH) were observed in Wells A-8 and AR-1; these wells were not sampled. Groundwater analytical data are presented in Table 2. A TPH-g and benzene concentration map is shown on Figure 2.

REMEDIAL PERFORMANCE EVALUATION

Remedial action consisting of GWE /SPH removal is currently in progress at this site. The GWE/SPH 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. PACIFIC assumed site environmental consulting responsibilities in November 1994. To evaluate GWE system performance, PACIFIC monitors well groundwater levels, instantaneous and average flow rates, and samples system influent and effluent for TPH-g and BTEX compound concentrations. Below is a brief description of the GWE system and an evaluation of its performance from June 28 to September 30, 1994.

GROUNDWATER EXTRACTION SYSTEM

Description

The GWE system utilizes electric GWE pumps in Wells A-9, AR-1, AR-2, and AR-3, and three 1,500-pound granular activated carbon (GAC) vessels arranged in series, to treat the influent groundwater stream prior to discharge into the sanitary sewer system. Sample ports are located at the treatment system influent, between the carbon vessels, and at the effluent. The treated groundwater is discharged to the East Bay Municipal Utility District sanitary sewer system under permit number 502-62131, which was re-issued on November 2, 1994, and expires on November 1, 1997.

SPH is automatically removed from Well A-8 by a product pump and from Well AR-1 by manual bailing and transferal to a storage drum for disposal.

Migration Control

Progress toward meeting the migration control objective is to evaluated by comparison of the liquid surface elevation contour map (Figure 1) and TPH-g and benzene concentration map (Figure 2) from previous and current groundwater monitoring events. The liquid surface contour map from this quarter indicates a groundwater depression extending approximately 25 feet radially from GWE Wells AR-1 and AR-2. The TPH-g and benzene concentration map from this quarter indicates that TPH-g and benzene

concentration in historical downgradient Wells A-3 and A-10 was non-detectable. Therefore, the migration control objective appears to have been met during third quarter 1994.

Mass Reduction

Progress toward meeting the mass reduction objective is determined by evaluating the GWE system mass removal data and the TPH-g concentration trends in associated groundwater monitoring wells. GWE system operational data are collected monthly. The system flow and influent sample analysis data are used to estimate dissolved TPH-g mass removal values. During this quarter, sampling was not performed during August and September, due to the change in the environmental consulting firm managing the site. Therefore, system influent TPH-g and benzene concentration data from July and October 1994 sampling event were averaged and used for mass removal calculations. Based on the data, PACIFIC estimates that during this period the GWE system removed 0.07 pound (0.01 gallon) of TPH-g and less than 0.01 pound (negligible volume) of benzene from the impacted groundwater beneath the site. To date, GWE has removed approximately 1.7 pounds (0.28 gallon) of TPH-g and 0.36 pound (0.05 gallon) of benzene from impacted groundwater beneath the site. Mass removal data for the GWE system are presented in Table 3. Additionally, one gallon of SPH was removed from Wells AR-1 and A-8 during this period. Treatment system certified analytical reports, chain-of-custody documentation, and field data sheets are presented as Attachment C. Progress toward site remediation is presented in the table below.

	Mass Removed			
	Third Quarter 1994		Cumulative	
Analyte	(lbs)	(gal)	(lbs)	(gal)
Groundwater Extraction				
TPH-g	0.47	0.09	1.9	0.3
Benzene	0.11	0.015	0.48	0.07
Separate-Phase Hydrocarbons	NA	1.0	NA	2.75

lbs = Pounds
gal = Gallons
TPH-g = Total petroleum hydrocarbons calculated as gasoline
NA = Not available
Note: Cumulative mass removed was obtained from available data provided by the previous consultant.

GWE System Operational Data

The GWE system was 100 percent operational during the reporting period.

During the reporting period, the GWE system discharged treated groundwater at an average operational flow rate of approximately 0.91 gallons per minute (gpm), for a period discharge of 123,245 gallons. The instantaneous groundwater system flow rate

was approximately 5.8 gpm. Calculations based on 8 percent loading isotherm by weight indicate the primary carbon vessel is approximately 2.1 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

PACIFIC will continue operation and maintenance of the GWE system and SPH removal during the fourth quarter 1994.

SUMMARY OF WORK

Work Completed Third Quarter 1994

- Sampled site wells for third quarter 1994 groundwater monitoring program. Sampling performed by IWM.

Work Anticipated Fourth Quarter 1994

- Monitor and optimize GWE and SPH recovery system performance.
- Monthly SPH gauging and removal at Well AR-1.
- Preparation and submittal of third quarter 1994 groundwater monitoring and remedial system performance evaluation report.
- Sample site wells for fourth quarter 1994 groundwater monitoring program. Sampling to be performed by IWM.
- Preparation of fourth quarter 1994 groundwater monitoring and remedial system performance evaluation report.
- Issue quarterly self-monitoring report to the EBMUD.
- Renewal of EBMUD sanitary sewers discharge permit (completed in November 1994).

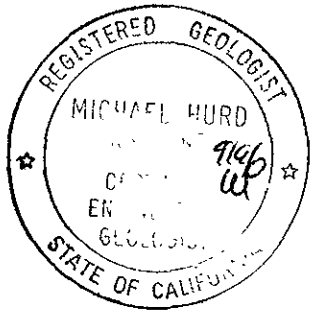
If there are any questions regarding the contents of this letter, please call.

Sincerely,

Pacific Environmental Group, Inc.

Shaw E. Garakani
Project Engineer

Michael Hurd
Senior Geologist
CEG 1885



Attachments:
- Table 1 - Liquid Surface Elevation Data
- Table 2 - Groundwater Analytical Data - Total Petroleum Hydrocarbons (TPH as Gasoline and BTEX Compounds)
- Table 3 - Groundwater Extraction System Mass Removal Data
- Figure 1 - Liquid Surface Elevation Contour Map
- Figure 2 - TPH-g/Benzene Concentration Map
- Attachment A - IWM's Certified Analytical Reports, Chain-of-Custody Documentation, and Field Data Sheets
- Attachment B - IWM's Groundwater Sampling Procedures
- Attachment C - Treatment System Certified Analytical Reports, Chain-of-Custody Documentation, and Field Data Sheets

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

Table 1
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
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
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

Table 1 (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	07/30/90		11.70	11.71	0.01	42.92
(cont.)	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
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
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 ----------				

Table 1 (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-6	07/29/92	55.17	10.40	10.40	0.00	44.77
(cont.)	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
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		10.28	10.28	0.00	44.43
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	----------	

Table 1 (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-8	12/16/93		13.40	13.40	0.00	40.37
(cont.)	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
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
	02/10/94		8.00	8.00	0.00	45.04
	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
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

Table 1 (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-10	02/10/94		9.61	9.61	0.00	44.65
(cont.)	05/06/94		10.81	10.81	0.00	43.45
	08/09/94		12.24	12.24	0.00	42.02
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
	12/16/93		NM	NM	NM	NM
	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
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

Table 1 (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-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
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			
	08/06/93		17.42	17.42	0.00	37.30
	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
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
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

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

Table 2
Groundwater Analytical Data
Total Petroleum Hydrocarbons
(TPH as Gasoline and BTEX Compounds)

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

Well Number	Date Sampled	TPH 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	9.0
	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
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
A-4	03/21/86	3.50 feet of Separate-Phase Hydrocarbons				
	01/07/88	0.02 feet 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 feet of Separate-Phase Hydrocarbons				
	10/27/89	0.01 feet of Separate-Phase Hydrocarbons				

Table 2 (continued)
Groundwater Analytical Data
Total Petroleum Hydrocarbons
(TPH as Gasoline and BTEX Compounds)

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

Well Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
A-4	01/15/90	0.01 feet of Separate-Phase Hydrocarbons				
(cont).	04/04/90	40,000	680	320	1,400	4,900
	07/30/90	0.01 feet of Separate-Phase Hydrocarbons				
	10/29/90	0.03 feet of Separate-Phase Hydrocarbons				
	01/16/91	0.01 feet 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 feet of Separate-Phase Hydrocarbons				
	04/29/92	0.02 feet of Separate-Phase Hydrocarbons				
	07/29/92	0.04 feet of Separate-Phase Hydrocarbons				
	10/28/92	0.03 feet of Separate-Phase Hydrocarbons				
	01/26/93	0.04 feet of Separate-Phase Hydrocarbons				
	04/01/93	0.02 feet of Separate-Phase Hydrocarbons				
	08/06/93	0.03 feet 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
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
	08/09/94	<50	<0.5	<0.5	<0.5	<0.5
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

Table 2 (continued)
Groundwater Analytical Data
Total Petroleum Hydrocarbons
(TPH as Gasoline and BTEX Compounds)

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

Well Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
A-6	10/21/91	<30	<0.30	<0.30	<0.30	<0.30
(cont.)	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
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
	08/09/94	<50	<0.5	<0.5	<0.5	<0.5
A-8	03/21/86	Well Inaccessible				
	01/07/88	Well Inaccessible				
	03/20/89	0.66 feet of Separate-Phase Hydrocarbons				
	05/24/89	1.20 feet of Separate-Phase Hydrocarbons				
	08/18/89	0.77 feet of Separate-Phase Hydrocarbons				
	10/27/89	1.31 feet of Separate-Phase Hydrocarbons				
	01/15/90	0.87 feet of Separate-Phase Hydrocarbons				
	04/04/90	0.25 feet of Separate-Phase Hydrocarbons				
	07/30/90	1.75 feet of Separate-Phase Hydrocarbons				
	10/29/90	0.10 feet of Separate-Phase Hydrocarbons				
	01/16/91	0.01 feet of Separate-Phase Hydrocarbons				
	04/12/91	0.01 feet of Separate-Phase Hydrocarbons				
	07/10/91	0.01 feet of Separate-Phase Hydrocarbons				
	10/21/91	0.11 feet 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 feet of Separate-Phase Hydrocarbons				
	10/28/92	Well Dry				
	01/26/93	Well Dry				
	04/01/93	Well Inaccessible				
	08/06/93	Well Dry				

Table 2 (continued)
Groundwater Analytical Data
Total Petroleum Hydrocarbons
(TPH as Gasoline and BTEX Compounds)

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

Well Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
A-8	10/14/93	Well Inaccessible				
(cont.)	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 feet of Separate-Phase Hydrocarbons				
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				
	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
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

Table 2 (continued)
Groundwater Analytical Data
Total Petroleum Hydrocarbons
(TPH as Gasoline and BTEX Compounds)

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

Well Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
A-10	05/06/94	<50	<0.5	<0.5	<0.5	<0.5
(cont.)	08/09/94	<50	<0.5	<0.5	<0.5	<0.5
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
	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
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
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

Table 2 (continued)
Groundwater Analytical Data
Total Petroleum Hydrocarbons
(TPH as Gasoline and BTEX Compounds)

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

Well Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
A-13	10/28/92	<50	<0.50	<0.50	<0.50	<0.50
(cont.)	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
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				
	10/14/93	Well Inaccessible				
	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 feet of Separate-Phase Hydrocarbons				
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
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

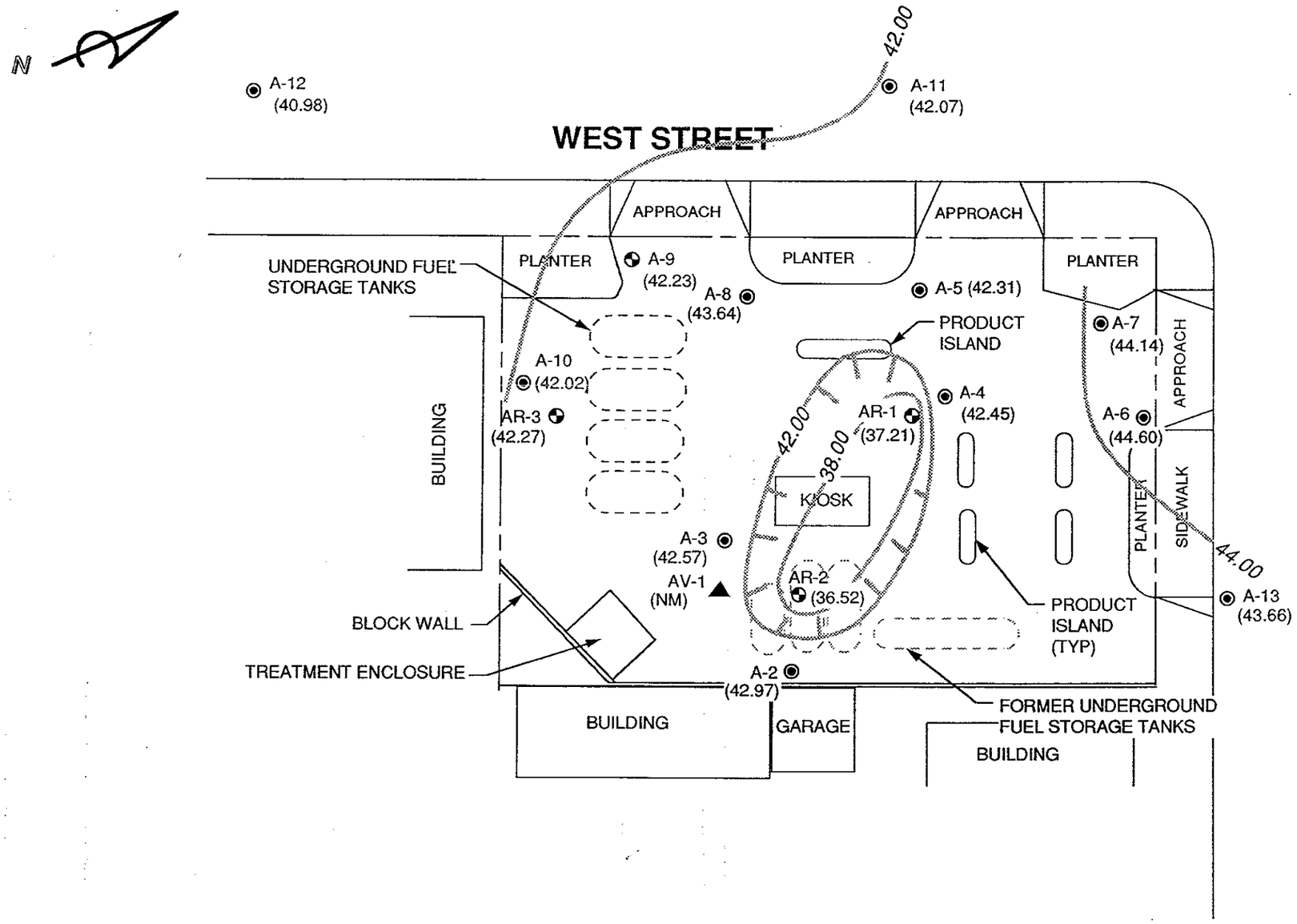
ppb = Parts per billion
NA = Not analyzed
NS = Not sampled
* = Raised detection limit due to high analyte concentration requiring sample dilution.

Table 3
Groundwater Extraction System Mass Removal Data
Total Petroleum Hydrocarbons
(TPH as Gasoline and Benzene)

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

					TPH as Gasoline			Benzene			
Sample I.D.	Date Sampled	Totalizer Reading (gallons)	Net Volume (gallons)	Average Flow Rate (gpm)	Influent Concentration (µg/L)	Net Removed (lbs)	Removed to Date (lbs)	Influent Concentration (µg/L)	Net Removed (lbs)	Removed to Date (lbs)	Primary Carbon Loading (percent)
INFL	06/28/94 a	4,120,050	N/A	0.94	740	0.000	1.612	38	0.000	0.381	2.02
INFL	07/15/94	4,143,150	23,100	0.94	ND	0.071	1.684	ND	0.004	0.385	2.10
INFL	08/18/94	4,175,310	32,160	0.66	NS	0.000	1.684	NS	0.000	0.385	2.10
INFL	09/30/94	4,243,295 b	67,985	1.10	NS	0.000	1.684	NS	0.000	0.385	2.10
INFL	10/31/94 c	4,311,280	67,985	1.52	ND	0.000	1.684	ND	0.000	0.385	2.10
REPORTING PERIOD: 6/28/94-9/30/94											
TOTAL POUNDS REMOVED:							1.684			0.385	
TOTAL GALLONS REMOVED:							0.276			0.052	
PERIOD POUNDS REMOVED:						0.071			0.004		
PERIOD GALLONS REMOVED:						0.012			0.000		
TOTAL GALLONS EXTRACTED:					4,310,070						
PERIOD GALLONS EXTRACTED:					123,245						
PERIOD AVERAGE FLOWRATE (gpm):					0.91						
PRIMARY BED CAPACITY REMAINING (%):					97.9						

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, flowrate, and sample concentrations estimated from prior event 07/15/94.
c. Pacific Environmental Group, Inc., became consultant for the site as of October 1, 1994.
Note: Carbon loading assumes an 8% isotherm.
Note: Pounds of hydrocarbons removed to date provided by prior consultant.
Note: See certified analytical reports for 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

(42.45) LIQUID SURFACE ELEVATION IN FEET - MSL, 8-9-94

44.00 LIQUID SURFACE ELEVATION CONTOUR IN FEET - MSL, 8-9-94

(NM) WELL NOT MEASURED

APPROXIMATE DIRECTION OF HISTORICAL GROUNDWATER FLOW

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

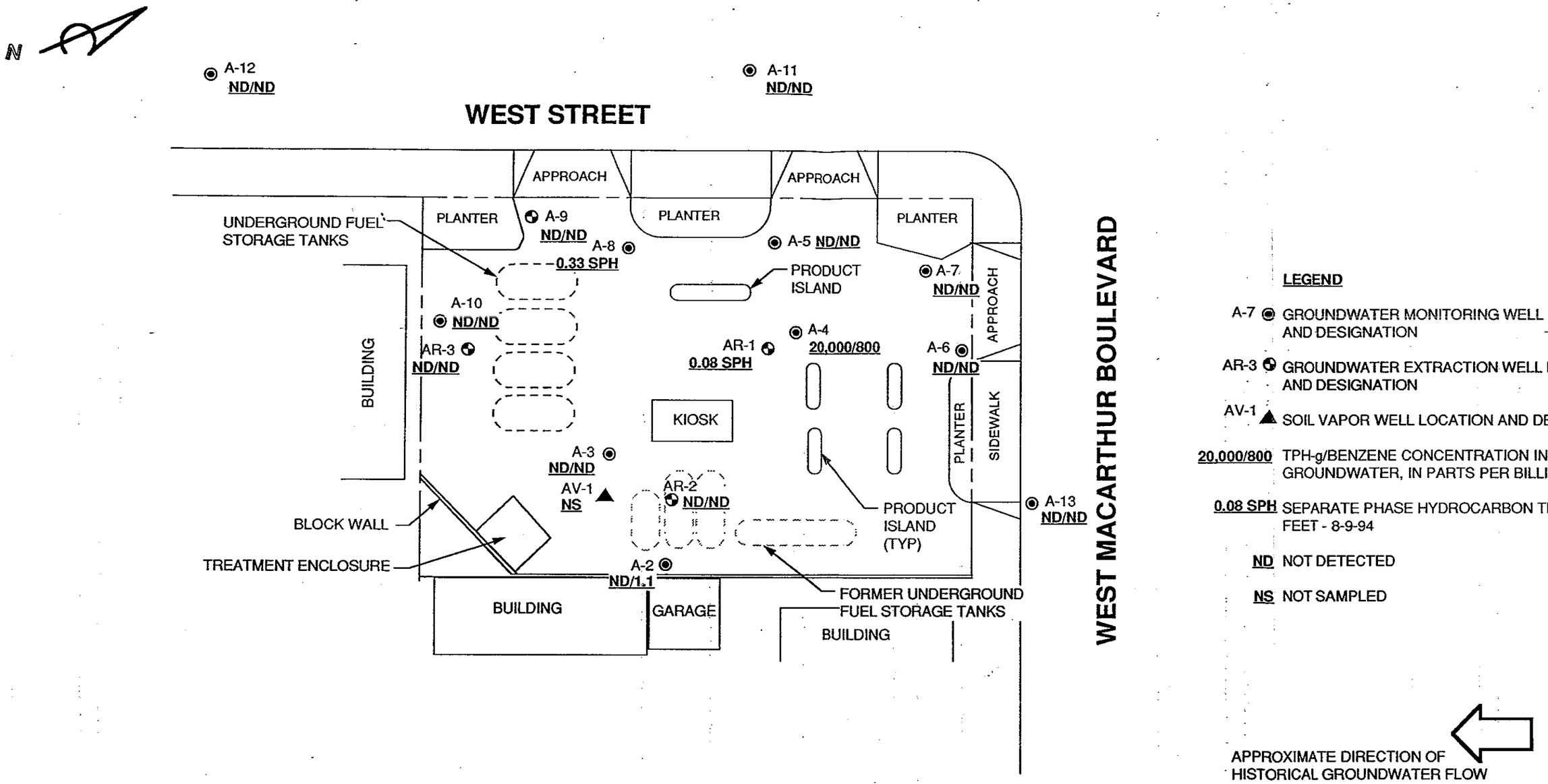
PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE
0 30 60 FEET

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

LIQUID SURFACE ELEVATION CONTOUR MAP

FIGURE:
1
PROJECT:
330-109.2A



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
- 20,000/800 TPH-g/BENZENE CONCENTRATION IN GROUNDWATER, IN PARTS PER BILLION, 8-9-94
- 0.08 SPH SEPARATE PHASE HYDROCARBON THICKNESS IN FEET - 8-9-94
- ND NOT DETECTED
- NS NOT SAMPLED

APPROXIMATE 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

TPH-g/BENZENE CONCENTRATION MAP

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

ATTACHMENT A

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

330-109.2A

INTEGRATED
WASTESTREAM
MANAGEMENT, INC.

August 31, 1994

Mr. Robert Campbell
Geostrategies
6747 Sierra Court, Suite G
Dublin, CA 94568

Dear Mr. Campbell:

Attached are the field data sheets and analytical results for quarterly ground water sampling at ARCO Facility No. A-4931 in Oakland, California. Integrated Wastestream Management measured the depth to water and collected samples from wells at this site on August 9, 1994.

Sampling was carried out in accordance with the protocols described in the "Request for Bid for Quarterly Sampling at ARCO Facilities in Northern California".

Please call us if you have any questions.

Sincerely,
Integrated Wastestream Management

Tom DeLon
Project Manager

Walter H. Howe
Registered Geologist

REGISTERED GEOLOGIST
WALTER H. HOWE
No. 730
4/196
STATE OF CALIFORNIA

950 AMES AVENUE MILPITAS, CA. 95035 (408) 942-8955

INTEGRATED
WASTESTREAM
MANAGEMENT

Summary of Ground Water Sample Analyses for ARCO Facility A-4931, Oakland, California

WELL NUMBER	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12	A-13	AR-1	AR-2	AR-3
DATE SAMPLED	8/9/94	8/9/94	8/9/94	8/9/94	8/9/94	8/9/94	8/9/94	8/9/94	8/9/94	8/9/94	8/9/94	8/9/94	8/9/94	8/9/94	8/9/94
DEPTH TO WATER	12.51	12.09	12.28	11.86	10.57	10.28	10.46	10.81	12.24	11.67	11.07	11.45	17.59	18.25	11.92
SHEEN	NONE	NONE	NONE	NONE	NONE	NONE	FP	NONE	NONE	NONE	NONE	NONE	FP	NONE	NONE
PRODUCT THICKNESS	NA	NA	NA	NA	NA	NA	0.33	NA	NA	NA	NA	NA	1"	NA	NA
TPHg	ND	ND	20,000	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND
BTEX															
BENZENE	1.1	ND	800	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND
TOLUENE	ND	ND	<20	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND
ETHLYBENZENE	ND	ND	200	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND
XYLENES	ND	ND	270	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	ND	ND

FOOTNOTES:

Concentrations reported in ug/L (ppb)

TPHg = Total Purgeable Petroleum Hydrocarbons (USEPA Method 8015 Modified)

BTEX Distinction (USEPA Method 8020)

PCE = Tetrachloroethene (USEPA Method 8010)

* = Well inaccessible

** = Not sampled per consultant request

DCE = cis-1, 2-Dichloroethene (USEPA Method 8010)

TCE = Trichloroethene (USEAP Method 8010)

ND = Not Detected

NA = Not applicable

FP = Floating product

950 AMES AVENUE MILPITAS, CA 95035 (408) 942-8955

FIELD REPORT

Depth To Water / Floating Product Survey

Site Arrival Time: 1100.
Site Departure Time: 1815
Weather Conditions: Sunny Clear

DTW: Well Box or Well Casing (circle one)

Project No.:
Location: 731 W. MacArthur Blvd.
Date: Aug. 9, 1994
Client / Station#: Arco 4931
Field Technician: Vince / Cisco
Day of Week: Tuesday

DTW ORDER	WELL ID	SURFACE SEAL	LID SECURE	GASKET	LOCK	EXPANDING CAP	TOTAL DEPTH (Feet)	FIRST DEPTH TO WATER (Feet)	SECOND DEPTH TO WATER (Feet)	DEPTH TO FLOATING PRODUCT (Feet)	FLOATING PRODUCT THICKNESS (Feet)	SHEEN (Y=YES, N=NO) FP=FLOATING PRODUCT	COMMENTS	MATERIALS
11	A-2	OK	Yes	None	OK	OK	19.80	12.51	12.51	N/A	N/A	N	4"	Christy
10	A-3	OK	Yes	None	OK	OK	(10.34)	12.09	12.09	N/A	N/A	N	4" T.D. 1715	Christy
13	A-4	OK	Yes	None	OK	OK	20.42	12.28	12.28	N/A	N/A	N	4"	Christy
9	A-5	OK	Yes	None	OK	OK	24.01	11.86	11.86	N/A	N/A	N	3"	Christy
12	A-6	OK	Yes	None	OK	OK	25.60	10.57	10.57	N/A	N/A	N	3"	Christy
8	A-7	OK	Yes	None	OK	OK	22.86	10.28	10.28	N/A	N/A	N	3"	Christy
15	A-8	OK	Yes	None	OK	OK	N/A	10.46	10.46	10.13	0.33	Yes	3"	2x2 lid
7	A-9	OK	Yes	OK	None	None	36.0	10.81	10.81	N/A	N/A	N	6"	~~Christy~~ 2x2 lid
6	A-10	OK	Yes	None	OK	OK	30.16	12.24	12.24	N/A	N/A	N	3"	Christy
1	A-11	OK	Yes	None	OK	OK	28.12	11.67	11.67	N/A	N/A	N	3"	Christy
2	A-12	OK	Yes	None	OK	OK	29.92	11.07	11.07	N/A	N/A	N	3"	Christy
3	A-13	OK	Yes	None	OK	OK	29.40	11.45	11.45	N/A	N/A	N	3"	Christy
14	AR-1	OK	Yes	None	OK	OK	N/A	17.59	17.59			Yes	6" 1" FP measured w/ 3/4 bailer ([illegible])	2x2 lid
4	AR-2	OK	Yes	OK	None	None	27.50	18.25	18.25	N/A	N/A	N	6"	2x2 lid
5	AR-3	OK	Yes	OK	None	None	27.20	11.92	11.92	N/A	N/A	N	4"	2x2 lid

* Oil-water interface probe will not fit into AR-1

PAGE 2 OF 5 DATE: 8-9-94 CLIENT/STATION #: Arco 1931 ADDRESS: 731 W. MacArthur Blvd.

WELL ID: A-9 TD 36.0 DTW 10.81 x 1.5 (Gal. / Linear Ft.) x 2 (Casing / Volume) = 75.57 (Calculated / Purge)

DATE PURGED: 8-9-94 START (2400 HR): 1515 END (2400 HR) 1524
DATE SAMPLED: 8-9-94 TIME (2400 HR): 1528 DTW: 11.3

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1516	2	7.38	0.29	72.0	clear
1518	24	7.44	0.26	69.0	clear
1521	49	7.45	0.27	68.5	clear
1524	75	7.46	0.26	68.0	clear

Total purge: 75
PURGING EQUIP.: Centrifugal Pump / Bailer Disp. SAMPLING EQUIP: 3/4 TEFLON ~~Bailer Disp.~~
REMARKS:

WELL ID: AR-3 TD 27.20 DTW 11.92 x 0.66 (Gal. / Linear Ft.) x 3 (Casing / Volume) = 30.25 (Calculated / Purge)

DATE PURGED: 8-9-94 START (2400 HR): 1543 END (2400 HR) 1552
DATE SAMPLED: 8-9-94 TIME (2400 HR): 1556 DTW: 12.3

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1544	13	7.29	0.23	68.2	clear
1546	15	7.33	0.24	68.1	clear
1550	26	7.27	0.24	67.6	clear
1552	31	7.26	0.26	67.3	clear

Total purge: 31
PURGING EQUIP.: Centrifugal Pump / Bailer Disp. SAMPLING EQUIP: 3/4 Teflon ~~Bailer Disp.~~
REMARKS:

WELL ID: A-10 TD 30.16 DTW 12.24 x 0.38 (Gal. / Linear Ft.) x 3 (Casing / Volume) = 20.42 (Calculated / Purge)

DATE PURGED: 8-9-94 START (2400 HR): 1601 END (2400 HR) 1607
DATE SAMPLED: 8-9-94 TIME (2400 HR): 1612 DTW: 12.6

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1602	2	7.16	0.28	71.8	clear
1603	7	7.20	0.27	68.3	clear
1605	15	7.18	0.27	67.1	clear
1607	20	7.17	0.26	66.9	clear

Total purge: 20
PURGING EQUIP.: Centrifugal Pump / Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS:

WELL ID: A-3 TD ~~17.35~~ 17.15 DTW 12.09 x 0.66 (Gal. / Linear Ft.) x 3 (Casing / Volume) = Calculated Purge

DATE PURGED: 8-9-94 START (2400 HR): 1619 END (2400 HR) 1622
DATE SAMPLED: 8-9-94 TIME (2400 HR): 1625 DTW: 15.8

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1620	3	7.19	0.31	69.6	Clear
1622	6	7.18	0.32	69.4	clear

Total purge: 6
PURGING EQUIP.: Centrifugal Pump / Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS: Well pumped dry at 6 gallons

PRINT NAME: Vince Valdes SIGNATURE: Vince Valdes

CASING DIAMETER (inches):	2	3	4	6	8	12	Other:
GALLON/LINEAR FOOT:	0.17	0.38	0.66	1.5	2.6	5.8	Other:

PAGE 3 OF 5 DATE: 8-9-94 CLIENT/STATION #: Arco 1931 ADDRESS: 731 W. MacArthur Blvd.

WELL ID: AR-2 TD 27.50 DTW 18.25 x 0.15 (Gal./Linear Ft.) x 2 (Casing/Volume) = 27.75 (Calculated Purge)

DATE PURGED: 8-9-94 START (2400 HR): 1635 END (2400 HR) 1644
DATE SAMPLED: 8-9-94 TIME (2400 HR): 1647 DTW: 24.2

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1637	5	7.06	0.27	68.2	clear
1639	17	7.01	0.26	67.4	clear
1641	21	7.04	0.26	67.2	clear
1644	25	7.05	0.25	66.9	clear

Total purge: 25
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: ~~Bailer Disp.~~ 3/4" Teflon
REMARKS: V.V.

WELL ID: A-12 TD 29.92 DTW 11.07 x 0.38 (Gal./Linear Ft.) x 3 (Casing/Volume) = 21.98 (Calculated Purge)

DATE PURGED: 8-9-94 START (2400 HR): 1700 END (2400 HR) 1706
DATE SAMPLED: 8-9-94 TIME (2400 HR): 1709 DTW: 18.1

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1701	3	7.12	0.28	71.4	cloudy
1702	8	7.11	0.27	70.6	clear
1704	15	7.00	0.27	68.9	clear
1706	21	6.99	0.45	68.3	clear

Total purge: 21
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS: Francisco Abungan
Francisco Abungan

WELL ID: A-11 TD 28.12 DTW 11.67 x 0.38 (Gal./Linear Ft.) x 3 (Casing/Volume) = 18.75 (Calculated Purge)

DATE PURGED: 8-9-94 START (2400 HR): 1715 END (2400 HR) 1720
DATE SAMPLED: 8-9-94 TIME (2400 HR): 1722 DTW: 16

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1716	3	7.10	0.45	69.8	cloudy
1718	10	7.15	0.45	68.3	clear
1719	15	7.12	0.45	68.1	clear
1720	18	7.10	0.46	68.0	clear

Total purge:
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS: FRANCISCO Abungan
Francisco Abungan

WELL ID: ____ TD ____ DTW ____ x ____ (Gal./Linear Ft.) x ____ (Casing/Volume) = ____ (Calculated Purge)

DATE PURGED: ____ START (2400 HR): ____ END (2400 HR) ____
DATE SAMPLED: ____ TIME (2400 HR): ____ DTW: ____

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)

Total purge:
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS:

PRINT NAME: Vince Valdes SIGNATURE: Vince Valdes

CASING DIAMETER (inches):	2	3	4	6	8	12	Other:
GALLON/LINEAR FOOT:	0.17	0.38	0.66	1.5	2.6	5.8	Other:

PAGE 4 OF 5 DATE: 8-9-94 CLIENT/STATION #: ARCO 1731 ADDRESS: 731 W. MacArthur BLVD.

WELL ID: A-6 TD 25.60 - DTW 10.57 x Gal./Linear Ft. 0.38 x Casing Volume 3 = Calculated Purge 17.13

DATE PURGED: 8-9-94 START (2400 HR): 1539 END (2400 HR) 1544
DATE SAMPLED: 8-9-94 TIME (2400 HR): 1548 DTW: 14.7

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1540	3	6.77	0.44	73.3	CLEAR
1541	8	6.75	0.44	72.7	CLEAR
1542	12	6.73	0.44	72.5	CLEAR
1544	17	6.72	0.43	72.1	CLEAR

Total purge: 17
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.
REMARKS:

WELL ID: A-4 TD 20.42+ - DTW 12.28 x Gal./Linear Ft. 0.66 x Casing Volume 3 = Calculated Purge 16.11

DATE PURGED: 8-9-94 START (2400 HR): 1600 END (2400 HR) 1601
DATE SAMPLED: 8-9-94 TIME (2400 HR): 1605 DTW: 17.4

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1600	3	6.37	0.57	73.9	CLEAR
1601	5	6.38	0.64	73.5	CLEAR

Total purge: 5
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.
REMARKS: WELL PUMPED DRY AT 5 GALLONS.

WELL ID: ____ TD ____ - DTW ____ x Gal./Linear Ft. ____ x Casing Volume ____ = Calculated Purge ____

DATE PURGED: ____ START (2400 HR): ____ END (2400 HR) ____
DATE SAMPLED: ____ TIME (2400 HR): ____ DTW: ____

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)

Total purge: ____
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.
REMARKS:

WELL ID: ____ TD ____ - DTW ____ x Gal./Linear Ft. ____ x Casing Volume ____ = Calculated Purge ____

DATE PURGED: ____ START (2400 HR): ____ END (2400 HR) ____
DATE SAMPLED: ____ TIME (2400 HR): ____ DTW: ____

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)

Total purge: ____
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.
REMARKS:

PRINT NAME: Francisco Abungan SIGNATURE: Francisco Abungan

CASING DIAMETER (inches): 2 3 4 6 8 12 Other: ____
GALLON/LINEAR FOOT: 0.17 0.38 0.66 1.5 2.6 5.8 Other: ____

PAGE 5 of 5 DATE: 8-9-94 CLIENT/STATION #: ARCO 1931 ADDRESS: 731 W. MacArthur Blvd.

WELL ID: A-2 TD 19.8 DTW 12.51 x 0.66 Gal./Linear Ft. x 3 Casing Volume = 14.43 Calculated Purge

DATE PURGED: 8-9-94 START (2400 HR): 1427 END (2400 HR) 1428
DATE SAMPLED: 8-9-94 TIME (2400 HR): 1435 DTW: 17.1

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1428	3	7.61	0.41	72.9	CLEAR
1428	6	7.58	0.413	72.1	CLEAR

Total purge: 6
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS:

WELL ID: A-13 TD 29.40 DTW 11.45 x 0.38 Gal./Linear Ft. x 3 Casing Volume = 20.46 Calculated Purge

DATE PURGED: 8-9-94 START (2400 HR) 1443 END (2400 HR) 1450
DATE SAMPLED: 8-9-94 TIME (2400 HR): 1455 DTW: 19

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1444	5	7.32	0.48	71.7	CLEAR
1445	10	7.21	0.491	71.3	CLEAR
1447	15	7.19	0.499	71.8	CLEAR
1450	20	7.18	0.491	71.5	CLEAR

Total purge: 20
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS:

WELL ID: A-7 TD 22.86 DTW 10.28 x 0.38 Gal./Linear Ft. x 3 Casing Volume = 14.34 Calculated Purge

DATE PURGED: 8-9-94 START (2400 HR): 1505 END (2400 HR) 1510
DATE SAMPLED: 8-9-94 TIME (2400 HR): 1515 DTW: 15.9

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1506	3	6.88	0.45	72.6	CLEAR
1508	8	6.83	0.45	72.3	CLEAR
1510	14	6.83	0.440	71.5	CLEAR

Total purge: 14
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS:

WELL ID: A-5 TD 24.01 DTW 11.86 x 0.38 Gal./Linear Ft. x 3 Casing Volume = 13.85 Calculated Purge

DATE PURGED: 8-9-94 START (2400 HR): 1520 END (2400 HR) 1524
DATE SAMPLED: 8-9-94 TIME (2400 HR): 1530 DTW: 15.2

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
1521	3	7.02	0.58	72.1	CLEAR
1522	8	6.98	0.56	71.5	CLOUDY
1524	14	6.97	0.52	70.8	CLOUDY

Total purge: 14
PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS:

PRINT NAME: Francisco Abunyan SIGNATURE: Francisco Abunyan

CASING DIAMETER (inches):	2	3	4	6	8	12	Other:
GALLON/LINEAR FOOT:	0.17	0.38	0.66	1.5	2.6	5.8	Other:

Columbia Analytical Services inc.

August 24, 1994

Service Request No. S940898

Gina Austin
Tom DeLon
IWM
950 Ames Avenue
Milpitas, CA 95035

Re: **ARCO Facility No. 4931**

Dear Ms. Austin/Mr. DeLon:

Attached are the results of the water samples submitted to our lab on August 11, 1994. For your reference, these analyses have been assigned our service request number S940898.

All analyses were performed consistent with our laboratory's quality assurance program. All results are intended to be considered in their entirety, and CAS is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions.

Respectfully submitted:

COLUMBIA ANALYTICAL SERVICES, INC.

Carol Klein for
Keoni A. Murphy
Laboratory Manager

Annelise Jade Bazar
Annelise J. Bazar
Regional QA Coordinator

KAM/ajb

Acronyms

ASTM	American Society for Testing and Materials
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MRL	Method Reporting Limit
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected at or above the MRL
NR	Not Requested
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
VPH	Volatile Petroleum Hydrocarbons

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	IWM	**Service Request:**	S940898
Project:	ARCO Facility No. 4931	**Date Collected:**	8/9/94
Sample Matrix:	Water	**Date Received:**	8/11/94
		Date Extracted:	NA
		Date Analyzed:	8/17/94

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method

Analyte:	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes, Total
Units:	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)
Method Reporting Limit:	50	0.5	0.5	0.5	0.5
Sample Name	**Lab Code**				
A-2 (17.1)	S940898-002	ND	1.1	ND	ND	ND
A-3 (15.8)	S940898-003	ND	ND	ND	ND	ND
A-4 (17.5)	S940898-004	20,000	800	<20 *	200	270
A-5 (15.2)	S940898-005	ND	ND	ND	ND	ND
A-6 (14.7)	S940898-006	ND	ND	ND	ND	ND
A-7 (15.9)	S940898-007	ND	ND	ND	ND	ND
A-9 (11.3)	S940898-008	ND	ND	ND	ND	ND
A-10 (12.6)	S940898-009	ND	ND	ND	ND	ND
A-11 (16)	S940898-010	ND	ND	ND	ND	ND
A-12 (18.1)	S940898-011	ND	ND	ND	ND	ND
A-13 (19)	S940898-012	ND	ND	ND	ND	ND
AR-2 (24.2)	S940898-013	ND	ND	ND	ND	ND
AR-3 (12.3)	S940898-014	ND	ND	ND	ND	ND
Method Blank	S940817-WB	ND	ND	ND	ND	ND

* Raised MRL due to high analyte concentration requiring sample dilution.

Approved By: Carol Klein Date: 8-24-94

5ABTXGAS/061694

APPENDIX A

LABORATORY QC RESULTS

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO Facility No. 4931
Sample Matrix: Water

Service Request: S940898
Date Collected: 8/9/94
Date Received: 8/11/94
Date Extracted: NA
Date Analyzed: 8/17/94

Surrogate Recovery Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method

Sample Name	Lab Code	Percent Recovery α,α,α-Trifluorotoluene
A-2 (17.1)	S940898-002	102
A-3 (15.8)	S940898-003	103
A-4 (17.5)	S940898-004	116 *
A-5 (15.2)	S940898-005	102
A-6 (14.7)	S940898-006	102
A-7 (15.9)	S940898-007	97
A-9 (11.3)	S940898-008	97
A-10 (12.6)	S940898-009	98
A-11 (16)	S940898-010	102
A-12 (18.1)	S940898-011	98
A-13 (19)	S940898-012	103
AR-2 (24.2)	S940898-013	100
AR-3 (12.3)	S940898-014	98
A-2 (17.1) MS	S940898-002MS	103
A-2 (17.1) DMS	S940898-002DMS	102
Method Blank	S940817-WB	100

CAS Acceptance Limits: 69-116

* The surrogate used for this sample was 4-Bromofluorobenzene.

Approved By: Carol Klein Date: 8-24-94

SUR1/062994

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-0056

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO Facility No. 4931

Service Request: S940898
Date Analyzed: 8/17/94

Initial Calibration Verification (ICV) Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: ppb

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Benzene	25	26.9	108	85-115
Toluene	25	25.8	103	85-115
Ethylbenzene	25	25.9	104	85-115
Xylenes, Total	75	74.8	100	85-115
Gasoline	250	242	97	90-110

Approved By: Carol Klein Date: 8-24-94

ICV25AL/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	IWM	**Service Request:**	S940898
Project:	ARCO Facility No. 4931	**Date Collected:**	8/9/94
Sample Matrix:	Water	**Date Received:**	8/11/94
		Date Extracted:	NA
		Date Analyzed:	8/17/94

Matrix Spike/Duplicate Matrix Spike Summary
BTE
EPA Methods 5030/8020
Units: ug/L (ppb)

Sample Name: A-2 (17.1)
Lab Code: S940898-002

Analyte	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference
Benzene	25	25	1.07	28.8	28.8	111	111	75-135	<1
Toluene	25	25	ND	25.9	26.0	104	104	73-136	<1
Ethylbenzene	25	25	ND	26.4	26.6	106	106	69-142	<1

Approved By: Carol Klein Date: 8-24-94

DMSIS/060194

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-0400

APPENDIX B

CHAIN OF CUSTODY

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. - WM-94-5CC

Chain of Custody

ARCO Facility no. 4931	City (Facility) Oakland	Project manager (Consultant) Tom DeLon	Laboratory name Columbia
ARCO engineer Mike Whelan	Telephone no. (ARCO) 415-571-2449	Telephone no. (Consultant) 408 945-8935	Fax no. (Consultant) (408) 942-1499	Contract number 07077
Consultant name John Young/Emcon	Address (Consultant) 950 Ames Ave, Milpitas CA 95035		Method of shipment GAS ~~COURIER~~ Sampler Deliver

	Sample I.D.	Lab no.	Container no.	Matrix: Soil	Water	Other	Preservation: Ice	Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TRH 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 ☐
	FB-1	1	2		✓		✓	✓	8-9-94	630		✓	✓								
1	A-2	2	2		✓		✓	✓		1435		✓	✓								
8	A-3	3	2		✓		✓	✓		1625		✓	✓								
5	A-4	4	2		✓		✓	✓		1605		✓	✓								
2	A-5	5	2		✓		✓	✓		1530		✓	✓								
7	A-6	6	2		✓		✓	✓		1518		✓	✓								
9	A-7	7	2		✓		✓	✓		1515		✓	✓								
3	A-9	8	2		✓		✓	✓		1528		✓	✓								
6	A-10	9	2		✓		✓	✓		1612		✓	✓								
	A-11	10	2		✓		✓	✓		1722		✓	✓								
1	A-12	11	2		✓		✓	✓		1709		✓	✓								
	A-13	12	2		✓		✓	✓		1455		✓	✓								
2	AR-2	13	2		✓		✓	✓		1647		✓	✓								
3	AR-3	14	2		✓		✓	✓		1556		✓	✓								

Special detection Limit/reporting

Special QA/QC

Remarks: Hold on FB-1

Lab number 5940898

Turnaround time

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

Condition of sample:		Temperature received: cool	
Relinquished by sampler	Date 8-11-94	Time 1350	Received by
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory	Date 8/11/94	Time 1350

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

APPC-3292 (2-91)

ATTACHMENT B

IWM'S GROUNDWATER SAMPLING PROCEDURES

FIELD PROCEDURES: GROUNDWATER SAMPLING

PRELIMINARY: SITE SAFETY

IWM SAFETY PRACTICES APPLY AT ALL TIMES! OBSERVE ALL STANDARD PROCEDURES WITH SPECIAL ATTENTION TO THESE HAZARDS:

- Vehicular traffic: Insure visibility of yourself and your equipment
- Pedestrian activity: Anticipate and prevent tripping hazards

A. WATER-LEVEL MEASUREMENTS

GENERAL

1. Water-level measurements must be taken before disturbing the water in the well in any way. The water in the well should be in an undisturbed state for a minimum of 24 hours before performing this task.
2. To insure consistency in date from event-to-event, the measurement must be taken from the same point on the well top casing. As a general rule, take the measurement from the highest point of the casing. Typically, there is a notch in the casing for this purpose. If no such mark is visible, place one at the highest point of the casing, take measurements from that point, and make a note of this in the field notes.
3. Always work from the cleanest wells (based on past data) to the dirtiest.
4. Keep your equipment CLEAN! Between wells clean the probes, lines and associated attachments with a clean cloth soaked in water containing Alconox (or like cleaning agent). Thoroughly rinse in tap water in a 5 gallon bucket. After each rinsing, empty the bucket into a 55 gallon drum or other purge water containment vessel.
5. Take measurements to the nearest .01 foot.

PROCEDURE (NO FREE PRODUCT ANTICIPATED)

1. Inspect the wellhead for the following: damage of any kind, indications of possible leakage into the well at the wellhead, damaged or missing locks, etc. Remove any standing water in or around the well head. Note all irregularities.
2. Lower the (CLEAN!) water-level indicator slowly down the well until the indicator sounds.
3. Continue lowering the indicator about 2 inches more before very slowly raising the indicator until the sound stops.
4. Take the measurement at the casing.
5. Repeat this procedure. If the next reading is within .01 foot of the first, then record the first measurement. If not, repeat this procedure until two consecutive measurements are within .01 foot.
6. Remove and CLEAN the equipment (probe and tape) before proceding to the next well.

PROCEDURE (FREE PRODUCT ANTICIPATED)

1. Inspect the wellhead for the following: damage of any kind, indications of possible leakage into the well at the wellhead, damaged or missing locks, etc. Remove any standing water in or around the well head. Note all irregularities.
2. Lower the (CLEAN!) oil-water interface probe slowly down the well until the indicator sounds. The presence of product is indicated by a steady sound; its absence by a broken sound. (If there is no evidence of product, follow procedure for water-level measurements where no product is anticipated.)
3. If the presence of product is indicated, lower the probe very slowly until the signal changes to broken pattern.
4. Continue lowering the indicator about 2 inches more before very slowly raising the indicator until the sound becomes steady; note this measurement at the casing as the depth to water. Continue raising the probe until the sound stops; note this measurement at the casing as the depth to product.
5. Repeat this procedure. If the next readings are within .01 foot of the first set, then record the first measurements. If not, repeat this entire procedure until two consecutive measurements sets are within .01 foot.
6. Remove and CLEAN the equipment before using in another well.

B. SUBJECTIVE ANALYSIS

GENERAL

1. **Always work from the cleanest wells (based on past data) to the dirtiest.**
2. **Follow this procedure for cleaning the bailer between wells:**

a. Fill and empty the bailer once using tap water.
b. Refill bailer approximately two-thirds full with a mixture of water and Alconox (or like cleaning agent).
c. Clean bailer inside and out with a bottle brush.
d. Empty the bailer then repeat this process at least three times.
e. After each cleaning, empty the cleaning liquids into a 55 gallon drum or other purge water containment vessel.

3. **Clean the lines (or wire) and associated attachments with a clean cloth soaked in water containing Alconox (or like cleaning agent). Thoroughly rinse in tap water in a 5 gallon bucket. After each rinsing, empty the bucket into a 55 gallon drum or other purge water containment vessel.**

PROCEDURE

1. **Gently lower the (CLEAN) bailer into the well until it reaches the water surface.**
2. **Lower the bailer further about half its length.**
3. **Remove the bailer and examine the water therein for the following:**

a. Presence of Free Product: Note and record thickness to the nearest eighth of an inch.
b. Sheen: Note visual indications of sheen as follows: "Heavy", "Moderate" or "Llight".
c. Emulsion: Record presence of emulsion as "Heavy", "Moderate", or "Light".
d. Color: Record if floating product is present.

C. WELL PURGING: GENERAL

GENERAL

1. **To minimize any risk of cross contamination, whenever possible use surface pumps and disposable tubing.**
2. **If another alternative is used for purging (bailers, submersible pumps, bladder pumps, etc.), follow cleaning procedures outlined for bailers and equipment above.**

PROCEDURE

1. Determine the volume of water in the well.
2. If the well recharges, remove three well volumes. If the well doesn't recharge, or does so slowly, continue purging until the recharge water stabilizes with regard to pH, temperature and conductivity, or until the well is empty.
3. Contain purged water in labeled 55 gallon drums or other provided containment.

D. WATER SAMPLE COLLECTION

GENERAL

1. In general, use disposable bailers for all sampling.
2. If a teflon bailer is reused, follow this procedure for cleaning the bailer between wells:

a. Fill and empty the bailer once using tap water.
b. Refill bailer approximately two-thirds full with a mixture of water and Alconox (or like cleaning agent).
c. Clean bailer inside and out with a bottle brush.
d. Empty the bailer then repeat this process at least three times.
e. After each cleaning, empty the cleaning liquids into a 55 gallon drum or other purge water containment vessel.

3. Clean the lines (or wire) and associated attachments with a clean cloth soaked in water containing Alconox (or like cleaning agent). Thoroughly rinse in tap water in a 5 gallon bucket. After each rinsing, empty the bucket into a 55 gallon drum or other purge water containment vessel.
4. Always work from the cleanest wells (based on past data) to the dirtiest.
5. Always keep your samples chilled.

PROCEDURE

1. If well recharges, sample may be obtained immediately after purging. If during the course of the sampling day a well does not recharge sufficiently to half fill the bailer, return the next morning to take the sample.
2. Review the sampling list to determine which analysis(es) is(are) required for each well during this sampling event. Note any special handling requirements (addition of preservatives, etc.). Complete the sample labels with the following: sample ID number, project ID number and date. Attach the labels to the sample

containers. Always prepare duplicate samples for analysis and indicate the number of containers on the Chain of Custody. Also, label two sample containers with the project ID number, date and the words "Field Blank"; fill these two containers with distilled water and place in the holders provided for transport (see 5. below).

3. Lower a new disposable bailer into the well and take a sample from below the water's surface. Minimize agitation while removing the bailer.

4. Using the valve at the bottom of the bailer, fill the sample vial very slowly to minimize agitation of the liquid. Cap the vial tightly, then tap it and invert it to check for any air. Top off the vial if there is any air present.

5. Place all sample vials in the holders provided for transport. Place holders inside a cooler containing enough ice to keep the sample temperature below 4 degrees Centigrade. However, do not permit the samples to freeze.

6. After sampling is complete, lock cooler if possible; if not, seal with tape and sign across tape so that any tampering will be evident.

7. Enter the information concerning the collected samples on the field notes and on the Chain of Custody.

8. Before resealing each wellhead, replace any lock or cap, as required.

E. CHAIN OF CUSTODY PROCEDURE

GENERAL

1. Only list on the Chain of Custody those samples that will go to the lab; samples to be held for possible future analysis should only be noted on the field notes.

2. Fill out the Chain of Custody in ink.

PROCEDURE

1. Fill out as much of the form as possible before beginning work on the site.

2. Provide the following:

a. Your name, signature and phone number.

b. The Project Manager's name and phone number.

c. The laboratory.

d. The turnaround time.

3. For each sample, provide the sample ID number, site ID, sample date and analysis(es) requested.
4. After the samples are taken, note the sample condition.
5. The completed Chain of Custody must accompany the shipping container to the laboratory; keep a copy for the Project Manager.
6. Each time the samples change custody the date and time are directely noted on the Chain of Custody which is signed by both the transferor and the transferee.
7. The laboratory will make the final entry upon receipt of the samples. Sample condition will be noted on the Chain of Custody. The original Chain of Custody will be returned with the sample results and a copy will be kept by the laboratory.

ATTACHMENT C -

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

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 9 (415) 364-9600 FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520 (510) 686-9600 FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834 (916) 921-9600 FAX (916) 921-0100

Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Joel Coffman

Project: Arco 4931-94.5

Enclosed are the results from 5 water samples received at Sequoia Analytical on July 15,1994. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
4G83201	Water, A-Eff	7/15/94	EPA 5030/8015 Mod./8020
4G83202	Water, B-Mid	7/15/94	EPA 5030/8015 Mod./8020
4G83203	Water, C-Mid	7/15/94	EPA 5030/8015 Mod./8020
4G83204	Water, D-Inf	7/15/94	EPA 5030/8015 Mod./8020
4G83205	Water, TB	7/15/94	EPA 5030/8015 Mod./8020

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

Todd Olive
Project Manager

Sequoia Analytical

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Gettler Ryan/Geostrategies	Client Project ID:	Arco 4931-94.5	Sampled:	Jul 15, 1994
6747 Sierra Court, Ste J	Sample Matrix:	Water	Received:	Jul 15, 1994
Dublin, CA 94568	Analysis Method:	EPA 5030/8015 Mod./8020	Reported:	Jul 25, 1994
Attention: Joel Coffman	First Sample #:	4G83201		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 4G83201 A-Eff	Sample I.D. 4G83202 B-Mid	Sample I.D. 4G83203 C-Mid	Sample I.D. 4G83204 D-Inf	Sample I.D. 4G83205 TB
Purgeable Hydrocarbons	50	N.D.	N.D.	N.D.	740	N.D.
Benzene	0.50	N.D.	N.D.	N.D.	38	N.D.
Toluene	0.50	N.D.	N.D.	N.D.	19	N.D.
Ethyl Benzene	0.50	N.D.	N.D.	N.D.	9.3	N.D.
Total Xylenes	0.50	N.D.	N.D.	N.D.	120	N.D.
Chromatogram Pattern:		--	--	--	Gas	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0
Date Analyzed:	7/19/94	7/19/94	7/19/94	7/19/94	7/19/94
Instrument Identification:	GCHP-2	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	97	92	96	102	95

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Todd Olive
Project Manager

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Gettler Ryan/Geostrategies
6747 Sierra Court, Ste J
Dublin, CA 94568
Attention: Joel Coffman

Client Project ID: Arco 4931-94.5
Matrix: Liquid
QC Sample Group: 4G83201-05

Reported: Jul 25, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	J. Minkel	J. Minkel	J. Minkel	J. Minkel
MS/MSD Batch#:	4G82802	4G82802	4G82802	4G82802
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	7/19/94	7/19/94	7/19/94	7/19/94
Instrument I.D.#:	GCHP-2	GCHP-2	GCHP-2	GCHP-2
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Matrix Spike % Recovery:	93	95	98	100
Matrix Spike Duplicate % Recovery:	85	86	90	90
Relative % Difference:	9.0	9.9	8.5	11

LCS Batch#:				
Date Prepared:				
Date Analyzed:				
Instrument I.D.#:				
LCS % Recovery:				
% Recovery 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

Todd Olive
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.

GROUNDWATER RECOVERY SYSTEM MONITORING DATA SHEET

Client: ARCO #4931
Site: 731 W. MacArthur
Oakland, CA

Job#: 7909
Field Technician: F. Cline
Date: 7-15-94

EXTRACTION WELL #		AR-1 RW	AR-2	AR-3	A-9	A-8
	Time	13:00				
GW Pump	Active on Arrival? (Y/N)	Yes	Yes	No	No	No
	Active on Departure? (Y/N)	Yes	Yes	No	No	No
	Flow Rate (gpm)	1.2 gpm	3.4 gpm	—	—	
	Depth to Water (ft)	21'	21'	18'	18'	
Product Pump	Active on Arrival? (Y/N)	N/A			—	No
	Active on Departure? (Y/N)	N/A			—	No
	Pump Depth (ft)	N/A			→	No
	Sampled? (Y/N) / ID#	No	No	No	No	No

SYSTEM	
Active on Arrival? (Y/N)	Yes
Active on Departure? (Y/N)	Yes
Re-Start Date	—
Flowmeter (gallons)	4143150
Instantaneous Flow (gpm)	0 - 4.6 gpm
Electric Meter	74960
Filter Pressure (psig)	3 psi
Filter Replaced? (Y/N)	No
Product Tank Level - Total (in)	6"
Product Tank Level - Water (in)	2"

CARBON VESSELS	INFLUENT (D)	MIDPOINT (C)	MIDPOINT (B)	EFFLUENT (A)
Time	13:00			—
Pressure (psig)	6"	6"	2"	1"
Sampled? (Y/N) / ID#	Y D	Y C	Y B	Y A
Analysis	Gas BTXE			—

Comments: ~~Bailed~~ Pumped product from A-8 & AR-1
~~2~~ 1gal AR-1 & 1/2 gal A-8
Swept enclosure cleaned up wash.

Supplies Used: