



PACIFIC ENVIRONMENTAL GROUP INC.

ENVIRONMENTAL PROTECTION

97 DEC -2 AM 8:41

Quarterly Groundwater Monitoring and Remedial System Performance Summary Third Quarter 1997

ARCO Service Station 0374
6407 Telegraph Avenue at Alcatraz Avenue
Oakland, California

Prepared for


Mr. Paul Supple
ARCO Products Company

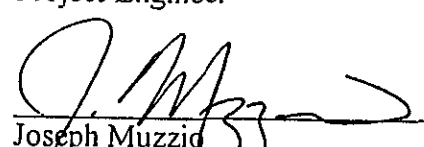
November 25, 1997

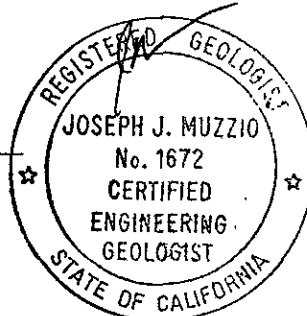
Prepared by

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

Project 330-084.2D


Shaw Garakani
Project Engineer


Joseph Muzzio
Project Manager
CEG 1672



Date: November 25, 1997

Quarter: 3Q97

ARCO QUARTERLY GROUNDWATER MONITORING REPORT

Facility No.: 0374 Address: 6407 Telegraph Avenue at Alcatraz Avenue, Oakland
ARCO Environmental Engineer: Paul Supple
Consulting Co./Contact Person: Pacific Environmental Group, Inc./Shaw Garakani
Consultant Project No.: 330-084.2D
Primary Agency/Regulatory ID No.: Regional Water Quality Control Board - S.F. Bay Region

WORK PERFORMED THIS QUARTER (Third - 1997):

1. Submitted second quarter 1997 groundwater monitoring report.
2. Performed third quarter 1997 groundwater monitoring event on August 12, 1997.
3. Prepared third quarter 1997 groundwater monitoring report.
4. Continued intrinsic bioremediation enhancement at Well MW-3.

WORK PROPOSED FOR NEXT QUARTER (Fourth - 1997):

1. Submit third quarter 1997 groundwater monitoring report.
2. Perform fourth quarter 1997 groundwater monitoring event.
3. Prepare fourth quarter 1997 groundwater monitoring event.
4. Continue intrinsic bioremediation enhancement at Well MW-3.

Current Phase of Project:	<u>Monitoring</u>	(Assmnt, Remed., etc.)
Frequency of Groundwater Sampling:	<u>Quarterly/Annually</u>	(Quarterly, etc.)
Frequency of Groundwater Monitoring:	<u>Quarterly</u>	(Monthly, etc.)
Is Free Product (FP) Present On-Site:	<u>No</u>	(Yes/No)
FP Recovered this Quarter:	<u>None</u>	(gallons)
Cumulative FP Recovered to Date:	<u>None</u>	(gallons)
Bulk Soil Removed This Quarter:	<u>None</u>	(cubic yards)
Bulk Soil Removed to Date:	<u>None</u>	(cubic yards)
Current Remediation Techniques:	<u>Bioremediation enhancement</u>	(SVE/Sparge/FP Removal, etc.)
Approximate Depth to Groundwater:	<u>5.43 to 8.46</u>	(Measure Feet)
Groundwater Gradient:	<u>Southwest</u>	(Direction)
	<u>0.04</u>	(Magnitude)

DISCUSSION:

- TPPH-g and benzene concentrations at all wells except Well MW-4, were below detection limits this quarter.
- The occurrence of intrinsic bioremediation at the site was documented during third quarter 1996.

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 Summary

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

Table 1
Groundwater Sampling Schedule

ARCO Service Station 0374
6407 Telegraph Avenue at Alcatraz Avenue
Oakland, California

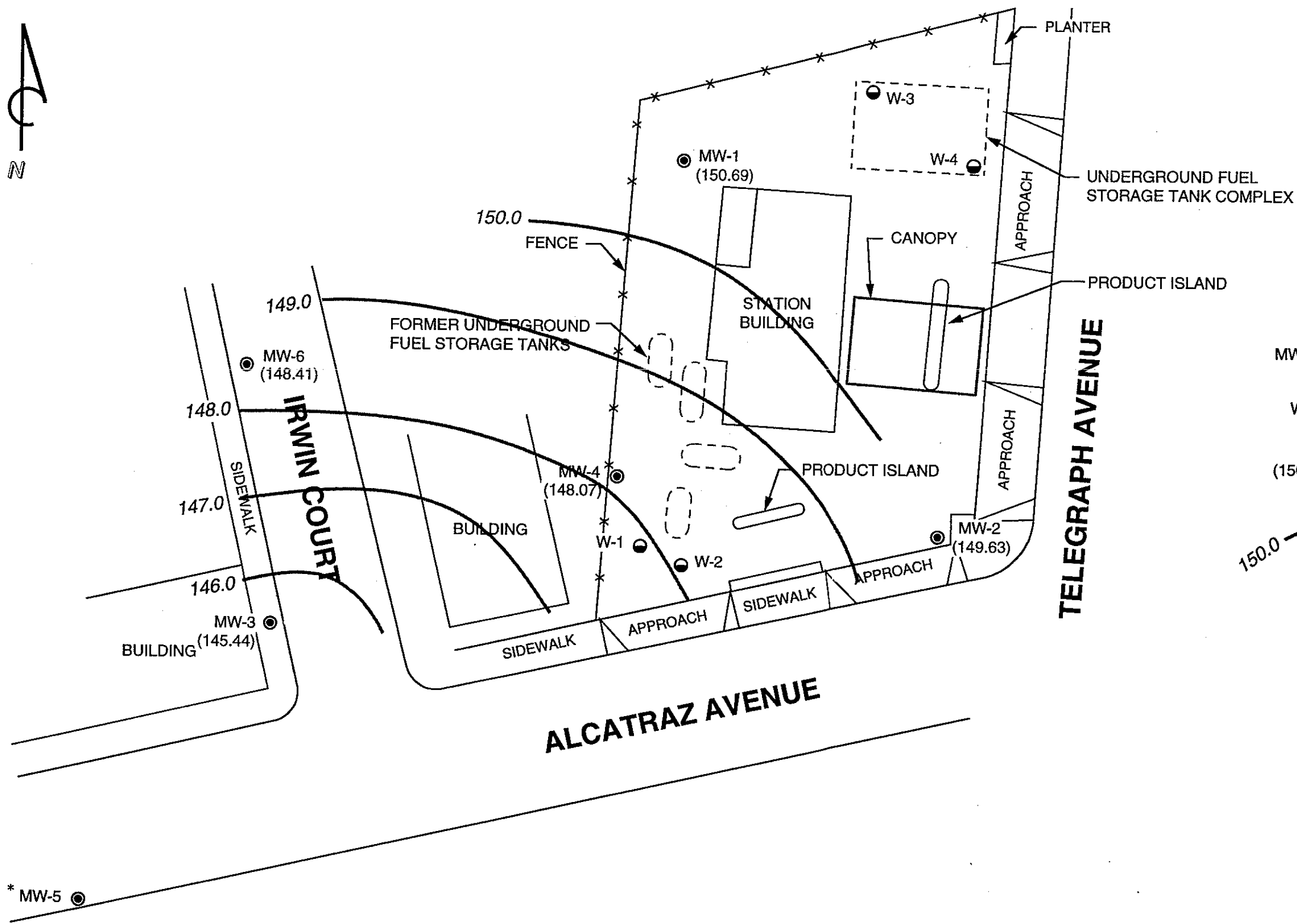
Well Number	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Sampling Frequency
MW-1			a		Annually
MW-2			a		Annually
MW-3	a		a		Semiannually
MW-4	a		a		Semiannually
MW-5	a	a	a	a	Quarterly
MW-6			a		Annually

a. Samples analyzed for TPH-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 0374
 6407 Telegraph Avenue at Alcatraz Avenue
 Oakland, California

Well Number	Date Gauged/ Sampled	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Xylenes (ppb)	MtBE (ppb)
MW-1	01/31/96	158.91	6.34	152.57	----- Well Sampled Annually -----					
	04/10/96		5.82	153.09	----- Well Sampled Annually -----					
	07/16/96		7.23	151.68	<50	<0.50	<0.50	<0.50	<0.50	340
	10/14/96		8.34	150.57	----- Well Sampled Annually -----					
	03/27/97		6.37	152.54	----- Well Sampled Annually -----					
	05/27/97		7.30	151.61	----- Well Sampled Annually -----					
	08/12/97		8.22	150.69	<50	<0.50	<0.50	<0.50	<0.50	620
MW-2	01/31/96	157.92	6.51	151.41	----- Well Sampled Annually -----					
	04/10/96		6.94	150.98	----- Well Sampled Annually -----					
	07/16/96		7.73	150.19	<50	1.2	<0.50	<0.50	<0.50	33
	10/14/96		8.35	149.57	----- Well Sampled Annually -----					
	03/27/97		7.40	150.52	----- Well Sampled Annually -----					
	05/27/97		7.82	150.10	----- Well Sampled Annually -----					
	08/12/97		8.29	149.63	<50	<0.50	<0.50	<0.50	<0.50	23
MW-3*	01/31/96	153.64	7.02	146.62	140	20	0.87	11	14	NA
	04/10/96		7.82	145.82	84	2.4	<0.50	1.9	1.1	NA
	07/16/96		6.80	146.84	<50	2.2	<0.50	<0.50	<0.50	<2.5
	10/14/96		7.67	145.97	<50	1.2	<0.50	<0.50	0.81	2.9
	03/27/97		7.62	146.02	<50	0.94	<0.50	0.9	0.63	<2.5
	05/27/97		6.72	146.92	----- Well Sampled Semiannually -----					
	08/12/97		8.20	145.44	<50	<0.50	<0.50	<0.50	<0.50	<2.5
MW-4	01/31/96	156.53	5.64	150.89	230	23	2.2	3.7	32	NA
	04/10/96		6.66	149.87	7,300	1,600	350	350	830	NA
	07/16/96		7.73	148.80	5,600	1,100	160	240	520	150
	10/14/96		8.55	147.98	4,500	860	72	160	340	<62
	03/27/97		7.15	149.38	25,000	5,200	760	850	2,600	<250
	05/27/97		7.75	148.78	----- Well Sampled Semiannually -----					
	08/12/97		8.46	148.07	4,800	950	40	140	210	170
MW-5	01/31/96	151.33	8.64	142.69	<50	<0.50	<0.50	<0.50	<0.50	NA
	04/10/96		N/A	--	<50	<0.50	<0.50	<0.50	<0.50	NA
	07/16/96		8.15	143.18	<50	0.79	1.3	<0.50	<0.50	<2.5
	10/14/96		7.92	143.41	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	03/27/97		7.75	143.58	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	05/27/97		8.16	143.17	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	08/12/97		----- Well Inaccessible -----							
MW-6	01/31/96	153.84	5.15	148.69	----- Well Sampled Annually -----					
	04/10/96		4.58	149.26	----- Well Sampled Annually -----					
	07/16/96		4.96	148.88	<50	<0.50	<0.50	<0.50	<0.50	150
	10/14/96		6.15	147.69	----- Well Sampled Annually -----					
	03/27/97		4.40	149.44	----- Well Sampled Annually -----					
	05/27/97		4.90	148.94	----- Well Sampled Annually -----					
	08/12/97		5.43	148.41	<50	<0.50	<0.50	<0.50	<0.50	39
MtBE	= Methyl tert-butyl ether									
MSL	= Mean sea level									
TOC	= Top of casing									
ppb	= Parts per billion									
<	= Less than laboratory detection limit stated to the right									
NA	= Not analyzed									
NS	= Not sampled									
N/A	= Not available									
*	= ORCs installed in well beginning 11/14/95. Please refer to Attachment C for details.									



LEGEND

- MW-1 ● GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- W-1 ● TANK PIT GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- (150.69) LIQUID SURFACE ELEVATION IN FEET - MSL, 8-12-97
- 150.0 — LIQUID SURFACE ELEVATION CONTOUR IN FEET - MSL, 8-12-97
- * WELL INACCESSIBLE

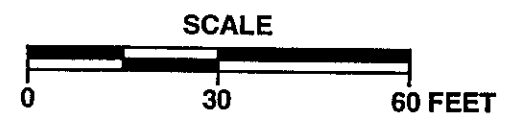


APPROXIMATE DIRECTION OF GROUNDWATER FLOW

APPROXIMATE GRADIENT = 0.04



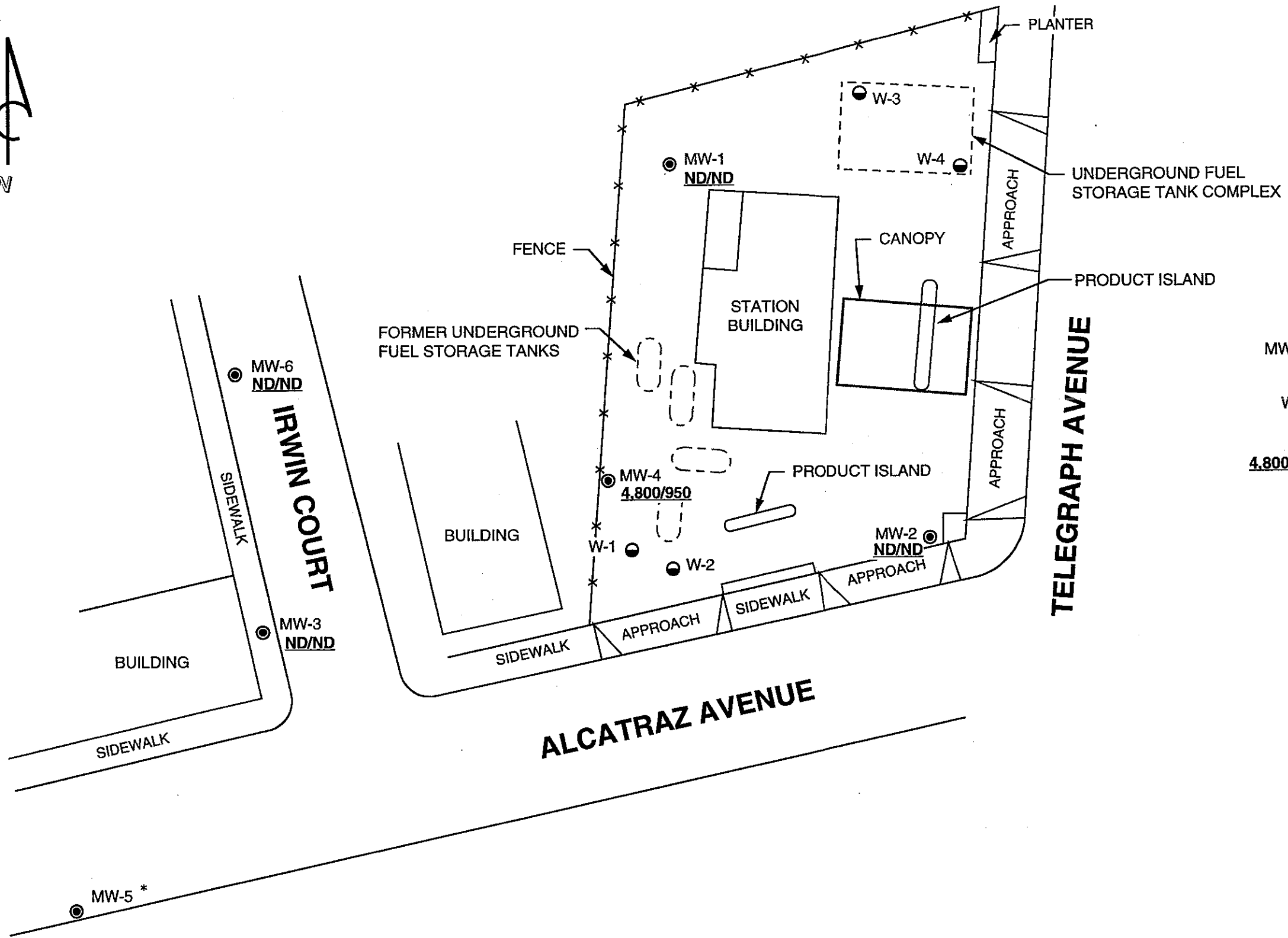
PACIFIC ENVIRONMENTAL GROUP, INC.



ARCO SERVICE STATION 0374
6407 Telegraph Avenue at Alcatraz Avenue
Oakland, California

GROUNDWATER ELEVATION CONTOUR MAP

FIGURE: **1**
PROJECT: 330-084.2D



LEGEND

MW-1 ● GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

W-1 ● TANK PIT GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

4,800/950 TPPH-g/BENZENE CONCENTRATION IN GROUNDWATER, IN PARTS PER BILLION, 8-12-97

ND NOT DETECTED

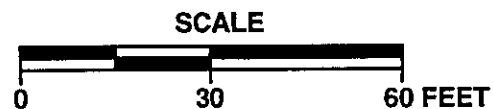
* WELL INACCESSIBLE



APPROXIMATE DIRECTION OF GROUNDWATER FLOW



PACIFIC ENVIRONMENTAL GROUP, INC.



ARCO SERVICE STATION 0374
6407 Telegraph Avenue at Alcatraz Avenue
Oakland, California

TPPH-g/BENZENE CONCENTRATION MAP

FIGURE:
2
PROJECT:
330-084.2D

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), 8020, and 5030 utilizing a purge-and-trap extraction technique. Final detection was by gas chromatography using flame- and photo-ionization detectors. The methods of analysis for the groundwater samples are documented in the certified analytical report. The certified analytical report, chain-of-custody documentation, and field data sheets are presented as Attachment B.

ATTACHMENT B

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



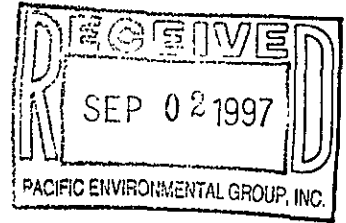
Sequoia Analytical

680 Chesapeake Drive
404 N Wiget Lane
819 Striker Avenue, Suite 8

Redwood City, CA 94063
Walnut Creek, CA 94598
Sacramento, CA 95834

(650) 364-9600
(510) 988-9600
(916) 921-9600

FAX (650) 364-9233
FAX (510) 988-9673
FAX (916) 921-0100



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

Project: 330-084.2K/0374, Berkeley


Enclosed are the results from samples received at Sequoia Analytical on August 13, 1997.
The requested analyses are listed below:

<u>SAMPLE #</u>	<u>SAMPLE DESCRIPTION</u>	<u>DATE COLLECTED</u>	<u>TEST METHOD</u>
9708774 -01	LIQUID, MW-1	08/12/97	MTBE_W Methyl t-Butyl Ethe
9708774 -01	LIQUID, MW-1	08/12/97	TPHGBW Purgeable TPH/BTEX
9708774 -02	LIQUID, MW-2	08/12/97	MTBE_W Methyl t-Butyl Ethe
9708774 -02	LIQUID, MW-2	08/12/97	TPHGBW Purgeable TPH/BTEX
9708774 -03	LIQUID, MW-3	08/12/97	MTBE_W Methyl t-Butyl Ethe
9708774 -03	LIQUID, MW-3	08/12/97	TPHGBW Purgeable TPH/BTEX
9708774 -04	LIQUID, MW-4	08/12/97	MTBE_W Methyl t-Butyl Ethe
9708774 -04	LIQUID, MW-4	08/12/97	TPHGBW Purgeable TPH/BTEX
9708774 -05	LIQUID, MW-6	08/12/97	MTBE_W Methyl t-Butyl Ethe
9708774 -05	LIQUID, MW-6	08/12/97	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





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

Client Proj. ID: 330-084.2K/0374, Berkeley
Sample Descript: MW-1
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9708774-01

Sampled: 08/12/97
Received: 08/13/97
Analyzed: 08/21/97
Reported: 08/25/97

Attention: Shaw Garakani

GC Batch Number: GC082197BTEX02A
Instrument ID: GCHP02

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	5.0	620
Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	113

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager





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

Client Proj. ID: 330-084.2K/0374, Berkeley
Sample Descript: MW-1
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9708774-01

Sampled: 08/12/97
Received: 08/13/97
Analyzed: 08/20/97
Reported: 08/25/97

Attention: Shaw Garakani

QC Batch Number: GC082097BTEX03A
Instrument ID: GCHP03

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		N.D.
Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	103

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

SEQUOIA ANALYTICAL - ELAP #1210


Tod Granicher
Project Manager





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

Client Proj. ID: 330-084.2K/0374, Berkeley
Sample Descript: MW-2
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9708774-02

Sampled: 08/12/97
Received: 08/13/97
Analyzed: 08/20/97
Reported: 08/25/97

Attention: Shaw Garakani

QC Batch Number: GC082097BTEX03A
Instrument ID: GCHP03

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	23
Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	101

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager





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

Client Proj. ID: 330-084.2K/0374, Berkeley
Sample Descript: MW-2
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9708774-02

Sampled: 08/12/97
Received: 08/13/97
Analyzed: 08/20/97
Reported: 08/25/97

Attention: Shaw Garakani

QC Batch Number: GC082097BTEX03A
Instrument ID: GCHP03

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas		
Benzene	50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:	0.50	N.D.
Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	101

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

SEQUOIA ANALYTICAL - ELAP #1210


Tod Granlcher
Project Manager





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

Attention: Shaw Garakani

Client Proj. ID: 330-084.2K/0374, Berkeley
Sample Descript: MW-3
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9708774-03

Sampled: 08/12/97
Received: 08/13/97
Analyzed: 08/20/97
Reported: 08/25/97


QC Batch Number: GC082097BTEX03A
Instrument ID: GCHP03

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	108

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

SEQUOIA ANALYTICAL - ELAP #1210


Tod Granicher
Project Manager





Pacific Environmental Group 2025 Gateway Place, Suite 440 San Jose, CA 95110	Client Proj. ID: 330-084.2K/0374, Berkeley Sample Descript: MW-3 Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9708774-03	Sampled: 08/12/97 Received: 08/13/97 Analyzed: 08/20/97 Reported: 08/25/97
Attention: Shaw Garakani		
QC Batch Number: GC082097BTEX03A		
Instrument ID: GCHP03		

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas		
Benzene	50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:	0.50	N.D.
Surrogates		
Trifluorotoluene	Control Limits % 70 130	% Recovery 108

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

SEQUOIA ANALYTICAL - ELAP #1210

Jee

Tod Granicher
Project Manager





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

Client Proj. ID: 330-084.2K/0374, Berkeley
Sample Descript: MW-4
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9708774-04

Sampled: 08/12/97
Received: 08/13/97
Analyzed: 08/20/97
Reported: 08/25/97

Attention: Shaw Garakani

QC Batch Number: GC082097BTEX03A
Instrument ID: GCHP03

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	50	170
Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70	130
		119

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

SEQUOIA ANALYTICAL - ELAP #1210

Shaw
Shaw Garakani
Project Manager






Pacific Environmental Group 2025 Gateway Place, Suite 440 San Jose, CA 95110	Client Proj. ID: 330-084.2K/0374, Berkeley Sample Descript: MW-4 Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9708774-04	Sampled: 08/12/97 Received: 08/13/97 Analyzed: 08/20/97 Reported: 08/25/97
QC Batch Number: GC082097BTEX03A		
Instrument ID: GCHP03		

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas		
Benzene	1000	4800
Toluene	10	950
Ethyl Benzene	10	40
Xylenes (Total)	10	140
Chromatogram Pattern:	10	210
		Gas
Surrogates		
Trifluorotoluene	Control Limits % 70	% Recovery 119

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

SEQUOIA ANALYTICAL - ELAP #1210


 Tod Granicher
 Project Manager





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

Client Proj. ID: 330-084.2K/0374, Berkeley
Sample Descript: MW-6
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9708774-05

Sampled: 08/12/97
Received: 08/13/97
Analyzed: 08/20/97
Reported: 08/25/97

Attention: Shaw Garakani

QC Batch Number: GC082097BTEX03A
Instrument ID: GCHP03

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	39
Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	111

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager





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

Client Proj. ID: 330-084.2K/0374, Berkeley
Sample Descript: MW-6
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9708774-05

Sampled: 08/12/97
Received: 08/13/97
Analyzed: 08/20/97
Reported: 08/25/97

Attention: Shaw Garakani

GC Batch Number: GC082097BTEX03A
Instrument ID: GCHP03

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas		
Benzene	50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:	0.50	N.D.
Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	111

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

SEQUOIA ANALYTICAL - ELAP #1210

Shaw
Shaw Granicher
Project Manager





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

Client Project ID: 330-084.2K/0374, Berkeley
Matrix: Liquid

Attention: Shaw Garakani

Work Order #: 9708774 -01-05

Reported: Aug 28, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC082097BTEX03A	GC082097BTEX03A	GC082097BTEX03A	GC082097BTEX03A	GC082097BTEX03A
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:	D. Jirsa	D. Jirsa	D. Jirsa	D. Jirsa	D. Jirsa
MS/MSD #:	970857903	970857903	970857903	970857903	970857903
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	8/20/97	8/20/97	8/20/97	8/20/97	8/20/97
Analyzed Date:	8/20/97	8/20/97	8/20/97	8/20/97	8/20/97
Instrument I.D.#:	GCHP03	GCHP03	GCHP03	GCHP03	GCHP03
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	8	9.4	10	29	70
MS % Recovery:	80	94	100	97	117
Dup. Result:	7.8	9.2	10	28	69
MSD % Recov.:	78	92	100	93	115
RPD:	2.5	2.2	0.0	3.5	1.4
RPD Limit:	0-25	0-25	0-25	0-25	0-25

LCS #:	BLK082097	BLK082097	BLK082097	BLK082097	BLK082097
Prepared Date:	8/20/97	8/20/97	8/20/97	8/20/97	8/20/97
Analyzed Date:	8/20/97	8/20/97	8/20/97	8/20/97	8/20/97
Instrument I.D.#:	GCHP03	GCHP03	GCHP03	GCHP03	GCHP03
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
LCS Result:	8.1	9.6	10	29	71
LCS % Recov.:	81	96	100	97	118

MS/MSD	60-140	60-140	60-140	60-140	60-140
LCS	70-130	70-130	70-130	70-130	70-130
Control Limits					

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.

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

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

9708774.PPP <1>





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

Client Project ID: 330-084.2K/0374, Berkeley
Matrix: Liquid

Work Order #: 9708774 -01-05

Reported: Aug 28, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC082197BTEX02A	GC082197BTEX02A	GC082197BTEX02A	GC082197BTEX02A	GC082197BTEX02A
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 #:	D. Jirsa	D. Jirsa	D. Jirsa	D. Jirsa	D. Jirsa
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	8/21/97	8/21/97	8/21/97	8/21/97	8/21/97
Analyzed Date:	8/21/97	8/21/97	8/21/97	8/21/97	8/21/97
Instrument I.D.#:	GCHP02	GCHP02	GCHP02	GCHP02	GCHP02
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	7.6	9.4	11	32	68
MS % Recovery:	76	94	110	107	113
Dup. Result:	7.8	9.6	11	33	70
MSD % Recov.:	78	96	110	110	117
RPD:	2.6	2.1	0.0	3.1	2.9
RPD Limit:	0-25	0-25	0-25	0-25	0-25

LCS #:	BLK082197	BLK082197	BLK082197	BLK082197	BLK082197
Prepared Date:	8/21/97	8/21/97	8/21/97	8/21/97	8/21/97
Analyzed Date:	8/21/97	8/21/97	8/21/97	8/21/97	8/21/97
Instrument I.D.#:	GCHP02	GCHP02	GCHP02	GCHP02	GCHP02
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
LCS Result:	7.9	9.7	11	33	70
LCS % Recov.:	79	97	110	110	117

MS/MSD	60-140	60-140	60-140	60-140	60-140
LCS	70-130	70-130	70-130	70-130	70-130
Control Limits					

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.

SEQUOIA ANALYTICAL

TJ
Tod Granicher
Project Manager

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

9708774.PPP <2>





Sequoia
Analytical

680 Chesapeake Drive
404 N. Wiget Lane
819 Striker Avenue, Suite 8

Redwood City, CA 94063
Walnut Creek, CA 94598
Sacramento, CA 95834

(650) 364-9600
(510) 988-9600
(916) 921-9600

FAX (650) 364-9233
FAX (510) 988-9673
FAX (916) 921-0100

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

Client Proj. ID: 330-084.2K/0374, Berkeley

Received: 08/13/97

Lab Proj. ID: 9708774

Reported: 08/25/97

LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of 15 pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

SEQUOIA ANALYTICAL

JL

T. Granicher
Project Manager



ARCO Facility no. **0374** City (Facility) **6407 Telegraph Berkeley CA** Project manager (Consultant) **Shaw Garchans**
 ARCO engineer **Paul Supple** Telephone no. (ARCO) _____ Telephone no. (Consultant) **408 441 7500** Fax no. (Consultant) **408 441 7539**
 Consultant name **Pacific Env. Group Inc** Address (Consultant) **2025 GATEWAY PL Suite 400 SAN JOSE CA 95110**

Laboratory name **Sequoia**
 Contract number **2102600**
 Method of shipment _____

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX EPA 802	BTEX/TPH-9/mo EPA 1631/802/8015	TPH Modified 8015 Gas <input type="checkbox"/> Diesel <input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/>	TPH EPA 418.1/SM500E	EPA 607/8010	EPA 624/8240	EPA 625/8270	Semi Metals TCLP Metals <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/>	CAN Metals EPA 601/7000 TLC <input type="checkbox"/> STLC <input type="checkbox"/>	Lead Org./DHS Lead EPA 74207/421 <input type="checkbox"/>	
			Soil	Water	Other	Ice	Acid														
✓ MW-1	1	3		X			8/12/97	11:55		X											
✓ MW-2	2	↓		↓				12:18													
✓ MW-3	3	↓		↓				14:05													
✓ MW-4	4	↓		↓				12:50													
✓ MW-6	5	↓		↓				13:15													

Special detection Limit/reporting _____

Special QA/QC _____

Remarks **9708774**

Lab number _____

Turnaround time
 Priority Rush 1 Business Day
 Rush 2 Business Days
 Expedited 5 Business Days **13 12 24**
 Standard 10 Business Days

Condition of sample: _____ Temperature received: _____

Relinquished by sampler Don W. Thompson	Date 8/12/97	Time 17:15	Received by Missy Hesorn
Relinquished by Missy Hesorn	Date 8/13/97	Time 11:45	Received by Steve Ten
Relinquished by Steve Ten	Date 8/13/97	Time _____	Received by laboratory Steve Ten

Date **8/13/97** Time **12:24**

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-084-26 LOCATION: 5407 Telegraph Ave Oakland WELL ID #: MW-1

CLIENT/STATION No.: Arco #0374 FIELD TECHNICIAN: DM Waterman

WELL INFORMATION

Depth to Liquid: TOB TOC
 Depth to water: 8.45 TOB 8.22 TOC
 Total depth: 265 TOB TOC
 Date: 8/12/97 Time (2400): 11:25

Probe Type and I.D. #
 Oil/Water interface
 Electronic indicator 37
 Other:

CASING

<u>DIAMETER</u>	<u>GAL/</u>
<u>LINEAR FT.</u>	
<input type="checkbox"/> 2	<u>0.17</u>
<input type="checkbox"/> 3	<u>0.38</u>
<input checked="" type="checkbox"/> 4	<u>0.66</u>
<input type="checkbox"/> 4.5	<u>0.83</u>
<input type="checkbox"/> 5	<u>1.02</u>
<input type="checkbox"/> 6	<u>1.5</u>
<input type="checkbox"/> 8	<u>2.6</u>

SAMPLE TYPE

Groundwater
 Duplicate
 Extraction well
 Trip blank
 Field blank
 Equipment blank
 Other:

TD 265 - DTW 8.45 = 18.05 Gal/Linear Foot .66 = 12 x Number of Casings 3 = Calculated Purge 36

DATE PURGED: 8/12/97 START: 11:41 END (2400 hr): 11:52 PURGED BY: DM

DATE SAMPLED: 8/12/97 START: 11:55 END (2400 hr): 11:55 SAMPLED BY: DM

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
<u>11:45</u>	<u>12</u>	<u>6.91</u>	<u>1310</u>	<u>69.2</u>	<u>Cloudy</u>	<u>light</u>	<u>None</u>
<u>11:48</u>	<u>24</u>	<u>6.61</u>	<u>1330</u>	<u>69.5</u>	<u>Cloudy</u>	<u>light</u>	<u>None</u>
<u>11:52</u>	<u>36</u>	<u>6.65</u>	<u>1370</u>	<u>70.6</u>	<u>Clear</u>	<u>Trace</u>	<u>None</u>

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: 31 Dedicated:
 Other:

SAMPLING EQUIPMENT/I.D. #

Bailer: 31-4
 Dedicated:
 Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
<u>MW-1</u>	<u>8/12/97</u>	<u>11:55</u>	<u>3</u>	<u>40ml</u>	<u>VOA</u>	<u>HCL</u>	<u>Gas/BTEX/MTBE</u>

REMARKS:

SIGNATURE: DM Waterman

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-084-26 LOCATION: 5407 Telegraph Ave Oakland WELL ID #: MW-2

CLIENT/STATION No.: Arco #0374 FIELD TECHNICIAN: Don Watkinson

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC _____
 Depth to water: 8.55 TOB 8.29 TOC _____
 Total depth: 26 TOB _____ TOC _____
 Date: 8/12/97 Time (2400): 11:30

Probe Type and I.D. #
 Oil/Water interface
 Electronic indicator
 Other: _____

CASING

DIAMETER	GAL/ LINEAR FT.
<input type="checkbox"/> 2	_____ 0.17
<input type="checkbox"/> 3	_____ 0.38
<input checked="" type="checkbox"/> 4	_____ 0.66
<input type="checkbox"/> 4.5	_____ 0.83
<input type="checkbox"/> 5	_____ 1.02
<input type="checkbox"/> 6	_____ 1.5
<input type="checkbox"/> 8	_____ 2.6

SAMPLE TYPE

Groundwater
 Duplicate
 Extraction well
 Trip blank
 Field blank
 Equipment blank
 Other: _____

TD 26 - DTW 8.55 = 17.45 Gal/Linear Foot .66 = 11.5 x Number of Casings 3 = Calculated = Purge 34.5

DATE PURGED: 8/12/97 START: 12:05 END (2400 hr): 12:15 PURGED BY: Don
 DATE SAMPLED: 8/12/97 START: 12:18 END (2400 hr): 12:18 SAMPLED BY: Don

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
<u>12:08</u>	<u>11.5</u>	<u>7.09</u>	<u>670</u>	<u>76.6</u>	<u>clear</u>	<u>trace</u>	<u>none</u>
<u>12:11</u>	<u>23</u>	<u>6.99</u>	<u>630</u>	<u>78.7</u>	<u>clear</u>	<u>trace</u>	<u>none</u>
<u>12:15</u>	<u>34.5</u>	<u>6.95</u>	<u>650</u>	<u>80.5</u>	<u>clear</u>	<u>trace</u>	<u>none</u>

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.

Bailor: _____
 Centrifugal Pump: 37
 Other: _____

Airlift Pump: _____
 Dedicated: _____

SAMPLING EQUIPMENT/I.D.

Bailor: 31-5
 Dedicated: _____
 Other: _____

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
<u>MW-2</u>	<u>8/12/97</u>	<u>12:18</u>	<u>3</u>	<u>40ml</u>	<u>VOM</u>	<u>HCL</u>	<u>Gas/BTEX/MTBE</u>

REMARKS: _____

SIGNATURE: Don Watkinson



PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-084-26 LOCATION: 5407 Telegraph Ave Oakland WELL ID #: MW-3

CLIENT/STATION No.: Arco #0374 FIELD TECHNICIAN: Don Vatanpaugh

WELL INFORMATION

Depth to Liquid: TOB TOC
 Depth to water: 8.58 TOB 8.20 TOC
 Total depth: 27. TOB TOC
 Date: 8/12/97 Time (2400): 13:25

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 27 - DTW 8.58 = 18.42 Gal/Linear 66 x Foot 18.42 = 17.6 x Casings 3 = Calculated = Purge 36

DATE PURGED: 8/12/97 START: 13:48 END (2400 hr): 14:00 PURGED BY: Don
 DATE SAMPLED: 8/12/97 START: 14:05 END (2400 hr): 14:05 SAMPLED BY: Don

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
<u>13:52</u>	<u>12</u>	<u>6.66</u>	<u>480</u>	<u>77.5</u>	<u>Cloudy</u>	<u>light</u>	<u>none</u>
<u>13:56</u>	<u>24</u>	<u>6.57</u>	<u>560</u>	<u>75.8</u>	<u>Cloudy</u>	<u>light</u>	<u>none</u>
<u>14:00</u>	<u>36</u>	<u>6.65</u>	<u>600</u>	<u>74.4</u>	<u>Clear</u>	<u>trace</u>	<u>none</u>

Pumped dry Yes No
 FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:
 DTW: TOB/TOC

PURGING EQUIPMENT/I.D. # SAMPLING EQUIPMENT/I.D. #
 Bailer: Airlift Pump:
 Centrifugal Pump: 31 Dedicated:
 Other: Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
<u>MW-3</u>	<u>8/12/97</u>	<u>14:05</u>	<u>3</u>	<u>40ml</u>	<u>VOA</u>	<u>HCL</u>	<u>Gas/BTEX/m+BE</u>

REMARKS: DO- 6.7 ppm any 6 ppm
FLS 1.6
Replaced ORCS

SIGNATURE: Don Vatanpaugh



FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-084-28 LOCATION: 5407 Telegraph Ave Oakland WELL ID #: MW-4

CLIENT/STATION No.: Arco #0374 FIELD TECHNICIAN: Don Waterman

WELL INFORMATION

Depth to Liquid: TOB TOC
 Depth to water: 9.24 TOB 8.46 TOC
 Total depth: 27 TOB TOC
 Date: 8/12/97 Time (2400): 11:33

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 27 - DTW 9.24 = 17.76 Gal/Linear Foot 66 = 11.7 Number of Casings 3 = Calculated Purge 35

DATE PURGED: 8/12/97 START: 12:31 END (2400 hr): 12:45 PURGED BY: Don
 DATE SAMPLED: 8/12/97 START: 12:50 END (2400 hr): 12:50 SAMPLED BY: Don

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
<u>12:35</u>	<u>12</u>	<u>6.54</u>	<u>1420</u>	<u>79.0</u>	<u>Clear</u>	<u>Trace</u>	<u>mod</u>
<u>12:39</u>	<u>24</u>	<u>6.58</u>	<u>1400</u>	<u>79.6</u>	<u>Clear</u>	<u>Trace</u>	<u>faint</u>
<u>12:45</u>	<u>36</u>	<u>6.28</u>	<u>1350</u>	<u>75.5</u>	<u>Clear</u>	<u>Trace</u>	<u>faint</u>

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: 31-6
 Dedicated:
 Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
<u>MW-4</u>	<u>8/12/97</u>	<u>12:50</u>	<u>3</u>	<u>40ml</u>	<u>VOA</u>	<u>HCL</u>	<u>Gas/BTEX/mTBE</u>

REMARKS:

SIGNATURE: Don Waterman



PACIFIC ENVIRONMENTAL GROUP INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-084.2K LOCATION: 5407 Telegraph Ave Oakland WELL ID #: MW-6

CLIENT/STATION No.: Arco #0374 FIELD TECHNICIAN: Don Waterpaul

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC _____
 Depth to water: 5.97 TOB 5.43 TOC _____
 Total depth: 14.5 TOB _____ TOC _____
 Date: 8/12/97 Time (2400): 13:07

Probe Type and I.D. #
 Oil/Water interface
 Electronic indicator
 Other: _____

CASING

DIAMETER GAL/LINEAR FT.

<input type="checkbox"/>	2	_____	0.17
<input type="checkbox"/>	3	_____	0.38
<input checked="" type="checkbox"/>	4	_____	0.66
<input type="checkbox"/>	4.5	_____	0.83
<input type="checkbox"/>	5	_____	1.02
<input type="checkbox"/>	6	_____	1.5
<input type="checkbox"/>	8	_____	2.6

SAMPLE TYPE

Groundwater
 Duplicate
 Extraction well
 Trip blank
 Field blank
 Equipment blank
 Other: _____

TD 14.5 - DTW 5.97 = 8.53 Gal/Linear Foot .66 = 5.6 Number of Casings 3 Calculated = Purge 17

DATE PURGED: 8/12/97 START: 13:05 END (2400 hr): 15:14 PURGED BY: Don
 DATE SAMPLED: 8/12/97 START: 13:15 END (2400 hr): 13:15 SAMPLED BY: Don

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
<u>13:09</u>	<u>5.6</u>	<u>6.77</u>	<u>590</u>	<u>83.2</u>	<u>Clear</u>	<u>Trace</u>	<u>None</u>
<u>13:11</u>	<u>11.2</u>	<u>6.78</u>	<u>560</u>	<u>79.5</u>	<u>Clear</u>	<u>Trace</u>	<u>None</u>
<u>13:14</u>	<u>17</u>	<u>6.70</u>	<u>470</u>	<u>77.6</u>	<u>Brown</u>	<u>mod</u>	<u>None</u>

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: _____
 Centrifugal Pump: 31
 Other: _____
 Airlift Pump: _____
 Dedicated: _____

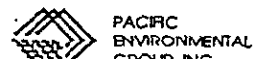
SAMPLING EQUIPMENT/I.D. #

Bailer: 31-7
 Dedicated: _____
 Other: _____

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
<u>MW-6</u>	<u>8/12/97</u>	<u>13:15</u>	<u>3</u>	<u>40ml</u>	<u>VOA</u>	<u>HCL</u>	<u>Gas/BTEX/MTBE</u>

REMARKS: _____

SIGNATURE: Don Waterpaul



ARCO Products Company
Division of AtlanticRichfield Company

330-0842K Task Order No. WA 2102600

Chain of Custody.

ARCO Facility no. 0374 City (Facility) 6407 Telegraph Berkeley CA
 ARCO engineer Paul Supple Telephone no. (ARCO) Telephone no. (Consultant) 408 441 7500 Fax no. (Consultant) 408 441 7539
 Consultant name Pacific Env. Group Inc. Address (Consultant) 2025 GATEWAY PL Suite 440 SAN JOSE CA 95110

Laboratory name *Saguola*
 Contract number 2102600

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH/PAHs EPA 801/8020/8015	TPH Modified 8015 Gas <input type="checkbox"/> Diesel <input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/>	TPH EPA 418.1/SM/503E	EPA 601/6010	EPA 624/6240	EPA 625/6270	TCLP Metals <input type="checkbox"/> VOA <input type="checkbox"/>	Semi Metals <input type="checkbox"/> VOA <input type="checkbox"/>	CMAA Metals EPA 8010/7000 TLC <input type="checkbox"/> STLC <input type="checkbox"/>	Lead Org./DHS <input type="checkbox"/> Lead EPA 7420/7421 <input type="checkbox"/>	
			Soil	Water	Other	Ice	Acid															
MW-1		3		X			HCl	8/12/97	11:55		X											
MW-2		↓		↓			↓	↓	↓	↓	↓											
MW-3		↓		↓			↓	↓	↓	↓	↓											
MW-4		↓		↓			↓	↓	↓	↓	↓											
MW-6		↓		↓			↓	↓	↓	↓	↓											

Method of shipment

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:
 Relinquished by sampler *Don Waterman* Date 8/12/97 Time 17:15 Received by
 Relinquished by Date Time Received by
 Relinquished by Date Time Received by laboratory Date Time

ATTACHMENT C

REMEDIAL SYSTEM PERFORMANCE SUMMARY

ATTACHMENT C

REMEDIAL SYSTEM PERFORMANCE SUMMARY

GWE System

Groundwater extraction (GWE) was conducted between December 21, 1993, and October 13, 1995. No evidence of additional plume migration has been observed since system deactivation. The GWE system was comprised of a pneumatic pump in Well W-2 and three 200-pound granular activated carbon vessels arranged in series to treat the extracted groundwater. Extracted and treated groundwater was discharged into the East Bay Municipal Utility District (EBMUD) Permit Account Number 502-85611. Based on verbal approval from the ACHCSA, indicating that GWE would no longer be required at the site, the EBMUD permit was relinquished on June 14, 1996. Overall, approximately 0.1 million gallons of groundwater were extracted and less than 0.05 gallon of benzene was removed.

Please refer to PACIFIC's *Quarterly Groundwater Monitoring Report - Second Quarter 1997* for historical GWE system performance and analytical data.

Intrinsic Bioremediation Evaluation

At the request of ARCO, PACIFIC monitored intrinsic bioremediation indicator parameters (bioparameters) during the third quarter 1996 groundwater monitoring event. Groundwater samples from Wells MW-3, MW-4, and MW-5 were analyzed for total alkalinity, dissolved oxygen (DO), ferrous iron, nitrate, sulfate, methane, biological oxygen demand (BOD), chemical oxygen demand (COD), and carbon dioxide (CO₂). Intrinsic bioremediation evaluation data are presented in Table C-1.

It is generally accepted that depleted concentrations of electron acceptors (DO, nitrate, and sulfate), and elevated concentrations of bioremediation byproducts (CO₂, methane, and ferrous iron) within the hydrocarbon-impacted plume compared to background levels indicate that intrinsic bioremediation is occurring. As indicated by Table C-1, collected data follow the trend that indicates the occurrence of intrinsic bioremediation.

Bioremediation Enhancement Program

At the request of ARCO, PACIFIC initiated an in-situ bioremediation enhancement program at off-site Well MW-3 on November 14, 1995. The in-situ bioremediation enhancement program utilizes oxygen releasing compound (ORC) manufactured by Regensis Bioremediation Products, Inc. Twelve 2-inch-diameter ORC socks were installed below the groundwater surface in Well MW-3. 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.

Data collected from Well MW-3 indicate that concentrations of TPPH-g and benzene have declined since ORC units were installed. ORC units are changed when dissolved oxygen data indicate that they have been depleted. ORC installation and monitoring data are presented in Table C-1.

Conclusions

As indicated above, GWE at the site has been terminated with verbal approval from ACHCSA. Bioremediation enhancement program will continue during fourth quarter 1997.

Attachments: Table C-1 - Intrinsic Bioremediation Evaluation Data

Table C-1
Intrinsic Bioremediation Evaluation and Enhancement Data

ARCO Service Station 0374
6407 Telegraph Avenue at Alcatraz Avenue
Oakland, California

Well	Date Sampled	Field Analyses					Laboratory Analyses									
		Groundwater Temperature (deg F)	pH (units)	Conductivity (µmhos)	D.O. (mg/L)	Ferrous Iron (mg/L)	Total Alkalinity (mg CaCO ₃ /L)	B.O.D. (mg/L)	Carbon Dioxide (mg/L)	C.O.D. (mg/L)	Methane (%)	Nitrate as Nitrate (mg/L)	Nitrite as Nitrite (mg/L)	Sulfate (mg/L)	TPPH as Gasoline (µg/L)	Total BTEX (µg/L)
MW-3	11/14/95 **	65.5*	6.76*	508*	7.17	N/A	NS	NS	NS	NS	NS	6.6	<1.0	NS	140	46
	06/06/96 **	66.2	7.38	700	12.28	N/A	NS	NS	NS	NS	NS	NS	NS	NS	84†	5.4†
	07/16/96	67.8	7.08	1,010	8.73	0.0	280	1.8	270	44	<0.020	<1.0	NS	78	<50	2.2
	01/21/97 **	59	N/A	N/A	11.15	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	08/12/97 **	74.4	6.65	600	6.7	1.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-4	07/16/96	69.5	6.72	1,370	3.20	4.20	420	NS	470	NS	0.11	<1.0	NS	18	5,600	2,020
MW-5	07/16/96	70.4	6.85	690	6.80	0.0	170	NS	180	NS	<0.020	<1.0	NS	35	<50	1.1
MW-6	06/06/96	N/A	N/A	N/A	3.47	N/A	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

D.O. = Dissolved oxygen
B.O.D = Biochemical oxygen demand
C.O.D = Chemical oxygen demand
TPPH = Total purgeable petroleum hydrocarbons
BTEX = Benzene, toluene, ethylbenzene, and xylenes
deg F = Degrees Fahrenheit
µmhos = Micromhos
mg/L = Milligrams per liter
µg/L = Micrograms per liter
NS = Not sampled
N/A = Not available
* = Field measurements collected on November 2, 1995.
** = ORC installed following data collection.
† = From April 10, 1996 groundwater monitoring event.