PACIFIC
ENVIRONMENTAL
GROUP INC.

ENVIRONMENTAL
PROTECTION
96 DEC 23 PM 3:08

Quarterly Groundwater Monitoring Report
Third Quarter 1996

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

Prepared for

Mr. Paul Supple
ARCO Products Company

December 20, 1996

(510) 299-8891
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Moraga CA
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Prepared by

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

Project 330-084.2C

Shaw Garakani
Project Engineer

Gary P. Pestana
Project Manager
RG 6451

REGISTERED GEOLOGIST
GARY P. PESTANA
No. 6451
EXP. 10/31/98
STATE OF CALIFORNIA

Date: December 20, 1996
Quarter: 3Q96

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.: 330-084.2C
Primary Agency/Regulatory ID No.:

WORK PERFORMED THIS QUARTER (Third - 1996):

1. Performed third quarter 1996 groundwater monitoring event.
2. Prepared third quarter 1996 groundwater monitoring report.
3. Submitted second quarter 1996 groundwater monitoring report
4. Performed intrinsic bioremediation evaluation.

WORK PROPOSED FOR NEXT QUARTER (Fourth - 1996):

1. Perform fourth quarter 1996 groundwater monitoring event.
2. Prepare fourth quarter 1996 groundwater monitoring report.
3. Submit third quarter 1996 groundwater monitoring report.
4. Replace ORC's in Well MW-3.

Current Phase of Project:	Monitoring/Bioremediation Enhancement	(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:	None	(cubic yards)
Current Remediation Techniques:	Bioremediation Enhancement	(SVE/Sparge/FP Removal, etc.)
Approximate Depth to Groundwater:	4.6 to 6.8	(Measure Feet)
Groundwater Gradient:	Southwest	(Direction)
	0.03	(Magnitude)

DISCUSSION:

- TPPH-g and benzene concentrations at all wells except Well MW-4 are slightly above detection limits. TPPH-g and benzene concentrations at Well MW-4 have increased during the past two quarters.
- Intrinsic bioremediation evaluation indicates the occurrence of biodegradation within the impacted plume.

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 - Historical Groundwater Elevation and Analytical Data Tables
- Attachment B - Field and Laboratory Procedures
- Attachment C - Certified Analytical Reports, Chain-of-Custody Documentation, and Field Data Sheets
- Attachment D - 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 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

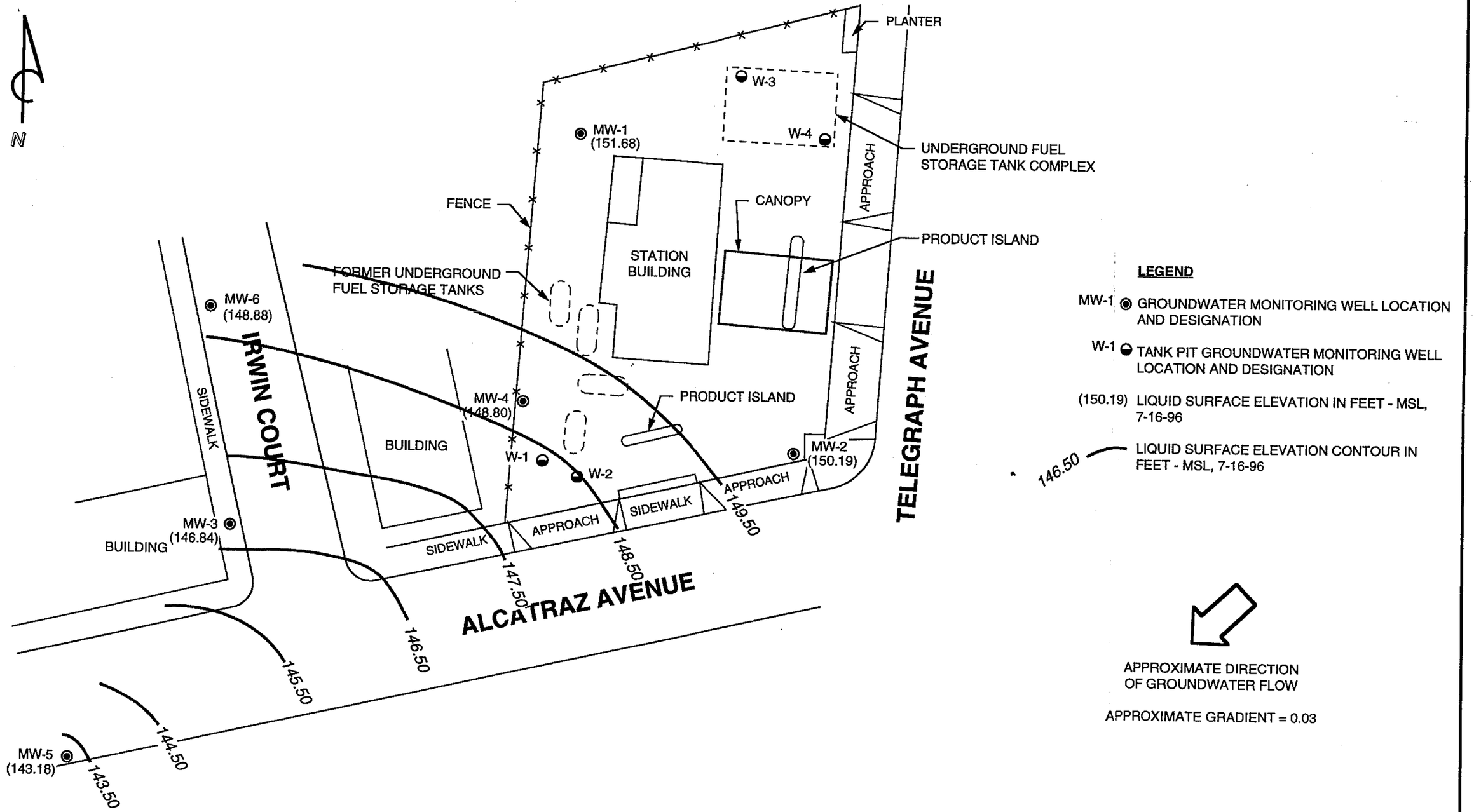
a. Samples analyzed for TPPH-g, BTEX compounds, and MtBE according to EPA Methods 8015 (modified) and 8020.

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

ARCO Service Station 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
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
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
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
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
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

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
N/A	= Not available



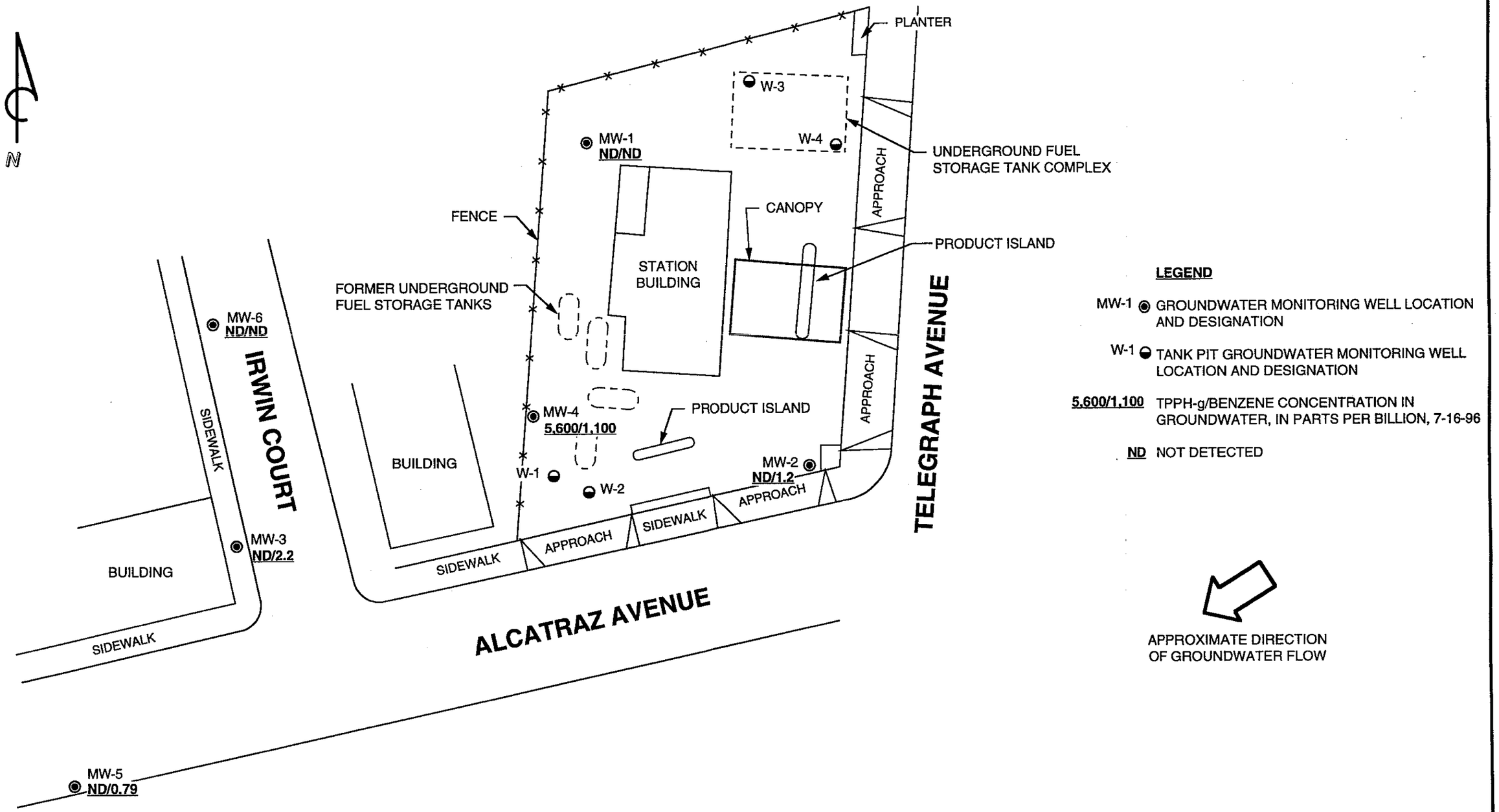
PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE
0 30 60 FEET

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

GROUNDWATER ELEVATION CONTOUR MAP

FIGURE:
1
PROJECT:
330-084.2C



PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE
0 30 60 FEET

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

TPPH-g/BENZENE CONCENTRATION MAP

FIGURE:
2
PROJECT:
330-084.2C

ATTACHMENT A

HISTORICAL GROUNDWATER ELEVATION AND ANALYTICAL DATA TABLES

Table A-1
Historical Liquid Surface Elevation Data

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

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
MW-1	07/20/89	159.44	8.04	--	151.40
	08/30/89		8.47	--	150.97
	10/04/89		8.50	--	150.94
	01/10/90		6.74	--	152.70
	08/07/90		6.87	--	152.57
	12/06/90		7.35	--	152.09
	12/19/90		7.22	--	152.22
	01/29/91		8.28	--	151.16
	02/20/91		7.98	--	151.46
	04/25/91		6.89	--	152.55
	05/31/91		7.64	--	151.80
	07/08/91		8.17	--	151.27
	08/09/91		8.58	--	150.86
	09/25/91		8.82	--	150.62
	10/17/91		8.96	--	150.48
	11/20/91		8.60	--	150.84
	12/27/91		8.71	--	150.73
	01/19/92		7.83	--	151.61
	02/19/92		6.68	--	152.76
	03/09/92		4.47	--	154.97
	04/15/92	158.91	6.44	--	152.47
	05/12/92		7.31	--	151.60
	06/16/92		7.97	--	150.94
	07/14/92		8.22	--	150.69
	08/07/92		8.46	--	150.45
	09/22/92		6.76	--	152.15
	10/12/92		7.13	--	151.78
	11/23/92		7.24	--	151.67
	12/16/92		6.44	--	152.47
	01/21/93		5.03	--	153.88
	02/22/93		4.93	--	153.98
	03/25/93		5.13	--	153.78
	04/27/93		5.68	--	153.23
	08/04/93		7.91	--	151.00
	10/13/93		8.81	--	150.10
	02/03/94		7.51	--	151.40
	04/29/94		7.20	--	151.71
	08/02/94		8.02	--	150.89
	11/12/94		6.70	--	152.21
	02/23/95		7.77	--	151.14
	05/09/95		7.82	--	151.09
	08/07/95		7.45	--	151.46
	11/02/95		8.26	--	150.65
MW-2	07/20/89	158.46	8.15	--	150.31
	08/30/89		8.42	--	150.04
	10/04/89		8.40	--	150.06
	01/10/90		6.12	--	152.34
	08/07/90		6.35	--	152.11
	12/06/90		7.15	--	151.31
	12/19/90		7.38	--	151.08
	01/29/91		8.41	--	150.05
	02/20/91		8.26	--	150.20
	04/25/91		7.70	--	150.76
	05/31/91		8.10	--	150.36
	07/08/91		8.34	--	150.12

Table A-1 (continued)
Historical Liquid Surface Elevation Data

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

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
MW-2	08/09/91		8.51	--	149.95
(cont.)	09/25/91		8.66	--	149.80
	10/17/91		8.80	--	149.66
	11/20/91		8.66	--	149.80
	12/27/91		8.57	Sheen	149.89
	01/19/92		8.25	--	150.21
	02/19/92		7.50	--	150.96
	03/09/92		7.40	--	151.06
	04/15/92	157.92	7.72	--	150.20
	05/12/92		8.01	--	149.91
	06/16/92		8.25	--	149.67
	07/14/92		8.33	--	149.59
	08/07/92		8.42	--	149.50
	09/22/92		6.13	--	151.79
	10/12/92		6.80	--	151.12
	11/23/92		7.15	--	150.77
	12/16/92		6.66	--	151.26
	01/21/93		5.93	--	151.99
	02/22/93		6.01	--	151.91
	03/25/93		5.91	--	152.01
	04/27/93		6.63	--	151.29
	08/04/93		8.02	--	149.90
	10/13/93		8.64	--	149.28
	02/03/94		8.08	--	149.84
	04/29/94		8.14	--	149.78
	08/02/94		8.31	--	149.61
	11/12/94		7.74	--	150.18
	02/23/95		7.53	--	150.39
	05/09/95		7.57	--	150.35
	08/07/95		8.15	--	149.77
	11/02/95		8.50	--	149.42
MW-3	07/20/89	154.18	7.58	--	146.60
	08/30/89		8.00	--	146.18
	10/04/89		7.73	Emulsion	146.45
	01/10/90		7.78	--	146.40
	08/07/90		7.66	--	146.52
	12/06/90		7.75	--	146.43
	12/19/90		7.58	--	146.60
	01/29/91		7.60	--	146.58
	02/20/91		7.51	--	146.67
	04/25/91		6.37	--	147.81
	05/31/91		7.19	--	146.99
	07/08/91		7.60	--	146.58
	08/09/91		7.94	--	146.24
	09/25/91		8.23	--	145.95
	10/17/91		8.44	--	145.74
	11/20/91		8.78	--	145.40
	12/27/91		8.05	Sheen	146.13
	01/19/92		7.65	--	146.53
	02/19/92		6.48	--	147.70
	03/09/92		5.45	--	148.73
	04/15/92	153.64	7.75	--	145.89
	05/12/92		7.45	--	146.19
	06/16/92		7.51	--	146.13
	07/14/92		7.60	--	146.04

Table A-1 (continued)
Historical Liquid Surface Elevation Data

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

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
MW-3	08/07/92		7.85	--	145.79
(cont.)	09/22/92		7.73	--	145.91
	10/12/92		7.83	--	145.81
	11/23/92		6.98	--	146.66
	12/16/92		5.96	--	147.68
	01/21/93		4.62	--	149.02
	02/22/93		5.15	--	148.49
	03/25/93		5.45	--	148.19
	04/27/93		5.79	--	147.85
	08/04/93		7.24	--	146.40
	10/13/93		8.03	--	145.61
	02/03/94		6.66	--	146.98
	04/29/94		7.70	--	145.94
	08/02/94		7.47	--	146.17
	11/12/94		5.91	--	147.73
	02/23/95		7.18	--	146.46
	05/09/95		5.96	--	147.68
	08/07/95		7.83	--	145.81
	11/02/95		7.83	--	145.81
MW-4	07/20/89	157.08	8.09	--	148.99
	08/30/89		8.45	Sheen	148.63
	10/04/89		8.57	Sheen	148.51
	01/10/90		7.26	--	149.82
	08/07/90		6.87	--	150.21
	12/06/90		8.02	Sheen	149.06
	12/19/90		7.69	--	149.39
	01/29/91		8.39	Sheen	148.69
	02/20/91		8.16	--	148.92
	04/25/91		7.14	--	149.94
	05/31/91		7.64	--	149.44
	07/08/91		8.34	--	148.74
	08/09/91		8.60	--	148.48
	09/25/91		8.80	--	148.28
	10/17/91		8.98	--	148.10
	11/20/91		8.78	--	148.30
	12/27/91		8.82	--	148.26
	01/19/92		8.18	--	148.90
	02/19/92		7.62	--	149.46
	03/09/92		6.68	--	150.40
	04/15/92	156.53	6.96	--	149.57
	05/12/92		7.45	--	149.08
	06/16/92		7.94	--	148.59
	07/14/92		8.21	--	148.32
	08/07/92		8.41	--	148.12
	09/22/92		6.14	--	150.39
	10/12/92		6.45	--	150.08
	11/23/92		7.48	--	149.05
	12/16/92		6.95	--	149.58
	01/21/93		5.53	--	151.00
	02/22/93		5.83	--	150.70
	03/25/93		5.96	--	150.57
	04/27/93		6.30	--	150.23
	08/04/93		7.71	--	148.82
	10/13/93		8.53	--	148.00
	02/03/94		9.27	--	147.26

Table A-1 (continued)
Historical Liquid Surface Elevation Data

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

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
MW-4	04/29/94		9.50	--	147.03
(cont.)	08/02/94		8.69	--	147.84
	11/12/94		6.88	--	149.65
	02/23/95		9.38	--	147.15
	05/09/95		9.00	--	147.53
	08/07/95		9.55	--	146.98
	11/02/95		9.58	--	146.95
MW-5	04/15/92	151.33	8.05	--	143.28
	05/12/92		8.44	--	142.89
	06/16/92		8.74	--	142.59
	07/14/92		9.70	--	141.63
	08/07/92		9.10	--	142.23
	09/22/92		9.26	--	142.07
	10/25/92		9.24	--	142.09
	11/23/92		---------- Well Inaccessible ----------		
	12/16/92		8.20	--	143.13
	01/21/93		7.89	--	143.44
	02/22/93		7.29	--	144.04
	03/25/93		7.51	--	143.82
	04/27/93		7.72	--	143.61
	08/05/93		8.66	--	142.67
	10/13/93		9.00	--	142.33
	02/03/94		9.38	--	141.95
	04/29/94		---------- Well Inaccessible ----------		
	08/02/94		8.71	--	142.62
	11/12/94		8.65	--	142.68
	02/23/95		9.23	--	142.10
	05/09/95		7.65	--	143.68
	08/07/95		8.25	--	143.08
	11/02/95		8.60	--	142.73
MW-6	04/15/92	153.84	4.55	--	149.29
	05/12/92		5.32	--	148.52
	06/16/92		5.91	--	147.93
	07/14/92		6.08	--	147.76
	08/07/92		6.36	--	147.48
	09/22/92		6.53	--	147.31
	10/25/92		6.54	--	147.30
	11/23/92		5.75	--	148.09
	12/16/92		4.69	--	149.15
	01/21/93		3.82	--	150.02
	02/22/93		3.78	--	150.06
	03/25/93		3.93	--	149.91
	04/27/93		4.30	--	149.54
	08/05/93		5.39	--	148.45
	10/13/93		7.12	--	146.72
	02/03/94		5.17	--	148.67
	04/29/94		4.66	--	149.18
	08/02/94		5.64	--	148.20
	11/12/94		6.32	--	147.52
	02/23/95		5.60	--	148.24
	05/09/95		5.21	--	148.63

Table A-1 (continued)
Historical Liquid Surface Elevation Data

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

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	SPH Thickness (feet)	Liquid Surface Elevation (feet, MSL)
MW-6	08/07/95		5.68	--	148.16
(cont.)	11/02/95		6.60	--	147.24

SPH = Separate-phase hydrocarbons
MSL = Mean sea level
TOC = Top of casing

Table A-2
Historical Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, TEPH as Diesel, and Oil and Grease)

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

Well Number	Date Sampled		TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TEPH as Diesel (ppb)	Oil and Grease (ppb)
MW-1	07/21/89		33	0.77	1.6	15	5	NA	NA
	08/30/89		<20	<0.50	<0.50	<0.50	<0.50	NA	NA
	10/04/89		<20	<0.50	<0.50	<0.50	<0.50	NA	NA
	01/10/90		<20	<0.50	<0.50	<0.50	<0.50	NA	NA
	08/07/90		<20	<0.50	<0.50	<0.50	<0.50	NA	NA
	12/06/90		<50	3.6	2.7	0.60	5.8	NA	NA
	02/20/91		<50	<0.50	<0.50	<0.50	<0.50	NA	NA
	07/08/91		<30	<0.30	<0.30	<0.30	<0.30	NA	NA
	09/25/91		<30	57	57	54	1.7	NA	NA
	11/20/91		57	9.2	3.7	0.63	25	NA	NA
	03/09/92		<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	04/15/92		<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	07/14/92		<50	<0.5	0.7	<0.5	1.3	NA	NA
	10/12/92		<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	01/21/93		<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	04/27/93		<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	08/04/93		<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	10/13/93		<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	02/03/94		<50	1.4	2.1	<0.5	2	NA	NA
	04/29/94		<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	08/02/94		<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	11/12/94		<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	02/23/95		<50	<0.50	<0.50	<0.50	<0.50	NA	NA
	05/09/95		<50	<0.50	<0.50	<0.50	<0.50	NA	NA
	08/07/95	a	<500	<5.0	<5.0	<5.0	<5.0	NA	NA
	11/02/95		<50	3.6	<0.50	<0.50	<0.50	NA	NA
MW-2	07/21/89		4,200	280	210	38	24	NA	NA
	08/30/89		4,200	160	260	45	240	NA	NA
	10/04/89		4,300	860	300	29	330	NA	NA
	01/10/90		8,000	890	710	120	760	NA	NA
	08/07/90		6,000	880	76	25	80	NA	NA
	12/06/90		1,600	330	69	18	63	NA	NA
	02/20/91		1,300	160	46	13	48	NA	NA
	07/08/91		310	76	18	7.7	24	NA	NA
	09/25/91		83	17	0.69	2.2	4.1	NA	NA
	11/20/91		180	46	6.1	3	8.7	NA	NA
	03/09/92		690	170	25	21	58	NA	NA
	04/15/92		86	20	2.3	3.8	85	NA	NA
	07/14/92		160	46	1.4	1.2	35	NA	NA
	10/12/92		230	59	7	55	11	NA	NA
	01/21/93		450	70	6.6	22	54	NA	NA
	04/27/93		<50	6.6	<0.5	0.7	1.1	NA	NA
	08/04/93		<50	2.1	<0.5	<0.5	<0.5	NA	NA
	10/13/93		<50	14	<0.5	<0.5	<0.5	NA	NA
	02/03/94		<50	4.4	<0.5	<0.5	0.8	NA	NA
	04/29/94		150	38	0.7	4.3	4.8	NA	NA
	08/02/94		<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	11/12/94		95	28	0.7	2.5	7.5	NA	NA
	02/23/95		<50	1.8	<0.50	<0.50	<0.50	NA	NA
	05/09/95		<50	1.9	<0.50	<0.50	<0.50	NA	NA
	08/07/95		<50	0.66	<0.50	<0.50	<0.50	NA	NA
	11/02/95		<50	<0.50	<0.50	<0.50	<0.50	NA	NA

Table A-2 (continued)
Historical Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, TEPH as Diesel, and Oil and Grease)

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

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TEPH as Diesel (ppb)	Oil and Grease (ppb)
MW-3	07/21/89	430	9	4.8	<0.50	50	NA	NA
	08/30/89	1,200	85	46	84	55	NA	NA
	10/04/89	7,000	580	900	120	670	NA	NA
	01/10/90	940	130	59	21	73	NA	NA
	08/07/90	2,300	180	64	59	120	NA	NA
	12/06/90	460	52	55	14	39	350	NA
	02/20/91	470	36	30	9.3	31	<100	<5,000
	07/08/91	2500	240	470	74	320	NA	NA
	09/25/91	1,100	120	110	34	120	NA	NA
	11/20/91	1,000	180	140	43	140	NA	NA
	03/10/92	1,200	200	110	53	130	NA	NA
	04/15/92	1,600	200	13	110	81	NA	NA
	07/14/92	5,200	620	44	310	250	NA	NA
	10/12/92	850	150	5.2	55	46	NA	NA
	01/21/93	620	100	12	35	35	NA	NA
	04/27/93	1,700	180	83	64	100	NA	NA
	08/04/93	380	70	12	29	41	NA	NA
	10/13/93	780	90	6	40	31	NA	NA
	02/03/94	340	42	8.7	9.2	28	NA	NA
	04/29/94	830	150	38	27	48	NA	NA
	08/02/94	220	25	1.7	7.6	8.3	NA	NA
	11/12/94	160	6.0	<0.5	3.2	4.1	NA	NA
	02/23/95	120	1.3	<0.50	1.1	1.6	NA	NA
	05/09/95	190	20	6.6	8.9	20	NA	NA
	08/07/95	<50	2.3	0.51	0.51	0.57	NA	NA
	11/02/95	<50	2.3	<0.50	<0.50	0.94	NA	NA
MW-4	07/21/89	8,700	720	360	120	640	NA	NA
	08/30/89	7,300	630	220	N/A	320	NA	NA
	10/04/89	21,000	2,300	1,300	280	1,300	NA	NA
	01/10/90	4,300	470	250	63	430	NA	NA
	08/07/90	69,000	8,700	4,200	540	4,600	28,000	<5,000
	12/06/90	Separate-Phase Hydrocarbon Sheen						
	02/20/91	5,200	690	200	95	580	<100	<5,000
	07/08/91	1,700	280	68	37	170	NA	NA
	09/25/91	6,300	2,100	290	210	590	NA	NA
	11/20/91	2,700	1,200	200	110	320	NA	NA
	03/10/92	690	180	80	18	43	NA	NA
	04/15/92	8,500	2,100	750	280	1,000	NA	NA
	07/14/92	10,000	2,900	530	290	930	NA	NA
	10/12/92	19,000	5,200	1,600	490	1,800	690	NA
	01/21/93	22,000	4,400	1,300	580	2,200	1,400	NA
	04/27/93	21,000	4,800	1,200	630	2,400	1,100	NA
	08/04/93	23,000	6,600	1,700	770	2,600	1500	NA
	10/13/93	16,000	3,500	800	470	1,800	670	NA
	02/03/94	850	140	84	7.9	59	59	NA
	04/29/94	68	1.1	<0.5	<0.5	1.7	<50	NA
	08/02/94	52	5.7	<0.5	1.2	1.9	<50	NA
	11/12/94	1,600	230	51	81	190	90	NA
	02/23/95	1,700	340	81	52	130	NA	NA
	05/09/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA
	08/07/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA
	11/02/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA

Table A-2 (continued)
Historical Groundwater Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, TEPH as Diesel, and Oil and Grease)

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

Well Number	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TEPH as Diesel (ppb)	Oil and Grease (ppb)
MW-5	04/15/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	07/14/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	10/25/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	01/21/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	04/27/93	<50	0.5	1	<0.5	0.8	NA	NA
	08/05/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	10/14/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	02/03/94	<50	0.8	1.7	<0.5	15	NA	NA
	04/29/94	Well Inaccessible						
	08/02/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	11/12/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	02/23/95	<50	<0.50	0.56	<0.50	0.50	NA	NA
	05/09/95	<50	<0.50	0.56	<0.50	0.50	NA	NA
	08/07/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA
	11/02/95	<50	<0.50	1.8	<0.50	<0.50	NA	NA
MW-6	04/15/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	07/15/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	10/25/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	01/21/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	04/27/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	08/05/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	10/13/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	02/03/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	04/29/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	08/02/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	11/12/94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	02/23/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA
	05/09/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA
	08/07/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA
	11/02/95	<50	<0.50	<0.50	<0.50	<0.50	NA	NA

TEPH = Total extractable petroleum hydrocarbons
ppb = Parts per billion
NA = Not analyzed
a. Detection limits were raised due to analysis for MTBE
Prior to June 1995, TPPH as gasoline and TEPH as diesel were reported as TPH as gasoline and diesel, respectively.

Table A-3
Historical Groundwater Analytical Data
Total Methyl t-Butyl Ether

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

Well Number	Date Sampled	Methyl t-Butyl Ether (ppb)
MW-1	08/07/95	510
MW-2	08/07/95	37
MW-3	08/07/95	<2.5
MW-4	08/07/95	<2.5
MW-5	08/07/95	<2.5
MW-6	08/07/95	160

ppb = Parts per billion
See certified analytical report for detection limit.

ATTACHMENT B

FIELD AND LABORATORY PROCEDURES

ATTACHMENT B
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 C.

ATTACHMENT C

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: Kelly Brown

Project: 330-084.21 / 374 / Berkeley

Enclosed are the results from samples received at Sequoia Analytical on July 16, 1996. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE COLLECTED	TEST METHOD
9607A23 -01	LIQUID, MW-1	07/16/96	TPGBMW Purgeable TPH/BTEX
9607A23 -02	LIQUID, MW-2	07/16/96	TPGBMW Purgeable TPH/BTEX
9607A23 -03	LIQUID, MW-3	07/16/96	TPGBMW Purgeable TPH/BTEX
9607A23 -04	LIQUID, MW-4	07/16/96	TPGBMW Purgeable TPH/BTEX
9607A23 -05	LIQUID, MW-5	07/16/96	TPGBMW Purgeable TPH/BTEX
9607A23 -06	LIQUID, MW-6	07/16/96	TPGBMW Purgeable TPH/BTEX
9607A23 -07	LIQUID, TB-1	07/16/96	TPGBMW 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

Claudia Hirotsu
Project Manager

Quality Assurance Department

Sequoia Analytical

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Pacific Environmental Group	Client Proj. ID: 330-084.21 / 374 / Berkeley	Sampled: 07/16/96
2025 Gateway Place, Suite 440	Sample Descript: MW-1	Received: 07/16/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 07/23/96
Attention: Kelly Brown	Lab Number: 9607A23-01	Reported: 07/27/96

QC Batch Number: GC072396BTEX02A
Instrument ID: GCHP02

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	**2.5**	**340**
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	107

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

SEQUOIA ANALYTICAL - ELAP #1210

Claudia Hirotsu
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	Client Proj. ID: 330-084.21 / 374 / Berkeley	Sampled: 07/16/96
2025 Gateway Place, Suite 440	Sample Descript: MW-2	Received: 07/16/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 07/23/96
Attention: Kelly Brown	Lab Number: 9607A23-02	Reported: 07/27/96

QC Batch Number: GC072396BTEX02A
Instrument ID: GCHP02

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	**2.5**	**33**
Benzene	**0.50**	**1.2**
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	90

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

SEQUOIA ANALYTICAL - ELAP #1210

Claudia Hirotsu
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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: 330-084.21 / 374 / Berkeley	Sampled: 07/16/96
2025 Gateway Place, Suite 440	Sample Descript: MW-3	Received: 07/16/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 07/23/96
Attention: Kelly Brown	Lab Number: 9607A23-03	Reported: 07/27/96

QC Batch Number: GC072396BTEX02A
Instrument ID: GCHP02

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	N.D.
Benzene	**0.50**	**2.2**
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	92

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

SEQUOIA ANALYTICAL - ELAP #1210

Claudia Hirotsu
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Pacific Environmental Group	Client Proj. ID: 330-084.21 / 374 / Berkeley	Sampled: 07/16/96
2025 Gateway Place, Suite 440	Sample Descript: MW-4	Received: 07/16/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 07/24/96
Attention: Kelly Brown	Lab Number: 9607A23-04	Reported: 07/27/96

QC Batch Number: GC072496BTEX03A
Instrument ID: GCHP03

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	2000	5600
Methyl t-Butyl Ether	100	150
Benzene	20	1100
Toluene	20	160
Ethyl Benzene	20	240
Xylenes (Total)	20	520
Chromatogram Pattern:		Gas

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

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Pacific Environmental Group	Client Proj. ID: 330-084.21 / 374 / Berkeley	Sampled: 07/16/96
2025 Gateway Place, Suite 440	Sample Descript: MW-5	Received: 07/16/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 07/23/96
Attention: Kelly Brown	Lab Number: 9607A23-05	Reported: 07/27/96

QC Batch Number: GC072396BTEX03A
Instrument ID: GCHP03

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	N.D.
Benzene	**0.50**	**0.79**
Toluene	**0.50**	**1.3**
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

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

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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: 330-084.21 / 374 / Berkeley	Sampled: 07/16/96
2025 Gateway Place, Suite 440	Sample Descript: MW-6	Received: 07/16/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 07/23/96
Attention: Kelly Brown	Lab Number: 9607A23-06	Reported: 07/27/96

QC Batch Number: GC072396BTEX02A
Instrument ID: GCHP02

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	**2.5**	**150**
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	94

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

SEQUOIA ANALYTICAL - ELAP #1210

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Pacific Environmental Group	Client Proj. ID: 330-084.21 / 374 / Berkeley	Sampled: 07/16/96
2025 Gateway Place, Suite 440	Sample Descript: TB-1	Received: 07/16/96
San Jose, CA 95110	Matrix: LIQUID	
	Analysis Method: 8015Mod/8020	Analyzed: 07/23/96
Attention: Kelly Brown	Lab Number: 9607A23-07	Reported: 07/27/96

QC Batch Number: GC072396BTEX02A
Instrument ID: GCHP02

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	82

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

SEQUOIA ANALYTICAL - ELAP #1210

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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: Kelly Brown

Client Proj. ID: 330-084.21 / 374 / Berkeley

Lab Proj. ID: 9607A23

Received: 07/16/96

Reported: 07/27/96

LABORATORY NARRATIVE

TPPH note: sample 9607A23-04 was diluted 40 fold.

SEQUOIA ANALYTICAL

Claudia Hirotsu
Project Manager

Sequoia Analytical

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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Kelly Brown

Client Project ID: 330-084.2I / 374 / Berkeley
Matrix: LIQUID
Work Order #: 9607A23 01-03, 06, 07

Reported: Jul 29, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes
QC Batch#:	GC072396BTEX02A	GC072396BTEX02A	GC072396BTEX02A	GC072396BTEX02A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	B. Sullivan	B. Sullivan	B. Sullivan	B. Sullivan
MS/MSD #:	960782205	960782205	960782205	960782205
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Prepared Date:	7/23/96	7/23/96	7/23/96	7/23/96
Analyzed Date:	7/23/96	7/23/96	7/23/96	7/23/96
Instrument I.D.#:	GCHP2	GCHP2	GCHP2	GCHP2
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Result:	10	10	10	30
MS % Recovery:	100	100	100	100
Dup. Result:	9.6	9.4	9.5	28
MSD % Recov.:	96	94	95	93
RPD:	4.1	6.2	5.1	6.9
RPD Limit:	0-25	0-25	0-25	0-25
LCS #:	BLK072396	BLK072396	BLK072396	BLK072396
Prepared Date:	7/23/96	7/23/96	7/23/96	7/23/96
Analyzed Date:	7/23/96	7/23/96	7/23/96	7/23/96
Instrument I.D.#:	GCHP2	GCHP2	GCHP2	GCHP2
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
LCS Result:	10	11	11	31
LCS % Recov.:	100	110	110	103
MS/MSD	60-140	60-140	60-140	60-140
LCS	70-130	70-130	70-130	70-130
Control Limits				

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

SEQUOIA ANALYTICAL

Claudia Hirotsu
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: Kelly Brown

Client Project ID: 330-084.2I / 374 / Berkeley
Matrix: LIQUID
Work Order #: 9607A23 05

Reported: Jul 29, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes
QC Batch#:	GC072396BTEX03A	GC072396BTEX03A	GC072396BTEX03A	GC072396BTEX03A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	B. Sullivan	B. Sullivan	B. Sullivan	B. Sullivan
MS/MSD #:	960782205	960782205	960782205	960782205
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Prepared Date:	7/23/96	7/23/96	7/23/96	7/23/96
Analyzed Date:	7/23/96	7/23/96	7/23/96	7/23/96
Instrument I.D.#:	GCHP3	GCHP3	GCHP3	GCHP3
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Result:	9.6	9.5	9.5	28
MS % Recovery:	96	95	95	93
Dup. Result:	9.8	9.8	9.7	28
MSD % Recov.:	98	98	97	93
RPD:	2.1	3.1	2.1	0.0
RPD Limit:	0-25	0-25	0-25	0-25
LCS #:	BLK072396	BLK072396	BLK072396	BLK072396
Prepared Date:	7/23/96	7/23/96	7/23/96	7/23/96
Analyzed Date:	7/23/96	7/23/96	7/23/96	7/23/96
Instrument I.D.#:	GCHP2	GCHP2	GCHP2	GCHP2
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
LCS Result:	9.9	9.9	9.8	30
LCS % Recov.:	99	99	98	100
MS/MSD	60-140	60-140	60-140	60-140
LCS	70-130	70-130	70-130	70-130
Control Limits				

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

SEQUOIA ANALYTICAL

Claudia Hirotsu
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: Kelly Brown

Client Project ID: 330-084.2I / 374 / Berkeley
Matrix: LIQUID
Work Order #: 9607A23 04

Reported: Jul 29, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes
QC Batch#:	GC072496BTEX03A	GC072496BTEX03A	GC072496BTEX03A	GC072496BTEX03A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	B. Sullivan	B. Sullivan	B. Sullivan	B. Sullivan
MS/MSD #:	960788401	960788401	960788401	960788401
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Prepared Date:	7/24/96	7/24/96	7/24/96	7/24/96
Analyzed Date:	7/24/96	7/24/96	7/24/96	7/24/96
Instrument I.D.#:	GCHP3	GCHP3	GCHP3	GCHP3
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Result:	9.8	9.8	9.7	29
MS % Recovery:	98	98	97	97
Dup. Result:	9.7	9.6	9.6	29
MSD % Recov.:	97	96	96	97
RPD:	1.0	2.1	1.0	0.0
RPD Limit:	0-25	0-25	0-25	0-25
LCS #:	BLK072496	BLK072496	BLK072496	BLK072496
Prepared Date:	7/24/96	7/24/96	7/24/96	7/24/96
Analyzed Date:	7/24/96	7/24/96	7/24/96	7/24/96
Instrument I.D.#:	GCHP3	GCHP3	GCHP3	GCHP3
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
LCS Result:	9.7	9.6	9.6	29
LCS % Recov.:	97	96	96	97
MS/MSD Control Limits	60-140	60-140	60-140	60-140
LCS Control Limits	70-130	70-130	70-130	70-130

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

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

Claudia Hirotsu
Project Manager

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

ARCO Products Company

Division of AtlanticRichfieldCompany

330084 21 **Task Order No.** 1934800

Chain of Custody

ARCO Facility no. 374	City (Facility) 6707 Telegraph Ave Berkeley	Project manager (Consultant) Kelly Brown	Laboratory name Sequoia
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) (408) 441 7500	Fax no. (Consultant) (408) 441 7539
Consultant name Pacific Environmental Group Inc	Address (Consultant) 2025 Gateway Place Suite 440 San Jose CA 95110		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid HCl	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH(Gas)/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 ☐		
MW1		3		X		X	X	7/16/96	15:25		X	1	A-C									
MW-2		↓		↓		↓	↓	↓	16:05		↓	2	↓									
MW-3									16:55			3										
MW-4									17:35			4										
MW-5									15:00			5										
MW-6		↓							14:20			6										
TB-1		2		↓		↓	↓	↓	n/a		↓	7	A-B									

Special detection Limit/reporting: 9607A23

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	Date 7/16/96	Time 18:55	Received by
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory — Date 07/16/96 — Time 18:55

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

APC-3292 (2-91)

SEQUOIA ANALYTICAL SAMPLE RECEIPT LOG

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

WORKORDER: 9607A23
DATE OF LOG-IN: 7/19/96

CIRCLE THE APPROPRIATE RESPONSE.

1. Custody Seal(s): Present / (Absent)
   Intact / Broken*
2. Custody Seal Nos.: Put In Remarks Section
3. Chain-of-Custody Records: (Present) / Absent*
4. Traffic Reports or Packing List: Present / (Absent)
5. Airbill: Airbill / Sticker Present / (Absent)
6. Airbill No.:
7. Sample Tags: (Present) / Absent*
   Sample Tag Nos.: (Listed) / Not Listed on Chain-of-Custody
8. Sample Condition: (Intact) / Broken* / Leaking*
9. Does information on custody reports, traffic reports and sample tags agree? (Yes) / No*
10. Proper preservatives used: (Yes) / No*
11. Date Rec. at Lab: 07/16/96
12. Temp. Rec. at Lab: 11°C
13. Time Rec. at Lab: 18:55

LAB SAMPLE #	DASH #	CLIENT IDENTIFICATION	CONTAINER DESCRIPTION	SAMPLE MATRIX	DATE SAMP.	REMARKS: CONDITION(ETC.)
1	A-C	MW-1	VOA (3)	liquid	07/16/96	
2		2				
3		3				
4		4				
5		5				
6		6				
7	A,B	TB-1	VIA (2)			

07/16/96

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

FIELD SERVICES / O & M REQUEST

SITE INFORMATION FORM

Project #:330-084.21

Station #:374

Site Address:6407 Telegraph ave Berkeley, California

County: Alameda

Project Manager: Kelly Brown

Requestor: Chuck Graves

Client: Arco

Prefield contacts: None

☐ **1st time visit**

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

☐ **Monthly**

☐ **Semi-Monthly**

☐ **Weekly**

☐ **One time Event**

☐ **Other.**_____

Client P.O.C.: Mike Whelan

Date of Request: 3Q

Ideal Field Date:

Budget Hrs._____

Actual Hrs. 4

Mob de Mob 1

Total Purge = 188 Gal

Field Tasks: For General Description

Third Quarter 1996 Groundwater sampling event: DTW/DTL on all wells TOB/TOC sample per attached protocol.

WA# 19348 00

Comments, remarks, from Field Staff (include problems encountered)

Completed by: _____ Date: 7/16/96

Checked by: _____

WELL SAMPLING REQUEST

SAMPLING PROTOCOL								
Project No.	Station #	Project Name	SEQUENCE	Project Manager	Approval	Date/s	Laboratory:	Client Engineer:
330-084.21	374	6407 Telegraph Berkeley	3Q96	Kelly Brown	6/25/96		Sequoia	Mike Whelan

Well Number	Ideal Sampling Order	Sample I.D.	Sampling Frequency	Analyses	TOB TOC	Well Depth	Casing Diameter	Well goes Dry?	Comments
MW-1	3		ANNUAL-3Q	MtBE/GAS/BTEX	TOB/TOC	26.5	4"	NO	
MW-2	4		ANNUAL-3Q	MtBE/GAS/BTEX	TOB/TOC	26	4"	NO	
MW-3	5		QLY	MtBE/GAS/BTEX	TOB/TOC	27	4"	NO	
MW-4	6		QLY	MtBE/GAS/BTEX	TOB/TOC	27	4"	NO	
MW-5	2		QLY	MtBE/GAS/BTEX	TOB/TOC	22	4"	NO	
MW-6	1		ANNUAL-3Q	MtBE/GAS/BTEX	TOB/TOC	14.5	4"	NO	
TB-1			QLY	MtBE/GAS/BTEX					

FIELD SERVICES REQUEST

SITE INFORMATION FORM

Identification

Project # 330-084.5C
Station ID #0374
Site Address: 6407 Telegraph Ave, Oakland
Lab: Sequoia
County:
Project Manager: Shaw Garakani
Requester: David S. Nanstad
Client: ARCO
Client P.O.C: MIKE WHELAN
Date of Request: July 15, 1996

Project Type

☒ Operation & Maintenance
☐ Sampling
☐ 1st time visit
☐ Quarterly
☐ 1st ☐ 2nd ☐ 3rd ☐ 4th
X Monthly
☐ Semi-Monthly
☐ Weekly
☐ One time event
☐ Other:
Ideal field date: July 16

Check Appropriate Category

X In Budget Site Visit
☐ Out of Budget Site Visit

Budget Hours: +1.5
Actual Hours: 4 hrs
Mob de Mob:

Site Safety Concerns

STANDARD

Field Tasks General Description

OBJECTIVE:Please perform the bio monitoring per the attached schedule. Well MW-3 contains a string of ORC's.

Please obtain a DO measurement from the well before removing ORCs to perform monitoring.

Replace ORC's after purging and sampling. There is a bucket of used ORC's on site.

Please check for hydrocarbon oder and through out in boneyard dumpster if no oder exists.

REMEBER: BIO MONITORING ANALYSIS ON SEPARATE CHAIN USING 3300845C

BIO TIME GOES UNDER 3300845C AS WELL.

Comments, remarks from field staff

Completed By: W Reich Date: 7/16/96

Pacific Environmental Group, Inc.

3rd Quarter Intrinsic Groundwater Bioremediation Enhancement Program Monitoring Schedule
ARCO Service Station 0374
6407 Telegraph
Oakland, CA

	Field Analysis				Laboratory Analysis							
Well	O.R.P.	D.O. Using Ampoule	D.O. Using Probe	Ferrous Iron	Nitrate as Nitrate	Sulfate	CH_4	Alka-linity	B.O.D.	CO_2	C.O.D.	*TPPH-BTEX
MW-3	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
MW-4	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y
MW-5	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y

O.R.P. = Oxidation reduction potential
D.O. = Dissolved oxygen
B.O.D. = Biological oxygen demand
C.O.D. = Chemical oxygen demand
ORC = Oxygen releasing compound
*TPPH-g = Total purgeable petroleum hydrocarbons. collect only if not on quarterly groundwater monitoring schedule
*BTEX = Benzene. toluene. ethylbenzene. xylenes. collect only if not on quarterly groundwater monitoring schedule
Y/N = Monitor/Don't Monitor

Note: All analysis associatted with bio-monitoring go on a separate chain under 3300845c.

***Collect all data using slow (1 gpm) purge protocol unless otherwise specified*

Bioremediation Assessment Field and Laboratory Procedures

Field Procedures

Parameter	Instrument or Technique
Color	Manually
Odor	Manually
Oxidation Reduction Potential (ORP)	YSI Model 3560 water quality monitoring system with YSI Model 3540 ORP electrode assembly
Turbidity	Nepholemetric turbidity unit or manually
Hydrogen Sulfide	HACH hydrogen sulfide test kit Model HS-C. catalog No. 25378-00
Dissolved Oxygen	YSI Model 50 in-situ dissolved oxygen meter
Ferrous Iron	HACH TPTZ iron reagent method. Model IR-21, catalog No. 22993-00 and ferrous iron Powder Pillows Catalog No. 1037-69

Laboratory Procedures

Analysis	Method	Bottle
TPPH-g & BTEX Compounds	EPA Methods 8015 (modified). 8020. and 5030	Voa. cool. HCL; no head-space
*Nitrate as Nitrate	EPA Method 300	G or P. keep cool. 100ml. 24 hr hold:NP
*Sulfate	EPA Method 300	G or P. keep cool. 100ml. 28 day hold:NP
Nitrogen as Ammonia	EPA Method 350.3	G or P. 500 ml with H_2SO4. keep cool. 28 day hold time
B.O.D.	EPA Method 405.1	P. 1L. 48 hour hold. NP. keep cool
C.O.D.	EPA Method 410.4	VOA w/ H_2SO_4. 28 day hold time. keep cool
Heterotrophic Plate Count	SM 907	P. 100ml. $NA_2S_2O_3$. keep cool. 30 hour hold: or non-preserved: keep cool. 12 hour hold time
Total Iron	EPA Method 6010	P. G. C. 200ml. HNO_3 6 month hold. keep cool
*Alkalinity	EPA Method 310.1	P or G. 100 ml. cool. NP. 14d
*CO_2	SM406C	P or G. 100 ml. cool. NP. immediately
Methane (CH4)	fill NP air tight voa half full	Air tight VOA. NP. immediately

** These analyses can all be extracted from the same 1 liter bottle. Be sure to collect 1 backup bottle.*

Dissolved Oxygen Meter Checklist and Data Sheet

PART A: WELL DATA
MATERIALS
PLEASE CHECK OFF THE FOLLOWING BEFORE LEAVING OFFICE!

DO METER	1	PROBE AND REEL	1
CALIBRATION BOTTLE	1	KCL SOLUTION	1
SPARE MEMBRANES	1	6 SPARE D BATTERIES	\
BUCKET	1	PAPER TOWEL	\
INSTRUCTION BINDER	1	SPARE O-RINGS	\
SCISSORS	1	SPARE DATA SHEETS	\
ALCONOX	1	STICK	\
WATER BOTTLE	1	WATER LEVEL INDICATOR	\

BEFORE MEASUREMENTS

INSPECT MEMBRANE (DAMAGED OR 1/8"BUBBLES)?	Yes	WARM UP UNIT FOR 20 MINUTES?	Yes

CALIBRATION

INSPECT MEMBRANE (DAMAGED OR 1/8"BUBBLES)?	Yes	CALIBRATE UNIT?	Yes
4a. CALIBRATION TEMPERATURE (C)	23.1	4b. CALIBRATION DO READING (mg/L)	6.47

COMPARED TO CALIBRATION DO TABLE VALUE?	23.1	4d. CALIBRATION BOTTLE READING (mg/L)	6.47 6.55

FIELD MEASUREMENTS

Sampling Device ~~Bailer~~ Bailer
Purging Device IP

Time Started ~~14~~ 16:15
Time Completed 16:55

Well MW-3	*D.O. AMPOULE (mg/L)		*D.O. PROBE (mg/L)		HYDROGEN SULFIDE (mg/L)	FERROUS IRON (mg/L)
	Before Purge	After	Before Purge	After		
	+12	5.0	off scale	8.73	N/A	0

**Collected from 2 feet below groundwater table after 2 minute stabilization period.*

PROBE & CORD RINSED? YES x NO ___
DO READING STABILIZED? YES ? NO ?

CHECK LAB SAMPLES COLLECTED

Alkalinity	1	BOD	X
CO_2	1	COD	X
Nitrate	1	Sulfate	X
Methane (CH_4)	1		

Sampling Device Bailer Time Started 17:40
Purging Device SP Time Completed 17:55

Well MW-4	*D.O. AMPOULE (mg/L)	*D.O. PROBE (mg/L)	HYDROGEN SULFIDE (mg/L)	FERROUS IRON (mg/L)
	3.0	3.20	NA	4.20

**Collected from 2 feet below groundwater table after 2 minute stabilization period.*

PROBE & CORD RINSED? YES ____ NO ____
DO READING STABILIZED? YES ____ NO ____

CHECK LAB SAMPLES COLLECTED

Alkalinity	____	BOD	____
CO_2	____	COD	____
Nitrate	____	Sulfate	____
Methane (CH_4)	____		

Sampling Device Bailer Time Started 14:25
Purging Device SP Time Completed 15:00

Well MW-5	*D.O. AMPOULE (mg/L)	*D.O. PROBE (mg/L)	HYDROGEN SULFIDE (mg/L)	FERROUS IRON (mg/L)
	4.0	6.80	N/A	0.0

**Collected from 2 feet below groundwater table after 2 minute stabilization period.*

PROBE & CORD RINSED? YES X NO ____
DO READING STABILIZED? YES ____ NO ____

CHECK LAB SAMPLES COLLECTED

Alkalinity	X	BOD	____
CO_2	X	COD	____
Nitrate	X	Sulfate	X
Methane (CH_4)	X	Gas Ox	X

Bioremediation Enhancement Program
Bottle Schedule

ARCO Service Station 0374
6407 Telegraph Road
Oakland, CA

	BOTTLE TYPE (VOLUME, PRESERVATIVE)						
Well	VOA (40ml,HCL)	Plastic (1L,NP)	Plastic (500ml, H_2SO_4)	VOA (40ml, H_2SO_4)	VOA (40ml,NP)	Plastic (500ml,$NA_2S_2O_3$)	Plastic (500ml,HNO_3)
MW-3	3	2	0	3	3	0	0
MW-4	3	1	0	0	3	0	0
MW-5	3	1	0	0	3	0	0
TOTAL	9	4	0	3	9	0	0

FIELD REPORT

DEPTH TO WATER/SEPARATE-PHASE HYDROCARBON SURVEY

PROJECT No.: 330081 21 LOCATION: 6907 Telegraph/Ave Berkeley DATE: 7/16/96

CLIENT/STATION NO.: Arco #374 FIELD TECHNICIAN: G. Peck DAY OF WEEK: Tues

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

Casing Size	Dtw Order	Well ID	Time	Surface Seal	Lid Secure	Gasket	Lock	Expanding Cap	Total Depth (feet)	First Depth to Water (feet) TOB/TOC	Second Depth to Water (feet) TOB/TOC	SEPARATE-PHASE HYDROCARBONS (SPH): SPH Depth (feet) TOB/TOC	SPH Thickness (feet)	COLOR: Fresh	Weathered	Gas	Oil	VISCOSITY: Lite	Medium	Heavy	LIQUID REMOVED (gallons): SPH / H_2O
4"	3	MW-1	13:22	Y	Y	X	Y	X	26.63	7.23 / 7.23	7.46 / 7.46										/
4"	4	MW-2	13:25	Y	Y	X	Y	X	26.30	7.73 / 7.73	8.0 / 8.0										/
4"	5	MW-3	13:29	Y	Y	X	Y	X	26.74	6.80 / 6.80	7.05 / 7.05										/
4"	6	MW-4	13:37	Y	Y	X	Y	X	26.90	7.73 / 7.73	8.32 / 8.32										/
4"	2	MW-5	13:46	Y	Y	X	Y	X	23.00	8.15 / 8.15	8.57 / 8.57										/
4"	1	MW-6	13:13	Y	Y	X	Y	X	14.60	4.96 / 4.96	5.42 / 5.42										/
										/	/										/
										/	/										/
										/	/										/

Comments: _____

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-084.21 LOCATION: 6407 Telegraph Ave Berkeley WELL ID #: MW-1

CLIENT/STATION No.: Arco #374 FIELD TECHNICIAN: W Reck

WELL INFORMATION

Depth to Liquid:	—	TOB —	TOC
Depth to water:	7.46	TOB 7.23	TOC
Total depth:	—	TOB 26.63	TOC
Date: 7/16/96	Time (2400): 13:22		

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 26.63 - DTW 7.23 = 19.40 x Gal/Linear Foot .66 = 12.80 x Number of Casings 3 = Calculated Purge 38.41

DATE PURGED: 7/16/96 START: 15:10 END (2400 hr): 15:22 PURGED BY: W Reck

DATE SAMPLED: 7/16/96 START: 15:22 END (2400 hr): 15:25 SAMPLED BY: W Reck

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
15:15	13.0	6.70	1990	74.8	Brown	Mod	None
15:20	26.0	6.47	2080	73.6	Cloudy	Light	None
15:22	39.0	6.49	2000	72.7	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:
- ☐ Airlift Pump:
- ☐ Dedicated:
- ☐ Other:

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 28-7
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-1	7/16/96	15:25	3	40ml	VOA	HCL	Gas/Btex/MTBE

REMARKS: Well almost Dry

Water Delivered

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-084-21 LOCATION: 6407 Telegraph Ave Berkeley WELL ID #: MW-2

CLIENT/STATION No.: Arco #374 FIELD TECHNICIAN: W Peck

WELL INFORMATION

Depth to Liquid:	—	TOB —	TOC
Depth to water:	8.0	TOB 7.73	TOC
Total depth:	—	TOB 26.50	TOC
Date: 7/16/96	Time (2400): 13:25		

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 26.30 - DTW 7.73 = 18.57 x Gal/Linear Foot .66 = 12.25 x Number of Casings 3 = Calculated Purge 36.76

DATE PURGED: 7/16/96 START: 15:35 END (2400 hr): 15:57 PURGED BY: W Peck

DATE SAMPLED: 7/16/96 START: 15:57 END (2400 hr): 16:05 SAMPLED BY: W Peck

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
15:42	12.25	6.85	860	72.5	Brown	Mod	None
15:50	24.50	6.70	750	72.7	Cloudy	Light	None
15:57	36.75	6.75	770	70.7	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:
- ☐ Other:
- ☐ Airlift Pump:
- ☐ Dedicated:

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-2	7/16/96	16:05	3	40ml	VOA	HCl	Gas/Btex/MTBE

REMARKS:

Water Pick

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-084.21 LOCATION: 6407 Telegraph Ave. Berkeley WELL ID #: MW-3

CLIENT/STATION No.: Arco #374 FIELD TECHNICIAN: W Peck

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 7.05 TOB 6.80 TOC
Total depth: — TOB 26.74 TOC
Date: 7/16/96 Time (2400): 13:29

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 26.74 - DTW 6.80 = 19.94 x Gal/Linear Foot .66 = 13.16 x Number of Casings 3 = Calculated Purge 39.48

DATE PURGED: 7/16/96 START: 16:15 END (2400 hr): 16:37 PURGED BY: W Peck

DATE SAMPLED: 7/16/96 START: 16:45 END (2400 hr): 16:55 SAMPLED BY: W Peck

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
16:25	13.25	6.80	860	69.5	Cloudy	light	None
16:35	26.50	6.69	970	68.6	Cloudy	light	None
16:37	28.50	7.08	1010	67.8	Brown	mod	None
~~30~~			DRY AT 28.50 Gal.				

Pumped dry (Yes) / No

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

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: 24.50 TOB (TOC) 7.67 1020 68.3 Brown mod None

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

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: G-13
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-3	7/16/96	16:55	3	40ml	VOA	HCl	Gas/Btex/MTBE
	7/16/96		1	1-L	Plastic	NP	Nitrate/Sulfate/Alkalinity/COD
	7/16/96		3	40ml	VOA	NP	CH4 (Methane)
			3	40ml	VOA	H_2SO_4	C.O.D.
			1	1-L	Plastic	NP	BOD

REMARKS: DRY AT 28.50 Gal

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-084.21 LOCATION: 6407 Telegraph Ave Berkeley WELL ID #: MW-4

CLIENT/STATION No.: Arco #374 FIELD TECHNICIAN: W Peck

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 8.52 TOB 7.73 TOC
Total depth: — TOB 26.80 TOC
Date: 7/16/96 Time (2400): 13:34

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 25.80 - DTW 7.73 = 19.7 x Gal/Linear Foot .66 = 12.65 x Number of Casings 3 = Calculated Purge 37.95

DATE PURGED: 7/16/96 START: 17:00 END (2400 hr): 17:27 PURGED BY: W Peck

DATE SAMPLED: 7/16/96 START: 17:27 END (2400 hr): 17:35 SAMPLED BY: W Peck

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
17:10	12.75	6.72	1630	73.1	Brown	Mod	Mod
17:18	25.50	6.67	1550	69.8	Cloudy	Light	Faint
17:27	38.25	6.72	1370	69.5	Clear	Trace	Faint

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:
- ☐ Other:
- ☐ Airlift Pump:
- ☐ Dedicated:

SAMPLING EQUIPMENT/I.D. #
- ☒ Bailer: 23.1
- ☐ Dedicated:
- ☐ Other:

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW 4	7/16/96	17:35	3	40ml	VOA	HCL	Gas/BTEX/MTBE
↓	7/16/96	↓	1	1L	Plastic	NP	Nitrate/Sulfate/Alkanisity/COD
↓	7/16/96	↓	3	40ml	VOA	NP	CH4 (Methane)

REMARKS:

Water Flow

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-084.21 LOCATION: 6407 Telegraph Ave Berkeley WELL ID #: MW-5

CLIENT/STATION No.: Arco #374 FIELD TECHNICIAN: W Peck

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 8.57 TOB 8.15 TOC
Total depth: — TOB 23.0 TOC
Date: 7/16/96 Time (2400): 1316

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 23.0 - DTW 8.15 = 14.85 x Gal/Linear Foot .66 = 9.80 x Number of Casings 3 = Calculated Purge 29.40

DATE PURGED: 7/16/96 START: 14:25 END (2400 hr): 14:45 PURGED BY: W Peck

DATE SAMPLED: 7/16/96 START: 14:50 END (2400 hr): 15:00 SAMPLED BY: W Peck

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 2 5°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR
14:32	10.0	7.39	770	79.0	Cloudy	Light	None
14:40	20.0	6.82	740	71.8	Clear	Trace	None
14:45	26.0	6.85	690	70.4	Clear	Trace	None
		DRY AT 26.0 Gal.					

Pumped dry (Yes) / No

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

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: 21.10 TOB/(TOC) 7.59 740 69.8 Cloudy Light None

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
MW-5	7/16/96	1500	3	40ml	VOA	HCL	Gas/Btex/MTBE
	7/16/96		1	1L	Plastic	NP	Nitrate/Sulfate/Alkalinity/COD
	7/16/96		3	40ml	VOA	NP	CH4 (Methane)

REMARKS: DRY AT 26.0 Gal

Water Flow Rate

PACIFIC

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-084.21 LOCATION: 6407 Telegraph Ave. Berkeley WELL ID #: MW-6

CLIENT/STATION No.: Arco #374 FIELD TECHNICIAN: W Peck

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: 5.02 TOB 4.96 TOC
Total depth: — TOB 10.60 TOC
Date: 7/16/96 Time (2400): 13:13

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 14.50 - DTW 4.96 = 9.64 x Gal/Linear Foot .66 = 6.36 x Number of Casings 3 = Calculated Purge 19.08

DATE PURGED: 7/16/96 START: 14:00 END (2400 hr): 14:13 PURGED BY: W Peck

DATE SAMPLED: 7/16/96 START: 14:13 END (2400 hr): 14:20 SAMPLED BY: W Peck

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
14:05	6.50	6.96	800	78.3	Cloudy	Light	None
14:09	13.0	6.84	740	75.1	Cloudy	Light	None
14:13	19.50	6.88	870	74.3	Brown	Mod	None

Pumped dry Yes (No)

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

FIELD MEASUREMENTS AT ~~TIME OF SAMPLE, AFTER RECHARGE~~:

DTW: ____ TOB/TOC ____

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

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-6	7/16/96	14:20	3	40ml	VOA	HCL	Gas/Btex/MTBE

REMARKS: Well almost dry

Water Flow

PACIFI

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-084.21 LOCATION: 6407 Telegraph Ave Berkeley WELL ID #: TB-1

CLIENT/STATION No.: Arco #374 FIELD TECHNICIAN: W Peck

WELL INFORMATION

Depth to Liquid: — TOB — TOC
Depth to water: TOB TOC
Total depth: — TOB TOC
Date: 7/16/96 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: 7/16/96 START: ____ END (2400 hr): ____ PURGED BY: W Peck

DATE SAMPLED: 7/16/96 START: ____ END (2400 hr): ____ SAMPLED BY: W Peck

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

Pumped dry Yes / No

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

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: ____ TOB/TOC

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

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
TB-1	7/16/96	W/o	3	40ml	VOA	HCL	Gas/Btex/MTBE

REMARKS: TRIP BLANK

Water

ARCO Products Company
Division of AtlanticRichfieldCompany

330 084 21 **Task Order No.** 14 14 500

Chain of Custody

ARCO Facility no. 374	City (Facility) Telegraph Ave Berkeley	Project manager (Consultant) Shaw Groskopf	Laboratory name Sequoia
ARCO engineer	Telephone no. (ARCO)	Telephone no. (Consultant) (510) 461 5700	Fax no. (Consultant) (510) 461 7500
Consultant name Pacific Environmental Group Inc	Address (Consultant) 2025 Gateway Place Suite 470 San Jose CA 95110		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 8020/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	GHs (Gasoline) EPA 8015/8010	(Oil) EPA 8240/8260	EPA 625/8270	TCLP Metals ☐ VOA ☐ Semi VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	
MW-3		6		X		X		7/16	1655						X	X	X				X
MW-4		4		X					1735						X						X
MW-5		4		X		X			1500						X						

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number

Turnaround time

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

Condition of sample:		Temperature received:
Relinquished by sampler	Date 7/16/96 Time 1853	Received by
Relinquished by	Date Time	Received by
Relinquished by	Date Time	Received by laboratory Date 07/16/96 Time 19:55

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

ARCO Products Company ◆ 330 w 4 21 **Task Order No.** 113-700 **Chain of Custody**
Division of AtlanticRichfieldCompany

ARCO Facility no. 274	City (Facility) Emeryville Berkeley	Project manager (Consultant) Kelly Brown	Laboratory name Inpco
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) (510) 420-7707	Fax no. (Consultant) (510) 337-9335
Consultant name Delta Environmental Group Inc	Address (Consultant) 2015 Century Plaza Dr Ste 100 Walnut Creek CA 94596		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid HCl	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW-1		3		1		ice	X	7/16/96	15:25		X											
MW-2		↓		↓		↓	↓	↓	16:05		↓											
MW-3									16:55													
MW-4									17:35													
MW-5									15:00													
MW-6									14:20													
TB-1		2		↓		↓	↓	↓	N/A		↓											

Condition of sample: Temperature received:

Relinquished by sampler	Date 7/16/96	Time 18:55	Received by
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory — Date 07/16/96 — Time 18:55

Remarks

Lab number

Turnaround time

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

Special detection Limit/reporting

Special QA/QC

Method of shipment

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

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

DOES NOT HAS RESULT PAGE

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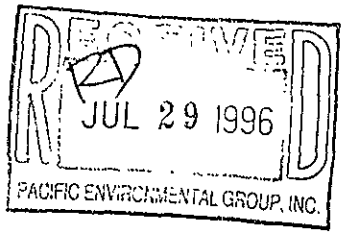

Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Shaw Garakani

Project: 330-084.2I / 374 / Berkeley

Enclosed are the results from samples received at Sequoia Analytical on July 16, 1996. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE COLLECTED	TEST METHOD
9607853 -01	LIQUID, MW-3	07/16/96	Alkalinity: Total
9607853 -01	LIQUID, MW-3	07/16/96	Biochem Oxygen Demand
9607853 -01	LIQUID, MW-3	07/16/96	Carbon Dioxide
9607853 -01	LIQUID, MW-3	07/16/96	Nitrate as Nitrate
9607853 -01	LIQUID, MW-3	07/16/96	Sulfate
9607853 -01	LIQUID, MW-3	07/16/96	Methane
9607853 -01	LIQUID, MW-3	07/16/96	Chemical Oxygen Demand
9607853 -02	LIQUID, MW-4	07/16/96	Alkalinity: Total
9607853 -02	LIQUID, MW-4	07/16/96	Carbon Dioxide
9607853 -02	LIQUID, MW-4	07/16/96	Nitrate as Nitrate
9607853 -02	LIQUID, MW-4	07/16/96	Sulfate
9607853 -02	LIQUID, MW-4	07/16/96	Methane
9607853 -03	LIQUID, MW-5	07/16/96	Alkalinity: Total
9607853 -03	LIQUID, MW-5	07/16/96	Carbon Dioxide

SEQUOIA ANALYTICAL

Sequoia Analytical

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

SAMPLE #	SAMPLE DESCRIPTION	DATE COLLECTED	TEST METHOD
9607853 -03	LIQUID, MW-5	07/16/96	Nitrate as Nitrate
9607853 -03	LIQUID, MW-5	07/16/96	Sulfate
9607853 -03	LIQUID, MW-5	07/16/96	Methane

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

Claudia Hirotsu
Project Manager

Quality Assurance Department

Sequoia Analytical

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

Client Proj. ID: 330-084.2I / 374 / Berkeley
Lab Proj. ID: 9607853

Attention: Shaw Garakani

Sampled: 07/16/96
Received: 07/16/96
Analyzed: see below
Reported: 07/27/96

LABORATORY ANALYSIS

	Analyte	Units	Date Analyzed	Detection Limit	Sample Results
Lab No: 9607853-01					
Sample Desc : **LIQUID,MW-3**					
	Alkalinity: Total	**mg CaCO3/L**	**07/17/96**	**2.0**	**280**
	Biochem Oxygen Demand	**mg/L**	**07/18/96**	**1.0**	**1.8**
	Carbon Dioxide	**mg/L**	**07/17/96**	**10**	**270**
	Chemical Oxygen Demand	**mg/L**	**07/22/96**	**20**	**44**
#1271	Methane	%	07/19/96	0.020	N.D.
	Nitrate as Nitrate	mg/L	07/19/96	1.0	N.D.
	Sulfate	**mg/L**	**07/18/96**	**1.0**	**78**
Lab No: 9607853-02					
Sample Desc : **LIQUID,MW-4**					
	Alkalinity: Total	**mg CaCO3/L**	**07/17/96**	**2.0**	**420**
	Carbon Dioxide	**mg/L**	**07/17/96**	**10**	**470**
#1271	**Methane**	**%**	**07/19/96**	**0.020**	**0.11**
	Nitrate as Nitrate	mg/L	07/22/96	1.0	N.D.
	Sulfate	**mg/L**	**07/22/96**	**1.0**	**18**
Lab No: 9607853-03					
Sample Desc : **LIQUID,MW-5**					
	Alkalinity: Total	**mg CaCO3/L**	**07/17/96**	**2.0**	**170**
	Carbon Dioxide	**mg/L**	**07/17/96**	**10**	**180**
#1271	Methane	%	07/19/96	0.020	N.D.
	Nitrate as Nitrate	mg/L	07/22/96	1.0	N.D.
	Sulfate	**mg/L**	**07/22/96**	**1.0**	**35**

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

SEQUOIA ANALYTICAL - ELAP #1210

Claudia Hirotsu
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: 330-084.21 / 374 / Berkeley
Lab Proj. ID: 9607853

Received: 07/16/96
Reported: 07/27/96

LABORATORY NARRATIVE

NOTE: Samples were preserved with H2SO4. NO3 results are actually NO2/NO3 combined.

SEQUOIA ANALYTICAL

Claudia Hirotsu
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: 330-084.21 / 374 / Berkeley
Matrix: LIQUID
Work Order #: 9607853 01

Reported: Jul 29, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Biochemical Oxygen Demand
QC Batch:	IN071796405100A
Analy. Method:	EPA 405.1
Prep Method:	N.A.

Analyst:	T. McMahon
Duplicate Sample #:	960786201
Prepared Date:	7/17/96
Analyzed Date:	7/22/96
Instrument I.D.#:	MANUAL
Sample Concentration:	1.6
Dup. Sample Concentration:	2.0
RPD:	22
RPD Limit:	0-20

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

SEQUOIA ANALYTICAL

Claudia Hirotsu
Project Manager

** RPD = Relative % Difference

Sequoia Analytical

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

Client Project ID: 330-084.2I / 374 / Berkeley
Matrix: LIQUID
Work Order #: 9607853 01

Reported: Jul 29, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Chemical Oxygen Demand	Sulfate	Nitrate
QC Batch#:	IN072296410400A	IN0718963000ACA	IN0719963000ACA
Analy. Method:	EPA 410.4	EPA 300.0	EPA 300.0
Prep. Method:	N.A.	N.A.	N.A.
Analyst:	Y. Arteaga	S. Chin	S. Chin
MS/MSD #:	960785301	960785301	960795701
Sample Conc.:	44	78	82
Prepared Date:	7/22/96	7/18/96	7/19/96
Analyzed Date:	7/22/96	7/18/96	7/19/96
Instrument I.D.#:	MANUAL	INIC1	INIC1
Conc. Spiked:	100 mg/L	10 mg/L	10 mg/L
Result:	150	91	88
MS % Recovery:	106	130	60
Dup. Result:	150	93	88
MSD % Recov.:	106	150	60
RPD:	0.0	2.2	0.0
RPD Limit:	0-20	0-20	0-20
LCS #:	LCS072296	LCS071896	LCS071996
Prepared Date:	7/22/96	7/18/96	7/19/96
Analyzed Date:	7/22/96	7/18/96	7/19/96
Instrument I.D.#:	MANUAL	INIC1	INIC1
Conc. Spiked:	100 mg/L	5.0 mg/L	10 mg/L
LCS Result:	110	5.3	9.1
LCS % Recov.:	110	106	91
MS/MSD Control Limits	75-125	75-125	75-125
LCS Control Limits	80-120	80-120	80-120

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

SEQUOIA ANALYTICAL

Claudia Hirotsu
Project Manager

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

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

Sequoia Analytical

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

Client Project ID: 330-084.21 / 374 / Berkeley
Matrix: LIQUID

Work Order #: 9607853 01-03

Reported: Jul 29, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Alkalinity
QC Batch#:	IN07179640300B
Analy. Method:	SM 403
Prep. Method:	N.A.
Analyst:	Y. Arteaga
MS/MSD #:	960777429
Sample Conc.:	200
Prepared Date:	7/17/96
Analyzed Date:	7/17/96
Instrument I.D.#:	MANUAL
Conc. Spiked:	200 mg/L
Result:	400
MS % Recovery:	100
Dup. Result:	400
MSD % Recov.:	100
RPD:	0.0
RPD Limit:	0-20

LCS #:	LCS071796
Prepared Date:	7/17/96
Analyzed Date:	7/17/96
Instrument I.D.#:	MANUAL
Conc. Spiked:	100 mg/L
LCS Result:	92
LCS % Recov.:	92

MS/MSD	75-125
LCS	80-120
Control Limits	

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

SEQUOIA ANALYTICAL

Claudia Hirotsu
Project Manager

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

Client Project ID: 330-084.21 / 374 / Berkeley
Matrix: LIQUID
Work Order #: 9607853 02, 03

Reported: Jul 29, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Sulfate	Nitrate
QC Batch#:	IN0722963000ACD	IN0722963000ACA
Analy. Method:	EPA 300.0	EPA 300.0
Prep. Method:	N.A.	N.A.
Analyst:	S. Chin	S. Chin
MS/MSD #:	9607A7101	9607B0303
Sample Conc.:	59	33
Prepared Date:	7/22/96	7/22/96
Analyzed Date:	7/22/96	7/22/96
Instrument I.D.#:	INIC1	INIC1
Conc. Spiked:	10 mg/L	10 mg/L
Result:	69	40
MS % Recovery:	100	70
Dup. Result:	74	41
MSD % Recov.:	150	80
RPD:	7.0	2.5
RPD Limit:	0-20	0-20
LCS #:	LCS072296	LCS072296
Prepared Date:	7/22/96	7/22/96
Analyzed Date:	7/22/96	7/22/96
Instrument I.D.#:	INIC1	INIC1
Conc. Spiked:	5.0 mg/L	10 mg/L
LCS Result:	4.9	9.0
LCS % Recov.:	98	90

MS/MSD	75-125	75-125
LCS	80-120	80-120
Control Limits		

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

SEQUOIA ANALYTICAL

Claudia Hirotsu
Project Manager

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

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

Sequoia Analytical

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

Client Project ID: 330-084.21 / 374 / Berkeley
Matrix: Air
Work Order #: 9607853 01-03

Reported: Jul 29, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Carbon Dioxide	Oxygen	Nitrogen
QC Batch:	GC071996341608A	GC071996341608A	GC071996341608A
Analy. Method:	ASTMD 346M	ASTMD 346M	ASTMD 346M
Prep Method:			
Analyst:	J. Dinsay	J. Dinsay	J. Dinsay
Reporting Units:	Inert Gases %	Inert Gases %	Inert Gases %
Duplicate Sample #:	Ambient Air	Ambient Air	Ambient Air
Prepared Date:	7/19/96	7/19/96	7/19/96
Analyzed Date:	7/19/96	7/19/96	7/19/96
Instrument I.D.#:	GCHP8	GCHP8	GCHP8
Sample Concentration:	0.045	20	75
Dup. Sample Concentration:	0.056	19	74
RPD:	22	5.1	1.3
RPD Limit:	0-30	0-30	0-30

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

SEQUOIA ANALYTICAL
ELAP #1271

Claudia Hirotsu
Project Manager

** RPD = Relative % Difference

ARCO Products Company ◆ Division of AtlanticRichfieldCompany — 330 084 21 — **Task Order No.** 1934800 — **Chain of Custody**

ARCO Facility no. 374	City (Facility) 6707 Telegraph Ave Berkeley	Project manager (Consultant) Shaw Garafani	Laboratory name Sequoia
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) (408) 441 7500	Fax no. (Consultant) (408) 441 7539
Consultant name Pacific Environmental Group Inc.	Address (Consultant) 2025 Gateway Place Suite 440 San Jose CA 95110		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid H_2SO_4	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	City (methane) EPA 8015/8010	COD EPA 8240/8260	EPA 625/8270 BOD	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	Nitrate/Sulfate Alkalinity/Cor
MW-3	1	8		X		X	X	7/16/96	16:55						X	X	X				X
MW-4	2	4		X		X			17:35						X						X
MW-5	3	4		X		X			1500						X						X

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number 9607853

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 Walter B. Hall	Date 7/16/96 Time 18:55	Received by	
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory	Date 07/16/96 Time 18:55

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

SEQUOIA ANALYTICAL SAMPLE RECEIPT LOG

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

WORKORDER: 9607853
DATE OF LOG-IN: 7/17/96

CIRCLE THE APPROPRIATE RESPONSE

1. Custody Seal(s): Present / (Absent) — Intact / Broken*
2. Custody Seal Nos.: Put in Remarks Section
3. Chain-of-Custody Records: (Present) / Absent*
4. Traffic Reports or Packing List: Present / (Absent)
5. Airbill: Airbill / Sticker — Present / (Absent)
6. Airbill No.:
7. Sample Tags: (Present) / Absent* — Sample Tag Nos.: (Listed) / Not Listed on Chain-of-Custody
8. Sample Condition: (Intact) / Broken* / Leaking*
9. Does information on custody reports, traffic reports and sample tags agree? (Yes) / No*
10. Proper preservatives used: (Yes) / No*
11. Date Rec. at Lab: 07/16/96
12. Temp. Rec. at Lab: 11°C
13. Time Rec. at Lab: 18:55

LAB SAMPLE #	DASH #	CLIENT IDENTIFICATION	CONTAINER DESCRIPTION	SAMPLE MATRIX	DATE SAMP.	REMARKS: CONDITION(ETC.)
1	AF	MW-3	1L plastic (2)	liquid	07/16/96	
↓	DEG	↓	VOA (3)			Unpreserved
↓	BCH	↓	VOA (3)			COD
2	C	MW-4	1L plastic			
↓	ABD	↓	VOA (3)			unpreserved
3	A-D	MW-5	same			

07/16/96

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

kb
mc

FIELD SERVICES REQUEST

SITE INFORMATION FORM

Identification

Project # 330-084.5C
Station ID #0374
Site Address: 6407 Telegraph Ave. Oakland
Lab: Sequoia
County:
Project Manager: Shaw Garakani
Requester: David S. Nanstad
Client: ARCO
Client P.O.C: MIKE WHELAN
Date of Request: July 3, 1996

Project Type

- ☒ Operation & Maintenance
- ☐ Sampling
- ☐ 1st time visit
- ☐ Quarterly
  - ☐ 1st ☐ 2nd ☐ 3rd ☐ 4th
- X Monthly
- ☐ Semi-Monthly
- ☐ Weekly
- ☐ One time event ARRIVED 11:30
- ☐ Other:

Ideal field date: asap

Check Appropriate Category

X In Budget Site Visit
☐ Out of Budget Site Visit

Budget Hours: ~~1.5~~
Actual Hours: 1.5
Mob de Mob:

Site Safety Concerns

STANDARD

Field Tasks General Description

OBJECTIVE: Go to the referenced site and post attached sign next to system on button. Verify totalizer reads 93,989 gals. If not record value and call engineer (DaveN at 292 or ShawG at 280). Place sign in a water proof ziplock.

Comments, remarks from field staff

METER # 9604916 / Total = 00094017

Completed By: MG Date: 7/10/96

Pacific Environmental Group, Inc.

FIELD SERVICES REQUEST

SITE INFORMATION FORM

Identification

Project # 330-084.5C

Station ID #0374

Site Address: 6407 Telegraph Ave. Oakland

Lab: Sequoia

County:

Project Manager: Shaw Garakani

Requester: David S. Nanstad

Client: ARCO

Client P.O.C: MIKE WHELAN

Date of Request: July 15, 1996

Project Type

☒ Operation & Maintenance

☐ Sampling

☐ 1st time visit

☐ Quarterly

☐ 1st ☐ 2nd ☐ 3rd ☐ 4th

X Monthly

☐ Semi-Monthly

☐ Weekly

☐ One time event

☐ Other:

Ideal field date: July 16

Check Appropriate Category

X In Budget Site Visit

☐ Out of Budget Site Visit

Budget Hours: +1.5

Actual Hours: 4 hrs

Mob de Mob:

Site Safety Concerns

STANDARD

Field Tasks General Description

OBJECTIVE:Please perform the bio monitoring per the attached schedule. Well MW-3 contains a string of ORC's.

Please obtain a DO measurement from the well before removing ORCs to perform monitoring.

Replace ORC's after purging and sampling. There is a bucket of used ORC's on site.

Please check for hydrocarbon oder and through out in boneyard dumpster if no oder exists.

REMEBER: BIO MONITORING ANALYSIS ON SEPARATE CHAIN USING 3300845C

BIO TIME GOES UNDER 3300845C AS WELL.

Comments, remarks from field staff

Completed By: W Reik Date: 7/16/96

Pacific Environmental Group, Inc.

3rd Quarter Intrinsic Groundwater Bioremediation Enhancement Program Monitoring Schedule
ARCO Service Station 0374
6407 Telegraph
Oakland, CA

	Field Analysis				Laboratory Analysis							
Well	O.R.P.	D.O. Using Ampoule	D.O. Using Probe	Ferrous Iron	Nitrate as Nitrate	Sulfate	CH_4	Alka-linity	B.O.D.	CO_2	C.O.D.	*TPPH-BTEX
MW-3	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
MW-4	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y
MW-5	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y

O.R.P. = Oxidation reduction potential
D.O. = Dissolved oxygen
B.O.D. = Biological oxygen demand
C.O.D. = Chemical oxygen demand
ORC = Oxygen releasing compound
*TPPH-g = Total purgeable petroleum hydrocarbons, collect only if not on quarterly groundwater monitoring schedule
*BTEX = Benzene, toluene, ethylbenzene, xylenes, collect only if not on quarterly groundwater monitoring schedule
Y/N = Monitor/Don't Monitor

Note: All analysis associatted with bio-monitoring go on a separate chain under 3300845c.

***Collect all data using slow (1 gpm) purge protocol unless otherwise specified*

Bioremediation Assessment Field and Laboratory Procedures

Field Procedures

Parameter	Instrument or Technique
Color	Manually
Odor	Manually
Oxidation Reduction Potential (ORP)	YSI Model 3560 water quality monitoring system with YSI Model 3540 ORP electrode assembly
Turbidity	Nepholemetric turbidity unit or manually
Hydrogen Sulfide	HACH hydrogen sulfide test kit Model HS-C, catalog No. 25378-00
Dissolved Oxygen	YSI Model 50 in-situ dissolved oxygen meter
Ferrous Iron	HACH TPTZ iron reagent method, Model IR-21, catalog No. 22993-00 and ferrous iron Powder Pillows Catalog No. 1037-69

Laboratory Procedures

Analysis	Method	Bottle
TPPH-g & BTEX Compounds	EPA Methods 8015 (modified), 8020, and 5030	Voa, cool, HCL; no head-space
*Nitrate as Nitrate	EPA Method 300	G or P, keep cool, 100ml, 24 hr hold:NP
*Sulfate	EPA Method 300	G or P, keep cool, 100ml, 28 day hold:NP
Nitrogen as Ammonia	EPA Method 350.3	G or P, 500 ml with H_2SO_4, keep cool, 28 day hold time
B.O.D.	EPA Method 405.1	P, 1L, 48 hour hold, NP, keep cool
C.O.D.	EPA Method 410.4	VOA w/ H_2SO_4, 28 day hold time, keep cool
Heterotrophic Plate Count	SM 907	P, 100ml, $NA_2S_2O_3$, keep cool, 30 hour hold; or non-preserved keep cool, 12 hour hold time
Total Iron	EPA Method 6010	P, G, C, 200ml, HNO_3 6 month hold, keep cool
*Alkalinity	EPA Method 310.1	P or G, 100 ml, cool, NP, 14d
*CO_2	SM406C	P or G, 100 ml, cool, NP, immediately
Methane (CH4)	fill NP air tight voa half full	Air tight VOA, NP, immediately

** These analyses can all be extracted from the same 1 liter bottle. Be sure to collect 1 backup bottle.*

Bioremediation Enhancement Program
Bottle Schedule

ARCO Service Station 0374
6407 Telegraph Road
Oakland, CA

	BOTTLE TYPE (VOLUME, PRESERVATIVE)						
Well	VOA (40ml,HCL)	Plastic (1L,NP)	Plastic (500ml, H_2SO_4)	VOA (40ml, H_2SO_4)	VOA (40ml,NP)	Plastic (500ml,$NA_2S_2O_3$)	Plastic (500ml,HNO_3)
MW-3	3	2	0	3	3	0	0
MW-4	3	1	0	0	3	0	0
MW-5	3	1	0	0	3	0	0
TOTAL	**9**	**4**	**0**	**3**	**9**	**0**	**0**

ARCO Products Company
Division of AtlanticRichfieldCompany

330 084 21 **Task Order No.** 19-14500

Chain of Custody

ARCO Facility no. 374	City (Facility) Livermore	Project manager (Consultant) Shaw Groskopf	Laboratory name Sequoia
ARCO engineer	Telephone no. (ARCO)	Telephone no. (Consultant) (510) 441 7500	Fax no. (Consultant) (510) 441 7577
Consultant name Pacific Environmental Group Inc	Address (Consultant) 2025 Gateway Place Suite 440 San Jose CA 95110		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	CHX (Genesis) EPA 8010/8010	EPA 8240/8260	EPA 625/8270	TCLP Metals ☐ VOA ☐ Semi VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	
MW-3		8		X		X	X	7/16	1655						X	X	X				X
MW-4		4		X		-			1735						X						X
MW-5		4		X		X			1500						X						

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:

	Date	Time	
Relinquished by sampler	7/16/96	1855	Received by
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory — Date 07/16/96 Time 18:55

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

ARCO Products Company

Division of AtlanticRichfieldCompany

330 054 21

Task Order No. 113-540

Chain of Custody

ARCO Facility no. 374	City (Facility) Telegraph Ave Berkeley	Project manager (Consultant) Kelly Brown	Laboratory name Sequoia
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) (510) 420 1500	Fax no. (Consultant) (510) 420 9570
Consultant name Pac. Env. Management Group Inc	Address (Consultant) 2025 Gateway Place Suite 440 San Jose CA 95110		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid HCl	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Semi Metals ☐ VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW-1		3		1		X	X	7/16/16	15:25		X											
MW-2									16:05													
MW-3									16:55													
MW-4									17:35													
MW-5									15:00													
MW-6									14:20													
TB-1		2							11/17													

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number

Turnaround time

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

Method of shipment

Condition of sample:

Temperature received:

Relinquished by sampler	Date 7/16/16	Time 1855
Relinquished by	Date	Time
Relinquished by	Date	Time

Received by		
Received by		
Received by laboratory	Date 07/16/16	Time 18:55

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

APC-3292 (2-91)

ATTACHMENT D

REMEDIAL SYSTEM PERFORMANCE EVALUATION

ATTACHMENT D
REMEDIAL SYSTEM PERFORMANCE EVALUATION

Groundwater Extraction System

Groundwater extraction (GWE) was conducted between December 21, 1993 and October 13, 1995. No evidence of 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 No. 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.

Historical GWE system performance and analytical data are presented in Tables D-1 and D-2. Graphical presentations of TPPH-g and benzene mass removal and concentration data are shown on Figures D-1 and D-2, respectively.

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 D-3.

In general, 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 shown by Table D-3 and Figures D-3 through D-9, collected data follow the trend that indicate the occurance of intrinsic bioremedation.

Certified analytical reports, chain-of-custody documentation, and field data sheets are presented as Attachment D-A.

Bioremediation Enhancement Program

At the request of ARCO, PACIFIC initiated an in-situ bioremediation enhancement program at offsite Well MW-3 on November 14, 1995. The in-situ bioremediation enhancement program utilizes oxygen releasing compound (ORC) manufactured by Regenesis Bioremediation Products, Inc. Twelve, 2-inch diameter ORC socks were installed below the groundwater surface in Well MW-3. Due to diminishing dissolved oxygen concentrations the ORCs were replaced with the same number of new ORCs on June 6, 1996. 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 has indicated that dissolved oxygen concentrations have increased and TPPH-g and benzene concentrations have decreased since ORCs were installed. ORC units are changed when dissolved oxygen data indicates that they have been depleted.

CONCLUSIONS

As indicated above, GWE at the site has been terminated with verbal approval from ACHCSA. Bioremediation enhancement program will continue during the fourth quarter 1996.

Attachments:
- Table D-1 - Groundwater Extraction System Performance Data
- Table D-2 - Groundwater Extraction System Analytical Data - Total Purgeable Petroleum Hydrocarbons (TPPH as Gasoline and BTEX Compounds)
- Table D-3 - Groundwater Biodegradation Study Field and Laboratory Data
- Figure D-1 - Groundwater Extraction System Mass Removal Trend
- Figure D-2 - Groundwater Extraction System Hydrocarbon Concentrations
- Figure D-3 - Total BTEX vs. Nitrate as Nitrate Concentrations
- Figure D-4 - Total BTEX vs. Sulfate Concentrations
- Figure D-5 - Total BTEX vs. Percent Methane Concentrations
- Figure D-6 - Total BTEX vs. Total Alkalinity Concentrations
- Figure D-7 - Total BTEX vs. Carbon Dioxide Concentrations
- Figure D-8 - Total BTEX vs. Dissolved Oxygen Concentrations
- Figure D-9 - Total BTEX vs. Ferrous Iron Concentrations
- Attachment D-A - Operation and Maintenance Field Data Sheets

Table D-1
Groundwater Extraction System Performance Data

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

Sample I.D.	Date Sampled		Totalizer Reading (gallons)	Net Volume (gallons)	Average Flow Rate (gpm)	TPPH Influent Concentration (µg/L)	TPPH Net Removed (lbs)	TPPH Removed to Date (lbs)	Benzene Influent Concentration (µg/L)	Benzene Net Removed (lbs)	Benzene Removed to Date (lbs)	Primary Carbon Loading (percent)
INFL	12/21/93	a	22	22	0.21	NS	0.000	0.00	NS	0.000	0.00	0.0
INFL	12/23/93	a	4,855	4,833	1.6	9,300	0.380	0.38	1,200	0.024	0.02	0.5
INFL	12/27/93	a	6,871	2,016	0.36	5,700	0.130	0.51	820	0.017	0.04	0.6
INFL	12/29/93	a	7,192	321	0.13	5,800	0.016	0.53	950	0.002	0.04	0.7
INFL	01/03/94	a	7,925	733	0.10	6,500	0.010	0.54	860	0.006	0.05	0.7
INFL	01/05/94	a	8,162	237	0.08	5,200	0.010	0.55	970	0.002	0.05	0.7
INFL	01/11/94	a	8,907	745	0.08	6,300	0.030	0.58	900	0.006	0.06	0.7
INFL	01/13/94	a	9,175	268	0.09	8,600	0.019	0.60	950	0.002	0.06	0.7
INFL	01/24/94	a	9,306	131	0.08	NS	0.007	0.60	NS	0.001	0.06	0.8
INFL	02/24/94	a	14,555	5,249	0.21	4,200	0.280	0.88	520	0.011	0.07	1.1
INFL	03/24/94	a	23,723	9,168	0.24	6,200	0.400	1.40	1,100	0.062	0.13	1.8
INFL	04/26/94	b	29,543	5,820	0.12	6,400	0.150	1.55	1,400	0.061	0.19	1.9
INFL	05/24/94	c	35,082	5,539	0.14	NS	0.196	1.75	NS	0.043	0.24	2.2
INFL	11/17/94	d,e	35,507	425	N/A	2,100	0.004	1.75	460	0.001	0.24	2.2
INFL	01/10/95	f	36,493	986	0.01	1,100	0.013	1.76	180	0.003	0.24	2.2
INFL	02/07/95	g	41,399	4,906	0.12	3,500	0.094	1.86	370	0.011	0.25	2.3
INFL	03/03/95	h	53,290	11,891	0.34	NS	0.220	2.08	NS	0.035	0.29	2.6
INFL	04/03/95		62,582	9,292	0.21	5,000	0.194	2.27	1,000	0.039	0.32	2.8
INFL	05/01/95		69,809	7,227	0.18	580	0.168	2.44	40	0.031	0.36	3.0
INFL	06/09/95		75,254	5,445	0.10	1,400	0.045	2.48	420	0.010	0.37	3.1
INFL	07/05/95		81,540	6,286	0.17	750	0.056	2.54	41	0.012	0.38	3.2
INFL	08/10/95		86,868	5,328	0.10	610	0.030	2.57	29	0.002	0.38	3.2
INFL	09/18/95		91,532	4,664	0.08	600	0.024	2.59	10	0.001	0.38	3.2
INFL	10/02/95		92,918	1,386	0.07	790	0.008	2.60	52	0.000	0.38	3.3
INFL	10/13/95	i,h	93,989	1,071	0.07	NS	0.006	2.61	NS	0.000	0.38	3.3

REPORTING PERIOD: 01/01/96 - 03/31/96 (i)				
TOTAL POUNDS REMOVED:		2.61		0.38
TOTAL GALLONS REMOVED:		0.43		0.05
PERIOD POUNDS REMOVED:	0.000		0.00	
PERIOD GALLONS REMOVED:	0.000		0.00	
TOTAL GALLONS EXTRACTED:	93,989			
PERIOD GALLONS EXTRACTED:	0			
PERIOD AVERAGE FLOW RATE (gpm):	N/A			
PRIMARY BED CAPACITY REMAINING:	96.7%			

TPPH = Total purgeable petroleum hydrocarbons
gpm = Gallons per minute
µg/L = Micrograms per liter
lbs = Pounds
NS = Not sampled (prior concentrations assumed)
N/A = Not available or not applicable

a. All data prior to 9/1/94 provided by prior consultant.
b. Samples taken 4/21/94; totalizer reading from 4/26/94.
c. Last site visit by RESNA on 5/24/94.
d. Pacific Environmental Group, Inc. became consultant for the site 9/1/94.
e. System operated for two days in 4th quarter 1994; system down due to extensive repairs required for system and compound.
f. System started on January 10, 1995.
g. System auto shutdown 2/14/95; shut down 3/3/95 for repairs.
h. TPPH/benzene pounds removed estimated from previous data.
i. GWE system temporarily shut down 10/13/95.

System operation began December 21, 1993, under RESNA Industries, Inc.; system shut down 4/27/94 - 11/17/94.
Pounds of hydrocarbons removed to date through March 24, 1994 provided by prior consultant.
Benzene mass removal from 12/21/93 through 4/27/94 estimated from data provided by prior consultant.
Prior to June 1995, TPPH was reported as "TPH calculated as Gasoline".
Mass removed is an approximation calculated using averaged concentrations.
Carbon loading assumes an 8 percent isotherm. See certified analytical reports for detection limits.

Table D-2
Groundwater Extraction System Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

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

Sample I.D.	Date Sampled	TPPH as Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)
Influent Samples						
SP-105	01/10/94	1,100	180	2.7	26	51
SP-105	02/07/94	3,500	370	120	67	230
SP-105	04/03/95	5,000	1,000	41	88	300
INFL	05/01/95	580	40	ND	1.2	17
SP-105	06/09/95	1,400	420	7	10	20
SP-105	07/05/95	750	41	ND	2.8	17
SP-105	08/10/95	610	29	0.64	3.4	16
SP-105	09/18/95	600	10	ND	ND	20
105	10/02/95	790	52	ND	8.4	67
Midpoint-1 Samples						
SP-106	01/10/94	ND	ND	ND	ND	ND
SP-106	02/07/94	ND	ND	ND	ND	ND
SP-106	04/03/95	ND	ND	ND	ND	ND
MID-1	05/01/95	ND	ND	ND	ND	ND
SP-106	06/09/95	ND	ND	ND	ND	ND
SP-106	07/05/95	ND	ND	ND	ND	ND
SP-106	08/10/95	ND	ND	ND	ND	ND
SP-106	09/18/95	ND	ND	ND	ND	ND
106	10/02/95	ND	ND	ND	ND	ND
Midpoint-2 Samples						
MID-2	11/17/94	ND	ND	ND	ND	ND
SP-107	01/10/94	ND	ND	ND	ND	ND
SP-107	02/07/94	ND	ND	ND	ND	ND
SP-107	04/03/95	ND	ND	ND	ND	ND
SP-107	06/09/94	ND	ND	ND	ND	ND
SP-107	09/18/95	ND	ND	ND	ND	ND
Effluent Samples						
SP-108	01/10/94	ND	ND	ND	ND	ND
SP-108	02/07/94	ND	ND	ND	ND	ND
SP-108	04/03/95	ND	ND	ND	ND	ND
EFFL	05/01/95	ND	ND	ND	ND	ND
SP-108	06/09/95	79	ND	ND	ND	ND
SP-108	07/05/95	ND	ND	ND	ND	ND
SP-108	08/10/95	ND	ND	ND	ND	ND
SP-108	09/18/95	ND	ND	ND	ND	ND
108	10/02/95	ND	ND	ND	ND	ND

µg/L = Micrograms per liter
ND = Not detected above detection limits
System startup on 12/21/93 by RESNA Industries, Inc.
Pacific Environmental Group, Inc. (PACIFIC) became consultant 9/01/94.
PACIFIC restarted system on 11/17/94.
See certified analytical reports for individual detection limits.

Table D-3
Groundwater Biodegradation Study Field and Laboratory Data

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

Well	Date Sampled	Field Analyses: Groundwater Temperature (deg F)	pH (units)	Conductivity (µmhos)	D.O. (mg/L)	Ferrous Iron (mg/L)	Laboratory Analyses: Total Alkalinity (mg CaCO3/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
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
* = Field measurements collected on November 2, 1995.
** = ORC installed following data collection.
NS = Not sampled
N/A = Not available
† = From April 10, 1996 groundwater monitoring event.

Figure D-1
Groundwater Extraction System Mass Removal Trend

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

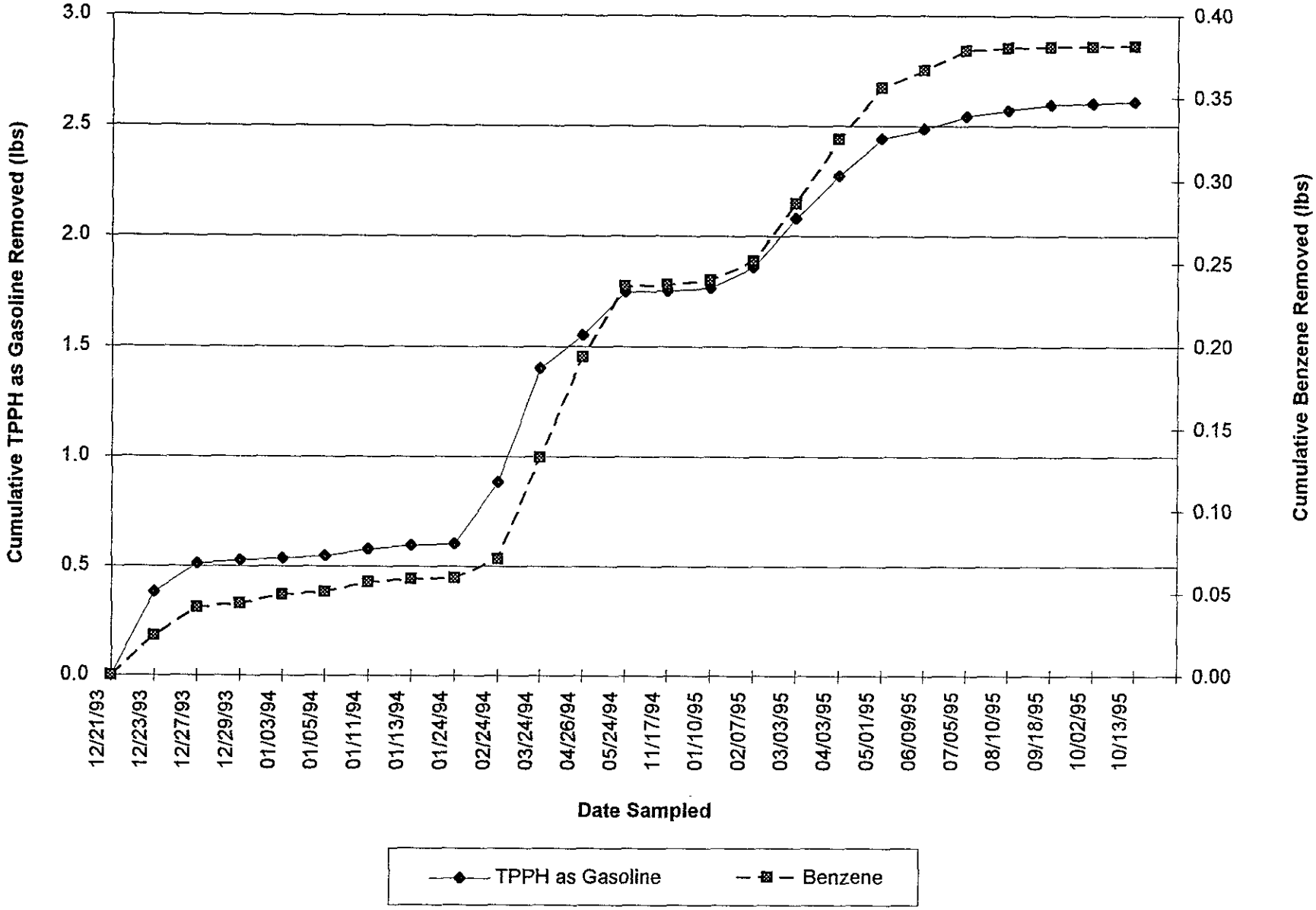


Figure D-2
Groundwater Extraction System Hydrocarbon Concentrations

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

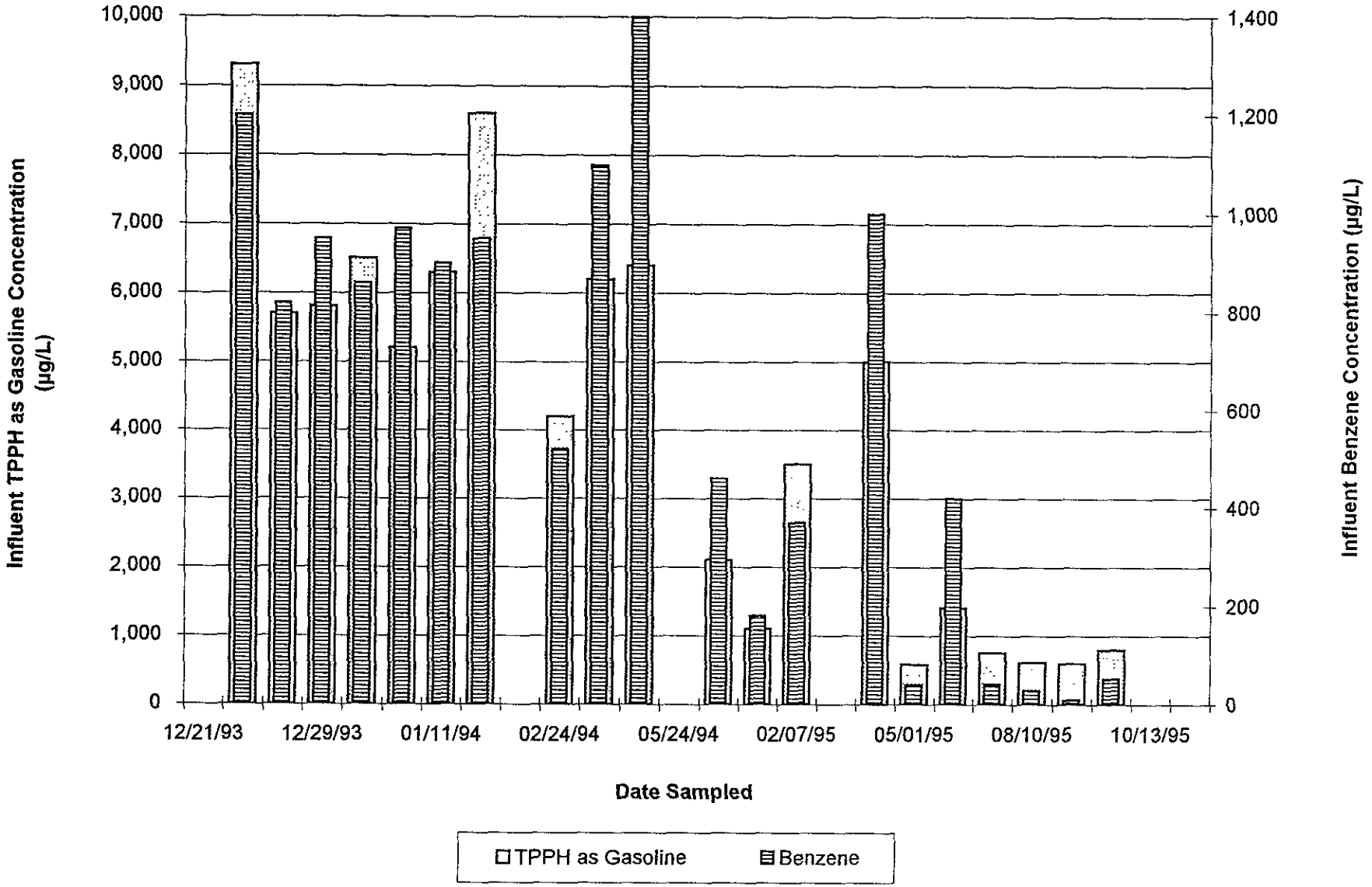


Figure D-3
Total BTEX vs. Nitrate as Nitrate Concentrations
July 16, 1996

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

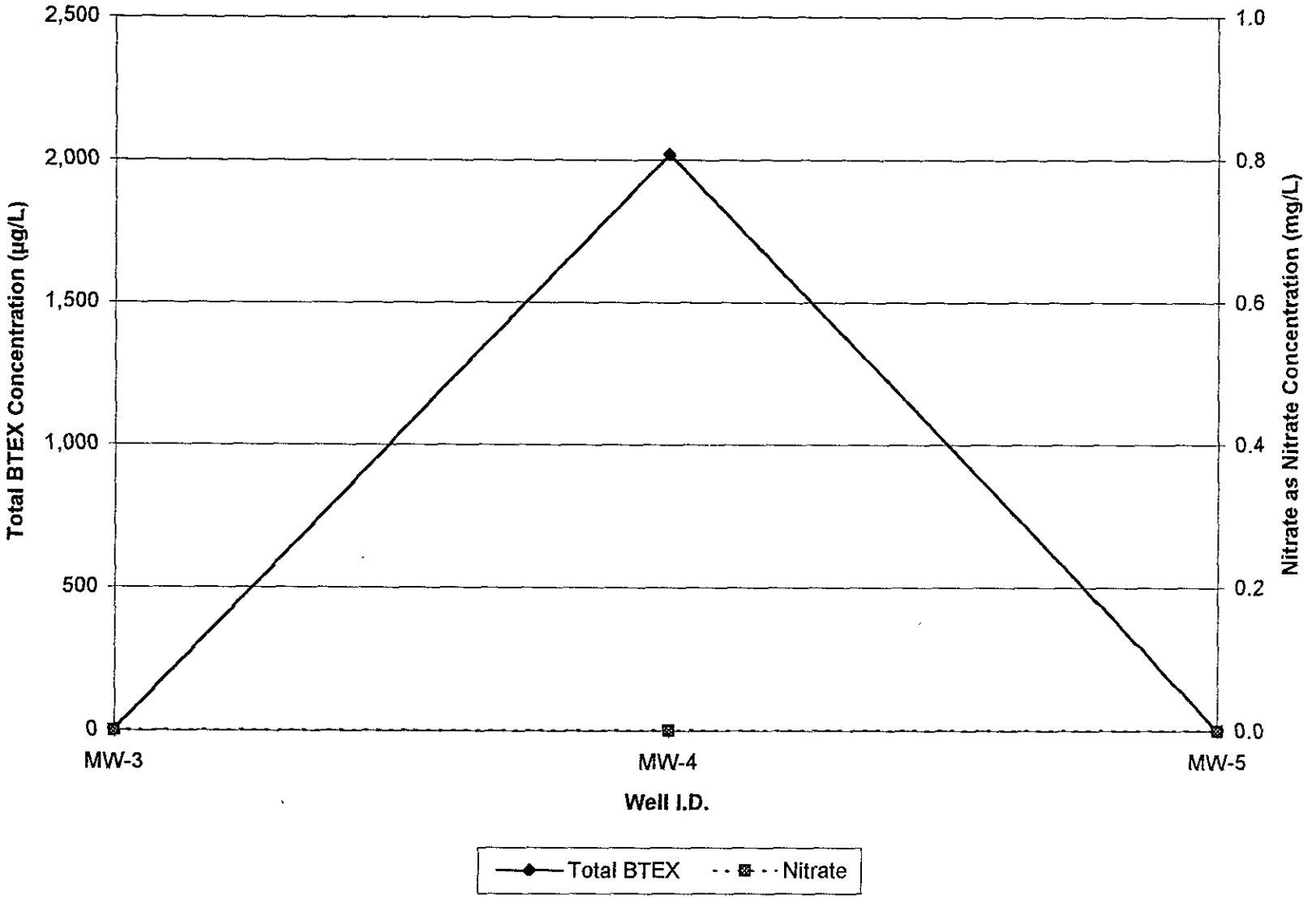


Figure D-4
Total BTEX vs. Sulfate Concentrations
July 16, 1996

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

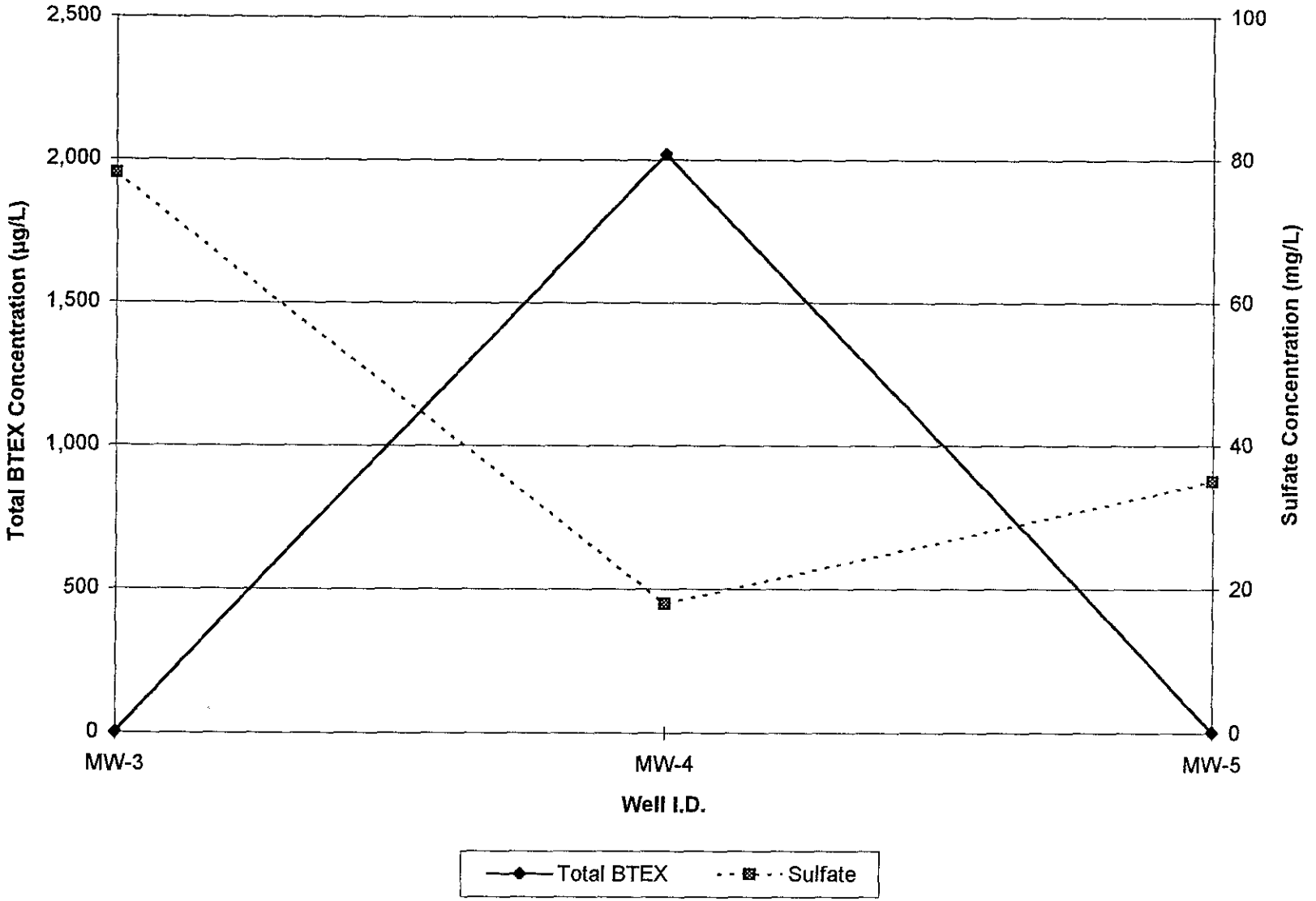


Figure D-5
Total BTEX vs. Percent Methane
July 16, 1996

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

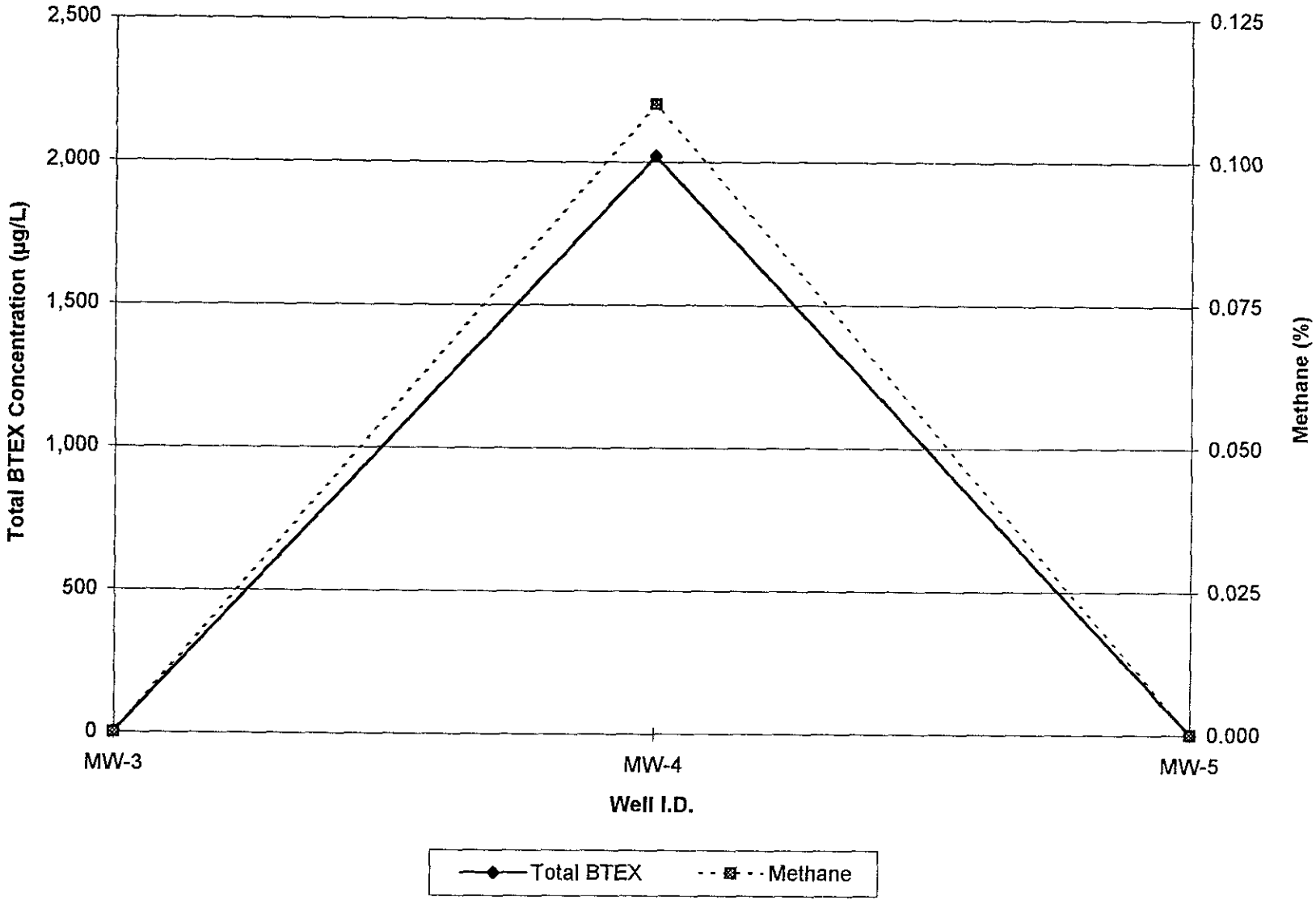


Figure D-6
Total BTEX vs. Total Alkalinity
July 16, 1996

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

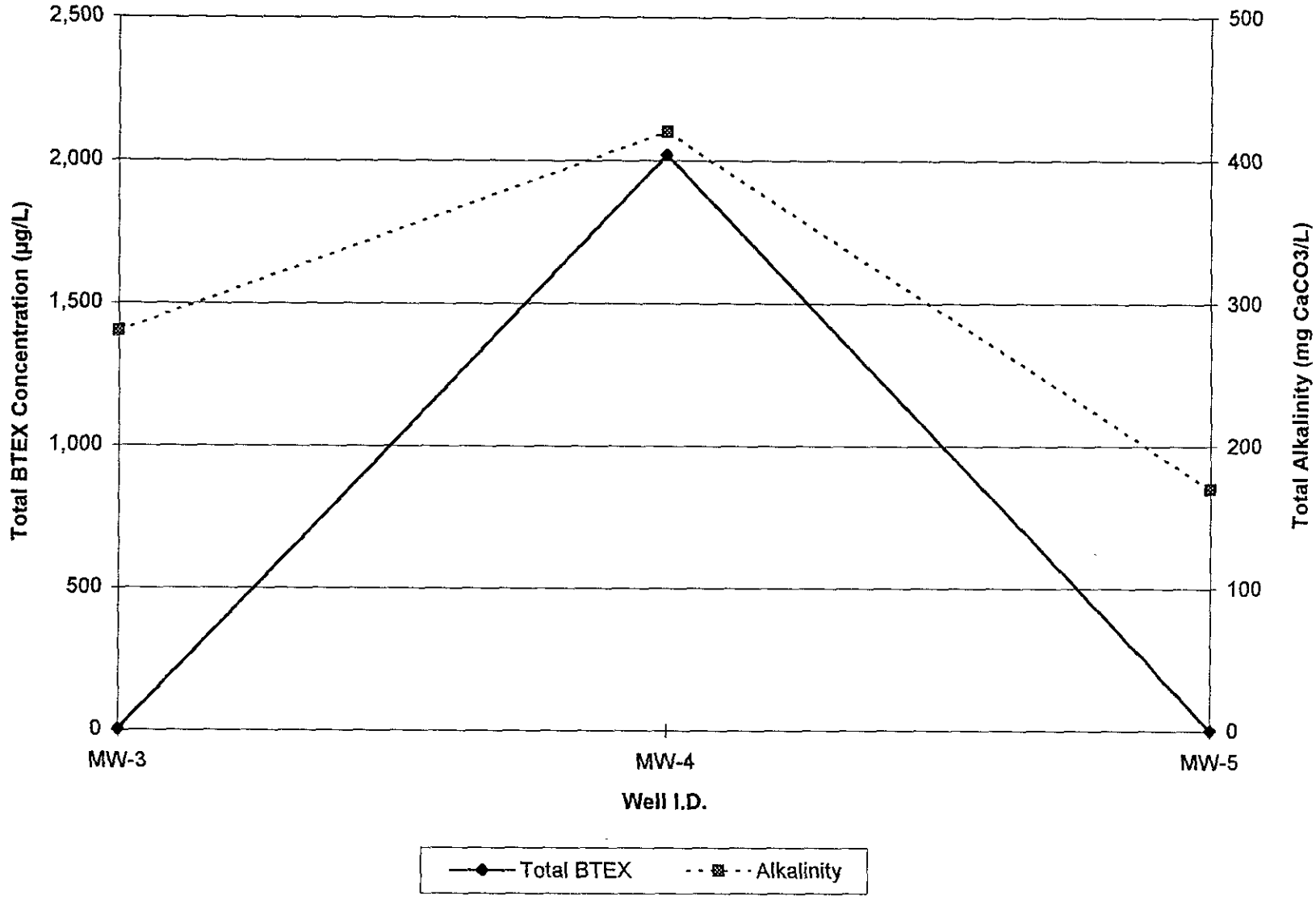


Figure D-7
Total BTEX vs. Carbon Dioxide Concentrations
July 16, 1996

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

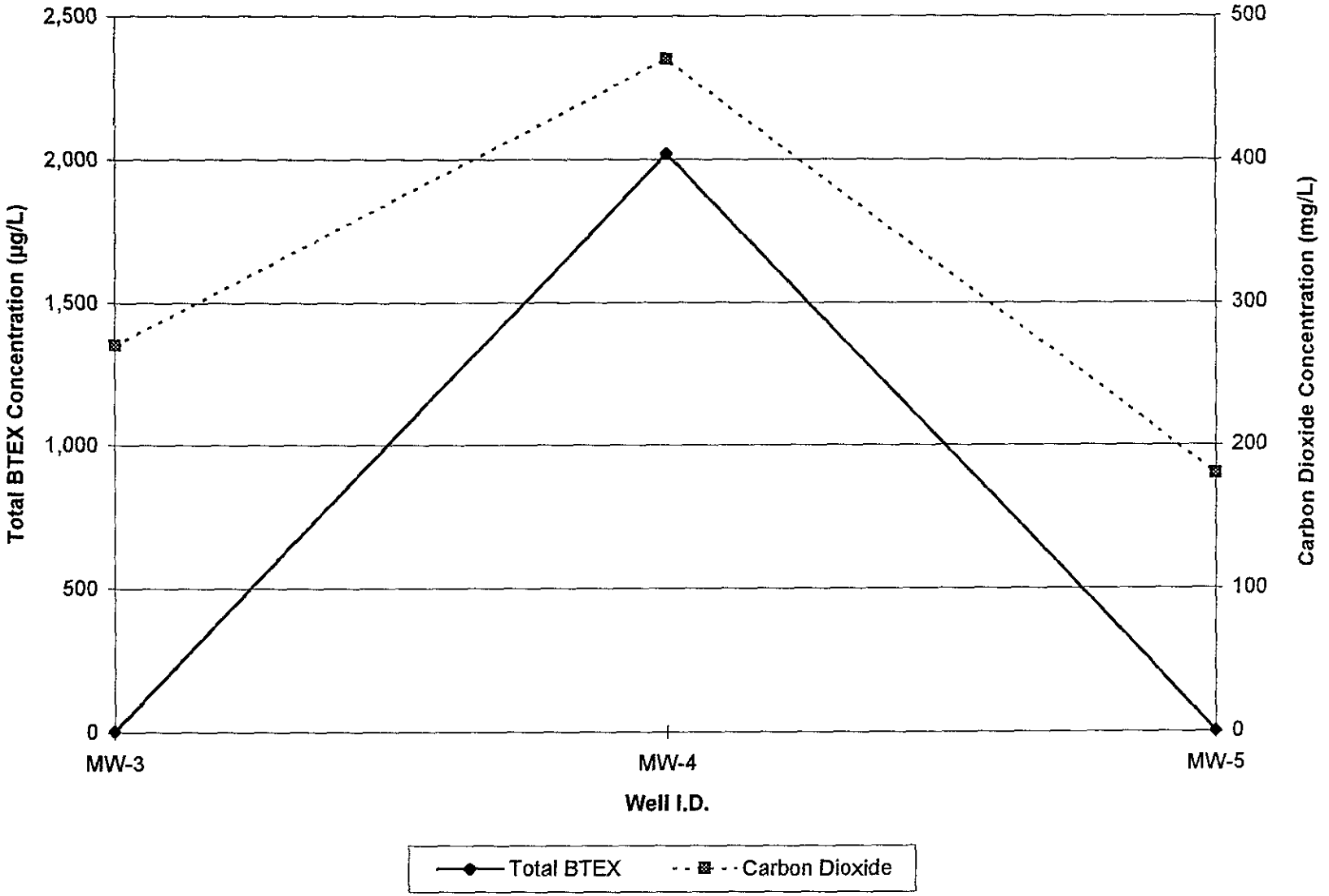


Figure D-8
Total BTEX vs. Dissolved Oxygen Concentrations
July 16, 1996

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

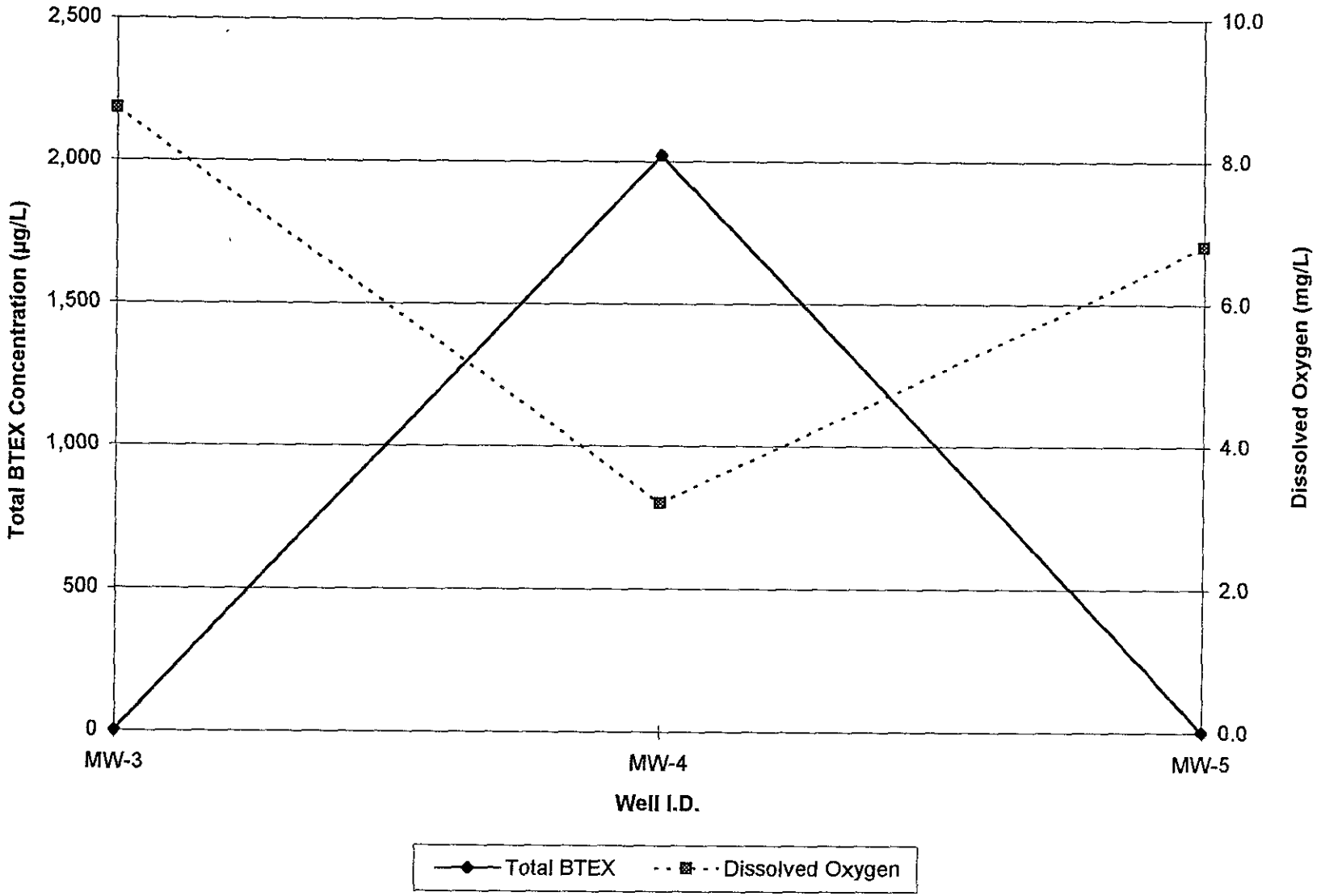
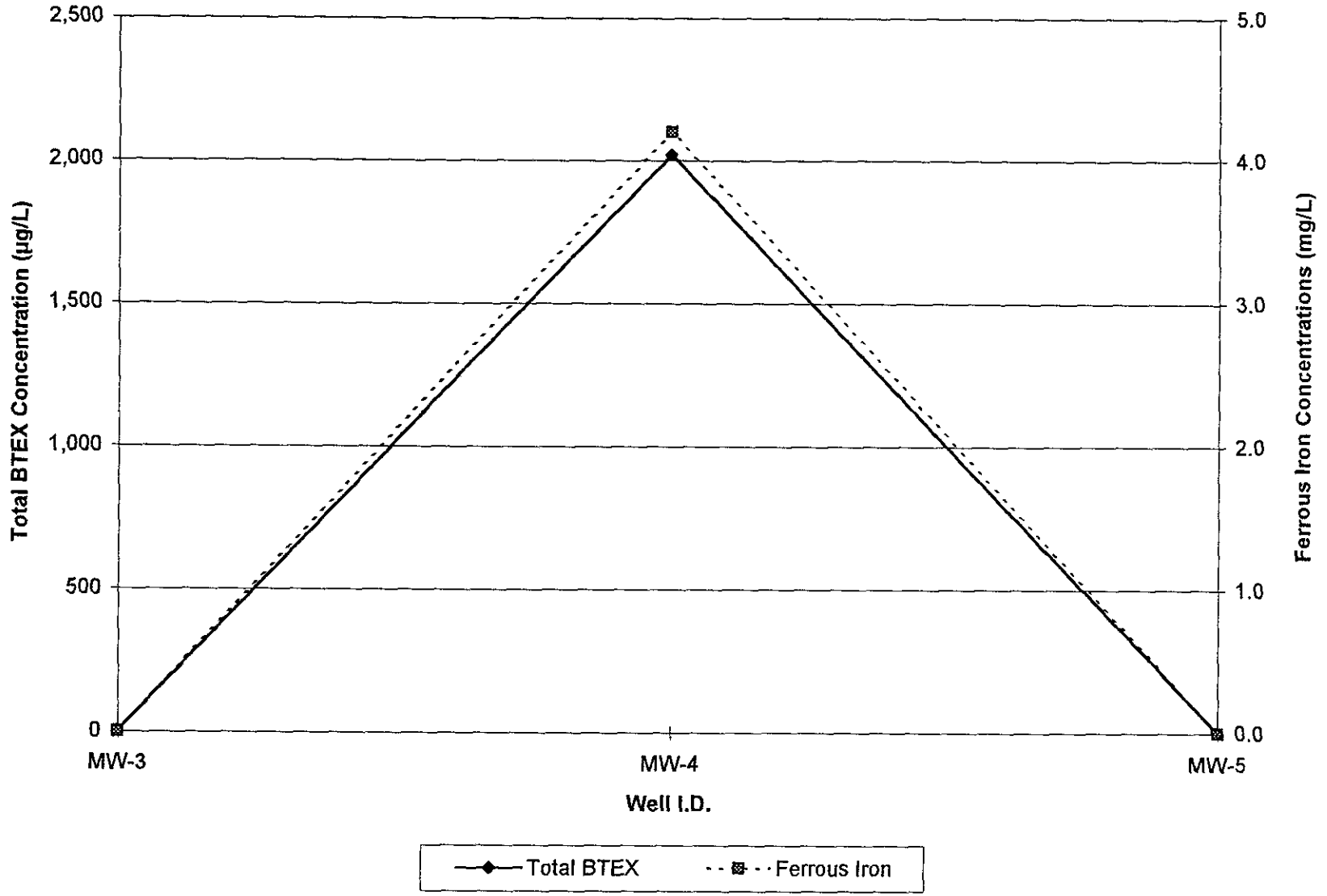


Figure D-9
Total BTEX vs. Ferrous Iron Concentrations
July 16, 1996

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



ATTACHMENT D-A

OPERATION AND MAINTENANCE
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

Client Proj. ID: 330-084.21 / 374 / Berkeley
Lab Proj. ID: 9607853

Attention: Shaw Garakani

Sampled: 07/16/96
Received: 07/16/96
Analyzed: see below
Reported: 07/27/96

LABORATORY ANALYSIS

	Analyte	Units	Date Analyzed	Detection Limit	Sample Results
Lab No: 9607853-01					
Sample Desc : **LIQUID,MW-3**					
	Alkalinity: Total	**mg CaCO3/L**	**07/17/96**	**2.0**	**280**
	Biochem Oxygen Demand	**mg/L**	**07/18/96**	**1.0**	**1.8**
	Carbon Dioxide	**mg/L**	**07/17/96**	**10**	**270**
	Chemical Oxygen Demand	**mg/L**	**07/22/96**	**20**	**44**
#1271	Methane	%	07/19/96	0.020	N.D.
	Nitrate as Nitrate	mg/L	07/19/96	1.0	N.D.
	Sulfate	**mg/L**	**07/18/96**	**1.0**	**78**
Lab No: 9607853-02					
Sample Desc : **LIQUID,MW-4**					
	Alkalinity: Total	**mg CaCO3/L**	**07/17/96**	**2.0**	**420**
	Carbon Dioxide	**mg/L**	**07/17/96**	**10**	**470**
#1271	**Methane**	**%**	**07/19/96**	**0.020**	**0.11**
	Nitrate as Nitrate	mg/L	07/22/96	1.0	N.D.
	Sulfate	**mg/L**	**07/22/96**	**1.0**	**18**
Lab No: 9607853-03					
Sample Desc : **LIQUID,MW-5**					
	Alkalinity: Total	**mg CaCO3/L**	**07/17/96**	**2.0**	**170**
	Carbon Dioxide	**mg/L**	**07/17/96**	**10**	**180**
#1271	Methane	%	07/19/96	0.020	N.D.
	Nitrate as Nitrate	mg/L	07/22/96	1.0	N.D.
	Sulfate	**mg/L**	**07/22/96**	**1.0**	**35**

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

SEQUOIA ANALYTICAL - ELAP #1210

Claudia Hirotsu
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: 330-084.2I / 374 / Berkeley
Lab Proj. ID: 9607853

Received: 07/16/96
Reported: 07/27/96

LABORATORY NARRATIVE

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

NOTE: Samples were preserved with H2SO4. NO3 results are actually NO2/NO3 combined.

SEQUOIA ANALYTICAL

Claudia Hirotsu
Project Manager

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Pacific Environmental Group	Client Project ID:	330-084.2I / 374 / Berkeley	
2025 Gateway Place, Suite 440	Matrix:	LIQUID	
San Jose, CA 95110			
Attention: Shaw Garakani	Work Order #:	9607853 01	Reported: Jul 29, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Biochemical Oxygen Demand
QC Batch:	IN071796405100A
Analy. Method:	EPA 405.1
Prep Method:	N.A.

Analyst:	T. McMahon
Duplicate Sample #:	960786201
Prepared Date:	7/17/96
Analyzed Date:	7/22/96
Instrument I.D.#:	MANUAL
Sample Concentration:	1.6
Dup. Sample Concentration:	2.0
RPD:	22
RPD Limit:	0-20

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

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

** RPD = Relative % Difference

Sequoia Analytical

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Pacific Environmental Group
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San Jose, CA 95110
Attention: Shaw Garakani

Client Project ID: 330-084.2I / 374 / Berkeley
Matrix: LIQUID
Work Order #: 9607853 01

Reported: Jul 29, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Chemical Oxygen Demand	Sulfate	Nitrate
QC Batch#:	IN072296410400A	IN0718963000ACA	IN0719963000ACA
Analy. Method:	EPA 410.4	EPA 300.0	EPA 300.0
Prep. Method:	N.A.	N.A.	N.A.
Analyst:	Y. Arteaga	S. Chin	S. Chin
MS/MSD #:	960785301	960785301	960795701
Sample Conc.:	44	78	82
Prepared Date:	7/22/96	7/18/96	7/19/96
Analyzed Date:	7/22/96	7/18/96	7/19/96
Instrument I.D.#:	MANUAL	INIC1	INIC1
Conc. Spiked:	100 mg/L	10 mg/L	10 mg/L
Result:	150	91	88
MS % Recovery:	106	130	60
Dup. Result:	150	93	88
MSD % Recov.:	106	150	60
RPD:	0.0	2.2	0.0
RPD Limit:	0-20	0-20	0-20

LCS #:	LCS072296	LCS071896	LCS071996
Prepared Date:	7/22/96	7/18/96	7/19/96
Analyzed Date:	7/22/96	7/18/96	7/19/96
Instrument I.D.#:	MANUAL	INIC1	INIC1
Conc. Spiked:	100 mg/L	5.0 mg/L	10 mg/L
LCS Result:	110	5.3	9.1
LCS % Recov.:	110	106	91

MS/MSD	75-125	75-125	75-125
LCS	80-120	80-120	80-120
Control Limits			

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 Project ID: 330-084.2I / 374 / Berkeley
Matrix: LIQUID
Work Order #: 9607853 01-03
Reported: Jul 29, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Alkalinity
QC Batch#:	IN07179640300B
Analy. Method:	SM 403
Prep. Method:	N.A.
Analyst:	Y. Arteaga
MS/MSD #:	960777429
Sample Conc.:	200
Prepared Date:	7/17/96
Analyzed Date:	7/17/96
Instrument I.D.#:	MANUAL
Conc. Spiked:	200 mg/L
Result:	400
MS % Recovery:	100
Dup. Result:	400
MSD % Recov.:	100
RPD:	0.0
RPD Limit:	0-20

LCS #:	LCS071796
Prepared Date:	7/17/96
Analyzed Date:	7/17/96
Instrument I.D.#:	MANUAL
Conc. Spiked:	100 mg/L
LCS Result:	92
LCS % Recov.:	92

MS/MSD	75-125
LCS	80-120
Control Limits	

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

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

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

Client Project ID: 330-084.2I / 374 / Berkeley
Matrix: LIQUID
Work Order #: 9607853 02, 03
Reported: Jul 29, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Sulfate	Nitrate
QC Batch#:	IN0722963000ACD	IN0722963000ACA
Analy. Method:	EPA 300.0	EPA 300.0
Prep. Method:	N.A.	N.A.
Analyst:	S. Chin	S. Chin
MS/MSD #:	9607A7101	9607B0303
Sample Conc.:	59	33
Prepared Date:	7/22/96	7/22/96
Analyzed Date:	7/22/96	7/22/96
Instrument I.D.#:	INIC1	INIC1
Conc. Spiked:	10 mg/L	10 mg/L
Result:	69	40
MS % Recovery:	100	70
Dup. Result:	74	41
MSD % Recov.:	150	80
RPD:	7.0	2.5
RPD Limit:	0-20	0-20
LCS #:	LCS072296	LCS072296
Prepared Date:	7/22/96	7/22/96
Analyzed Date:	7/22/96	7/22/96
Instrument I.D.#:	INIC1	INIC1
Conc. Spiked:	5.0 mg/L	10 mg/L
LCS Result:	4.9	9.0
LCS % Recov.:	98	90
MS/MSD Control Limits	75-125	75-125
LCS Control Limits	80-120	80-120

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

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

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

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

Sequoia Analytical

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

Client Project ID: 330-084.2I / 374 / Berkeley
Matrix: Air
Work Order #: 9607853 01-03
Reported: Jul 29, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Carbon Dioxide	Oxygen	Nitrogen
QC Batch:	GC071996341608A	GC071996341608A	GC071996341608A
Analy. Method:	ASTMD 346M	ASTMD 346M	ASTMD 346M
Prep Method:			
Analyst:	J. Dinsay	J. Dinsay	J. Dinsay
Reporting Units:	Inert Gases %	Inert Gases %	Inert Gases %
Duplicate Sample #:	Ambient Air	Ambient Air	Ambient Air
Prepared Date:	7/19/96	7/19/96	7/19/96
Analyzed Date:	7/19/96	7/19/96	7/19/96
Instrument I.D.#:	GCHP8	GCHP8	GCHP8
Sample Concentration:	0.045	20	75
Dup. Sample Concentration:	0.056	19	74
RPD:	22	5.1	1.3
RPD Limit:	0-30	0-30	0-30

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

SEQUOIA ANALYTICAL
ELAP #1271

Tod Granicher
Project Manager

** RPD = Relative % Difference

SEQUOIA ANALYTICAL SAMPLE RECEIPT LOG

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

WORKORDER: 9607853
DATE OF LOG-IN: 7/17/96

CIRCLE THE APPROPRIATE RESPONSE.

1. Custody Seal(s): Present / (Absent) — Intact / Broken*
2. Custody Seal Nos.: Put In Remarks Section
3. Chain-of-Custody Records: (Present) / Absent*
4. Traffic Reports or Packing List: Present / (Absent)
5. Airbill: Airbill / Sticker — Present / (Absent)
6. Airbill No.:
7. Sample Tags: (Present) / Absent* — Sample Tag Nos.: (Listed) / Not Listed on Chain-of-Custody
8. Sample Condition: (Intact) / Broken* / Leaking*
9. Does information on custody reports, traffic reports and sample tags agree? (Yes) / No*
10. Proper preservatives used: (Yes) / No*
11. Date Rec. at Lab: 07/16/96
12. Temp. Rec. at Lab: 11°C
13. Time Rec. at Lab: 18:55

LAB SAMPLE #	DASH #	CLIENT IDENTIFICATION	CONTAINER DESCRIPTION	SAMPLE MATRIX	DATE SAMP.	REMARKS: CONDITION(ETC
1	AF	MW-3	1L plastic (2)	liquid	07/15/96	
↓	DEG	↓	VOA (3)	↓	↓	Unpreserved
↓	BCH	↓	VOA (3)			COD
2	C	MW-4	1L plastic			
↓	ABD	↓	VOA (3)			unpreserved
3	A-D	MW-5	same			

07/16/96

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

ARCO Products Company ◆ 330 084 21 **Task Order No.** 173 1000
Division of AtlanticRichfieldCompany

ARCO Facility no. 374	City (Facility) 6407 Telegraph Ave Berkeley	Project manager (Consultant) Bhaw Garafani	Laboratory name Sequoia
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) (408) 441 7500	Fax no. (Consultant) (408) 441 7539
Consultant name Pacific Environmental Group Inc.	Address (Consultant) 2025 Gateway Place Suite 440 San Jose CA 95110		Contract number

Method of shipment

Special detection Limit/reporting

Special QA/QC

Remarks

Lab number 9607853

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

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid H_2SO_4	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	City (methane) EPA 8010/8015	EPA 8240	EPA 625/8270 8027	Semi TCLP Metals ☐ VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	Nitrate/Sulfate Alkalinity (Cor
MW-3	1	8		X		X	X	7/16/96	16:55						X	X	X				X
MW-4	2	4		X		X			17:35						X						X
MW 5	3	4		X		X			1500						X						

Condition of sample:

Temperature received:

	Date	Time
Relinquished by sampler Walter Hunt	7/16/96	18:55
Relinquished by		
Relinquished by		

Received by

Received by

Received by laboratory — Date 07/16/96 Time 18:55

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

APC-3292 (2-91)