PACIFIC
ENVIRONMENTAL
GROUP, INC.

ENVIRONMENTAL
PROTECTION
97 JUL 16 PM 3:04

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

ARCO Service Station 2112
1260 Park Street at Encinal Avenue
Alameda, California

Letter to Paul re: Termination of GWM - Closure

STID 3629

Prepared for

Mr. Paul Supple
ARCO Products Company
P.O. Box 6549
Moraga 94570

July 14, 1997

Prepared by

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

Project 330-106.2D

Shaw Garakani
Project Engineer

Gary P. Pestana
Senior Geologist
RG 6451

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

Date: July 14, 1997
Quarter: 1Q97

ARCO QUARTERLY GROUNDWATER MONITORING REPORT

Facility No.: 2112 Address: 1260 Park Street at Encinal Avenue, Alameda
ARCO Environmental Engineer: Paul Supple
Consulting Co./Contact Person: Pacific Environmental Group, Inc./Shaw Garakani
Consultant Project No.: 330-106.2D
Primary Agency/Regulatory ID No.: Alameda County Health Care Services Agency

WORK PERFORMED THIS QUARTER (First - 1997):

1. Performed first quarter 1997 groundwater monitoring event.
2. Prepared first quarter 1997 groundwater monitoring report.
3. Submitted fourth quarter 1996 groundwater monitoring report.
4. Removed groundwater extraction pumps from extraction wells.
5. Pursued case closure.

WORK PROPOSED FOR NEXT QUARTER (Second - 1997):

1. Perform second quarter 1997 groundwater monitoring event.
2. Prepare second quarter 1997 groundwater monitoring report.
3. Submit first quarter 1997 groundwater monitoring report.
4. Remove remedial compound and equipment from site.
5. Pursue site closure.

Current Phase of Project:	Monitoring	(Assmnt, Remed., etc.)
Frequency of Groundwater Sampling:	Quarterly/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:	None	(gallons)
Bulk Soil Removed This Quarter:	None	(cubic yards)
Bulk Soil Removed to Date:	1,950	(cubic yards)
Current Remediation Techniques:	Natural Attenuation	(SVE/Sparge/FP Removal, etc.)
Approximate Depth to Groundwater:	8.55 to 11.05	(Measure Feet)
Groundwater Gradient:	West	(Direction)
	0.012	(Magnitude)
Period TPPH-g/Benzene Removed:	0.0/0.0	(gallons)
Cumulative TPPH-g/Benzene Removed:	55/0.1	(gallons)

DISCUSSION:

- TPPH-g and benzene continue to be non-detect in all groundwater wells sampled.
- Based on ACHCSA's approval, the GWE system has been deactivated and the EBMUD sewer discharge permit relinquished. Plume appears stable.
- Site closure is in progress.
- ARCO received a letter dated May 2, 1997 from ACHCSA, indicating that the remedial system may be decommissioned. Therefore, removal of the remedial compound and equipment has been scheduled for second quarter 1997.
- 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: 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 2112
1260 Park Street at Encinal Avenue
Alameda, California

Well Number	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Sampling Frequency
A-1	a	a	a	a	Quarterly
A-2	a	a	a	a	Quarterly
A-3			a		Annually
A-4			a		Annually
A-5	a	a	a	a	Quarterly
AR-1	a	a	a	a	Quarterly
AR-2	a	a	a	a	Quarterly

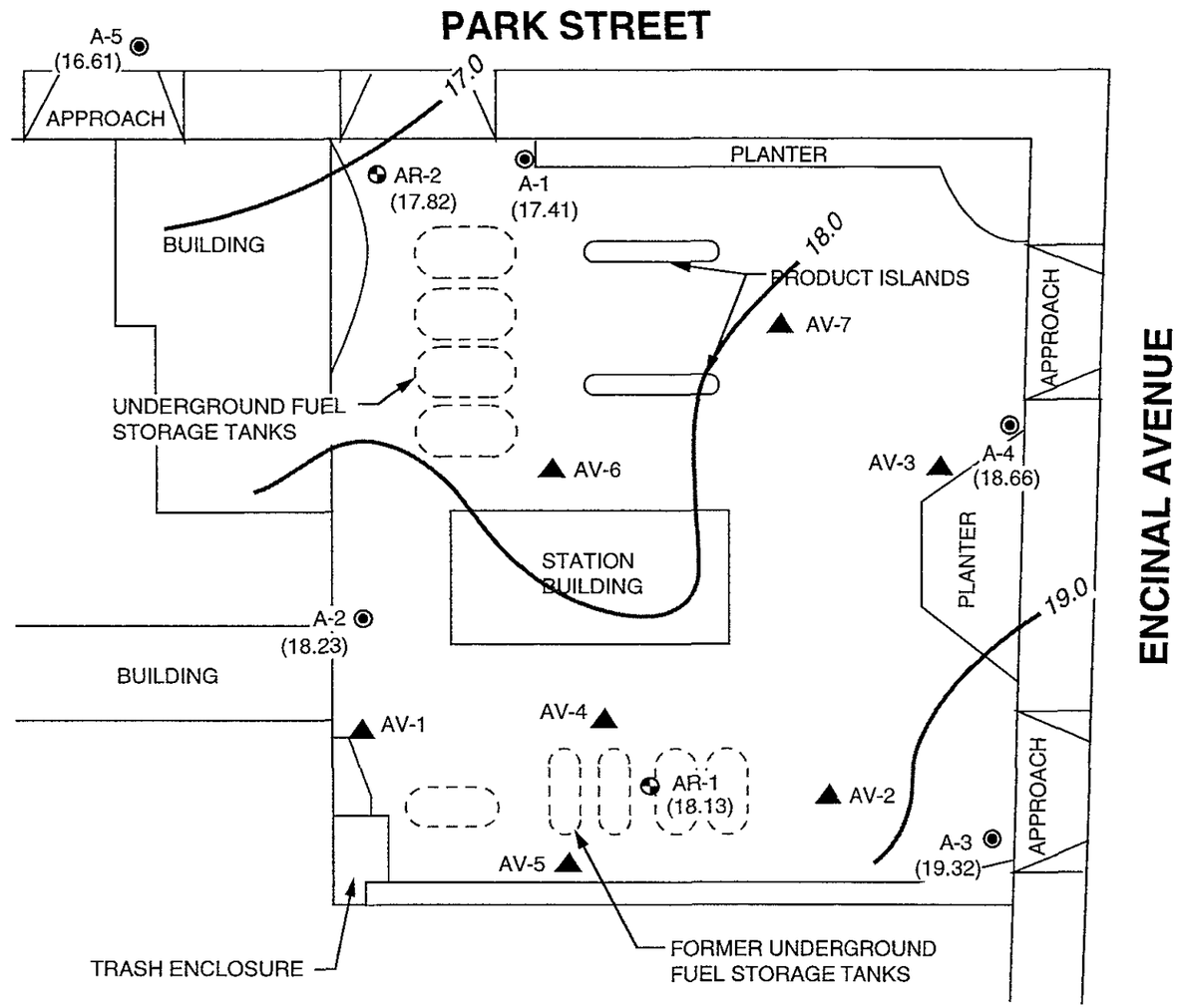
a. Samples analyzed for TPPH-g, BTEX compounds, and MtBE according to EPA Methods 8015 (modified) and 8020.

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

ARCO Service Station 2112
1260 Park Street at Encinal Avenue
Alameda, 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-1	01/15/96	28.39	11.18	17.21	<50	<0.50	<0.50	<0.50	<0.50	NA
	04/08/96		10.61	17 78	<50	<0.50	<0.50	<0.50	<0.50	NA
	07/02/96		11.28	17 11	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	10/01/96		11.70	16.69	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	04/08/97		10.98	17.41	<50	<0 50	<0.50	<0.50	<0.50	<2.5
A-2	01/15/96	29.28	11.17	18.11	<50	<0.50	<0.50	<0.50	<0.50	NA
	04/08/96		10.45	18.83	<50	<0.50	<0.50	<0.50	<0.50	NA
	07/02/96		11.40	17.88	<50	<0.50	<0.50	<0.50	<0.50	<2,5
	10/01/96		12.10	17.18	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	04/08/97		11.05	18.23	<50	<0 50	<0.50	<0.50	<0 50	<2.5
A-3	01/15/96	27.87	8.66	19.21	---------- Well Sampled Annually ----------					
	04/08/96		7.86	20.01	---------- Well Sampled Annually ----------					
	07/02/96		9.03	18.84	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	10/01/96		9.88	17.99	---------- Well Sampled Annually ----------					
	04/08/97		8.55	19.32	---------- Well Sampled Annually ----------					
A-4	01/15/96	28.54	10.00	18.54	---------- Well Sampled Annually ----------					
	04/08/96		9.34	19.20	---------- Well Sampled Annually ----------					
	07/02/96		10.22	18.32	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	10/01/96		10.85	17.69	---------- Well Sampled Annually ----------					
	04/08/97		9.88	18.66	---------- Well Sampled Annually ----------					
A-5	01/15/96	27.29	10.61	16 68	<50	<0.50	<0 50	<0.50	<0.50	NA
	04/08/96		10.59	16.70	<50	<0.50	<0.50	<0.50	<0.50	NA
	07/02/96		10.73	16.56	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	10/01/96		10.84	16.45	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	04/08/97		10.68	16.61	<50	<0.50	<0.50	<0 50	<0.50	<2.5
AR-1	01/15/96	29.08	10.44	18 64	<50	<0.50	<0.50	<0.50	<0.50	NA
	04/08/96		9.56	19.52	<50	<0.50	<0.50	<0.50	<0.50	NA
	07/02/96		10.67	18.41	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	10/01/96		11.60	17.48	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	04/08/97		10.95	18.13	<50	<0.50	<0.50	<0.50	<0.50	<2.5
AR-2	01/15/96	28.20	11.00	17.20	<50	<0.50	<0.50	<0.50	<0.50	NA
	04/08/96		9.71	18.49	<50	<0.50	<0.50	<0.50	<0.50	NA
	07/02/96		11.15	17.05	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	10/01/96		11.62	16.58	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	04/08/97		10.38	17.82	<50	<0.50	<0.50	<0.50	<0.50	<2.5

MtBE = Methyl tert-butyl ether
MSL = Mean sea level
TOB = Top of box
ppb = Parts per billion
NA = Not analyzed



LEGEND

A-4 ◉ GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

AR-1 ◔ GROUNDWATER EXTRACTION WELL LOCATION AND DESIGNATION

AV-2 ▲ SOIL VAPOR EXTRACTION WELL LOCATION AND DESIGNATION

(16.61) GROUNDWATER ELEVATION IN FEET - MSL, 4-8-97

19.0 GROUNDWATER ELEVATION CONTOUR IN FEET - MSL, 4-8-97

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

APPROXIMATE GRADIENT = 0.012

PACIFIC ENVIRONMENTAL GROUP, INC.

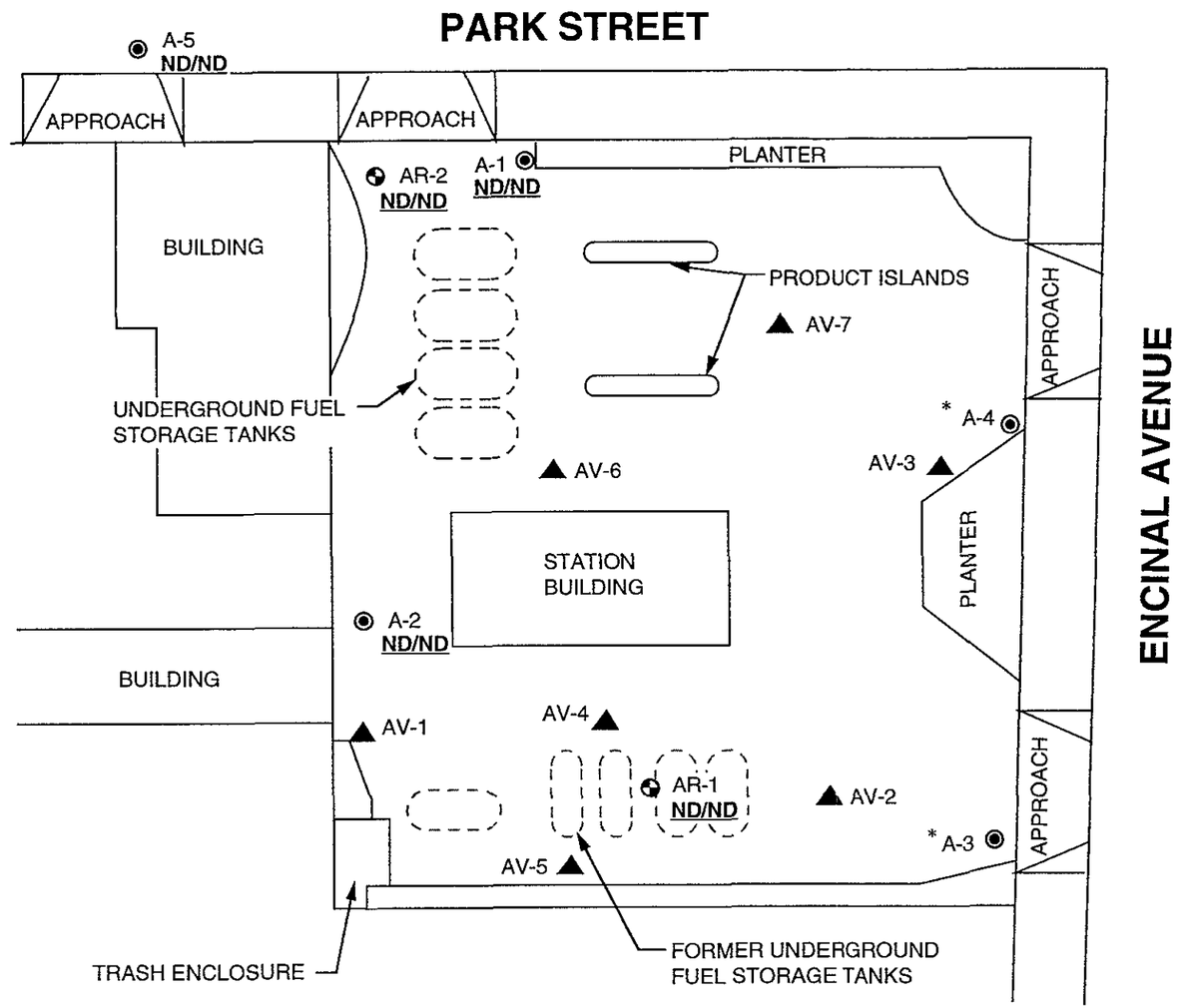
SCALE
0 30 60 FEET

ARCO SERVICE STATION 2112
1260 Park Street at Encinal Avenue
Alameda, California

GROUNDWATER ELEVATION CONTOUR MAP

FIGURE
1
PROJECT
330-106 2D

N



LEGEND

A-4 ◉ GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

AR-1 ◓ GROUNDWATER EXTRACTION WELL LOCATION AND DESIGNATION

AV-2 ▲ SOIL VAPOR EXTRACTION WELL LOCATION AND DESIGNATION

ND/ND TPPH-g/BENZENE CONCENTRATION IN GROUNDWATER, IN PARTS PER BILLION, 4-8-97

ND NOT DETECTED

* WELL SAMPLED ANNUALLY

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE
0 30 60 FEET

ARCO SERVICE STATION 2112
1260 Park Street at Encinal Avenue
Alameda, California

TPPH-g/BENZENE CONCENTRATION MAP

FIGURE 2

PROJECT 330-106 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, and xylenes. 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 REPORTS, CHAIN-OF-CUSTODY DOCUMENTATION, AND FIELD DATA SHEETS

Sequoia Analytical

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

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

Project: 330-106.2K, 2112, Alameda

Enclosed are the results from samples received at Sequoia Analytical on April 9, 1997. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE COLLECTED	TEST METHOD
9704533 -01	LIQUID, A-1	04/08/97	MTBE_W Methyl t-Butyl Ethe
9704533 -01	LIQUID, A-1	04/08/97	TPHGBW Purgeable TPH/BTEX
9704533 -02	LIQUID, A-2	04/08/97	MTBE_W Methyl t-Butyl Ethe
9704533 -02	LIQUID, A-2	04/08/97	TPHGBW Purgeable TPH/BTEX
9704533 -03	LIQUID, A-5	04/08/97	MTBE_W Methyl t-Butyl Ethe
9704533 -03	LIQUID, A-5	04/08/97	TPHGBW Purgeable TPH/BTEX
9704533 -04	LIQUID, AR-1	04/08/97	MTBE_W Methyl t-Butyl Ethe
9704533 -04	LIQUID, AR-1	04/08/97	TPHGBW Purgeable TPH/BTEX
9704533 -05	LIQUID, AR-2	04/08/97	MTBE_W Methyl t-Butyl Ethe
9704533 -05	LIQUID, AR-2	04/08/97	TPHGBW Purgeable TPH/BTEX
9704533 -06	LIQUID, TB-1	04/08/97	MTBE_W Methyl t-Butyl Ethe
9704533 -06	LIQUID, TB-1	04/08/97	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

Tod Granicher
Project Manager

Quality Assurance Department

Sequoia Analytical

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

Attention: Shaw Garakani

Client Proj. ID: 330-106.2K, 2112, Alameda
Sample Descript: A-1
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9704533-01

Sampled: 04/08/97
Received: 04/09/97

Analyzed: 04/15/97
Reported: 04/21/97

QC Batch Number: GC041597BTEX01A
Instrument ID: GCHP01

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	97

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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Pacific Environmental Group	Client Proj. ID: 330-106.2K, 2112, Alameda	Sampled: 04/08/97
2025 Gateway Place, Suite 440	Sample Descript: A-1	Received: 04/09/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 04/15/97
Attention: Shaw Garakani	Lab Number: 9704533-01	Reported: 04/21/97

QC Batch Number: GC041597BTEX01A
Instrument ID: GCHP01

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	97

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

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Pacific Environmental Group	Client Proj. ID: 330-106.2K, 2112, Alameda	Sampled: 04/08/97
2025 Gateway Place, Suite 440	Sample Descript: A-2	Received: 04/09/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8020	Analyzed: 04/15/97
Attention: Shaw Garakani	Lab Number: 9704533-02	Reported: 04/21/97

QC Batch Number: GC041597BTEX01A
Instrument ID: GCHP01

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	100

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

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Pacific Environmental Group	Client Proj. ID: 330-106.2K, 2112, Alameda	Sampled: 04/08/97
2025 Gateway Place, Suite 440	Sample Descript: A-2	Received: 04/09/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 04/15/97
Attention: Shaw Garakani	Lab Number: 9704533-02	Reported: 04/21/97

QC Batch Number: GC041597BTEX01A
Instrument ID: GCHP01

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	100

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: Shaw Garakani

Client Proj. ID: 330-106.2K, 2112, Alameda
Sample Descript: A-5
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9704533-03

Sampled: 04/08/97
Received: 04/09/97

Analyzed: 04/15/97
Reported: 04/21/97

QC Batch Number: GC041597BTEX01A
Instrument ID: GCHP01

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	97

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

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Pacific Environmental Group	Client Proj. ID: 330-106.2K, 2112, Alameda	Sampled: 04/08/97
2025 Gateway Place, Suite 440	Sample Descript: A-5	Received: 04/09/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 04/15/97
Attention: Shaw Garakani	Lab Number: 9704533-03	Reported: 04/21/97

QC Batch Number: GC041597BTEX01A
Instrument ID: GCHP01

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	97

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: Shaw Garakani

Client Proj. ID: 330-106.2K, 2112, Alameda
Sample Descript: AR-1
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9704533-04

Sampled: 04/08/97
Received: 04/09/97

Analyzed: 04/15/97
Reported: 04/21/97

QC Batch Number: GC041597BTEX01A
Instrument ID: GCHP01

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	101

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

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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: 330-106.2K, 2112, Alameda	Sampled: 04/08/97
2025 Gateway Place, Suite 440	Sample Descript: AR-1	Received: 04/09/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 04/15/97
Attention: Shaw Garakani	Lab Number: 9704533-04	Reported: 04/21/97

QC Batch Number: GC041597BTEX01A
Instrument ID: GCHP01

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	101

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

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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 Proj. ID: 330-106.2K, 2112, Alameda
Sample Descript: AR-2
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9704533-05

Sampled: 04/08/97
Received: 04/09/97

Analyzed: 04/15/97
Reported: 04/21/97

QC Batch Number: GC041597BTEX01A
Instrument ID: GCHP01

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	98

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

Attention: Shaw Garakani

Client Proj. ID: 330-106.2K, 2112, Alameda
Sample Descript: AR-2
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9704533-05

Sampled: 04/08/97
Received: 04/09/97

Analyzed: 04/15/97
Reported: 04/21/97

QC Batch Number: GC041597BTEX01A
Instrument ID: GCHP01

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	98

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: 330-106.2K, 2112, Alameda	Sampled: 04/08/97
2025 Gateway Place, Suite 440	Sample Descript: TB-1	Received: 04/09/97
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: EPA 8020	Analyzed: 04/15/97
Attention: Shaw Garakani	Lab Number: 9704533-06	Reported: 04/21/97

QC Batch Number: GC041597BTEX01A
Instrument ID: GCHP01

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	97

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: Shaw Garakani

Client Proj. ID: 330-106.2K, 2112, Alameda
Sample Descript: TB-1
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9704533-06

Sampled: 04/08/97
Received: 04/09/97

Analyzed: 04/15/97
Reported: 04/21/97

QC Batch Number: GC041597BTEX01A
Instrument ID: GCHP01

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	97

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

Client Project ID: 330-106.2K, 2112, Alameda
Matrix: Liquid
Work Order #: 9704533 -01-06

Reported: Apr 30, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC041597BTEX01A	GC041597BTEX01A	GC041597BTEX01A	GC041597BTEX01A	GC041597BTEX01A
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:	R. Geckler	R. Geckler	R. Geckler	R. Geckler	R. Geckler
MS/MSD #:	970428106	970428106	970428106	970428106	970428106
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	4/15/97	4/15/97	4/15/97	4/15/97	4/15/97
Analyzed Date:	4/15/97	4/15/97	4/15/97	4/15/97	4/15/97
Instrument I.D.#:	GCHP01	GCHP01	GCHP01	GCHP01	GCHP01
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	11	11	11	31	59
MS % Recovery:	110	110	110	103	98
Dup. Result:	12	11	11	32	64
MSD % Recov.:	120	110	110	107	107
RPD:	8.7	0.0	0.0	3.2	8.1
RPD Limit:	0-25	0-25	0-25	0-25	0-25
LCS #:	BLK041597	BLK041597	BLK041597	BLK041597	BLK041597
Prepared Date:	4/15/97	4/15/97	4/15/97	4/15/97	4/15/97
Analyzed Date:	4/15/97	4/15/97	4/15/97	4/15/97	4/15/97
Instrument I.D.#:	GCHP01	GCHP01	GCHP01	GCHP01	GCHP01
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
LCS Result:	11	11	10	31	59
LCS % Recov.:	110	110	100	103	98
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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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Shaw Garakani

Client Proj. ID: 330-106.2K, 2112, Alameda

Lab Proj. ID: 9704533

Received: 04/09/97

Reported: 04/21/97

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

ARCO Products Company ◆ Division of AtlanticRichfieldCompany — 330-106.1K — Task Order No. 2133400 — **Chain of Custody**

ARCO Facility no. 2112	City (Facility) 1260 Park St. Alameda CA	Project manager (Consultant) Shaw Gaedeke	Laboratory name Sequoia
ARCO engineer	Telephone no. (ARCO)	Telephone no. (Consultant) 408 441 7500	Fax no. (Consultant) 408 441 7539
Consultant name Pacific Earth Group	Address (Consultant) 2025 Gateway Pl suite 440 San Jose CA 95110		Contract number 2133400

Method of shipment: 9704533

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 ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
A-1	1	3		X		X	HCl	4/8/97	11:30		X											
A-2	2								11:50													
A-5	3								12:28													
AR-1	4								12:48													
AR-2	5								13:25													
TB-1	6	2				X	X	X	NA		X											

Special detection Limit/reporting

Special QA/QC

Remarks: AP 9 12 55

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		Date	Time
Relinquished by sampler: Don Hatcher Company	4/8/97	16:16	Received by: Krissy Flesoras		
Relinquished by: Krissy Flesoras	4/9/97	10:15	Received by:		
Relinquished by:	4/9/97		Received by laboratory: LO Cardenas	4-9-97	1255

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

APPC-3292 (2-91)

SEQUOIA ANALYTICAL SAMPLE RECEIPT LOG

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

WORKORDER: 9704533
DATE OF LOG-IN: 4/10/97

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: 4-9-97
12. Time Rec. at Lab: 1255
13. Temp Rec. at Lab: 6°C

LAB SAMPLE #	DASH #	CLIENT IDENTIFICATION	CONTAINER DESCRIPTION	SAMPLE MATRIX	DATE SAMP.	REMARKS: CONDITION (ETC.)
1	A-C	A-1	VOA (3)	liq	4-8	
2	↓	A-2	↓	↓	↓	
3		A-5				
4		AR-1				
5	↓	AR-2	↓			
6	A,B	TB-1	VOA (2)	↓	↓	

4-9-97 all Received

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

Revision 9/10/96
RCPTLOG.XLS

FIELD SERVICES / O & M REQUEST

SITE INFORMATION FORM

Project #:330-106.2k

Station #:2112

Site Address:1260 Park st
Alameda, California

County: Alameda

Project Manager: Shaw Garakani

Requestor: David Nanstad

Client: Arco
Prefield contacts:

☐ **1st time visit**

☒ **1st** ☐ **2nd** ☐ **3rd** ☐ **4th**

☐ **Monthly**

☐ **Semi-Monthly**

☐ **Weekly**

☐ **One time Event**

Other._____

Client P.O.C.: Paul Supple

Date of Request: 1Q

Ideal Field Date:

Budget Hrs._____

Actual Hrs. 3

Mob de Mob 2

Purge Total 141.2 gallons

Field Tasks: For General Description
First Quarter 1997 groundwater sampling event: DTW/DTL on all wells from TOB/TOC, Sample per attached protocol.
WA 21334 00

Comments, remarks, from Field Staff (include problems encountered

A-5 has a bit of sand in it had to hand bail the well because sand clogged up the pump.

Completed by: Don Waterman Date: 4/8/97

Checked by:_____

WELL SAMPLING REQUEST

SAMPLING PROTOCOL									
Project No.	Station #	Project Name	SEQUENCE	Project Manager	Approval	Date/s	Laboratory:		Client Engineer:
330-106.2k	2112	1260 Park st. Alameda	1q97	Shaw Garakani	9/12/96		Sequoia	21334 00	Paul Supple

Well Number	Ideal Sampling Order	Sample I.D.	Sampling Frequency	Analyses	TOB TOC	Well Depth	Casing Diameter	Well goes Dry?	Comments
A-1	1		QLY	GAS/BTEX/MtBE	TOB/TOC	30'	3"	N	
A-2	2		QLY	GAS/BTEX/MtBE	TOB/TOC	31'	3"	Y	
A-3	3		Annual/3Q	DTW ONLY	TOB/TOC	30.5'	3"	N	
A-4	4		Annual/3Q	DTW ONLY	TOB/TOC	30.5'	3"	N	
A-5	5		QLY	GAS/BTEX/MtBE	TOB/TOC	30.5	3"	N	
AR-1	6		QLY	GAS/BTEX/MtBE	TOB/TOC	30'	4"	N	
AR-2	7		QLY	GAS/BTEX/MtBE	TOB/TOC	30'	4"	N	
TB-1			QLY	GAS/BTEX/MtBE					

FIELD REPORT

DEPTH TO WATER/SEPARATE-PHASE HYDROCARBON SURVEY

PROJECT No.: 330106.26 LOCATION: 1760 PARK St DATE: 4/8/97

CLIENT/STATION NO.: ARCO 2112 FIELD TECHNICIAN: DON WATENPAUGH DAY OF WEEK: Tuesday

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): SPH Depth (feet) TOB/TOC	SPH Thickness (feet)	COLOR: Fresh	Weathered	Gas	Oil	VISCOSITY: Lite	Medium	Heavy	LIQUID REMOVED (gallons): SPH / H_2O
3" 1	A-1	10:38	✓	✓	✓	✓	✓	30	10.98 / 10.98	10.48 / 10.48										/
3" 2	A-2	10:40	✓	✓	✓	✓	✓	31	11.05 / 11.05	10.24 / 10.24										/
3" 3	A-3	10:45	✓	✓	✓	✓	✓	30.4	8.55 / 8.55	8.08 / 8.08										/
3" 4	A-4	10:47	✓	✓	✓	✓	✓	30.3	9.88 / 9.88	9.26 / 9.26										/
3" 5	A-5	10:52	✓	✓	✓	✓	✓	25.5	10.68 / 10.68	10.13 / 10.13										/
4" 6	AR-1	10:57	✓	✓	✓		✓	29.5	10.95 / 10.95	10.06 / 10.06										/
4" 7	AR-2	11:03	✓	✓	✓		✓	29.5	10.38 / 10.38	9.63 / 9.63										/
									/	/										/
									/	/										/

Comments: _____

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 3301062 LOCATION: 1260 PARK ST. ALAMEDA WELL ID #: A-1

CLIENT/STATION No.: 0211 ARCO FIELD TECHNICIAN: Don WATENPAUGH

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: — (TOB) 10.48 TOC
Total depth: 30 (TOB) — TOC
Date: 4/8/97 Time (2400): 10:38

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 10.48 = 19.52 x Gal/Linear Foot .38 = 7.4 x Number of Casings 3 = Calculated Purge 22.2

DATE PURGED: 4/8/97 START: 11:18 END (2400 hr): 11:29 PURGED BY: DW

DATE SAMPLED: 4/8/97 START: 11:30 END (2400 hr): 11:30 SAMPLED BY: DW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
11:21	7.4	7.56	820	78.2	Brown	mod	none
11:25	14.8	7.42	780	78.6	Cloudy	light	none
11:29	22.2	7.40	640	78.7	Cloudy	trace	non.

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

SAMPLING EQUIPMENT/I.D.

- ☒ Bailer: 31-3
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-1	4/8/97	11:30	3	40ml	VOA	HCL	GAS/BTEX/MtBE

REMARKS:

SIGNATURE:

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 3301067 LOCATION: 1260 PARK St. ALAMEDA WELL ID #: A-2

CLIENT/STATION No.: 0212 ARCO FIELD TECHNICIAN: DON WATENDAUGH

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: — (TOB) 10.24 TOC
Total depth: 31 (TOB) — TOC
Date: 4/8/97 Time (2400): 10:40

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 31 - DTW 10.24 = 20.76 x Gal/Linear Foot .38 = 7.8 x Number of Casings 3 = Calculated Purge 23.66

DATE PURGED: 4/8/97 START: 11:38 END (2400 hr): 11:45 PURGED BY: DMW

DATE SAMPLED: 4/8/97 START: 11:50 END (2400 hr): 11:50 SAMPLED BY: DMW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
11:42	7.8	7.26	1460	71.8	Cloudy	light	none
11:45	15.6	7.14	1600	68.7	cloudy	trace	none
11:48	23.7	7.26	1480	67.3	clear	trace	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
- ☐ Airlift Pump:
- ☐ Dedicated:
- ☐ Other:

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 31-5
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-2	4/8/97	11:50	3	40ml	VOA	HCL	GAS/BTEX/MTBE

REMARKS:

SIGNATURE: Don Watendaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 3301062 LOCATION: 1760 PARK ST. ALAMEDA WELL ID #: A-5

CLIENT/STATION No.: 02117 ARCO FIELD TECHNICIAN: DON WATENPAUGH

WELL INFORMATION

Depth to Liquid: ——— TOB ——— TOC
Depth to water: ——— (TOB) 10.13 TOC
Total depth: 30.5 (TOB) ——— TOC
Date: 4/8/97 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 30.5 - DTW 10.13 = 15.37 x Gal/Linear Foot .38 = 5.8 x Number of Casings 3 = Calculated Purge 17.52

DATE PURGED: 4/8/97 START: 12:03 END (2400 hr): 12:25 PURGED BY: [illegible]

DATE SAMPLED: 4/8/97 START: 12:28 END (2400 hr): 12:28 SAMPLED BY: [illegible]

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
12:08	5.8	7.65	670	72.3	Brown	Heavy	None
12:16	11.6	7.73	620	77.9	Brown	Heavy	None
12:25	17.5	7.75	550	74.2	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: ——— (TOB)/TOC ——— ——— ——— ——— ——— ———

PURGING EQUIPMENT/I.D. #
- ☒ Bailer: 31-6
- ☒ Centrifugal Pump: 31
- ☐ Airlift Pump: ———
- ☐ Dedicated: ———
- ☐ Other: ———

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 31-6
- ☐ Dedicated: ———
- ☐ Other: ———

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
A-5	4/8/97	12:28	3	40ml	VOA	HCL	GAS/BTEX/MtBE

REMARKS: ~~Well~~ Pump quit pumping at about 8 or 9 gallons — Line became plugged up with sand. Hand bailed the rest of the water.

SIGNATURE: [signature]

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 3301062 LOCATION: 1260 PARK ST. ALAMEDA WELL ID #: AR-1

CLIENT/STATION No.: 02112 ARCO FIELD TECHNICIAN: DON WATENPAUGH

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: (TOB) 10.06 TOC
Total depth: 29.5 (TOB) — TOC
Date: 4/8/97 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 29.5 - DTW 10.06 = 19.44 x Gal/Linear Foot .66 = 12.8 x Number of Casings 3 = Calculated Purge 38.5

DATE PURGED: 4/8/97 START: 12:36 END (2400 hr): 12:46 PURGED BY: Don

DATE SAMPLED: 4/8/97 START: 12:48 END (2400 hr): 12:48 SAMPLED BY: Don

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
12:40	12.8	7.87	700	71.6	Brown	mod	None
12:43	25.6	7.23	710	72.3	Brown	mod	none
12:46	38.5	7.33	750	74.5	Brown	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:
- ☒ Centrifugal Pump: 31
- ☐ Other:
- ☐ Airlift Pump:
- ☐ Dedicated:

SAMPLING EQUIPMENT/I.D.

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
AR-1	4/8/97	12:48	3	40ml	VOA	HCL	GRO/BTEX/MTBE

REMARKS:

SIGNATURE: Don Watenpaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 3301062 LOCATION: 1760 PARK St. ALAMEDA WELL ID #: AR-2

CLIENT/STATION No.: 0211 ARCO FIELD TECHNICIAN: DON WATENPAUGH

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: (TOB) 9.63 TOC
Total depth: 29.53 (TOB) — TOC
Date: 4/8/97 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 29.5 - DTW 9.63 = 19.87 x Gal/Linear Foot .66 = 13.11 x Number of Casings 3 = Calculated Purge 39.3

DATE PURGED: 4/8/97 START: 13:11 END (2400 hr): 13:22 PURGED BY:

DATE SAMPLED: 4/8/97 START: 13:25 END (2400 hr): 13:25 SAMPLED BY:

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
13:15	13.1	7.16	560	72.2	clear	Trace	none
13:18	26.2	6.97	550	69.1	clear	Trace	none
13:22	39.3	6.97	480	68.3	Clear	Trace	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:
- ☒ Centrifugal Pump: 31
- ☐ Other:
- ☐ Airlift Pump:
- ☐ Dedicated:

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 31-2
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
AR-2	4/8/97	13:25	3	40ml	VOA	HCL	GAS/BTEX/MTBE

REMARKS:

SIGNATURE: Don Watenpaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 3301062 LOCATION: 1260 PARK St. ALAMEDA WELL ID #: ~~4~~TB-1

CLIENT/STATION No.: 02112 ARCO FIELD TECHNICIAN: DonWATENPAUGH

WELL INFORMATION

Depth to Liquid: ____ TOB ____ TOC
Depth to water: ____ (TOB) ____ TOC
Total depth: ____ (TOB) ____ TOC
Date: ____ 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 ____ = ____ 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 @ 2 5°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR

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: ____
- ☒ 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
~~4~~TB-1	4/18/97	NA	~~3~~2	40ml	VOA	HCL	GRO/BTEX/MtBE

REMARKS: ____

SIGNATURE: Don Watenpaugh

PACIFIC ENVIRONMENTAL GROUP, INC.

ARCO Products Company
Division of AtlanticRichfieldCompany

330-106.2K — Task Order No. 2133400

Chain of Custody

ARCO Facility no. 2112	City (Facility) 1260 Park St. Alameda CA	Project manager (Consultant) Shaw Gavkani	Laboratory name. Sequoia
ARCO engineer	Telephone no. (ARCO)	Telephone no (Consultant) 408 441 7500	Fax no. (Consultant) 408 441 7539
Consultant name Pacific Envr Group	Address (Consultant) 2025 GATEWAY Pl suite 440 San Jose CA 95110		Contract number 21334 00

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 ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
A-1		3		X		X	HCl	4/8/97	11:30		X											
A-2		↓		↓		↓	↓	↓	11:50		↓											
A-5									12:28													
AR-1									12:48													
AR-2		↓		↓		↓	↓	↓	13:25		↓											
TB-1		2		X		X	X	X	NA		X											

Condition of sample:

Temperature received:

Relinquished by sampler Don Stalenpenny	Date 4/8/97	Time 16:16	Received by
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory

Date | Time

Laboratory name. Sequoia

Contract number 21334 00

Method of shipment

Special detection Limit/reporting

Special QA/QC

Remarks

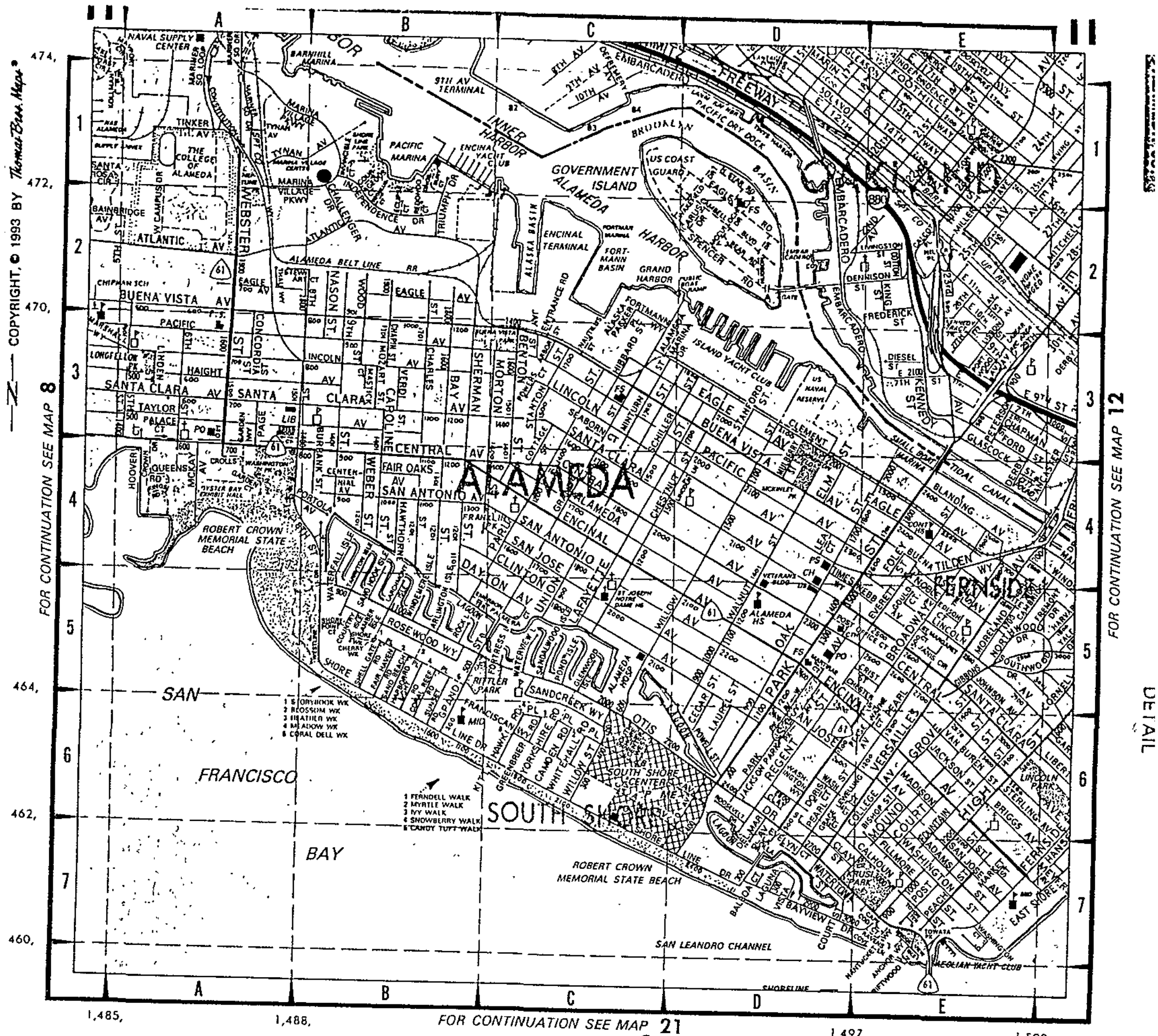
Lab number

Turnaround time

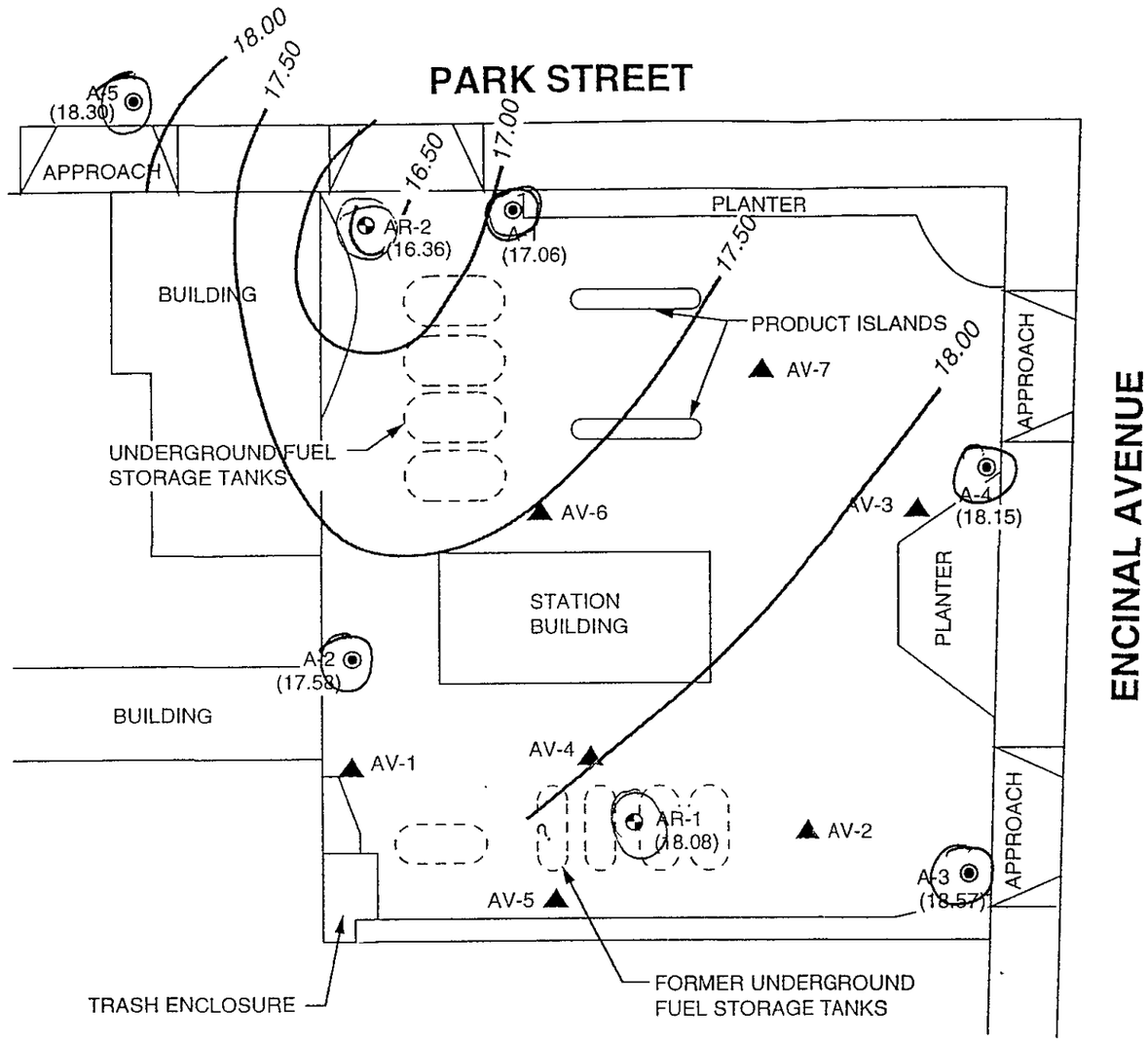
- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☑

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

APPC 3292 (3-91)



1260 Park St Alameda



LEGEND

- A-4 ◉ GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- AR-1 ◉ GROUNDWATER EXTRACTION WELL LOCATION AND DESIGNATION
- AV-2 ▲ SOIL VAPOR EXTRACTION WELL LOCATION AND DESIGNATION
- (18.15) GROUNDWATER ELEVATION IN FEET - MSL, 8-9-95
- 17.00 GROUNDWATER ELEVATION CONTOUR IN FEET - MSL, 8-9-95

APPROXIMATE DIRECTION OF HISTORICAL GROUNDWATER FLOW

APPROXIMATE GRADIENT = 0.01

Sample A-1 -30 A-3 DTW only
A-2 -31 A-4
A-5
AR1
AR-2

PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE
0 30 60 FEET

ARCO SERVICE STATION 2112
1260 Park Street at Encinal Avenue
Alameda, California

GROUNDWATER ELEVATION CONTOUR MAP

FIGURE 1
PROJECT 330-106 2B

ATTACHMENT C
REMEDIAL SYSTEM PERFORMANCE EVALUATION

ATTACHMENT C
REMEDIAL SYSTEM PERFORMANCE EVALUATION

Groundwater extraction (GWE) and soil vapor extraction (SVE) were performed during January 1993, and November 1994 to August 1995, respectively. Brief descriptions and performance evaluations of the remedial systems are presented below.

Groundwater Extraction System

The GWE system utilized ARO Model No. 666100 double-diaphragm total fluid pumps at Wells AR-1 and AR-2, and two 180-pound Westates Model No. ASC-200 liquid-phase granular activated carbon (GAC) vessels, arranged in series. The GWE system was permitted by East Bay Municipal Utility District (EBMUD) Wastewater Discharge Permit No. 502-65201. Based on authorization from the ACHCSA that GWE at the site was no longer required, the permit was relinquished during the second quarter 1996.

Historical GWE system performance data are presented in Table C-1. Historical graphical presentations of GWE system 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.

Soil Vapor Extraction System

The SVE system is comprised of eight SVE wells (A-1, and AV-1 through AV-7); a 5-horsepower, 230-volt Tuthill/M-D Pneumatics Earthvac Model No. 3210 skid-mounted blower; and three 2,000-pound Westates Model No. VSC-2000 vapor-phase GAC vessels. The SVE system in permitted by Bay Area Air Quality Management District (BAAQMD) Permit to Operation Condition I.D. No. 7974, which expires March 1, 1997. Operation of the SVE system was terminated due to low TPPH-g influent concentrations.

Historical SVE system performance data are presented in Table C-2; individual SVE well data are presented in Table C-3. Historical graphical presentations of SVE system TPPH-g and benzene mass removal and concentration data are shown on Figures C-3 and C-4, respectively.

Conclusions

Based on non-detectable concentrations of TPPH-g and benzene, toluene, ethylbenzene, and xylenes (BTEX compounds), and the SWQCB's guidance regarding low-risk fuel sites, PACIFIC has initiated site closure activities.

Attachments:
- Table C-1 - Historical Groundwater Extraction System Performance Data
- Table C-2 - Historical Soil Vapor Extraction System Performance Data
- Table C-3 - Historical Soil Vapor Extraction Well Data
- Figure C-1 - Historical Groundwater Extraction System Mass Removal Trend
- Figure C-2- Historical Groundwater Extraction System Hydrocarbon Concentrations
- Figure C-3 - Historical Soil Vapor Extraction System Mass Removal Trend
- Figure C-4 - Historical Soil Vapor Extraction System Hydrocarbon Concentrations

Table C-1
Historical Groundwater Extraction System Performance Data

ARCO Service Station 2112
1260 Park Street at Encinal Avenue
Alameda, 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 Remove (lbs)	Benzene: Removed to Date (lbs)	Primary Carbon Loading (percent)
INFL	06/28/94	741,520	N/A	1.3	ND	0.00	0.80	ND	0.000	0.133	1.0
INFL	11/04/94 a	782,881	41,361	N/A	ND	0.00	0.80	ND	0.000	0.133	1.0
INFL	03/07/95 b	804,954	22,073	N/A	NS	0.00	0.80	NS	0.000	0.133	1.0
INFL	04/20/95	826,131	21,177	0.3	ND	0.00	0.80	ND	0.000	0.133	1.0
INFL	05/03/95	836,000	9,869	0.5	NS	0.00	0.80	NS	0.000	0.133	1.0
INFL	06/06/95	898,000	62,000	1.3	NS	0.00	0.80	NS	0.000	0.133	1.0
INFL	07/06/95 c	945,200	47,200	1.1	74	0.01	0.81	13	0.003	0.135	1.0
INFL	08/03/95 d	945,200	0	0.0	ND	0.00	0.81	3.5	0.000	0.135	1.0
REPORTING PERIOD: 01/01/96 - 03/31/96											
TOTAL POUNDS REMOVED:							**0.81**			**0.135**	
TOTAL GALLONS REMOVED:							**0.13**			**0.018**	
PERIOD POUNDS REMOVED:						**0.00**			**0.000**		
PERIOD GALLONS REMOVED:						**0.00**			**0.000**		
TOTAL GALLONS EXTRACTED:					**945,200**						
PERIOD GALLONS EXTRACTED:					**0**						
PERIOD AVERAGE FLOW RATE (gpm):					**N/A**						

TPPH = Total purgeable petroleum hydrocarbons
gpm = Gallons per minute
µg/L = Micrograms per liter
lbs = Pounds
N/A = Not available or not applicable
ND = Not detected above the detection limit
NS = Not sampled (system influent sampled quarterly in January, April, July, and August)
a. System shut down for repair by Pacific Environmental Group, Inc on November 4, 1994.
b. System restarted March 7, 1995; continuous operation began on this date.
c. GWE system shut down for pulsing.
d. GWE system re-started for sampling, then temporarily shut down August 3, 1995.
Mass removed is an approximation calculated using averaged concentrations.
Pounds of hydrocarbons removed to date provided by prior consultant, GeoStrategies Incorporated.
Prior to June 1995, TPPH as gasoline was reported as TPH as gasoline.
See certified analytical reports for detection limits.

Table C-2
Historical Soil Vapor Extraction System Performance Data

ARCO Service Station 2112
1260 Park Street at Encinal Avenue
Alameda, California

Sample I.D.	Date Sampled	Hourmeter Reading (hours)	Hours of Operation (hours)	Vacuum (" H20)	Flow Rate (scfm)	TPPH as Gasoline: Influent Concentration (ppmv)	TPPH as Gasoline: Removal Rate (lbs/day)	TPPH as Gasoline: Removed to Date (lbs)	Benzene: Influent Concentration (ppmv)	Benzene: Removal Rate (lbs/day)	Benzene: Removed to Date (lbs)
INFL	11/04/94 a	N/A	N/A	N/A	210	N/A	N/A	276.7	N/A	N/A	0.18
INFL	11/14/94 a	N/A	15	68	210	38	3.0	276.6	0.72	0.05	0.22
INFL	11/16/94	N/A	38	42	210	54	4.3	284.4	0.89	0.06	0.30
INFL	11/17/94	N/A	12	42	290	43	4.7	286.7	0.46	0.04	0.32
INFL	11/30/94	N/A	39	40	240	28	2.6	292.6	0.37	0.03	0.38
INFL	12/02/94 b	N/A	36	50	240	28	2.6	296.4	ND	0.00	0.40
INFL	01/11/95 c	N/A	0	27	100	11	0.4	296.4	ND	0.00	0.40
INFL	02/02/95 d	N/A	528	38.5	170	20	0.3	304.2	ND	0.00	0.40
INFL	04/12/95 e	N/A	0	3.5 f	190	26	1.9	304.2	0.22	0.01	0.40
INFL	04/20/95	N/A	192	3.0 f	200	3.3	0.3	312.7	ND	0.00	0.45
INFL	05/03/95	0.0 g	312	4.0 f	200	ND	0.0	314.3	ND	0.00	0.45
INFL	06/06/95	764.0	764	44	210	5.9	0.5	321.8	0.092	0.01	0.55
INFL	07/06/95 h	1,201.7	438	45	210	12	0.9	334.6	0.092	0.01	0.66
INFL	08/03/95 i	1,203.3	2	43	215	11	0.9	334.6	0.18	0.01	0.66
TOTAL POUNDS REMOVED:								**334.6**			**0.66**
TOTAL GALLONS REMOVED:								**54.9**			**0.09**
PERIOD POUNDS REMOVED:							**0.0**			**0.00**	
PERIOD GALLONS REMOVED:							**0.0**			**0.00**	
PERIOD AVERAGE FLOW RATE:					**N/A**						
TOTAL HOURS OF OPERATION:					**2,375**						

TPPH = Total purgeable petroleum hydrocarbons
" H20 = Inches of water
scfm = Standard cubic feet per minute
ppmv = Parts per million by volume
lbs = Pounds
N/A = Not available or not applicable
ND = Not detected

a. System started, run approx. 7 hours 11/4/94 by PACIFIC; restarted on 11/14/94.
b. System shut down pending the BAAQMDs approval of a monthly monitoring schedule.
c. System restarted with BAAQMD's approval to monitor the system on a monthly basis
d. System down; performance values estimated by averaging two previous values.
e. System restarted on 4/12/95.
f. Vacuum measured in inches of mercury rather than inches of water.
g. Hourmeter installed 5/3/95 (initial reading = 0 0 hours).
h. SVE system shut down for pulsing.
i. SVE system restarted for sampling, then temporarily shut down 8/3/95.

Mass removed is an approximation calculated using averaged instantaneous mass removal rates
Pounds of hydrocarbons removed to date provided by prior consultant, GeoStrategies Incorporated.
Timer disconnected on November 15, 1994; continuous operation during week initiated, shutdown weekends.
Prior to June 1995, TPPH as gasoline was reported as TPH calculated as gasoline.
See certified analytical reports for detection limits.

Table C-3
Historical Soil Vapor Extraction Well Data

ARCO Service Station 2112
1260 Park Street at Encinal Avenue
Alameda, California

Date System Monitored	Well Number A-1 Status (O/C)	A-1 Vacuum (" H20) M	A-1 Vacuum (" H20) W	A-1 TPPH as Gasoline (ppmv)	A-1 Benzene (ppmv)	AV-1 Status (O/C)	AV-1 Vacuum (" H20) M	AV-1 Vacuum (" H20) W	AV-1 TPPH as Gasoline (ppmv)	AV-1 Benzene (ppmv)	AV-2 Status (O/C)	AV-2 Vacuum (" H20) M	AV-2 Vacuum (" H20) W	AV-2 TPPH as Gasoline (ppmv)	AV-2 Benzene (ppmv)	AV-3 Status (O/C)	AV-3 Vacuum (" H20) M	AV-3 Vacuum (" H20) W	AV-3 TPPH as Gasoline (ppmv)	AV-3 Benzene (ppmv)
11/15/94	O	68	68	180 *	N/A *	O	68	68	20 *	N/A *	O	68	66	ND *	N/A *	O	64	60	4.0 *	N/A *
11/16/94	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A
11/17/94	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A
12/01/95	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A
12/02/95	O	40	N/A	200 *	N/A *	O	40	N/A	70 *	N/A *	O	40	N/A	15 *	N/A *	O	40	N/A	10 *	N/A *
01/11/95	O	37	N/A	6.1 +	0.06 +	O	37	N/A	ND +	ND +	O	36	N/A	ND +	ND +	O	36	N/A	ND +	ND +
04/20/95	O	48	48	14 +	0.15 +	O	48	48	ND +	ND +	O	48	48	ND +	ND +	O	48	48	ND +	ND +
05/03/95	O	55	48	35 *	N/A *	O	55	50	ND *	N/A *	O	55	50	ND *	N/A *	O	55	50	ND *	N/A *
06/06/95	O	43	40	55 *	N/A *	O	43	42	65 *	N/A *	O	43	42	6 *	N/A *	O	43	42	5.5 *	N/A *
07/06/95	O	45	41	50 +	ND +	O	45	43	6 +	0.03 +	O	45	43	ND +	ND +	O	45	43	18 +	0.2 +
08/03/95 a	O	43	39	11 *	N/A *	O	43	42	12 *	N/A *	O	43	42	10 *	N/A *	O	43	41	6 *	N/A *

Date System Monitored	Well Number AV-4 Status (O/C)	AV-4 Vacuum (" H20) M	AV-4 Vacuum (" H20) W	AV-4 TPPH as Gasoline (ppmv)	AV-4 Benzene (ppmv)	AV-5 Status (O/C)	AV-5 Vacuum (" H20) M	AV-5 Vacuum (" H20) W	AV-5 TPPH as Gasoline (ppmv)	AV-5 Benzene (ppmv)	AV-6 Status (O/C)	AV-6 Vacuum (" H20) M	AV-6 Vacuum (" H20) W	AV-6 TPPH as Gasoline (ppmv)	AV-6 Benzene (ppmv)	AV-7 Status (O/C)	AV-7 Vacuum (" H20) M	AV-7 Vacuum (" H20) W	AV-7 TPPH as Gasoline (ppmv)	AV-7 Benzene (ppmv)
11/15/94	O	64	62	300 *	N/A *	O	68	68	150 *	N/A *	O	64	64	60 *	N/A *	O	64	60	50 *	N/A *
11/16/94	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A
11/17/94	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A
12/01/95	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A	O	40	N/A	N/A	N/A
12/02/95	O	40	N/A	175 *	N/A *	O	40	N/A	10 *	N/A *	O	40	N/A	15 *	N/A *	O	40	N/A	30 *	N/A *
01/11/95	O	33	N/A	3.7 +	0.22 +	O	36	N/A	0.03 +	ND +	O	35	N/A	3.0 +	0.31 +	O	35	N/A	165.5 +	ND +
04/20/95	O	48	N/A	26 +	0.04 +	O	48	48	ND +	ND +	O	48	46	ND +	ND +	O	48	46	5 9 +	ND +
05/03/95	O	55	N/A	N/A *	N/A *	O	55	47	ND *	N/A *	O	55	46	ND *	N/A *	O	55	48	10 *	N/A *
06/06/95	O	43	N/A	150 *	N/A *	O	43	40	20 *	N/A *	O	43	39	8 *	N/A *	O	43	40	8 *	N/A *
07/06/95	O	45	N/A	95 +	0.43 +	O	45	41	264 +	2 +	O	45	41	ND +	0.07 +	O	45	41	4 +	0.03 +
08/03/95 a	O	43	N/A	192 *	N/A *	O	43	40	21 *	N/A *	O	43	38	2 *	N/A *	O	43	39	3 *	N/A *

TPPH = Total purgeable petroleum hydrocarbons
O = Valve open
C = Valve closed
" H20 = Inches of water
ppmv = Parts per million by volume; converted from micrograms per liter.
Pacific Environmental Group, Inc. startup 11/4/94; prior consultant was GeoStrategies Inc.
Prior to June 1995, TPPH as gasoline was reported as TPH as gasoline.

M = Vacuum measured at manifold
W = Vacuum measured at well head
* = Concentration readings obtained by flame-ionization detector (FID).
+ = Air bag sampled analyzed by EPA Method 8015/8020
N/A = Not available or not applicable
ND = Not detected above the detection limit
a Remediation systems temporarily shut down 8/3/95.

Figure C-1
Historical Groundwater Extraction System Mass Removal Trend

ARCO Service Station 2112
1260 Park Street at Encinal Avenue
Alameda, California

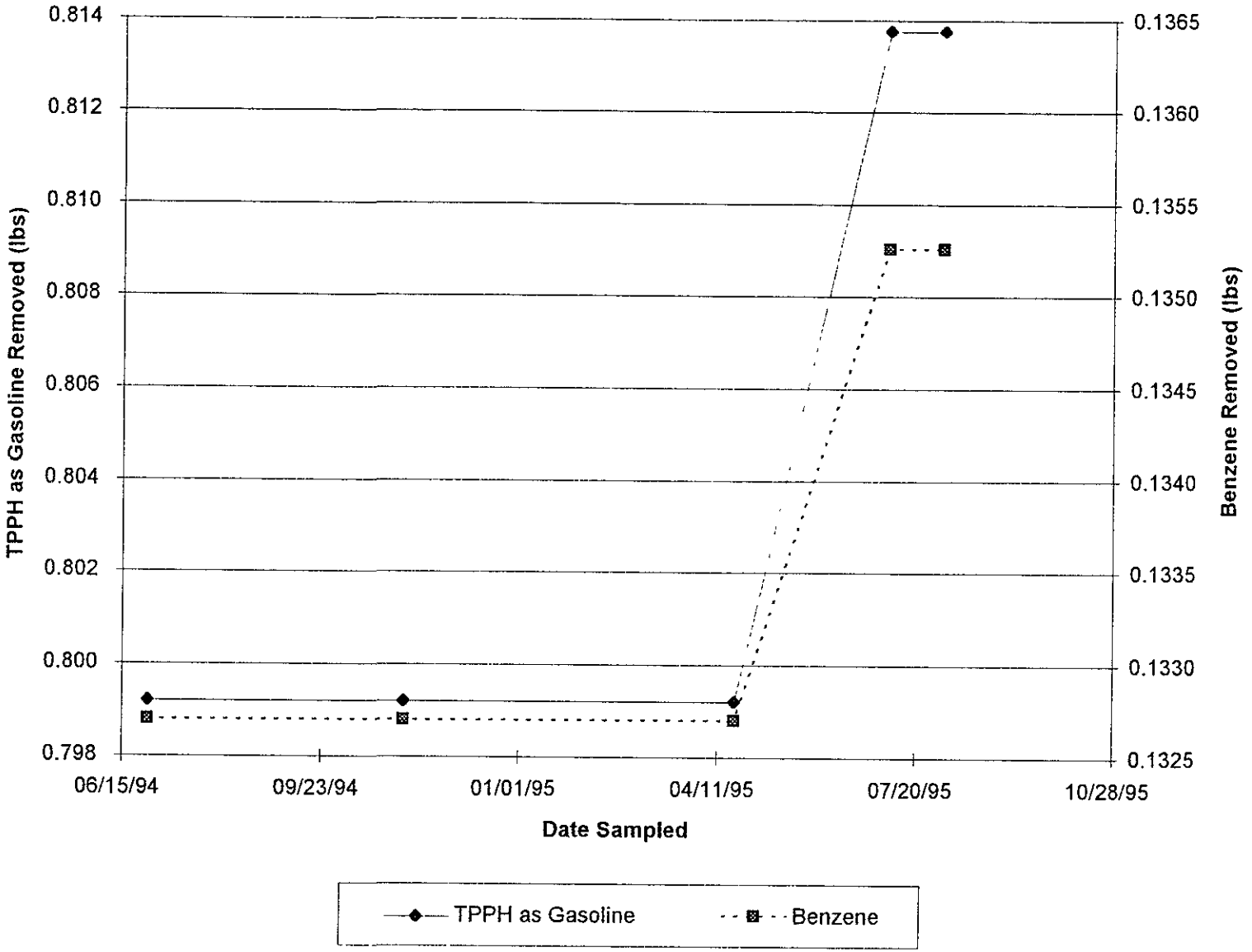


Figure C-2
Historical Groundwater Extraction System Hydrocarbon Concentrations

ARCO Service Station 2112
1260 Park Street at Encinal Avenue
Alameda, California

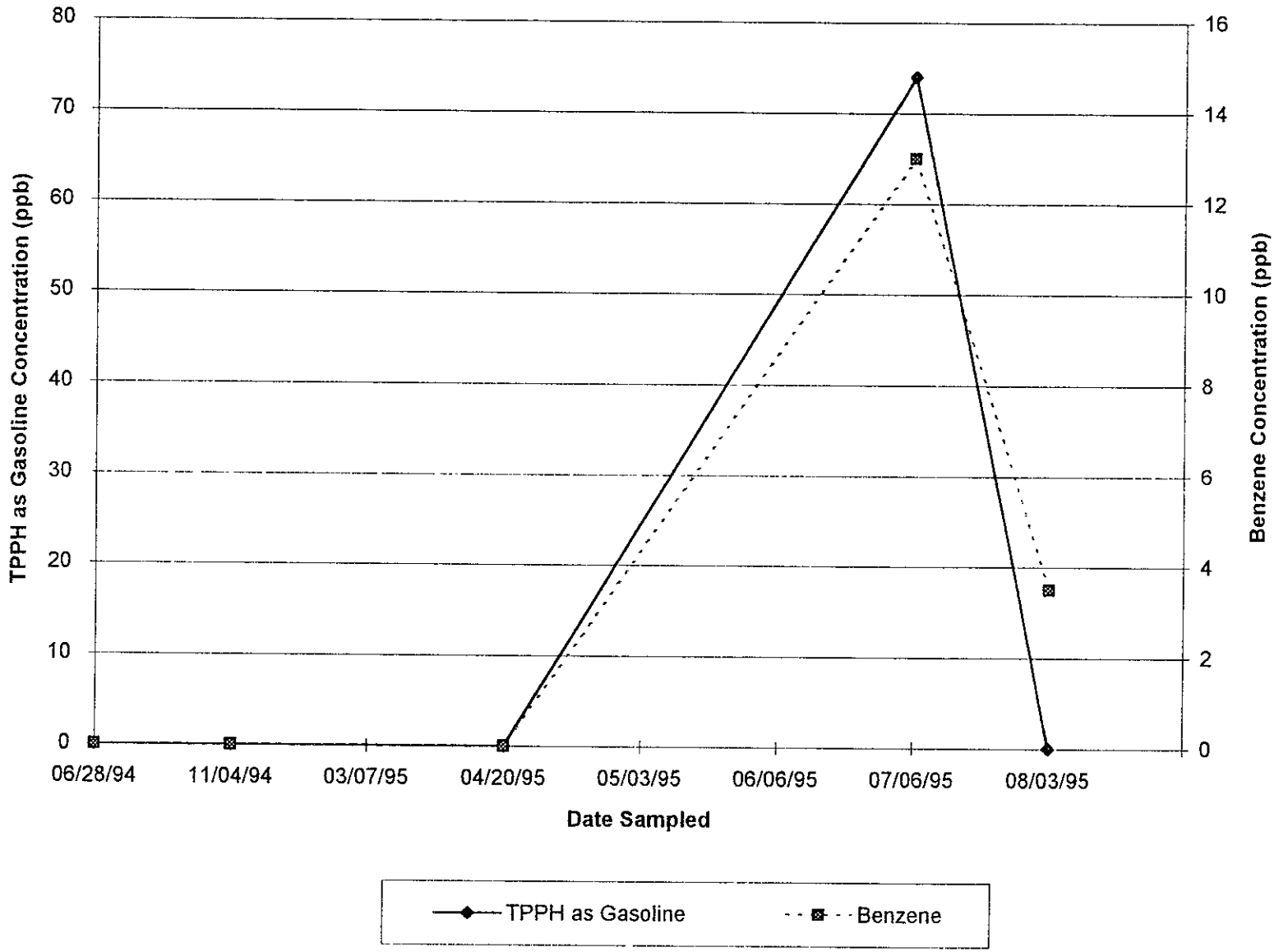


Figure C-3
Historical Soil Vapor Extraction System Mass Removal Trend

ARCO Service Station 2112
1260 Park Street at Encinal Avenue
Alameda, California

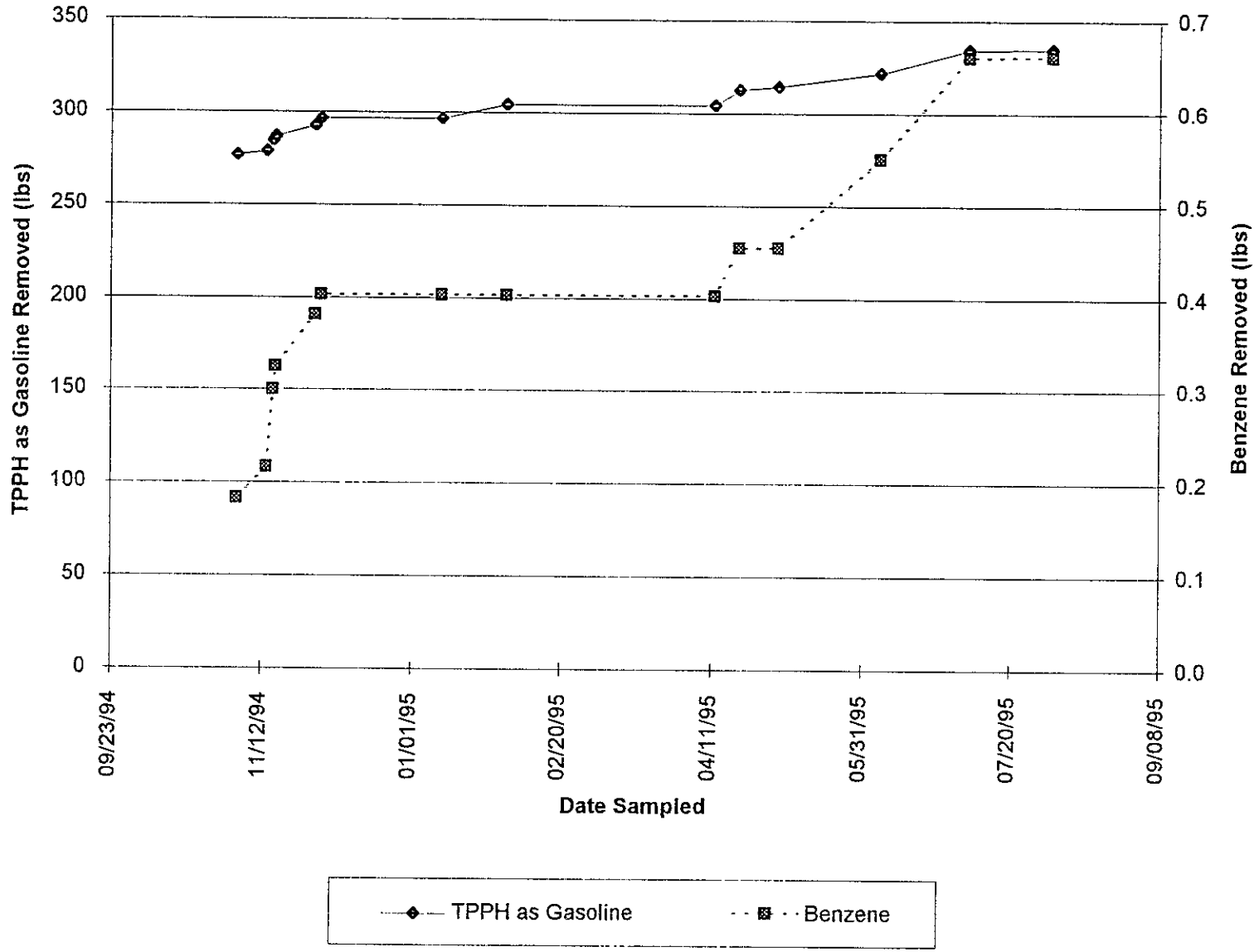


Figure C-4
Historical Soil Vapor Extraction System Hydrocarbon Concentrations

ARCO Service Station 2112
1260 Park Street at Encinal Avenue
Alameda, California