PACIFIC
ENVIRONMENTAL
GROUP, INC.

ENVIRONMENTAL
PROTECTION

97 OCT 27 PM 12:22

Quarterly Groundwater Monitoring Report and Remedial System Performance Evaluation Second Quarter 1997

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

Prepared for

Mr. Paul Supple
ARCO Products Company

October 20, 1997

Prepared by

Pacific Environmental Group, Inc.
2025 Gateway Place, Suite 440
San Jose, California 95110

Project 330-109.2D

Shaw Garakani
Project Engineer

Gary P. Pestana
Project Manager
RG 6451

REGISTERED GEOLOGIST
GARY P. PESTANA
No. 6451
EXP. 10/98
STATE OF CALIFORNIA

Date: October 20, 1997
Quarter: 2Q97

ARCO QUARTERLY GROUNDWATER MONITORING REPORT

Facility No.: 4931 Address: 731 West Boulevard at West Street
Oakland, California
ARCO Environmental Engineer: Paul Supple
Consulting Co./Contact Person: Pacific Environmental Group, Inc./Shaw Garakani
Consultant Project No.: 330-109.2D
Primary Agency/Regulatory ID No.: Alameda County Health Care Services Agency

WORK PERFORMED THIS QUARTER (Second, 1997):

1. Submitted first quarter 1997 groundwater monitoring report.
2. Performed second quarter 1997 groundwater monitoring event.
3. Prepared second quarter 1997 groundwater monitoring report.
4. Removed ORCs from Wells A-8 and A-9.

WORK PROPOSED FOR NEXT QUARTER (Third - 1997):

1. Submit second quarter 1997 groundwater monitoring report.
2. Perform third quarter 1997 groundwater monitoring event.
3. Prepare third quarter 1997 groundwater monitoring report.

Current Phase of Project:	Monitoring	(Assmnt, Remed., etc.)
Frequency of Groundwater Sampling:	Quarterly, Semiannually, and Annually	(Quarterly, etc.)
Frequency of Groundwater Monitoring:	Quarterly	(Monthly, etc.)
Is Free Product (FP) Present On-Site:	No	(Yes/No)
FP Recovered this Quarter:	None	(gallons)
Cumulative FP Recovered to Date:	Unknown	(gallons)
Bulk Soil Removed This Quarter:	None	(cubic yards)
Bulk Soil Removed to Date:	Unknown	(cubic yards)
Current Remediation Techniques:	Natural Attenuation	(SVE/Sparge/FP Removal, etc.)
Approximate Depth to Groundwater:	6.32 to 11.45	(Measure Feet)
Groundwater Gradient:	Southwest	(Direction)
	0.04	(Magnitude)
Period TPPH- g/Benzene Removed:	0.0/0.0	(gallons)
Cumulative TPPH-g/Benzene Removed:	0.45/0.06	(gallons)

DISCUSSION:

- Benzene was detected for the first time in Wells A-9 and A-12 at concentration of 2.3 ppm and 12 ppm, respectively.
- Based on Alameda County Health Care Service Agency (ACHCSA) approval, the groundwater extraction (GWE) system has been deactivated and EBMUD sewer discharge permit relinquished.
- Well A-13 was not sampled due to being asphalted over.
- Well A-13 has been removed from the sampling program.
- Wells AR-1 and AR-2 have been removed from the sampling program.
- Please refer to PACIFIC's *Quarterly Groundwater Monitoring Report - Fourth Quarter 1996* for historical groundwater elevation and analytical data.

ATTACHMENTS:

- Table 1 - Groundwater Sampling Schedule
- Table 2 - Groundwater Elevation and Analytical Data
- Figure 1 - Groundwater Elevation Contour Map
- Figure 2 - TPPH-g/Benzene Concentration Map
- Attachment A - Field and Laboratory Procedures
- Attachment B - Certified Analytical Reports, Chain-of-Custody Documentation, and Field Data Sheets
- Attachment C - Remedial System Performance Evaluation

cc: Mr. Kevin Graves, Regional Water Quality Control Board - San Francisco 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	---------- Well 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	Semiannually
A-9		a		a	Semiannually
A-10	---------- Removed from Sampling Program ----------				
A-11		a		a	Semiannually
A-12		a		a	Semiannually
A-13				a	Annually
AR-1	---------- Removed from Sampling Program ----------				
AR-2	---------- Removed from Sampling Program ----------				
AR-3	---------- Removed from Sampling Program ----------				

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

Table 2
Groundwater Elevation and Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, and MtBE)

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

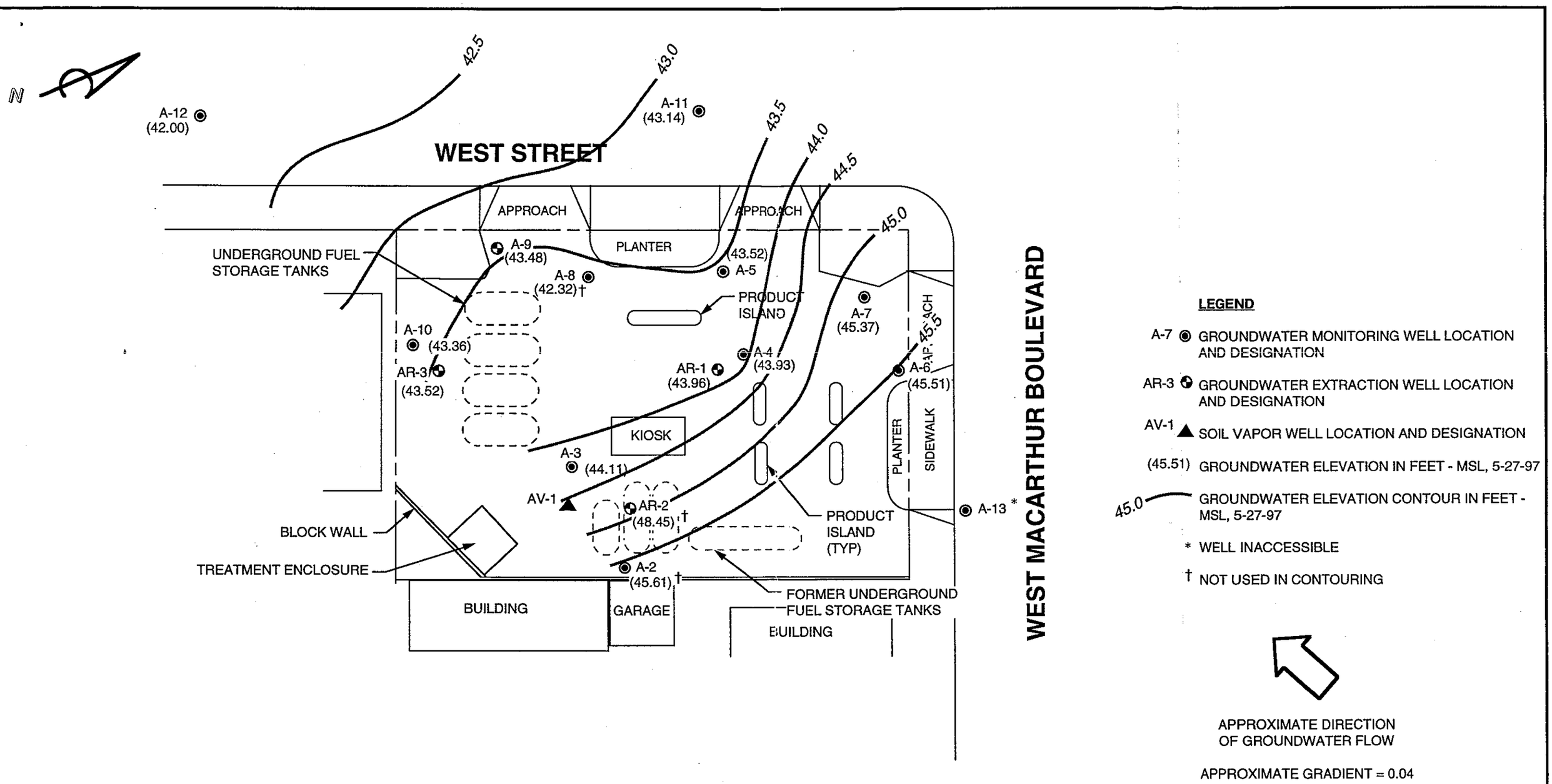
Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOB)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	MtBE (ppb)
A-2	03/26/96	55.48	5.37	50.11	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/22/96		5.25	50.23	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/22/96		10.45	45.03	<50	1.1	1.8	<0.50	1.3	<2.5
	12/19/96		5.53	49.95	<50	<0.50	<0.50	<0.50	<0.50	2.7
	04/01/97		8.77	46.71	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	05/27/97		9.87	45.61	<50	<0.50	<0.50	<0.50	<0.50	4.6
A-3	03/26/96	54.66	7.20	47.46	---------- Well Sampled Semiannually ----------					
	05/22/96		7.70	46.96	<50	1.2	1.9	0.70	1.3	NA
	08/22/96		10.88	43.78	---------- Well Sampled Semiannually ----------					
	12/19/96		7.70	46.96	5,900	<25	<25	<25	<25	5,300 *
	04/01/97		9.78	44.88	---------- Well Sampled Semiannually ----------					
	05/27/97		10.55	44.11	2,300	<20	<20	<20	<20	3,800
A-4	03/26/96	54.73	7.95	46.78	8,900	1,200	21	200	220	NA
	05/22/96		8.35	46.38	5,300	700	<10	170	130	NA
	08/22/96		11.03	43.70	3,000	480	<5.0	75	26	150
	12/19/96		8 67	46.06	<2,000	<20	<20	<20	<20	15,000 *
	04/01/97		11.95	42.78	8,900	1,700	22	310	260	6,900
	05/27/97		10.80	43.93	7,100	960	<20	150	74	7,900
A-5	03/26/96	54.17	7.93	46.24	---------- Well Sampled Semiannually ----------					
	05/22/96		8.20	45.97	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/22/96		10.70	43.47	---------- Well Sampled Semiannually ----------					
	12/19/96		8.39	45.78	9,900	1,100	330	230	700	24
	04/01/97		10.83	43.34	---------- Well Sampled Semiannually ----------					
	05/27/97		10.65	43.52	100	<0.50	<0.50	<0.50	<0.50	120
A-6	03/26/96	55.17	7.15	48 02	52	2.7	<0.50	1.1	2.0	NA
	05/22/96		7.35	47.82	<50	2.4	<0.50	0.88	1.7	NA
	08/22/96		10.12	45.05	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	12/19/96		7.43	47.74	<50	1.7	<0.50	0.78	1.5	<2.5
	04/01/97		9.97	45.20	<50	4.7	<0.50	1.9	3.2	<2.5
	05/27/97		9.66	45.51	<50	0.69	<0.50	<0.50	<0.50	<2.5
A-7	03/26/96	54.71	6.90	47.81	---------- Well Sampled Semiannually ----------					
	05/22/96		8.27	46.44	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/22/96		9.80	44.91	---------- Well Sampled Semiannually ----------					
	12/19/96		7.19	47.52	---------- Well Sampled Annually ----------					
	04/01/97		9.63	45.08	---------- Well Sampled Annually ----------					
	05/27/97		9.34	45.37	<50	<0.50	<0.50	<0.50	<0.50	<2.5
A-8 a	03/26/96	53.77	7.10	46.67	48,000	2,600	<100	650	1,100	NA
	05/22/96		7.20	46.57	14,000	2,800	160	320	190	NA
	08/22/96		11.57	42.20	8,000	1,000	76	150	96	4,300
	12/19/96		8.04	45.73	12,000	450	110	210	230	<500
	04/01/97		9.98	43.79	---------- Well Sampled Semiannually ----------					
	05/27/97		11.45	42.32	11,000	1,600	100	220	210	2,300
A-9 b	03/26/96	53.04	7.05	45.99	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/22/96		7.20	45.84	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/22/96		9.68	43.36	<50	<0.50	<0.50	<0.50	<0.50	8.5
	12/19/96		7.43	45.61	<50	<0.50	<0.50	<0.50	<0.50	2.6
	04/01/97		9.95	43.09	---------- Well Sampled Semiannually ----------					
	05/27/97		9.56	43.48	<50	2.3	<0.50	<0.50	<0.50	45
A-10	03/26/96	54.26	8.28	45.98	--------- Well Removed from Sampling Program ---------					
	05/22/96		8.60	45.66	--------- Well Removed from Sampling Program ---------					
	08/22/96		10.98	43.28	--------- Well Removed from Sampling Program ---------					

Table 2 (continued)
Groundwater Elevation and Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, and MtBE)

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

Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOB)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	MtBE (ppb)
A-10	12/19/96		8.80	45.46	---------- Well Removed from Sampling Program ----------					
(cont.)	04/01/97		11.15	43.11	---------- Well Removed from Sampling Program ----------					
	05/27/97		10.90	43.36	---------- Well Removed from Sampling Program ----------					
A-11	03/26/96	53.74	8.10	45.64	---------- Well Sampled Semiannually ----------					
	05/22/96		8.25	45.49	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/22/96		10.58	43.16	---------- Well Sampled Semiannually ----------					
	12/19/96		8 37	45.37	<50	<0.50	<0.50	<0.50	<0 50	<2.5
	04/01/97		10.95	42.79	---------- Well Sampled Semiannually ----------					
	05/27/97		10.60	43.14	<50	<0.50	<0.50	<0.50	<0.50	3.1
A-12	03/26/96	52.05	7.83	44.22	---------- Well Sampled Semiannually ----------					
	05/22/96		7.80	44.25	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/22/96		9.97	42.08	---------- Well Sampled Semiannually ----------					
	12/19/96		8.18	43.87	85	<0.50	<0.50	<0.50	<0.50	170
	04/01/97		10.30	41.75	---------- Well Sampled Semiannually ----------					
	05/27/97		10.05	42.00	50	12	<0.50	<0.50	<0.50	96
A-13	03/26/96	55.11	---------- Well Inaccessible ----------							
	05/22/96		---------- Well Inaccessible ----------							
	08/22/96		---------- Well Sampled Annually ----------							
	12/19/96		---------- Well Inaccessible ----------							
	04/01/97		---------- Well Sampled Annually ----------							
	05/27/97		---------- Well Sampled Annually ----------							
AR-1	03/26/96	54.72	8.13	46.59	6,200	110	64	38	520	NA
	05/22/96		8.57	46.15	NS	NS	NS	NS	NS	NS
	08/22/96		10.97	43.75	5,600	100	28	29	310	960
	12/19/96		8.93	45.79	-------- Well Removed from Sampling Program --------					
	04/01/97		11.78	42.94	-------- Well Removed from Sampling Program --------					
	05/27/97		10.76	43.96	-------- Well Removed from Sampling Program --------					
AR-2	03/26/96	54.77	4.93	49.84	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/22/96		5.65	49.12	NS	NS	NS	NS	NS	NS
	08/22/96		7.27	47.50	<50	<0.50	<0.50	<0.50	<0.50	200
	12/19/96		7.78	46.99	-------- Well Removed from Sampling Program --------					
	04/01/97		6.80	47.97	-------- Well Removed from Sampling Program --------					
	05/27/97		6.32	48.45	-------- Well Removed from Sampling Program --------					
AR-3	03/26/96	54.19	7.95	46.24	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/22/96		8.30	45.89	NS	NS	NS	NS	NS	NS
	08/22/96		10.84	43.35	-------- Well Removed from Sampling Program --------					
	12/19/96		8.56	45.63	-------- Well Removed from Sampling Program --------					
	04/01/97		11.24	42.95	-------- Well Removed from Sampling Program --------					
	05/27/97		10.67	43.52	-------- Well Removed from Sampling Program --------					

MSL = Mean sea level
TOB = Top of box
ppb = Parts per billion
< = Denotes laboratory detection limit
NA = Not analyzed
NS = Not sampled
a. = Bioremediation enhancement initiated 05/22/96 and terminated 04/01/97.
b. = Bioremediation enhancement initiated 11/17/95 and terminated 04/01/97.
* = MtBE results confirmed by EPA Method 8260.



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

(45.51) GROUNDWATER ELEVATION IN FEET - MSL, 5-27-97

45.0 GROUNDWATER ELEVATION CONTOUR IN FEET - MSL, 5-27-97

* WELL INACCESSIBLE

† NOT USED IN CONTOURING

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

APPROXIMATE GRADIENT = 0.04

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

PACIFIC ENVIRONMENTAL GROUP, INC.

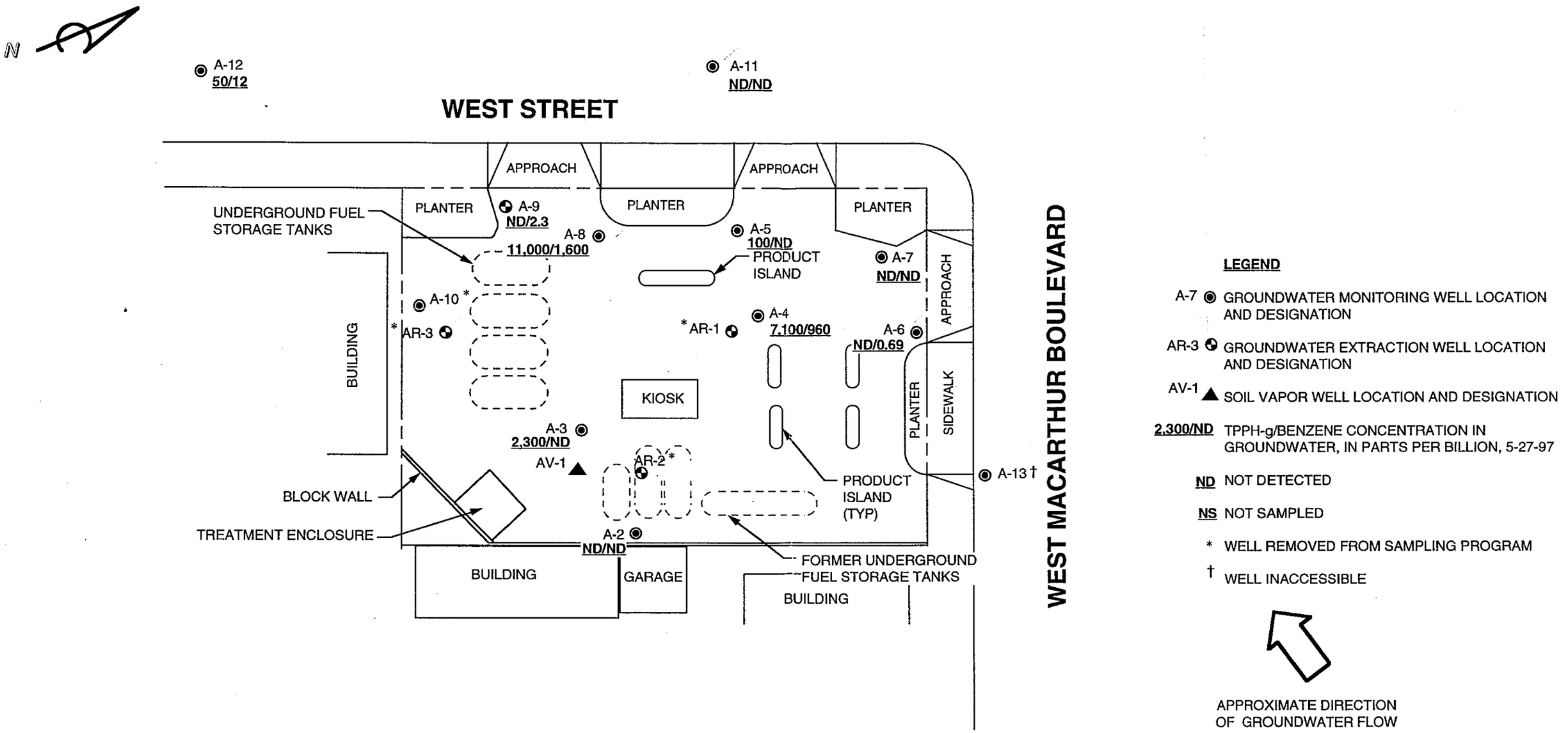
SCALE
0 30 60 FEET

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

GROUNDWATER ELEVATION CONTOUR MAP

FIGURE: 1

PROJECT: 330-109.2D



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
- 2,300/ND TPPH-g/BENZENE CONCENTRATION IN GROUNDWATER, IN PARTS PER BILLION, 5-27-97
- ND NOT DETECTED
- NS NOT SAMPLED
- * WELL REMOVED FROM SAMPLING PROGRAM
- † WELL INACCESSIBLE

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: 330-109.2D

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

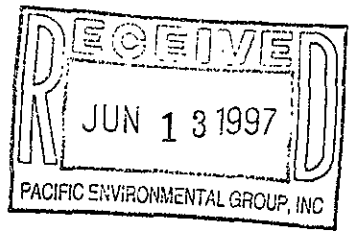
The groundwater samples were analyzed for the presence of total purgeable petroleum hydrocarbons calculated as gasoline, benzene, toluene, ethylbenzene, xylenes, and methyl tert-butyl ether. The analyses were performed according to EPA Methods 8015 (modified) and 8020 utilizing a purge-and-trap extraction 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 REPORT, 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: Sahw Garakani

Project: 330-109.2K/4931, Oakland

Enclosed are the results from samples received at Sequoia Analytical on May 28, 1997. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE COLLECTED	TEST METHOD
9705E61 -01	LIQUID, A-2	05/27/97	MTBE_W Methyl t-Butyl Ethe
9705E61 -01	LIQUID, A-2	05/27/97	TPHGBW Purgeable TPH/BTEX
9705E61 -02	LIQUID, A-3	05/27/97	MTBE_W Methyl t-Butyl Ethe
9705E61 -02	LIQUID, A-3	05/27/97	TPHGBW Purgeable TPH/BTEX
9705E61 -03	LIQUID, A-4	05/27/97	MTBE_W Methyl t-Butyl Ethe
9705E61 -03	LIQUID, A-4	05/27/97	TPHGBW Purgeable TPH/BTEX
9705E61 -04	LIQUID, A-5	05/27/97	MTBE_W Methyl t-Butyl Ethe
9705E61 -04	LIQUID, A-5	05/27/97	TPHGBW Purgeable TPH/BTEX
9705E61 -05	LIQUID, A-6	05/27/97	MTBE_W Methyl t-Butyl Ethe
9705E61 -05	LIQUID, A-6	05/27/97	TPHGBW Purgeable TPH/BTEX
9705E61 -06	LIQUID, A-7	05/27/97	MTBE_W Methyl t-Butyl Ethe
9705E61 -06	LIQUID, A-7	05/27/97	TPHGBW Purgeable TPH/BTEX
9705E61 -07	LIQUID, A-8	05/27/97	MTBE_W Methyl t-Butyl Ethe

SEQUOIA ANALYTICAL

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
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SAMPLE #	SAMPLE DESCRIPTION	DATE COLLECTED	TEST METHOD
9705E61 -07	LIQUID, A-8	05/27/97	TPHGBW Purgeable TPH/BTEX
9705E61 -08	LIQUID, A-9	05/27/97	MTBE_W Methyl t-Butyl Ethe
9705E61 -08	LIQUID, A-9	05/27/97	TPHGBW Purgeable TPH/BTEX
9705E61 -09	LIQUID, A-11	05/27/97	MTBE_W Methyl t-Butyl Ethe
9705E61 -09	LIQUID, A-11	05/27/97	TPHGBW Purgeable TPH/BTEX
9705E61 -10	LIQUID, A-12	05/27/97	MTBE_W Methyl t-Butyl Ethe
9705E61 -10	LIQUID, A-12	05/27/97	TPHGBW 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

Project Manager

Quality Assurance Department

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: Sahw Garakani

Client Proj. ID: 330-109.2K/4931, Oakland
Sample Descript: A-2
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9705E61-01

Sampled: 05/27/97
Received: 05/28/97

Analyzed: 06/05/97
Reported: 06/06/97

QC Batch Number: GC060597BTEX22A
Instrument ID: GCHP22

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	4.6

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

Tod Granicher
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: 330-109.2K/4931, Oakland	Sampled: 05/27/97
2025 Gateway Place, Suite 440	Sample Descript: A-2	Received: 05/28/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 06/05/97
Attention: Sahw Garakani	Lab Number: 9705E61-01	Reported: 06/06/97

QC Batch Number: GC060597BTEX22A
Instrument ID: GCHP22

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	87

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
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: Sahw Garakani

Client Proj. ID: 330-109.2K/4931, Oakland
Sample Descript: A-3
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9705E61-02

Sampled: 05/27/97
Received: 05/28/97

Analyzed: 06/05/97
Reported: 06/06/97

QC Batch Number: GC060597BTEX22A
Instrument ID: GCHP22

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	25	**3800**

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	84

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
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Pacific Environmental Group	Client Proj. ID: 330-109.2K/4931, Oakland	Sampled: 05/27/97
2025 Gateway Place, Suite 440	Sample Descript: A-3	Received: 05/28/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 06/05/97
Attention: Sahw Garakani	Lab Number: 9705E61-02	Reported: 06/06/97

QC Batch Number: GC060597BTEX22A
Instrument ID: GCHP22

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	**2000**	**2300**
Benzene	20	N.D.
Toluene	20	N.D.
Ethyl Benzene	20	N.D.
Xylenes (Total)	20	N.D.
Chromatogram Pattern:		
Discrete Peaks		C6-C7

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	84

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

SEQUOIA ANALYTICAL - ELAP #1210

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

Attention: Sahw Garakani

Client Proj. ID: 330-109.2K/4931, Oakland
Sample Descript: A-4
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9705E61-03

Sampled: 05/27/97
Received: 05/28/97

Analyzed: 06/04/97
Reported: 06/06/97

QC Batch Number: GC060497BTEX21A
Instrument ID: GCHP21

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	100	7900

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	106

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

SEQUOIA ANALYTICAL - ELAP #1210

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

Attention: Sahw Garakani

Client Proj. ID: 330-109.2K/4931, Oakland
Sample Descript: A-4
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9705E61-03

Sampled: 05/27/97
Received: 05/28/97

Analyzed: 06/04/97
Reported: 06/06/97

QC Batch Number: GC060497BTEX21A
Instrument ID: GCHP21

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	**2000**	**7100**
Benzene	**20**	**960**
Toluene	20	N.D.
Ethyl Benzene	**20**	**150**
Xylenes (Total)	**20**	**74**
Chromatogram Pattern:		**Gas**

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	106

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

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Pacific Environmental Group	Client Proj. ID: 330-109.2K/4931, Oakland	Sampled: 05/27/97
2025 Gateway Place, Suite 440	Sample Descript: A-5	Received: 05/28/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8020	Analyzed: 06/05/97
Attention: Sahw Garakani	Lab Number: 9705E61-04	Reported: 06/06/97

QC Batch Number: GC060597BTEX22A
Instrument ID: GCHP22

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	120

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

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Pacific Environmental Group	Client Proj. ID: 330-109.2K/4931, Oakland	Sampled: 05/27/97
2025 Gateway Place, Suite 440	Sample Descript: A-5	Received: 05/28/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 06/05/97
Attention: Sahw Garakani	Lab Number: 9705E61-04	Reported: 06/06/97

QC Batch Number: GC060597BTEX22A
Instrument ID: GCHP22

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	**50**	**100**
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		
Discrete Peaks		C6-C7

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	85

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

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

Attention: Sahw Garakani

Client Proj. ID: 330-109.2K/4931, Oakland
Sample Descript: A-6
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9705E61-05

Sampled: 05/27/97
Received: 05/28/97

Analyzed: 06/04/97
Reported: 06/06/97

QC Batch Number: GC060497BTEX21A
Instrument ID: GCHP21

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	N.D.

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	88

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

SEQUOIA ANALYTICAL - ELAP #1210

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Project Manager

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

Attention: Sahw Garakani

Client Proj. ID: 330-109.2K/4931, Oakland
Sample Descript: A-6
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9705E61-05

Sampled: 05/27/97
Received: 05/28/97

Analyzed: 06/04/97
Reported: 06/06/97

QC Batch Number: GC060497BTEX21A
Instrument ID: GCHP21

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**	**0.69**
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	88

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

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

Attention: Sahw Garakani

Client Proj. ID: 330-109.2K/4931, Oakland
Sample Descript: A-7
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9705E61-06

Sampled: 05/27/97
Received: 05/28/97

Analyzed: 06/04/97
Reported: 06/06/97

QC Batch Number: GC060497BTEX21A
Instrument ID: GCHP21

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	N.D.

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	88

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

SEQUOIA ANALYTICAL - ELAP #1210

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Pacific Environmental Group	Client Proj. ID: 330-109.2K/4931, Oakland	Sampled: 05/27/97
2025 Gateway Place, Suite 440	Sample Descript: A-7	Received: 05/28/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 06/04/97
Attention: Sahw Garakani	Lab Number: 9705E61-06	Reported: 06/06/97

QC Batch Number: GC060497BTEX21A
Instrument ID: GCHP21

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	88

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

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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: 330-109.2K/4931, Oakland	Sampled: 05/27/97
2025 Gateway Place, Suite 440	Sample Descript: A-8	Received: 05/28/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8020	Analyzed: 06/04/97
Attention: Sahw Garakani	Lab Number: 9705E61-07	Reported: 06/06/97

QC Batch Number: GC060497BTEX21A
Instrument ID: GCHP21

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	250	2300

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	88

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

SEQUOIA ANALYTICAL - ELAP #1210

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

Attention: Sahw Garakani

Client Proj. ID: 330-109.2K/4931, Oakland
Sample Descript: A-8
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9705E61-07

Sampled: 05/27/97
Received: 05/28/97

Analyzed: 06/04/97
Reported: 06/06/97

QC Batch Number: GC060497BTEX21A
Instrument ID: GCHP21

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	5000	11000
Benzene	50	1600
Toluene	50	100
Ethyl Benzene	50	220
Xylenes (Total)	50	210
Chromatogram Pattern:		Gas

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	88

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

SEQUOIA ANALYTICAL - ELAP #1210

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

Attention: Sahw Garakani

Client Proj. ID: 330-109.2K/4931, Oakland
Sample Descript: A-9
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9705E61-08

Sampled: 05/27/97
Received: 05/28/97

Analyzed: 06/04/97
Reported: 06/06/97

QC Batch Number: GC060497BTEX21A
Instrument ID: GCHP21

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	45

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

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

Attention: Sahw Garakani

Client Proj. ID: 330-109.2K/4931, Oakland
Sample Descript: A-9
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9705E61-08

Sampled: 05/27/97
Received: 05/28/97

Analyzed: 06/04/97
Reported: 06/06/97

QC Batch Number: GC060497BTEX21A
Instrument ID: GCHP21

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**	**2.3**
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.

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Pacific Environmental Group	Client Proj. ID: 330-109.2K/4931, Oakland	Sampled: 05/27/97
2025 Gateway Place, Suite 440	Sample Descript: A-11	Received: 05/28/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8020	Analyzed: 06/04/97
Attention: Sahw Garakani	Lab Number: 9705E61-09	Reported: 06/06/97

QC Batch Number: GC060497BTEX21A
Instrument ID: GCHP21

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	3.1

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	89

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

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Pacific Environmental Group
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San Jose, CA 95110

Attention: Sahw Garakani

Client Proj. ID: 330-109.2K/4931, Oakland
Sample Descript: A-11
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9705E61-09

Sampled: 05/27/97
Received: 05/28/97

Analyzed: 06/04/97
Reported: 06/06/97

QC Batch Number: GC060497BTEX21A
Instrument ID: GCHP21

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

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

Attention: Sahw Garakani

Client Proj. ID: 330-109.2K/4931, Oakland
Sample Descript: A-12
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9705E61-10

Sampled: 05/27/97
Received: 05/28/97

Analyzed: 06/04/97
Reported: 06/06/97

QC Batch Number: GC060497BTEX21A
Instrument ID: GCHP21

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	96

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

Tod Granicher
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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: 330-109.2K/4931, Oakland	Sampled: 05/27/97
2025 Gateway Place, Suite 440	Sample Descript: A-12	Received: 05/28/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 06/04/97
Attention: Sahw Garakani	Lab Number: 9705E61-10	Reported: 06/06/97

QC Batch Number: GC060497BTEX21A
Instrument ID: GCHP21

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	**50**	**50**
Benzene	**0.50**	**12**
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

Tod Granicher
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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Shaw Garakani

Client Project ID: 330-109.2K / 4931, Oakland
Matrix: LIQUID
Work Order #: 9705E61 01-10
Reported: Jun 11, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC060497BTEX21A	GC060497BTEX21A	GC060497BTEX21A	GC060497BTEX21A	GC060497BTEX21A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	A. Miraftab	A. Miraftab	A. Miraftab	A. Miraftab	A. Miraftab
MS/MSD #:	970602902	970602902	970602902	970602902	970602902
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	6/4/97	6/4/97	6/4/97	6/4/97	6/4/97
Analyzed Date:	6/4/97	6/4/97	6/4/97	6/4/97	6/4/97
Instrument I.D.#:	GCHP21	GCHP21	GCHP21	GCHP21	GCHP21
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	10	10	11	33	67
MS % Recovery:	100	100	110	110	112
Dup. Result:	9.6	9.8	10	30	63
MSD % Recov.:	96	98	100	100	105
RPD:	4.1	2.0	9.5	9.5	6.2
RPD Limit:	0-25	0-25	0-25	0-25	0-25
LCS #:	BLK060497	BLK060497	BLK060497	BLK060497	BLK060497
Prepared Date:	6/4/97	6/4/97	6/4/97	6/4/97	6/4/97
Analyzed Date:	6/4/97	6/4/97	6/4/97	6/4/97	6/4/97
Instrument I.D.#:	GCHP21	GCHP21	GCHP21	GCHP21	GCHP21
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
LCS Result:	9.6	9.4	9.4	29	60
LCS % Recov.:	96	94	94	97	100
MS/MSD Control Limits	60-140	60-140	60-140	60-140	60-140
LCS Control Limits	70-130	70-130	70-130	70-130	70-130

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

SEQUOIA ANALYTICAL

Tod Granicher
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: Shaw Garakani

Client Project ID: 330-109.2K / 4931, Oakland
Matrix: LIQUID
Work Order #: 9705E61 01-10

Reported: Jun 11, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC060597BTEX22A	GC060597BTEX22A	GC060597BTEX22A	GC060597BTEX22A	GC060497BTEX21A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	A. Porter	A. Porter	A. Porter	A. Porter	A. Porter
MS/MSD #:	9705F5002	9705F5002	9705F5002	9705F5002	9705F5002
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	6/5/97	6/5/97	6/5/97	6/5/97	6/5/97
Analyzed Date:	6/5/97	6/5/97	6/5/97	6/5/97	6/5/97
Instrument I.D.#:	GCHP22	GCHP22	GCHP22	GCHP22	GCHP22
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	9.7	9.3	9.3	27	51
MS % Recovery:	97	93	93	90	85
Dup. Result:	9.9	9.6	9.6	27	51
MSD % Recov.:	99	96	96	90	85
RPD:	2.0	3.2	3.2	0.0	0.0
RPD Limit:	0-25	0-25	0-25	0-25	0-25
LCS #:	BLK060597BSA	BLK060597BSA	BLK060597BSA	BLK060597BSA	BLK060597BSA
Prepared Date:	6/5/97	6/5/97	6/5/97	6/5/97	6/5/97
Analyzed Date:	6/5/97	6/5/97	6/5/97	6/5/97	6/5/97
Instrument I.D.#:	GCHP22	GCHP22	GCHP22	GCHP22	GCHP22
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
LCS Result:	10	9.7	9.6	28	54
LCS % Recov.:	100	97	96	93	90
MS/MSD Control Limits	60-140	60-140	60-140	60-140	60-140
LCS Control Limits	70-130	70-130	70-130	70-130	70-130

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

SEQUOIA ANALYTICAL

Tod Granicher
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

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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: Sahw Garakani

Client Proj. ID: 330-109.2K/4931, Oakland
Lab Proj. ID: 9705E61

Received: 05/28/97
Reported: 06/06/97

LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of 17 pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

SEQUOIA ANALYTICAL SAMPLE RECEIPT LOG

CLIENT NAME: PEG
REC. BY (PRINT) LDC

WORKORDER: 9705E61
DATE OF LOG-IN: 5/29/97

CIRCLE THE APPROPRIATE RESPONSE

1. Custody Seal(s) — Present / ~~Absent~~ Intact / Broken*
2. Custody Seal #: — Put in Remarks Section
3. Chain-of-Custody — ~~Present~~ / Absent*
4. Traffic Reports or Packing List: — Present / ~~Absent~~
5. Airbill: — Airbill / Sticker Present / ~~Absent~~
6. Airbill #:
7. Sample Tags: — ~~Present~~ / Absent
   Sample Tags #s: — ~~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: 5-28-97
12. Time Rec. at Lab: 1249
13. Temp Rec. at Lab: 14°C

LAB SAMPLE #	DASH #	CLIENT IDENTIFICATION	CONTAINER DESCRIPTION	SAMPLE MATRIX	DATE SAMP.	REMARKS: CONDITION (ETC.)
1	A-C	A-2	3 VOA	liq	5-27-97	
2		A-3	↓	↓	↓	
3		A-4				
4		A-5				
5		A-6				
6		A-7				
7		A-8				
8		A-9				
9		A-11				
10	↓	A-12	↓	↓	↓	

J. Cardenas 5-28-97

*if Circled, contact Project Manager and attach record of resolution.

ARCO Products Company Proj 330-109.2K
Division of AtlanticRichfieldCompany

Task Order No. WA 2133400

Chain of Custody

ARCO Facility no. 4931 | City (Facility) Oakland | Project manager (Consultant) Shaw Garakani | Laboratory name Sequoia

ARCO engineer Paul Supple | Telephone no. (ARCO) | Telephone no. (Consultant) (408) 441 7500 | Fax no. (Consultant) (408) 441 7539 | Contract number 2133400

Consultant name Pacific Env. Group Inc | Address (Consultant) 2025 Gateway Pl. Suite 440 San Jose CA 95110

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 MTBE 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 ☐ VOA ☐ Semi VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
A-2		3		X		X	HCl	5/27/97	14:00		X											
A-3		↓		↓		↓	↓	↓	14:15		↓											
A-4									14:30													
A-5									11:45													
A-6									11:23													
A-7									11:00													
A-8									13:00													
A-9									13:30													
A-11									12:45													
A-12									12:20													

Method of shipment: 9705E61

Special detection Limit/reporting

Special QA/QC

Remarks: 28 12 49

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	Date	Time	Received by	Date	Time
Relinquished by sampler: Don Watanpanyl	5/27/97	18:05	Received by: Krissy Flesoras		
Relinquished by: Krissy Flesoras	5/28/97	10:26	Received by: [signature]		
Relinquished by: [signature]	5/28/97		Received by laboratory: L Cardenas	5-28-97	1249

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

FIELD SERVICES / O & M REQUEST

SITE INFORMATION FORM

Project #:330-109.2K

☐ 1st time visit

Station #:4931

☐ 1st ☒ 2nd ☐ 3rd ☐ 4th

Date of Request: 2Q

Site Address:731 McArthur Blvd. Oakland, California

☐ Monthly

Ideal Field Date:

☐ Semi-Monthly

County: Alameda

☐ Weekly

Budget Hrs._____

Project Manager: Shaw Garakani

☐ One time Event

Actual Hrs. 36

Requestor: David Nanstad

☐ Other._____

Mob de Mob 1.5

Purge Total 171

Client: Arco

Client P.O.C.: Paul Supple

Prefield contacts:

Field Tasks: For General Description

Second Quarter 1997 groundwater sampling event: DTW/DTL from TOB/TOC; sample all wells for GAS/BTEX/MtBE. Note and repair/replace damaged J-plugs, locks ect. DO NOT PURGE WELLS WITH ORC'S.

WA# 21334 00

Comments, remarks, from Field Staff (include problems encountered

Casing on A-4 broken off at ground level inside box.

Completed by: Don Watenpaugh Date: 5/27/97

Checked by:_____

WELL SAMPLING REQUEST

SAMPLING PROTOCOL							
Project No.	**Station #**	**Project Name**	**SEQUENCE**	**Project Manager**	**Approval**	**Date/s**	**Laboratory:**
330-109.2K	4931	731 McArthur BL Oakland	2Q97	Shaw Garakani			Sequoia 21334 00

Well Number	Ideal Sampling Order	Sample I.D.	Sampling Frequency	Analyses	TOB TOC	Well Depth	Top of Screen	Casing Diameter	Well goes Dry?
A-2	1		QLY	MtBE/GAS/BTEX	TOB/TOC	20		4"	yes
A-3	11		Semiannual 2Q/4	MtBE/GAS/BTEX	TOB/TOC	17		4"	yes
A-4	16		QLY	MtBE/GAS/BTEX	TOB/TOC	20		4"	yes
A-5	2		Semiannual 2Q/4	MtBE/GAS/BTEX	TOB/TOC	24.5		3"	no
A-6	14		QLY	MtBE/GAS/BTEX	TOB/TOC	25.5		3"	no
A-7	13		Annually 2Q	MtBE/GAS/BTEX	TOB/TOC	23		3"	no
A-8	17		QLY	MtBE/GAS/BTEX	TOB/TOC	18		3"	no
A-9	12		QLY	MtBE/GAS/BTEX	TOB/TOC	19	5'	6"	no
A-10	3		REMOVED	DTW ONLY	TOB/TOC	?	5'	?	?
A-11	6		Semiannual 2Q/4	MtBE/GAS/BTEX	TOB/TOC	28	5'	3"	no
A-12	7		Semiannual 2Q/4	MtBE/GAS/BTEX	TOB/TOC	30	5'	3"	no
A-13	8		ANNUAL 2Q	MtBE/GAS/BTEX	TOB/TOC	29 5	10'	3"	no
AR-1	15		REMOVED	DTW ONLY	TOB/TOC	31.5	10'	6"	no
AR-2	9		REMOVED	DTW ONLY	TOB/TOC	27.5	10'	6"	no
AR-3	10		REMOVED	DTW ONLY	TOB/TOC	27	10'	6"	(4") no

FIELD REPORT

DEPTH TO WATER/SEPARATE-PHASE HYDROCARBON SURVEY

PROJECT No.: 330109.26 LOCATION: 731 McArthur DATE: Tues 5/27/97

CLIENT/STATION NO.: Arco 0193 FIELD TECHNICIAN: Don Waterman DAY OF WEEK: Tues

PROBE TYPE/ID No.
- ☐ Oil/Water IF/ ____
- ☒ H_2O level indicator 31
- ☐ 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
1	A-2	8:40	✓	✓	✓	✓		20	9.87 / 9.54	9.87 / 9.54										
11	A-3	8:47	✓	✓	✓			17	10.55 / 9.55	10.55 / 9.55										
16	A-4	8:10	✓	✓	✓			20	10.80 / 10.25	10.80 / 10.25										
2	A-5	8:50	✓	✓	✓	✓		24.5	10.65 / 9.95	10.65 / 9.95										
14	A-6	9:15	✓	✓	✓			24.5	9.66 / 8.98	9.66 / 8.98										
13	A-7	9:12	✓	✓	✓			23	9.34 / 8.87	9.34 / 8.87										
17	A-8	9:25	✓	✓				18	11.45 / 11.00	11.45 / 11.00										
12	A-9	9:28	✓	✓				19	9.56 / 8.70	9.56 / 8.70	5'									
3	A-10	8:55	✓	✓	✓			/	10.90 / 10.44	10.90 / 10.44	5'									

Comments:

A-4 Casing Broken at ground level outside Box

Coolant found A-13 on W. McArthur Blvd

FIELD REPORT

DEPTH TO WATER/SEPARATE-PHASE HYDROCARBON SURVEY

PROJECT No.: 330109.26 LOCATION: 731 McArthur DATE: 5/27/97

CLIENT/STATION NO. CH931 FIELD TECHNICIAN: Don Watenpaugh DAY OF WEEK: Tues.

PROBE TYPE/ID No.
- ☐ Oil/Water IF/ ____
- ☒ H_2O level indicator 31
- ☐ 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	SERARATE-PHASE HYDROCARBONS (SPH): Screen ~~SPH~~ Depth (feet) ~~TOB~~/TOC	SPH Thickness (feet)	COLOR: Fresh	Weathered	Gas	Oil	VISCOSITY: Lite	Medium	Heavy	LIQUID REMOVED (gallons): SPH / H_2O
6	A-11							28	10.60 / 10.45	10.60 / 10.45	5'										/
7	A-12							30	10.05 / 9.47	10.05 / 9.47	5'										/
8	A-13							29.5	/	/	10'										/
15	AR-1	9:05	✓	✓				31.5	10.76 / 10.11	10.76 / 10.11	10'										/
9	AR-2	8:43	✓	✓				27.5	6.32 / 5.15	6.32 / 5.15	10'										/
10	AR-3	9:00	✓	✓				27.	10.67 / 9.90	10.67 / 9.90	10'										/
																					/
																					/
																					/

Comments: ____

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

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

CLIENT/STATION No.: 04931 FIELD TECHNICIAN: Don Watenpaugh

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 9.87 (TOB) — TOC
Total depth: 20 (TOB) — TOC
Date: 5/27/97 Time (2400): 8:40

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic indicator 31
- ☐ 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 20 - DTW 9.54 = 10.46 x Gal/Linear Foot 0.66 = 6.9 x Number of Casings 3 = Calculated Purge 20.7

DATE PURGED: 5/27/97 START: 10:15 END (2400 hr): 10:25 PURGED BY: DMW

DATE SAMPLED: 5/27/97 START: 14:00 END (2400 hr): 14:00 SAMPLED BY: DMW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
10:25	6	7.80	430	83.4	Brown	Heavy	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: 18.46 (TOB) TOC	7.14	380	75.3	Brown	Heavy	None

PURGING EQUIPMENT/I.D. #
- ☐ Bailer:
- ☒ Centrifugal Pump: 31
- ☐ Airlift Pump:
- ☐ Dedicated:
- ☐ Other:

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 31-9
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-2	5/27/97	14:00	3	40ml	VOA	HCL	TPH/BTEX/MTBE

REMARKS: Ran dry @ 6 gallons

SIGNATURE: Don Watenpaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330109.76 LOCATION: 731 McArthur OAKLAND WELL ID #: A-3

CLIENT/STATION No.: 04931 FIELD TECHNICIAN: Don Watenpaugh

WELL INFORMATION

Depth to Liquid: ____ TOB ____ TOC
Depth to water: 10.55 (TOB) ____ TOC
Total depth: 17 (TOB) ____ TOC
Date: 5/27/97 Time (2400): 8:47

Probe Type and I.D. #: ☐ Oil/Water interface ____ ☒ Electronic indicator 31 ☐ 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 17 - DTW 9.55 = 7.45 x Gal/Linear Foot 0.66 = 4.9 x Number of Casings 3 = Calculated Purge 14.75

DATE PURGED: 5/27/97 START: 10:30 END (2400 hr): 10:34 PURGED BY: DMW
DATE SAMPLED: 5/27/97 START: 14:15 END (2400 hr): 14:15 SAMPLED BY: DMW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
10:34	5.0	7.21	770	79.3	Brown	Heavy	none

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			pH	E.C.	TEMPERATURE	COLOR	TURBIDITY	ODOR
11.58	(TOB)	TOC	6.62	820	82.4	Clear	trace	none

PURGING EQUIPMENT/I.D. #

☐ Bailer: ____ ☐ Airlift Pump: ____
☒ Centrifugal Pump: 31 ☐ Dedicated: ____
☐ Other: ____

SAMPLING EQUIPMENT/I.D. #

☒ Bailer: 31-8
☐ Dedicated: ____
☐ Other: ____

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-3	5/27/97	14:15	3	40ml	VOA	HCL	TPH/BTEX/MTBE

REMARKS: Ran dry @ 5.0 gallons

SIGNATURE: Don Watenpaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330109.7K LOCATION: 731 McArthur OAKLAND WELL ID #: A-4

CLIENT/STATION No.: 04931 FIELD TECHNICIAN: Don Watenpaugh

WELL INFORMATION

Depth to Liquid: ____ TOB ____ TOC
Depth to water: 10.80 (TOB) ____ TOC
Total depth: 20 (TOB) ____ TOC
Date: 5/27/97 Time (2400): 9:10

Probe Type and I.D. #
- ☐ Oil/Water interface ____
- ☒ Electronic indicator ____
- ☐ 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 20 - DTW 10.25 = 9.75 x Gal/Linear Foot 0.66 = 6.4 x Number of Casings 3 = Calculated Purge 19.3

DATE PURGED: 5/27/97 START: 13:40 END (2400 hr): 1350 PURGED BY: Dmw

DATE SAMPLED: 5/27/97 START: 14:30 END (2400 hr): 14:30 SAMPLED BY: Dmw

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR
13:45	6.5	6.56	1200	75.1	Brown	Heavy	Faint
13:50	13	6.60	1080	74.1	Brown	Heavy	Faint
	~~19.5~~		2				

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: 14.93 (TOB) TOC | 6.53 | 1320 | 82.6 | Cloudy | Light | Faint

PURGING EQUIPMENT/I.D. #
- ☐ Bailer: ____
- ☒ Centrifugal Pump: 3
- ☐ Other: ____
- ☐ Airlift Pump: ____
- ☐ Dedicated: ____

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 31-10
- ☐ Dedicated: ____
- ☐ Other: ____

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-4	5/27/97	14:30	3	40ml	VOA	HCl	TPH/BTEX/MtBE

REMARKS: Pumped dry @ 140 gallons

SIGNATURE: Don Watenpaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330109.7K LOCATION: 731 McArthur OAKLAND WELL ID #: A-5

CLIENT/STATION No.: 04931 FIELD TECHNICIAN: Don Watenpaugh

WELL INFORMATION

Depth to Liquid: ____ TOB ____ TOC
Depth to water: 10.65 (TOB) ____ TOC
Total depth: 24.5 (TOB) ____ TOC
Date: 5/27/97 Time (2400): 8:50

Probe Type and I.D. #
- ☐ Oil/Water interface ____
- ☒ Electronic indicator 31
- ☐ 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 24.5 - DTW 9.95 = 14.55 x Gal/Linear Foot 0.38 = 5.3 x Number of Casings 3 = Calculated Purge 16

DATE PURGED: 5/27/97 START: 11:30 END (2400 hr): 11:40 PURGED BY: DMW

DATE SAMPLED: 5/27/97 START: 11:45 END (2400 hr): 11:45 SAMPLED BY: DMW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
11:33	5.4	6.73	880	75.0	Brown	Heavy	None
11:36	10.6	6.71	780	72.4	Brown	Heavy	None
11:40	16	6.70	730	71.6	Brown	Heavy	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: ____
- ☒ Centrifugal Pump: ____
- ☐ Airlift Pump: ____
- ☐ Dedicated: ____
- ☐ Other: ____

SAMPLING EQUIPMENT/I.D.

- ☒ Bailer: 3/3
- ☐ Dedicated: ____
- ☐ Other: ____

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-5	5/27/97	11:45	3	40ml	VOA	HCL	TPH-g/BTEX/MtBE

REMARKS: ____

SIGNATURE: Don Watenpaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330 1097 LOCATION: 731 McArthur OAKLAND WELL ID #: A-6

CLIENT/STATION No.: 04931 FIELD TECHNICIAN: Don Watanpaugh

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 9.66 (TOB) — TOC
Total depth: 24.5 (TOB) — TOC
Date: 5/27/97 Time (2400): 9:15

Probe Type and I.D. #: ☐ Oil/Water interface ☒ Electronic indicator 31 ☐ 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 24.5 - DTW 8.98 = 15.52 x Gal/Linear Foot 0.38 = 5.89 x Number of Casings 3 = Calculated Purge 17.7

DATE PURGED: 5/27/97 START: 11:05 END (2400 hr): 11:19 PURGED BY: Don

DATE SAMPLED: 5/27/97 START: 11:23 END (2400 hr): 11:23 SAMPLED BY: Don

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
11:08	6	7.23	550	72.6	Brown	Heavy	none
11:14	12	7.07	540	74.2	Brown	heavy	none
11:19	17.7	6.95	560	74.9	cloudy	mod	none

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 ____

PURGING EQUIPMENT/I.D. #

☐ Bailer: ☐ Airlift Pump:
☒ Centrifugal Pump: 3 ☐ Dedicated:
☐ Other:

SAMPLING EQUIPMENT/I.D. #

☒ Bailer: 31-2
☐ Dedicated:
☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-6	5/27/97	11:23	3	40ml	VOA	HCl	TPHg/BTEX/MTBE

REMARKS:

SIGNATURE: Don Watanpaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330 1097.6 LOCATION: 731 McArthur OAKLAND WELL ID #: A-7

CLIENT/STATION No.: 04931 FIELD TECHNICIAN: Don Watenpaugh

WELL INFORMATION

Depth to Liquid:	TOB	TOC
Depth to water:	9.34 (TOB)	TOC
Total depth:	23 (TOB)	TOC
Date:	5/27/97 Time (2400):	9:12

Probe Type and I.D. #: ☐ Oil/Water interface ☒ Electronic indicator 31 ☐ 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 23 - DTW 8.87 = 14.13 x Gal/Linear Foot 0.38 = 5.37 x Number of Casings 3 = Calculated Purge 16.1

DATE PURGED: 5/27/97 START: 10:50 END (2400 hr): 10:58 PURGED BY: Don

DATE SAMPLED: 5/27/97 START: 11:00 END (2400 hr): 11:00 SAMPLED BY: Don

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR
10:53	5.4	7.73	430	73.6	Brown	Heavy	None
10:55	10.8	7.25	510	72.3	Cloudy	Heavy	None
10:58	16.0	7.04	530	71.8	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: ☐ Airlift Pump:
☒ Centrifugal Pump: 31 ☐ Dedicated:
☐ Other:

SAMPLING EQUIPMENT/I.D. #

☒ Bailer: 31-1
☐ Dedicated:
☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-7	5/27/97	11:00	3	40ml	VOA	HCl	TPH-g/BTEX/MtBE

REMARKS:

SIGNATURE: Don Watenpaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330 1097 B LOCATION: 731 McArthur OAKLAND WELL ID #: A-8

CLIENT/STATION No.: 04931 FIELD TECHNICIAN: Don Watenpaugh

WELL INFORMATION

Depth to Liquid: ____ TOB ____ TOC
1.45 Depth to water: ~~14.56~~ TOB ____ TOC
Total depth: 18 TOB ____ TOC
Date: 5/27/97 Time (2400): 9:25

Probe Type and I.D. #
- ☐ Oil/Water interface ____
- ☒ Electronic indicator 31
- ☐ Other: ____

CASING DIAMETER / GAL/LINEAR FT.

	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 18 - DTW ~~11.00~~ ~~3.89~~ = ____ x Gal/Linear Foot 0.38 = 2.66 x Number of Casings 3 = Calculated Purge 7.98

DATE PURGED: 5/27/97 START: 12:50 END (2400 hr): 12:57 PURGED BY: DW

DATE SAMPLED: 5/27/97 START: 13:00 END (2400 hr): 13:00 SAMPLED BY: DW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
1252	3	6.83	1760	81.2	Brown	Heavy	Moderate
12:54	6	6.80	1360	78.7	Brown	heavy	moderate
12:57	8	7.13	1280	80.6	Brown	heavy	moderate

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: ____
- ☒ Centrifugal Pump: 31
- ☐ Other: ____
- ☐ Airlift Pump: ____
- ☐ Dedicated: ____

SAMPLING EQUIPMENT/I.D.

- ☒ Bailer: 31-6
- ☐ Dedicated: ____
- ☐ Other: ____

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-8	5/27/97	13:00	3	40ml	VOA	HCL	TPH-g/BTEX/MTBE

REMARKS: ____

SIGNATURE: Don Watenpaugh

PACIFIC ENVIRONMENTAL GROUP, INC

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330 1097 K LOCATION: 731 McArthur OAKLAND WELL ID #: A-9

CLIENT/STATION No.: 04931 FIELD TECHNICIAN: Don Watanpaugh

WELL INFORMATION

Depth to Liquid:	TOB	TOC
Depth to water:	9.56 (TOB)	TOC
Total depth:	19 (TOB)	TOC
Date: 5/27/97	Time (2400): 9:20	

Probe Type and I.D. #: ☐ Oil/Water interface ☒ Electronic indicator 31 ☐ 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 - DTW 8.70 = 10.3 x Gal/Linear Foot 1.5 = 15.45 x Number of Casings 3 = Calculated Purge 46

DATE PURGED: 5/27/97 START: 13:10 END (2400 hr): 13:27 PURGED BY: Don

DATE SAMPLED: 5/27/97 START: 13:30 END (2400 hr): 13:30 SAMPLED BY: Don

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
13:16	15.5	7.26	610	78.4	Cloudy	mod	none
13:21	31.0	7.15	560	76.7	clear	light	none
13:27	46.0	7.03	580	77.6	Clear	light	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: ☐ Airlift Pump:
☒ Centrifugal Pump: 31 ☐ Dedicated:
☐ Other:

SAMPLING EQUIPMENT/I.D. #

☒ Bailer: 31-7
☐ Dedicated:
☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-9	5/27/97	13:30	3	40ml	VOA	HCL	GRO / BTEX/MTBE

REMARKS:

SIGNATURE: Don Watanpaugh

PACIFIC ENVIRONMENTAL GROUP, INC

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330 1097 LOCATION: 731 McArthur OAKLAND WELL ID #: ~~MW-2~~ MW-10

CLIENT/STATION No.: 04931 FIELD TECHNICIAN: Don Watanabe

WELL INFORMATION

Depth to Liquid: ____ TOB ____ TOC
Depth to water: 10.90 TOB 10.99 TOC
Total depth: ____ TOB ____ TOC
Date: 5/27/92 Time (2400): 8:55

Probe Type and I.D. #
- ☐ Oil/Water interface ____
- ☒ Electronic indicator 31
- ☐ 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 1.5 = ____ x Number of Casings 3 = Calculated Purge ____

DATE PURGED: ____ START: ____ END (2400 hr): ____ PURGED BY: DMW

DATE SAMPLED: ____ START: ____ END (2400 hr): ____ SAMPLED BY: DMW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR
					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: ____
- ☒ Centrifugal Pump: ____
- ☐ Other: ____
- ☐ Airlift Pump: ____
- ☐ Dedicated: ____

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A 10			3	40ml	VOA	HCL	GMX / BTEX

REMARKS: DTW TOB/TOC only

SIGNATURE: Don Watanabe

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330 1097 LOCATION: 731 McArthur OAKLAND WELL ID #: A-11

CLIENT/STATION No.: 04931 FIELD TECHNICIAN: Don Watenpaugh

WELL INFORMATION

Depth to Liquid: ___ TOB ___ TOC
Depth to water: ~~10.05~~ 10.60 (TOB) ___ TOC
Total depth: 28 (TOB) ___ TOC
Date: 5/27/97 Time (2400): ___

Probe Type and I.D. #
- ☐ Oil/Water interface ___
- ☒ Electronic indicator 31
- ☐ 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 ~~28~~ 28 - DTW ~~9.47~~ 10.45 = 17.55 x Gal/Linear Foot 0.38 = 6.66 x Number of Casings 3 Calculated = Purge 20

DATE PURGED: 5/27/97 START: 12:25 END (2400 hr): 12:40 PURGED BY: Don
DATE SAMPLED: 5/27/97 START: 12:45 END (2400 hr): 12:45 SAMPLED BY: Don

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
12:30	6.7	7.06	590	79.7	cloudy	mod	none
12:35	13.4	6.94	560	76.7	cloudy	mod	none
12:40	20	6.92	550	79.8	cloudy	light	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: ___
- ☒ Centrifugal Pump: 31
- ☐ Other: ___
- ☐ Airlift Pump: ___
- ☐ Dedicated: ___

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 315
- ☐ Dedicated: ___
- ☐ Other: ___

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-11	5/27/97	12:45	3	40ml	VOA	HCL	TPHg/BTEX/MtBE

REMARKS: ___

SIGNATURE: Don Watenpaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330 1097 06 LOCATION: 731 MacArthur OAKLAND WELL ID #: A-12

CLIENT/STATION No.: 04931 FIELD TECHNICIAN: Don Watenpaugh

WELL INFORMATION

Depth to Liquid: ~~—~~ TOB ~~—~~ TOC
Depth to water: 10.05 (TOB) ~~—~~ TOC
Total depth: (TOB) ~~—~~ TOC
Date: 5/27/97 Time (2400):

Probe Type and I.D. #: ☐ Oil/Water interface ☒ Electronic indicator 31 ☐ 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 30 - DTW 9.47 = 20.53 x Gal/Linear Foot 0.38 = 7.8 x Number of Casings 3 = Calculated Purge 23

DATE PURGED: 5/27/97 START: 11:50 END (2400 hr): 12:17 PURGED BY: Dmw

DATE SAMPLED: 5/27/97 START: 12:20 END (2400 hr): 12:20 SAMPLED BY: Dmw

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
11:55	7.5	7.02	560	70.6	cloudy	mod	none
12:05	15	6.89	550	72.2	cloudy	mod	none
12:17	23	6.87	530	74.0	cloudy	mod	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: ☐ Airlift Pump:
☒ Centrifugal Pump: 31 ☐ Dedicated:
☐ Other:

SAMPLING EQUIPMENT/I.D. #

☒ Bailer: 81-4
☐ Dedicated:
☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-12	5/27/97	12:20	3	40ml	VOA	HCl	TPH-g/BTEX/MTBE

REMARKS:

SIGNATURE: Don Watenpaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330 1097G LOCATION: 731 McArthur OAKLAND WELL ID #: A-13

CLIENT/STATION No.: 04931 FIELD TECHNICIAN: Don Waterpaugh

WELL INFORMATION

Depth to Liquid: ______ TOB ______ TOC
Depth to water: ______ (TOB) ______ TOC
Total depth: ______ (TOB) ______ TOC
Date: 5/27/97 Time (2400): ______

Probe Type and I.D. #
- ☐ Oil/Water interface ______
- ☒ Electronic indicator ______
- ☐ 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 0.38 = ______ x Number of Casings 3 = Calculated Purge ______

DATE PURGED: 5/27/97 START: ______ END (2400 hr): ______ PURGED BY: Don

DATE SAMPLED: 5/27/97 START: ______ END (2400 hr): ______ SAMPLED BY: Don

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR
	Couldn't		Find	well	in street		

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: ______
- ☒ Centrifugal Pump: 31
- ☐ Other: ______
- ☐ Airlift Pump: ______
- ☐ Dedicated: ______

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-13	5/27/97		3	40ml	VOA	HCL	TPHg/BTEX/MtBE

REMARKS: ______

SIGNATURE: Don Waterpaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330109.76 LOCATION: 731 McArthur OAKLAND WELL ID #: AR-1

CLIENT/STATION No.: 04931 FIELD TECHNICIAN: Don Watenpaugh

WELL INFORMATION

Depth to Liquid: ~~—~~ TOB ~~—~~ TOC
Depth to water: 10.76 (TOB) 10.11 TOC
Total depth: 31.5 (TOB) — TOC
Date: 5/27/97 Time (2400): 9:05

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic indicator 31
- ☐ 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 1.5 = ____ x Number of Casings 3 = Calculated Purge ____

DATE PURGED: ____ START: ____ END (2400 hr): ____ PURGED BY: ____

DATE SAMPLED: ____ START: ____ END (2400 hr): ____ SAMPLED BY: ____

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

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: ____
- ☒ Centrifugal Pump: ____
- ☐ Other: ____
- ☐ Airlift Pump: ____
- ☐ Dedicated: ____

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
AR1			3	40ml	VOA	HCL	GRAV / BTEX

REMARKS: DTW TOB/TOC only
10.76 / 10.11

SIGNATURE: Don Watenpaugh

PACIFIC ENVIRONMENTAL

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330 1097 LOCATION: 731 MacArthur OAKLAND WELL ID #: AR-2

CLIENT/STATION No.: 04931 FIELD TECHNICIAN: Don Watanabe

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 6.32 TOB — TOC
Total depth: 27.5 TOB — TOC
Date: 5/27/97 Time (2400): 1243

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic indicator 3/
- ☐ 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 1.5 = ____ x Number of Casings 3 Calculated = Purge ____

DATE PURGED: ____ START: ____ END (2400 hr): ____ PURGED BY: ____

DATE SAMPLED: ____ START: ____ END (2400 hr): ____ SAMPLED BY: ____

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

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:
- ☒ Centrifugal Pump:
- ☐ Airlift Pump:
- ☐ Dedicated:
- ☐ Other:

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-			3	40ml	VOA	HCl	GMA / BTEX

REMARKS:
DTW TOB / TOC only
6.32 / 5.15

SIGNATURE: Don Watanabe

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330 1097K LOCATION: 731 McArthur OAKLAND WELL ID #: AR-3

CLIENT/STATION No.: 0 4931 FIELD TECHNICIAN: Don Waterpaugh

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 10.67 (TOB) — TOC
Total depth: 27 (TOB) — TOC
Date: 5/27/97 Time (2400): 9:00

Probe Type and I.D. #
- ☐ Oil/Water interface
- ☒ Electronic indicator
- ☐ 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 1.5 = ____ x Number of Casings 3 = Calculated Purge ____

DATE PURGED: ____ START: ____ END (2400 hr): ____ PURGED BY: ____

DATE SAMPLED: ____ START: ____ END (2400 hr): ____ SAMPLED BY: ____

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR
					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:
- ☒ Centrifugal Pump:
- ☐ Other:
- ☐ Airlift Pump:
- ☐ Dedicated:

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

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

REMARKS: DTW TOB/TOC only
10.67/9.90

SIGNATURE: Don Waterpaugh

PACIFIC ENVIRONMENTAL

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. WA 2133400

Chain of Custody

ARCO Facility no. 4931	City (Facility) Oakland	Project manager (Consultant) Shaw Garakani	Laboratory name Sequoia
ARCO engineer Paul Supple	Telephone no. (ARCO)	Telephone no. (Consultant) (408) 441 7500	Fax no. (Consultant) (408) 441 7539	Contract number 2133400
Consultant name Pacific Env. Group Inc	Address (Consultant) 2025 Gateway Pl. Suite 440		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 More	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		X	HCl	5/27/97	14:00		X									
A-3									14:15											
A-4									14:30											
A-5									11:45											
A-6									11:23											
A-7									11:00											
A-8									13:00											
A-9									13:30											
A-11									12:45		↓									
A-12		↓		↓		↓	↓	↓	12:20											

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: Don Galanpanyl	5/27/97	18:05
Relinquished by		
Relinquished by		

Received by

Received by

Received by laboratory — Date — Time

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

APPC-3292 (2-91)

ATTACHMENT C

REMEDIAL SYSTEM PERFORMANCE EVALUATION

ATTACHMENT C
REMEDIAL SYSTEM PERFORMANCE EVALUATION

GWE System

Groundwater extraction (GWE) was conducted intermittently between November 10, 1992, and July 5, 1995. The GWE system was comprised of 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. The GWE system was permitted by East Bay Municipal Utility District Permit (Account Number 502-62131). Based on verbal approval from the Alameda County Health Care Services Agency, the GWE system was shutdown and the permit was relinquished. No evidence of plume migration has been observed since system deactivation. Overall, 4.6 million gallons of groundwater were extracted and less than 0.06 gallon of benzene removed.

Historical GWE system performance and analytical data are presented in Tables C-1 and C-2. Graphical presentations of total purgeable petroleum hydrocarbons calculated as gasoline (TPPH-g) and benzene mass removal and concentration data are shown on Figures C-1 and C-2, respectively.

Bioremediation Enhancement Program

At the request of ARCO Products Company, Pacific Environmental Group, Inc. (PACIFIC) initiated an in-situ bioremediation enhancement program consisting of installation of oxygen releasing compound (ORC) units in select wells beginning November 1995. ORC is a formulation of very fine, insoluble magnesium peroxide that releases oxygen at a slow, controlled rate when hydrated. ORC product literature was presented in PACIFIC's fourth quarter 1995 report. ORC units are currently installed in Wells A-8 and A-9. The in-situ bioremediation enhancement program was suspended during first quarter 1997. Bioremediation enhancement program data are presented in Table C-3.

Intrinsic Bioremediation Evaluation

At the request of ARCO, PACIFIC monitored intrinsic bioremediation indicator parameters (bioparameters) during the fourth quarter 1996 groundwater monitoring event. Groundwater

samples from Wells A-4, A-8, and A-12 were analyzed for biological oxygen demand (BOD), carbon dioxide (CO_2), chemical oxygen demand (COD), methane, nitrate, sulfate, dissolved oxygen (DO), and ferrous iron. Wells A-4 and A-8 are located within the plume; Well A-12 is located outside the plume. Although fourth quarter 1996 monitoring results indicate non-detectable concentrations of TPPH-g and BTEX compounds in Well A-4, this well was considered as an inter-plume well, based on third quarter 1996 monitoring results (TPPH-g and benzene concentrations of 3,000 and 480 parts per million [ppm], respectively). The parameters monitored and the associated values are presented in Table C-3.

In general, depleted concentrations of electron acceptors (DO, nitrate, and sulfate) and elevated concentrations of bioremediation byproducts (ferrous iron, CO_2, and methane) within the impacted plume compared to background, indicate that intrinsic bioremediation is occurring. Evaluation of collected data from Wells A-4 and A-8 and A-12 demonstrates a pattern that is indicative of intrinsic bioremediation at the site. Bioparameters are presented in Table C-3. Graphical presentation of bioparameters vs. total BTEX compounds were presented PACIFIC's fourth quarter 1996 report.

Conclusions

At the request of ARCO, the oxygen enhancement program was terminated during first quarter 1997. Therefore, the ORC units were removed from Wells A-8 and A-9 during second quarter 1997 sampling event. The GWE system will remain deactivated based on verbal approval from the ACHCSA.

Attachments:
- Table C-1 - Historical Groundwater Extraction System Performance Data
- Table C-2 - Historical Groundwater Extraction System Analytical Data
- Table C-3 - Bioremediation Enhancement Program Data
- Figure C-1 - Historical Groundwater Extraction System Mass Removal Trend
- Figure C-2 - Historical Groundwater Extraction System Hydrocarbon Concentrations

Table C-1
Historical 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: 04//01/97 - 06/30/97 (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:					**4,643,696 (e)**						
PERIOD GALLONS EXTRACTED:					N/A						
PERIOD AVERAGE FLOW RATE (gpm):					N/A						
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, Inc. 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 on 07/05/95 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 C-2
Historical Groundwater Extraction System Analytical Data

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

TPPH = Total purgeable petroleum hydrocarbons
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.
GWE system was deactivated on 07/05/95.
See certified analytical reports for detection limits.

Table C-3
Bioremediation Enhancement Program Data

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

		Field Analyses					Laboratory Analyses									
Well	Date Sampled	Groundwater Temperature (deg F)	pH (units)	Conductivity (µmhos)	DO (mg/L)	Ferrous Iron (mg/L)	Nitrite as Nitrite (mg/L)	Nitrate as Nitrate (mg/L)	Carbon Dioxide (%)	Methane (%)	Sulfate (mg/L)	B.O.D. (mg/L)	C.O.D. (mg/L)	TPPH as Gasoline (µg/L)	Benzene (µg/L)	Total BTEX (µg/L)
A-4	12/19/96	60.3	6.63	740	0.4	7.0	NS	<1.0	6.7	0.50	<1.0	NS	NS	<2,000	<20	<80
A-8	05/22/96 a	71.1	6.46	1,045	0.3	0.3	0.17	18	NS	NS	NS	NS	NS	14,000	2,800	3,470
	12/19/96 a	62.1	6.95	760	0.20	10	NS	26	3.7	0.35	43	30	350	12,000	450	1,000
A-9	11/17/95 b	69 3	6.39	560	0.7	0.7	<1.0	22	NS	NS	NS	NS	NS	NS	NS	NS
	05/22/96 c	76.0	6.69	720	3.8	3.8	<1.0	41	NS	NS	NS	NS	NS	ND	<0.50	ND
	12/19/96 b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
A-12	12/19/96	68.4	7.18	510	3.06	0.0	NS	33	1.6	<0.020	54	NS	NS	85	<0.50	<2.0

deg F = Degrees Fahrenheit
µmhos = Microhmos
DO = Dissolved oxygen measured prior to renewal of ORC units
B.O.D. = Biochemical oxygen demand
C.O.D. = Chemical oxygen demand
TPPH = Total purgeable petroleum hydrocarbons
BTEX = Benzene, toluene, ethylbenzene, and xylenes
mg/L = Milligrams per liter

µg/L = Micrograms per liter
ND = Not detected above the method detection limit
NS = Not sampled
NA = Not analyzed
a. Thirteen 2-inch diameter ORC units installed in Well A-8.
b. Eight 2-inch diameter ORC units installed in Well A-9.
c. ORC units replaced with the same number originally installed.

All data collected before original or any subsequent ORC installation, following standard purging protocol.

Figure C-1
Historical Groundwater Extraction System Mass Removal Trend

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

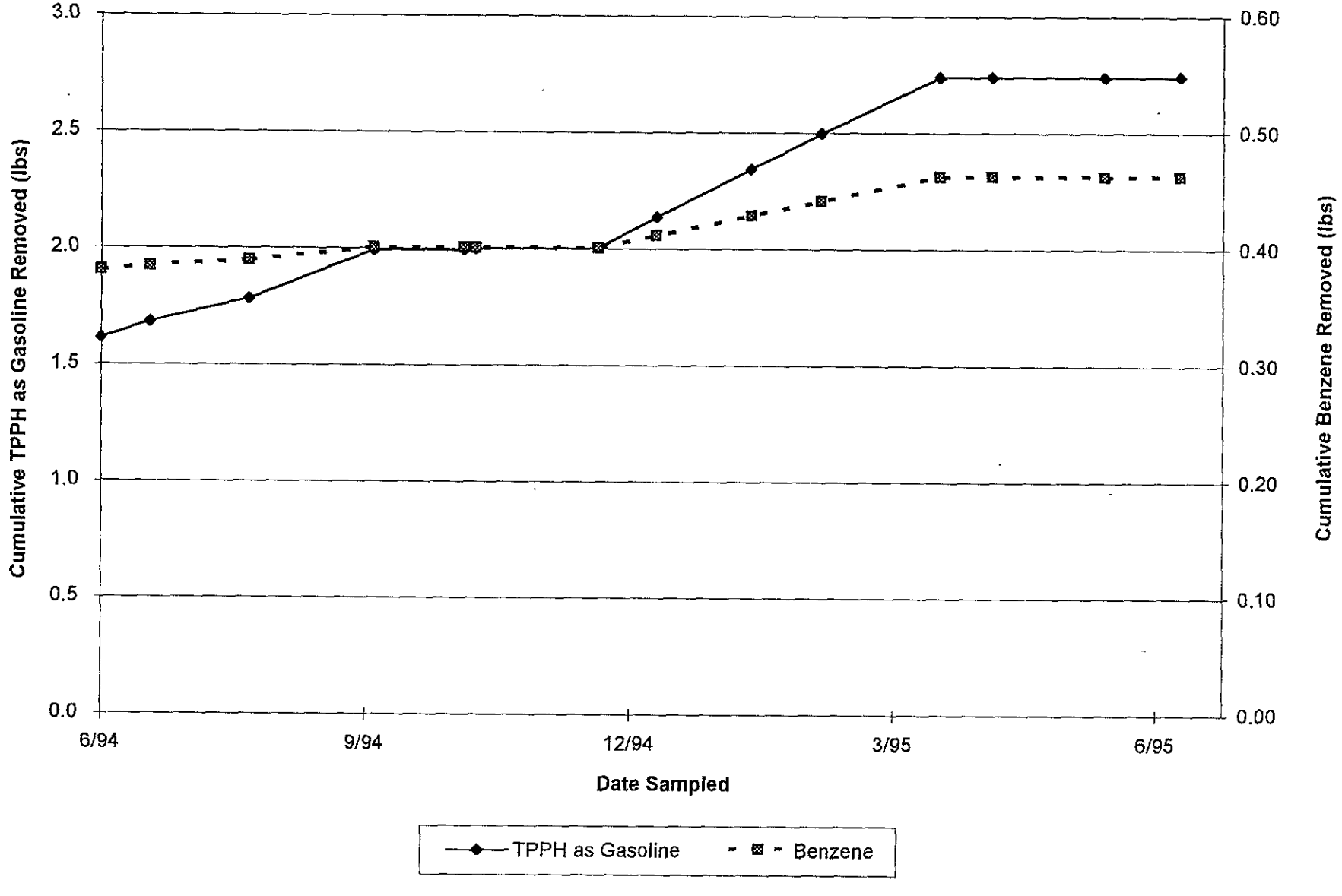

Figure C-2
Historical Groundwater Extraction System Hydrocarbon Concentrations

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