PACIFIC
ENVIRONMENTAL
GROUP, INC.

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

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

Prepared for

Mr. Michael Whelan
ARCO Products Company

November 7, 1997

Prepared by

Pacific Environmental Group, Inc.
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Project 330-006.2J

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STATE OF CALIFORNIA

Date: November 7, 1997
Quarter: 2Q97

ARCO QUARTERLY GROUNDWATER MONITORING REPORT

Facility No.: 0608 Address: 17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California
ARCO Environmental Engineer: Michael Whelan
Consulting Co./Contact Person: Pacific Environmental Group, Inc./Shaw Garakani
Consultant Project No.: 330-006.2J
Primary Agency/Regulatory ID No.: Alameda County Health Care Services Agency

WORK PERFORMED THIS QUARTER (Second - 1997):

1. Submitted first quarter 1997 quarterly monitoring report.
2. Performed second quarter 1997 groundwater monitoring event.
3. Prepared second quarter 1997 groundwater monitoring report.
4. Discontinued the oxygen enhancement program (removed ORC units).
5. Performed annual intrinsic bioremediation evaluation.
6. Continued quarterly payments to homeowners for not using domestic irrigation wells.
7. Continued homeowner quarterly monitoring results notification program.
8. Resumed sampling Wells E-1A, MW-5, and MW-10 on a quarterly schedule.

WORK PROPOSED FOR NEXT QUARTER (Third - 1997):

1. Submit second quarter 1997 quarterly monitoring report.
2. Perform third quarter 1997 groundwater monitoring event.
3. Prepare third quarter 1997 groundwater monitoring report.
4. Continue quarterly payments to homeowners for not using domestic irrigation wells.
5. Continue homeowner quarterly monitoring results notification program.
6. Prepare site closure summary request.
7. Pursue homeowner well abandonment.
8. Attend meeting with the ACHCSA regarding MtBE risk assessment.

Current Phase of Project:	Monitoring	(Assmnt, Remed., etc.)
Frequency of Groundwater Sampling:	Quarterly	(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:	200	(cubic yards)
Current Remediation Techniques:	Natural Attenuation	(SVE/Sparge/FP Removal, etc.)
Approximate Depth to Groundwater:	9.94 to 14.57	(Measure Feet)
Groundwater Gradient:	Southwest	(Direction)
	0.003	(Magnitude)
TPPH-g/Benzene Removed to Date:	0.0/0.0	(gallons)
Cumulative TPPH-g/Benzene Removed:	0.8/0.04	(gallons)

DISCUSSION:

- Hydrocarbon concentrations are within historical levels.
- During an April 29, 1997 meeting attended by ARCO, PACIFIC, and the ACHCSA, it was decided that the oxygen enhancement pilot study should be terminated, so that the natural attenuation maybe more accurately evaluated. Additionally, it was recommended that a site closure summary be submitted for review and consideration by the ACHCSA.
- Homeowner at 17393 Via Magdalena abandoned the irrigation well on his property during the second quarter 1997. The well apparently has been backfilled with gravel and capped with soil, and the area has been covered with base rock for garage construction and landscaping. Therefore the reimbursement program for this homeowner has been discontinued as of August 1997.
- Please refer to PACIFIC's *Quarterly Groundwater Monitoring Report - Fourth Quarter 1996* for historical groundwater elevation and analytical data.

ATTACHMENTS:

- Table 1 - Groundwater Sampling Schedule
- Table 2 - Groundwater Elevation and Analytical Data - Groundwater Monitoring Wells
- Table 3 - Groundwater Analytical Data - Domestic Irrigation Wells
- Figure 1 - Groundwater Elevation Contour Map
- Figure 2 - TPPH-g/Benzene Concentration Map
- Attachment A - Field and Laboratory Procedures
- Attachment B - Certified Analytical Reports, Chain-of-Custody Documentation, and Field Data Sheets
- Attachment C - Remedial System Performance Evaluation

cc: Ms. Madhulla Logan, M.S., Alameda County Health Care Services Agency
Mr. Ron Sykora/Mr. Robert L. Webster, David D. Bohannon Organization
Mr. Kevin Graves, Regional Water Quality Control Board - San Francisco Bay Region
Dr. Charles Lapin, ARCO Products Company

Table 1
Groundwater Sampling Schedule

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

Well Number	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Sampling Frequency
MW-5	a	a	a	a	Quarterly
MW-7	a	a	a	a	Quarterly
MW-8	a	a	a	a	Quarterly
MW-9	a	a	a	a	Quarterly
MW-10	a	a	a	a	Quarterly
MW-11	a	a	a	a	Quarterly
E-1A	a	a	a	a	Quarterly
MW-13	a	a	a	a	Quarterly
MW-14	a	a	a	a	Quarterly
MW-15	a	a	a	a	Quarterly
MW-16	a	a	a	a	Quarterly
MW-17	----------Destroyed----------				
MW-18	a	a	a	a	Quarterly
MW-19	a	a	a	a	Quarterly
MW-20	----------Destroyed----------				
MW-21	a	a	a	a	Quarterly
MW-22	a	a	a	a	Quarterly
MW-23	a	a	a	a	Quarterly
MW-24	a	a	a	a	Quarterly
MW-25	a	a	a	a	Quarterly
MW-26	a	a	a	a	Quarterly
Domestic Irrigation Wells					
590H	a	a	a	a	Quarterly
633H	a	a	a	a	Quarterly
634H	a	a	a	a	Quarterly
642H	a	a	a	a	Quarterly
675H	a	a	a	a	Quarterly
17197 VM	a	a	a	a	Quarterly

Table 1 (continued)
Groundwater Sampling Schedule

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

Well Number	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Sampling Frequency
Domestic Irrigation Wells (cont.)					
17200 VM	----------Destroyed----------				
17203 VM	a	a	a	a	Quarterly
17302 VM	a	a	a	a	Quarterly
17348 VE	a	a	a	a	Quarterly
17349 VM	a	a	a	a	Quarterly
17371 VM	a	a	a	a	Quarterly
17372 VM	a	a	a	a	Quarterly
17393 VM	----------Destroyed----------				

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
Groundwater Monitoring Wells
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, and MtBE)

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

Well Number		Date Sampled		Well Elevation (feet, MSL)	Depth to Water (feet, TOB)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	MtBE (ppb)
MW-5	††	03/14/96	a	33.99	9.75	24.24	1,600	30	<10	13	<10	NA
		05/29/96	b		11.48	22.51	240	2.4	<0.50	<0.50	<0.50	NA
		08/28/96			12.58	21.41	250	210	8.0	<1.0	<1.0	210
		11/25/96	d		12.07	21.92	<500	<5.0	<5.0	<5.0	<5.0	280
		03/31/97	†		12.42	21.57	<50	<0.50	<0.50	<0.50	<0.50	41
		06/25/97			12.64	21.35	NS	NS	NS	NS	NS	NS
MW-7		03/15/96	a	34.40	9.73	24.67	<50	<0.50	<0.50	<0.50	<0.50	NA
		05/29/96	b		11.60	22.80	<50	<0.50	<0.50	<0.50	<0.50	NA
		08/28/96	c		12.63	21.77	<50	<0.50	<0.50	<0.50	<0.50	<2.5
		11/25/96	d		12.10	22.30	<50	<0.50	<0.50	<0.50	<0.50	<2.5
		04/01/97	f		11.72	22.68	<50	<0.50	<0.50	<0.50	<0.50	<2.5
		06/25/97			12.98	21.42	<50	<0.50	<0.50	<0.50	<0.50	<2.5
MW-8		03/14/96	a	32.79	8.90	23.89	670	5.1	<2.0	<2.0	<2.0	NA
		05/29/96	b		10.58	22.21	490	<1.0	<1.0	0.91	0.91	NA
		08/28/96			11.30	21.49	680	29	2.1	3.0	2.4	80
		11/25/96			10.80	21.99	620	1.2	2.6	2.9	2.0	46
		04/01/97	f		10.76	22.03	530	<1.0	1.7	2.0	3.8	380
		06/25/97			11.65	21.14	480	6.7	0.69	0.8	0.71	88
MW-9		03/15/96	a	32.11	7.65	24.46	<50	<0.50	<0.50	<0.50	<0.50	NA
		05/28/96	b		9.67	22.44	<50	<0.50	<0.50	<0.50	<0.50	NA
		08/28/96	c		10.78	21.33	<50	<0.50	<0.50	<0.50	<0.50	<2.5
		11/25/96			10.24	21.87	<50	<0.50	<0.50	<0.50	<0.50	<2.5
		04/01/97	f		9.95	22.16	<50	<0.50	<0.50	<0.50	<0.50	<2.5
		06/25/97			10.85	21.26	<50	<0.50	<0.50	<0.50	<0.50	<2.5
MW-10	††	03/14/96	a	31.67	7.78	23.89	870	35	<5.0	5.2	7.0	NA
		05/29/96	b		10.00	21.67	800	<1.0	<1.0	<1.0	<1.0	NA
		08/28/96			10.93	20.74	NS	NS	NS	NS	NS	NS
		11/25/96	d		10.45	21.22	1,100	6.0	4.9	3.8	9.5	200
		03/31/97	†		10.15	21.52	160	<0.50	<0.50	<0.50	<0.50	140
		06/25/97			10.99	20.68	800	4.2	1.4	1.5	1.4	170
MW-11		03/14/96	a	32.54	8.60	23.94	<50	<0.50	<0.50	<0.50	<0.50	NA
		05/28/96	b		10.55	21.99	<50	<0.50	<0.50	<0.50	<0.50	NA
		08/28/96			11.52	21.02	<50	<0.50	<0.50	<0.50	<0.50	<2.5

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

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

Well Number	Date Sampled		Well Elevation (feet, MSL)	Depth to Water (feet, TOB)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	MtBE (ppb)
MW-11	11/25/96			11.00	21.54	<50	<0.50	<0.50	<0.50	<0.50	<2.5
(cont.)	04/01/97	f		10.88	21.66	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/25/97			11.65	20.89	<50	<0.50	<0.50	<0.50	<0.50	<2.5
E-1A ††	03/14/96	a	33.06	10.35	22.71	2,700	38	<5.0	130	6.2	NA
(MW-12)	05/29/96	b		11.50	21.56	1,400	410	18	55	5.5	NA
	08/28/96			11.70	21.36	NS	NS	NS	NS	NS	NS
	11/25/96	d		11.18	21.88	4,300	13	<5.0	100	20	220
	03/31/97	†		12.65	20.41	1,900	7.9	<2.0	62	3.5	140
	06/25/97			11.82	21.24	4,900	21	<5.0	53	6.8	160
MW-13	03/15/96	a	35.42	10.90	24.52	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/29/96	b		12.90	22.52	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/28/96			13.89	21.53	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	11/25/96			13.41	22.01	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	04/01/97	f		13.11	22.31	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/25/97			13.98	21.44	<50	<0.50	<0.50	<0.50	<0.50	<2.5
MW-14	03/15/96	a	30.46	6.63	23.83	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/28/96	b		8.83	21.63	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/28/96			9.83	20.63	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	11/25/96			9.33	21.13	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	04/01/97	f		9.04	21.42	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/25/97			9.94	20.52	<50	<0.50	<0.50	<0.50	<0.50	<2.5
MW-15	03/13/96	a	31.41	8.13	23.28	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/29/96	b		10.30	21.11	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/28/96			11.30	20.11	<50	<0.50	<0.50	<0.50	<0.50	5.3
	11/25/96			10.83	20.58	<50	<0.50	<0.50	<0.50	<0.50	12
	04/01/97	f		10.45	20.58	<50	<0.50	<0.50	<0.50	<0.50	7.2
	06/25/97			11.39	20.02	<50	<0.50	<0.50	<0.50	<0.50	7.0
MW-16	03/13/96	a	31.39	8.62	22.77	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/28/96	b		10.90	20.49	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/28/96			11.84	19.55	<50	<0.50	<0.50	<0.50	<0.50	89
	11/25/96			11.32	20.07	<50	<0.50	<0.50	<0.50	<0.50	66
	04/01/97	f		11.06	20.33	<50	<0.50	<0.50	<0.50	<0.50	49
	06/25/97			11.92	19.47	<50	<0.50	<0.50	<0.50	<0.50	59

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

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

Well Number	Date Sampled		Well Elevation (feet, MSL)	Depth to Water (feet, TOB)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	MtBE (ppb)
MW-17	Well Destroyed										
MW-18	03/13/96	a	29.70	7.53	22.17	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/28/96	b		9.88	19.82	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/28/96			10.82	18.88	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	11/25/96			10.18	19.52	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	04/01/97	f		10.14	19.56	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/25/97			10.94	18.76	<50	<0.50	<0.50	<0.50	<0.50	<2.5
MW-19	03/13/96	a	29.02	7.06	21.96	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/28/96	b		9.42	19.60	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/28/96			10.33	18.69	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	11/25/96			9.67	19.35	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	04/01/97	f		9.65	19.37	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/25/97			10.41	18.61	<50	<0.50	<0.50	<0.50	<0.50	<2.5
MW-20	Well Destroyed										
MW-21	03/13/96	a	28.72	7.58	21.14	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/29/96	b		9.85	18.87	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/28/96			10.75	17.97	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	11/25/96			10.00	18.72	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	04/01/97	f		10.03	18.69	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/25/97			10.83	17.89	<50	<0.50	<0.50	<0.50	<0.50	<2.5
MW-22	03/13/96	a	29.29	7.83	21.46	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/28/96	b		10.33	18.96	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/28/96			11.28	18.01	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	11/25/96			10.61	18.68	<50	<0.50	<0.50	<0.50	<0.50	3
	12/30/96			10.61	18.68	NA	NA	NA	NA	NA	3.3
	04/01/97	f		10.56	18.73	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/25/97			11.51	17.78	<50	<0.50	<0.50	<0.50	<0.50	<2.5
MW-23	03/13/96	a	30.99	9.13	21.86	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/28/96	b		11.37	19.62	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/28/96			12.31	18.68	<50	<0.50	<0.50	<0.50	<0.50	<2.5

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

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

Well Number	Date Sampled		Well Elevation (feet, MSL)	Depth to Water (feet, TOB)	Groundwater Elevation (feet, MSL)	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	MtBE (ppb)
MW-23	11/25/96			11.76	19.23	<50	<0.50	<0.50	<0.50	<0.50	<2.5
(cont.)	04/01/97	f		11.56	19.43	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/25/97			12.39	18.60	<50	<0.50	<0.50	<0.50	<0.50	<2.5
MW-24	01/15/96	a	34.38	10.10	24.28	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/28/96	b		12.25	22.13	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/28/96			13.28	21.10	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	11/25/96			12.71	21.67	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	04/01/97	f		12.50	21.88	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/25/97			13.38	21.00	<50	<0.50	<0.50	<0.50	<0.50	<2.5
MW-25	03/14/96	a	34.12	9.61	24.51	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/29/96	b		11.30	22.82	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/28/96	c		12.32	21.80	<50	<0.50	<0.50	<0.50	<0.50	51
	11/25/96			11.83	22.29	<50	<0.50	<0.50	<0.50	<0.50	110
	04/01/97	f		11.55	22.57	<50	<0.50	<0.50	<0.50	<0.50	39
	06/25/97			14.57	19.55	<50	<0.50	<0.50	<0.50	<0.50	49
MW-26	03/15/96	a	33.71	9.38	24.33	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/28/96	b		11.57	22.14	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/28/96	c		12.55	21.16	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	11/25/96			12.03	21.68	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	04/01/97	f		11.84	21.87	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/25/97			12.94	20.77	<50	<0.50	<0.50	<0.50	<0.50	<2.5

MtBE = Methyl tert-butyl ether
MSL = Mean sea level
TOB = Top of box
ppb = Parts per billion
a. All wells gauged on March 13, 1996.
b. All wells gauged on May 28, 1996.
c. Well sampled on August 29, 1996.
d. Well sampled on November 26, 1996.
e. MtBE result confirmed by EPA Method 8260.
f. Wells gauged on March 31, 1997.
< = Less than laboratory detection limit.
NA = Not analyzed
NS = Not sampled
† = Well sampled without purging.
†† = ORC program at well was initiated on September 21, 1995 and discontinued on May 15, 1997.

Table 3
Groundwater Analytical Data
Domestic Irrigation Wells
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, and MtBE)

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

Well Address	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	MtBE (ppb)
590 H	03/14/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/29/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/29/96 a	NS	NS	NS	NS	NS	NA
	11/26/96	NS	NS	NS	NS	NS	NS
	03/31/97	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/25/97 a	NS	NS	NS	NS	NS	NS
633 H	03/14/96	480	10	11	1.8	140	NA
	05/13/96 b	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/27/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/29/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	11/26/96	<50	<0.50	<0.50	<0.50	<0.50	3.70
	12/30/96	NA	NA	NA	NA	NA	4.9 c
	03/31/97	NS	NS	NS	NS	NS	NS
	06/25/97 a	NS	NS	NS	NS	NS	NS
634 H	03/13/96 a	NS	NS	NS	NS	NS	NA
	05/27/96 a	NS	NS	NS	NS	NS	NA
	08/29/96 a	NS	NS	NS	NS	NS	NA
	11/26/96	NS	NS	NS	NS	NS	NS
	03/31/97	NS	NS	NS	NS	NS	NS
	06/25/97 a	NS	NS	NS	NS	NS	NS
642 H	03/15/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/27/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/29/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	11/26/96	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	03/31/97	NS	NS	NS	NS	NS	NS
	06/25/97	NS	NS	NS	NS	NS	NS
675 H	03/13/96 a	NS	NS	NS	NS	NS	NA
	05/27/96 a	NS	NS	NS	NS	NS	NA
	08/29/96 d	NS	NS	NS	NS	NS	NA
	11/26/96	NS	NS	NS	NS	NS	NS
	03/31/97	NS	NS	NS	NS	NS	NS
	06/25/97	<50	<0.50	<0.50	<0.50	<0.50	<2.5
17197 VM	03/15/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/27/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/29/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	11/26/96	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	03/31/97	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/25/97	<50	<0.50	<0.50	<0.50	<0.50	<2.5
17200 VM	03/15/96	730	<1.0	<1.0	1.5	1.7	NA
	05/27/96	200	<0.50	<0.50	1.4	1.8	NA
	08/29/96	Well Destroyed					
17203 VM	03/15/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/27/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/29/96	<50	<0.50	<0.50	<0.50	<0.50	NA

Table 3 (continued)
Groundwater Analytical Data
Domestic Irrigation Wells
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, and MtBE)

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

Well Address	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	MtBE (ppb)
17203 VM	11/26/96	<50	<0.50	<0.50	<0.50	<0.50	<2.5
(cont.)	03/31/97 f	NS	NS	NS	NS	NS	NS
	06/25/97	<50	<0.50	<0.50	<0.50	<0.50	<2.5
17302 VM	03/15/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/27/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/29/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	11/26/96	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	03/31/97	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/25/97 f	NS	NS	NS	NS	NS	NS
17348 VE	03/13/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/27/96		Well Dry				
	08/29/96		Well Dry				
	11/26/96		Well Dry				
	03/31/97		Well Dry				
	06/25/97		Well Inaccessible				
17349 VM	03/15/96	1,700	<2.0	<2.0	2.5	13	NA
	05/27/96	320	4.2	1.3	0.95	0.71	NA
	08/29/96	410	7.5	<0.50	<0.50	1.1	NA
	11/26/96	300	<1.0	1.7	<1.0	2.1	55 *
	03/31/97	430	<1.0	2.7	<1.0	1.0	57 c
	06/25/97 **	2,100	30	<5.0	<5.0	6.7	140
	08/18/97	320	2.0	<0.5	<0.5	<0.5	34
	08/18/97	--	--	--	--	--	31 c
17371 VM	03/13/96 e	NS	NS	NS	NS	NS	NA
	05/27/96 e	NS	NS	NS	NS	NS	NA
	08/29/96 e	NS	NS	NS	NS	NS	NA
	11/26/96 e	NS	NS	NS	NS	NS	NS
	03/31/97 e	NS	NS	NS	NS	NS	NS
	06/25/97 e	NS	NS	NS	NS	NS	NS
17372 VM	03/14/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/27/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/29/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	11/26/96	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	03/31/97	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	06/25/97	<50	<0.50	<0.50	<0.50	<0.50	<2.5
17393 VM	03/14/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	05/27/96	<50	<0.50	<0.50	<0.50	<0.50	NA
	08/29/96	<50	<0.50	<0.50	<0.50	<0.50	NA

Table 3 (continued)
Groundwater Analytical Data
Domestic Irrigation Wells
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline, BTEX Compounds, and MtBE)

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

Well Address	Date Sampled	TPPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	MtBE (ppb)
17393 VM (cont.)	11/26/96	<50	<0.50	<0.50	<0.50	<0.50	<2.5
	03/31/97 a	NS	NS	NS	NS	NS	NS
	06/25/97	---------- Well Destroyed ----------					

TPPH = Total purgeable petroleum hydrocarbons
MtBE = Methyl tert-butyl ether
ppb = Parts ber billion
H = Hacienda Avenue
< = Less than laboratory detection limit stated at right.
NA = Not analyzed
NS = Not sampled
a. Owner not available to approve sampling access; well not sampled.
b. Well resampled to confirm data of March 14, 1996.
c. MtBE result confirmed by EPA Method 8260.
d. Pumping equipment obstructing sampling access; well not sampled.
e. Access denied by owner; well not sampled.
f. Pump on well does not work.
VM = Via Magdalena
VE = Via Encinas
* = MtBE data maybe anamolous; unable to confirm with EPA Method 8260.
** = Concentration data are suspect due to inadequate purging. Well resampled on August 18, 1997 for confirmation purposes.
Homeowners are contacted 1 week prior to sampling event.

N

VIA MANZANAS

RESIDENTIAL

MW-20 ∅

POTRERO COURT

APARTMENTS

APARTMENTS

VIA ARRIBA

SHOPS

HESPERIAN BOULEVARD

RESTAURANT

MW-19 (18.61)

VIA MAGDALENA

CHURCH AND SCHOOL

17200VM

MW-17 ∅

MW-14 (20.52)

MW-24 (21.00)

RESIDENTIAL

MW-26 (20.77)

RESTAURANT

MW-21 (17.89)

17197VM

MW-18 (18.76)

17203VM

VIA MEDIA

VIA FLORES

17302VM

17372VM

MW-9 (21.26)

(21.24) E-1A

(19.55) MW-25

RESIDENTIAL

MW-16 (19.47)

(20.68) MW-10

(21.14) MW-8

SP-1/V-4

MW-5 (21.35)

MW-7

20.0

633H

SP-2/V-5

590H

17349VM

17371VM

MW-15 (20.02)

MW-11 (20.89)

ALLEY

MW-13 (21.44)

(21.42)

21.0

SITE LOCATION

MW-22 (17.78)

VIA ENCINAS COURT

17393VM

634H

642H

RESIDENTIAL

SHOPS

17348VE

675H

MW-23 (18.60)

18.0

19.0

20.0

21.0

RESIDENTIAL

HACIENDA AVENUE

VIA ALAMO

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

APPROXIMATE GRADIENT = 0.003

LEGEND

MW-7 ◉ GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

SP-1/V-4 △ DUAL COMPLETION AIR SPARGING/SOIL VAPOR EXTRACTION WELL LOCATION AND DESIGNATION

MW-20 ∅ DESTROYED WELL LOCATION AND DESIGNATION

590H ■ DOMESTIC IRRIGATION WELL LOCATION AND DESIGNATION

E-1A ◉ GROUNDWATER EXTRACTION WELL LOCATION AND DESIGNATION

(21.42) GROUNDWATER ELEVATION IN FEET - MSL, 6-25-97

21.0 GROUNDWATER ELEVATION CONTOUR IN FEET - MSL, 6-25-97

PACIFIC ENVIRONMENTAL GROUP, INC.

APPROXIMATE SCALE

0 150 300 FEET

ARCO SERVICE STATION 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

GROUNDWATER ELEVATION CONTOUR MAP

FIGURE: 1

PROJECT: 330-006.2J

N

VIA MANZANAS

RESIDENTIAL

MW-20 ∅

POTRERO COURT

APARTMENTS

APARTMENTS

VIA ARRIBA

SHOPS

HESPERIAN BOULEVARD

RESTAURANT

MW-19
ND/ND

VIA MAGDALENA

CHURCH
AND SCHOOL

17200VM
∅ MW-17

MW-14
ND/ND

MW-24
ND/ND

RESIDENTIAL

RESTAURANT

MW-26
ND/ND

MW-9
ND/ND

MW-21
ND/ND

VIA MEDIA

VIA FLORES

ND/ND
MW-18
ND/ND

17197VM

17203VM
ND/ND

17302VM
NS

ND/ND
17372VM

4.900/21 E-1A

800/4.2
MW-10

480/6.7 MW-8

MW-25
ND/ND

MW-5
NS

MW-7
ND/ND

SP-1/V-4
NS

590H
NS

RESIDENTIAL

MW-16
ND/ND

NS
633H

SP-2/V-5
NS

17349VM
320/2.0 †

17371VM
NS

MW-15
ND/ND

MW-11
ND/ND

MW-22
ND/ND

VIA ENCINAS COURT

17393VM
NS

634H
642H
NS
NS

MW-13
ND/ND

SHOPS

SITE LOCATION

*17348VE

MW-23
ND/ND

675H
ND/ND

HACIENDA AVENUE

RESIDENTIAL

VIA ALAMO

APPROXIMATE DIRECTION
OF GROUNDWATER FLOW

LEGEND

MW-7 — GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

SP-1/V-4 △ — DUAL COMPLETION AIR SPARGING/SOIL VAPOR EXTRACTION WELL LOCATION AND DESIGNATION

MW-20 ∅ — DESTROYED WELL LOCATION AND DESIGNATION

590H ■ — DOMESTIC IRRIGATION WELL LOCATION AND DESIGNATION

E-1A — GROUNDWATER EXTRACTION WELL LOCATION AND DESIGNATION

800/4.2 — TPPH-g/BENZENE CONCENTRATION IN GROUNDWATER, IN PARTS PER BILLION, 6-25-97

ND NOT DETECTED

NS NOT SAMPLED

* WELL INACCESSIBLE

† DATA FROM RESAMPLING ON 8-18-97 (ORIGINAL DATA WAS SUSPECT)

PACIFIC ENVIRONMENTAL GROUP, INC.

APPROXIMATE SCALE
0 150 300 FEET

ARCO SERVICE STATION 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

TPPH-g/BENZENE CONCENTRATION MAP

FIGURE:
2
PROJECT:
330-006.2J

ATTACHMENT A

FIELD AND LABORATORY PROCEDURES

ATTACHMENT A
FIELD AND LABORATORY PROCEDURES

Sampling Procedures

The sampling procedure for each well consists first of measuring the water level and checking for the presence of separate-phase hydrocarbons (SPH), using either an electronic indicator and a clear Teflon® bailer or an oil-water interface probe. Wells not containing SPH are then purged of approximately three 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, a Hydac digital tester, Catalog Number 301353, is used to monitor temperature, pH, and electrical conductivity 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.

Field Procedures

Parameters measured in the field include color, odor, oxidation reduction potential, turbidity, hydrogen sulfide, dissolved oxygen, and ferrous iron. Field parameters were monitored at approximately the same times samples were collected for laboratory analysis. The instruments and techniques used to monitor these parameters are listed in the table below.

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 1R-21, catalog No. 22993-00

Laboratory Procedures

The groundwater samples were analyzed for the presence of total purgeable petroleum hydrocarbons calculated as gasoline (TPPH-g), benzene, toluene, ethylbenzene, xylenes (BTEX compounds), methyl tert-butyl ether (MtBE), nitrate as nitrate, sulfate, nitrogen as ammonia, and total iron according to the methods listed in the table below.

ANALYSIS	METHOD	TECHNIQUE
TPPH-g, BTEX Compounds, and MtBE	EPA Methods 8015 (modified), 8020, and 5030	Purge-and-trap extraction. Final detection by gas chromatography using flame- and photo-ionization detectors.
Nitrate as Nitrate	EPA Method 300	Ion chromatography
Sulfate	EPA Method 300	Ion chromatography
Nitrogen as Ammonia	EPA Method 350.3	Probe method
Total Iron	EPA Method 6010	Inductively coupled plasma

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

ATTACHMENT B

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

Sequoia Analytical

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

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

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-13
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E20-16

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX06A
Instrument ID: GCHP06

Methyl t-Butyl Ether (MTBE)

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	103

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-13
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E20-16

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX06A
Instrument ID: GCHP06

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	103

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

SEQUOIA ANALYTICAL - ELAP #1210

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

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-14
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E20-17

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX06A
Instrument ID: GCHP06

Methyl t-Butyl Ether (MTBE)

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	95

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

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

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-14
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E20-17

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX06A
Instrument ID: GCHP06

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	95

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

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

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-15
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E20-18

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX06A
Instrument ID: GCHP06

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	7.0

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	96

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

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

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

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-15
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E20-18

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX06A
Instrument ID: GCHP06

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	96

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-16
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E20-19

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/03/97
Reported: 07/08/97

QC Batch Number: GC070397BTEX01A
Instrument ID: GCHP01

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	59

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	86

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

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

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-16
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E20-19

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/03/97
Reported: 07/08/97

QC Batch Number: GC070397BTEX01A
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	86

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

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

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-18
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E20-20

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX06A
Instrument ID: GCHP06

Methyl t-Butyl Ether (MTBE)

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	98

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

SEQUOIA ANALYTICAL - ELAP #1210

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San Jose, CA 95110

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-18
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E20-20

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX06A
Instrument ID: GCHP06

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	98

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

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San Jose, CA 95110

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-19
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E20-21

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX06A
Instrument ID: GCHP06

Methyl t-Butyl Ether (MTBE)

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	90

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

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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-19
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E20-21

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX06A
Instrument ID: GCHP06

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	90

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

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

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-22
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E20-22

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX06A
Instrument ID: GCHP06

Methyl t-Butyl Ether (MTBE)

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	96

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
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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-22
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E20-22

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX06A
Instrument ID: GCHP06

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	96

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

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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-21
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E20-23

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX06A
Instrument ID: GCHP06

Methyl t-Butyl Ether (MTBE)

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	99

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

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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-21
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E20-23

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX06A
Instrument ID: GCHP06

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	99

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

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San Jose, CA 95110

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo

Lab Proj. ID: 9706E18

Sampled: 06/25/97
Received: 06/26/97
Analyzed: see below

Reported: 07/08/97

LABORATORY ANALYSIS

	Analyte	Units	Date Analyzed	Detection Limit	Sample Results
Lab No: 9706E18-02					
Sample Desc : **LIQUID,MW-23**					
	Alkalinity: Total	**mg CaCO3/L**	**07/07/97**	**2.0**	**420**
	Carbon Dioxide	**mg/L**	**07/07/97**	**10**	**440**
#1271	Methane	%	06/28/97	0.020	N.D.
	Nitrate as Nitrate	**mg/L**	**06/28/97**	**1.0**	**38**
	Sulfate	**mg/L**	**06/28/97**	**1.0**	**82**
Lab No: 9706E18-03					
Sample Desc : **LIQUID,MW-10**					
	Alkalinity: Total	**mg CaCO3/L**	**07/07/97**	**2.0**	**490**
	Carbon Dioxide	**mg/L**	**07/07/97**	**10**	**520**
#1271	**Methane**	**%**	**06/28/97**	**0.020**	**0.26**
	Nitrate as Nitrate	mg/L	06/28/97	1.0	N.D.
	Sulfate	mg/L	06/28/97	1.0	N.D.
Lab No: 9706E18-04					
Sample Desc : **LIQUID,MW-8**					
	Alkalinity: Total	**mg CaCO3/L**	**07/07/97**	**2.0**	**440**
	Carbon Dioxide	**mg/L**	**07/07/97**	**10**	**470**
#1271	Methane	%	06/28/97	0.020	N.D.
	Nitrate as Nitrate	mg/L	06/28/97	1.0	N.D.
	Sulfate	**mg/L**	**06/28/97**	**1.0**	**18**

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

SEQUOIA ANALYTICAL - ELAP #1210

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

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: 17372
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E18-01

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	N.D.
Surrogates	**Control Limits %**	**% Recovery**
Trifluorotoluene	70 130	91

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
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Pacific Environmental Group
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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: 17372
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E18-01

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	91

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

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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-23
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E18-02

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	N.D.
Surrogates	**Control Limits %**	**% Recovery**
Trifluorotoluene	70 130	98

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

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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-23
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E18-02

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	98

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

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Pacific Environmental Group
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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-10
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E18-03

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	170

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	91

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

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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-10
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E18-03

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	800
Benzene	0.50	4.2
Toluene	0.50	1.4
Ethyl Benzene	0.50	1.5
Xylenes (Total)	0.50	1.4
Chromatogram Pattern:		
Weathered Gas		C6-C12

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	91

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

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

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-8
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E18-04

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	88

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	97

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
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Pacific Environmental Group
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San Jose, CA 95110

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-8
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E18-04

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	480
Benzene	0.50	6.7
Toluene	0.50	0.69
Ethyl Benzene	0.50	0.80
Xylenes (Total)	0.50	0.71
Chromatogram Pattern:		
Weathered Gas		C6-C12

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	97

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

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

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: 17349
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E18-05

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	25	140

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	120

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

SEQUOIA ANALYTICAL - ELAP #1210

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San Jose, CA 95110

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: 17349
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E18-05

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	500	**2100**
Benzene	5.0	**30**
Toluene	5.0	N.D.
Ethyl Benzene	5.0	N.D.
Xylenes (Total)	5.0	**6.7**
Chromatogram Pattern:		
Weathered Gas		**C6-C12**

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	120

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

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Pacific Environmental Group
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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: 17203
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E18-06

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	N.D.
Surrogates	**Control Limits %**	**% Recovery**
Trifluorotoluene	70 130	91

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

SEQUOIA ANALYTICAL - ELAP #1210

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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: 17203
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E18-06

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	91

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

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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: 17197
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E18-07

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX06A
Instrument ID: GCHP06

Methyl t-Butyl Ether (MTBE)

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	92

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

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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: 17197
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E18-07

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX06A
Instrument ID: GCHP06

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	92

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

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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: 675
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E18-08

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Methyl t-Butyl Ether (MTBE)

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	90

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

SEQUOIA ANALYTICAL - ELAP #1210

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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: 675
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E18-08

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	90

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

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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: E1-A
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E18-09

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/03/97
Reported: 07/08/97

QC Batch Number: GC070397BTEX01A
Instrument ID: GCHP01

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	25	160

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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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: E1-A
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E18-09

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/03/97
Reported: 07/08/97

QC Batch Number: GC070397BTEX01A
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	500	4900
Benzene	5.0	21
Toluene	5.0	N.D.
Ethyl Benzene	5.0	53
Xylenes (Total)	5.0	6.8
Chromatogram Pattern:		Gas

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
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San Jose, CA 95110

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-7
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E18-10

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Methyl t-Butyl Ether (MTBE)

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	92

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

SEQUOIA ANALYTICAL - ELAP #1210

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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-7
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E18-10

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	92

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

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San Jose, CA 95110

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-9
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E18-11

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Methyl t-Butyl Ether (MTBE)

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	89

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

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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-9
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E18-11

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	89

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

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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-26
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E18-12

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Methyl t-Butyl Ether (MTBE)

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	87

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

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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-26
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E18-12

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	87

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

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Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-25
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E18-13

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/03/97
Reported: 07/08/97

QC Batch Number: GC070397BTEX22A
Instrument ID: GCHP22

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	49

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	80

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

SEQUOIA ANALYTICAL - ELAP #1210

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

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-25
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E18-13

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/03/97
Reported: 07/08/97

QC Batch Number: GC070397BTEX22A
Instrument ID: GCHP22

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	80

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
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San Jose, CA 95110

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-24
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E18-14

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Methyl t-Butyl Ether (MTBE)

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	86

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

SEQUOIA ANALYTICAL - ELAP #1210

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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: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-24
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E18-14

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	86

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

Sequoia Analytical

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

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-11
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9706E18-15

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Methyl t-Butyl Ether (MTBE)

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	86

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager

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

Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Sample Descript: MW-11
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9706E18-15

Sampled: 06/25/97
Received: 06/26/97

Analyzed: 07/02/97
Reported: 07/08/97

QC Batch Number: GC070297BTEX01A
Instrument ID: GCHP01

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

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

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	86

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

SEQUOIA ANALYTICAL - ELAP #1210

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

Client Proj. ID: 330-006.2K/0608, San Lorenzo

Lab Proj. ID: 9706E18

Received: 06/26/97

Reported: 07/08/97

LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of 50 pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

Sequoia Analytical

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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo
Lab Proj. ID: 9706E20

Received: 06/26/97
Reported: 07/08/97

LABORATORY NARRATIVE

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SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

Sequoia Analytical

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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Gary Pestana

Client Project ID: 330-006.2K / 0608, San Lorenzo
Matrix: LIQUID
Work Order #: 9706E18 01-15, 9706E20 06-23
Reported: Jul 14, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC070297BTEX01A	GC070297BTEX01A	GC070297BTEX01A	GC070297BTEX01A	GC070297BTEX01A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	A. Porter	A. Porter	A. Porter	A. Porter	A. Porter
MS/MSD #:	9706F0204	9706F0204	9706F0204	9706F0204	9706F0204
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	7/2/97	7/2/97	7/2/97	7/2/97	7/2/97
Analyzed Date:	7/2/97	7/2/97	7/2/97	7/2/97	7/2/97
Instrument I.D.#:	GCHP1	GCHP1	GCHP1	GCHP1	GCHP1
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	10	9.9	10	29	78
MS % Recovery:	100	99	100	97	130
Dup. Result:	9.4	9.0	9.1	27	71
MSD % Recov.:	94	90	91	90	118
RPD:	6.2	9.5	9.4	7.1	9.4
RPD Limit:	0-25	0-25	0-25	0-25	0-25
LCS #:	BLK070297	BLK070297	BLK070297	BLK070297	BLK070297
Prepared Date:	7/2/97	7/2/97	7/2/97	7/2/97	7/2/97
Analyzed Date:	7/2/97	7/2/97	7/2/97	7/2/97	7/2/97
Instrument I.D.#:	GCHP1	GCHP1	GCHP1	GCHP1	GCHP1
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
LCS Result:	9.4	9.0	9.0	27	71
LCS % Recov.:	94	90	90	90	118
MS/MSD Control Limits	60-140	60-140	60-140	60-140	60-140
LCS Control Limits	70-130	70-130	70-130	70-130	70-130

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

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

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

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

Sequoia Analytical

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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Gary Pestana

Client Project ID: 330-006.2K / 0608, San Lorenzo
Matrix: LIQUID
Work Order #: 9706E18 01-15
9706E20 06-23

Reported: Jul 14, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC070397BTEX22A	GC070397BTEX22A	GC070397BTEX22A	GC070397BTEX22A	GC070397BTEX22A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	R. Vincent	R. Vincent	R. Vincent	R. Vincent	R. Vincent
MS/MSD #:	9706F0202	9706F0202	9706F0202	9706F0202	9706F0202
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	7/3/97	7/3/97	7/3/97	7/3/97	7/3/97
Analyzed Date:	7/3/97	7/3/97	7/3/97	7/3/97	7/3/97
Instrument I.D.#:	GCHP22	GCHP22	GCHP22	GCHP22	GCHP22
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	8.9	9.1	9.0	29	54
MS % Recovery:	89	91	90	97	90
Dup. Result:	9.6	9.8	9.8	31	60
MSD % Recov.:	96	98	98	103	100
RPD:	6-Aug	7.4	8.5	6.7	11
RPD Limit:	0-25	0-25	0-25	0-25	0-25
LCS #:	BLK070397	BLK070397	BLK070397	BLK070397	BLK070397
Prepared Date:	7/3/97	7/3/97	7/3/97	7/3/97	7/3/97
Analyzed Date:	7/3/97	7/3/97	7/3/97	7/3/97	7/3/97
Instrument I.D.#:	GCHP22	GCHP22	GCHP22	GCHP22	GCHP22
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
LCS Result:	9.5	9.5	9.6	31	60
LCS % Recov.:	95	95	96	103	100
MS/MSD Control Limits	60-140	60-140	60-140	60-140	60-140
LCS Control Limits	70-130	70-130	70-130	70-130	70-130

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

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Gary Pestana

Client Project ID: 330-006.2K / 0608, San Lorenzo
Matrix: LIQUID
Work Order #: 9706E18 01-15
9706E20 06-23

Reported: Jul 14, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC070397BTEX01A	GC070397BTEX01A	GC070397BTEX01A	GC070397BTEX01A	GC070397BTEX01A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	A. Porter	A. Porter	A. Porter	A. Porter	A. Porter
MS/MSD #:	9706E2020	9706E2020	9706E2020	9706E2020	9706E2020
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	7/3/97	7/3/97	7/3/97	7/3/97	7/3/97
Analyzed Date:	7/3/97	7/3/97	7/3/97	7/3/97	7/3/97
Instrument I.D.#:	GCHP1	GCHP1	GCHP1	GCHP1	GCHP1
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	9.1	8.8	8.8	26	70
MS % Recovery:	91	88	88	87	117
Dup. Result:	9.5	9.1	9.0	28	72
MSD % Recov.:	95	91	90	93	120
RPD:	4.3	3.4	2.2	7.4	2.8
RPD Limit:	0-25	0-25	0-25	0-25	0-25
LCS #:	BLK070397	BLK070397	BLK070397	BLK070397	BLK070397
Prepared Date:	7/3/97	7/3/97	7/3/97	7/3/97	7/3/97
Analyzed Date:	7/3/97	7/3/97	7/3/97	7/3/97	7/3/97
Instrument I.D.#:	GCHP1	GCHP1	GCHP1	GCHP1	GCHP1
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
LCS Result:	9.9	9.4	9.6	28	76
LCS % Recov.:	99	94	96	93	127
MS/MSD LCS Control Limits	60-140 70-130	60-140 70-130	60-140 70-130	60-140 70-130	60-140 70-130

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
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San Jose, CA 95110
Attention: Gary Pestana

Client Project ID: 330-006.2K / 0608, San Lorenzo
Matrix: LIQUID
Work Order #: 9706E18 01-15, 9706E20 06-23
Reported: Jul 14, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC070297BTEX06A	GC070297BTEX06A	GC070297BTEX06A	GC070297BTEX06A	GC070297BTEX06A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	A. Porter	A. Porter	A. Porter	A. Porter	A. Porter
MS/MSD #:	9706F0203	9706F0203	9706F0203	9706F0203	9706F0203
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	7/2/97	7/2/97	7/2/97	7/2/97	7/2/97
Analyzed Date:	7/2/97	7/2/97	7/2/97	7/2/97	7/2/97
Instrument I.D.#:	GCHP6	GCHP6	GCHP6	GCHP6	GCHP6
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	9.7	9.5	9.4	27	68
MS % Recovery:	97	95	94	90	113
Dup. Result:	9.6	9.3	9.4	27	68
MSD % Recov.:	96	93	94	90	113
RPD:	1.0	2.1	0.0	0.0	0.0
RPD Limit:	0-25	0-25	0-25	0-25	0-25
LCS #:	BLK070297	BLK070297	BLK070297	BLK070297	BLK070297
Prepared Date:	7/2/97	7/2/97	7/2/97	7/2/97	7/2/97
Analyzed Date:	7/2/97	7/2/97	7/2/97	7/2/97	7/2/97
Instrument I.D.#:	GCHP6	GCHP6	GCHP6	GCHP6	GCHP6
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
LCS Result:	9.6	9.2	9.2	27	66
LCS % Recov.:	96	92	92	90	110
MS/MSD	60-140	60-140	60-140	60-140	60-140
LCS	70-130	70-130	70-130	70-130	70-130
Control Limits					

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

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

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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.

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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Gary Pestana

Client Project ID: 330-006.2K / 0608, San Lorenzo
Matrix: LIQUID
Work Order #: 9706E18 01-15
9706E20 06-23

Reported: Jul 14, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Alkalinity	Nitrate	Sulfate
QC Batch#:	IN070797040300A	IN0627973000ACD	IN0627973000ACD
Analy. Method:	SM 403	EPA 300.0	EPA 300.0
Prep. Method:		N.A.	N.A.
Analyst:	C. Hirotsu	R. Iverson	R. Iverson
MS/MSD #:	970705601	9706E1804	9706E1804
Sample Conc.:	68	N.D.	N.D.
Prepared Date:	7/7/97	6/27/97	6/27/97
Analyzed Date:	7/7/97	6/28/97	6/28/97
Instrument I.D.#:	MANUAL	INIC2	INIC2
Conc. Spiked:	200 mg/L	10 µg/L	10 µg/L
Result:	330	9.7	28
MS % Recovery:	130*	97	100
Dup. Result:	330	9.7	28
MSD % Recov.:	130*	97	100
RPD:	0.0	0.0	0.0
RPD Limit:	0-20	0-20	0-20

*Matrix effect

LCS #:	LCS070797	IN062797	IN062797
Prepared Date:	7/7/97	6/27/97	6/27/97
Analyzed Date:	7/7/97	6/28/97	6/28/97
Instrument I.D.#:	MANUAL	INIC2	INIC2
Conc. Spiked:	100 mg/L	10 mg/L	10 mg/L
LCS Result:	96	10	9.6
LCS % Recov.:	96	100	96

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

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

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

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 Project ID:	330-006.2K / 0608, San Lorenzo			
2025 Gateway Place, Suite 440	Matrix:	Air			
San Jose, CA 95110					
Attention: Gary Pestana	Work Order #:	9706E18	01-15	Reported:	Jul 14, 1997
		9706E20	06-23		

QUALITY CONTROL DATA REPORT

Analyte:	Carbon dioxide	Oxygen	Nitrogen
QC Batch:	GC062897341608A	GC062897341608A	GC062897341608A
Analy. Method:	ASTMD 3416M	ASTMD 3416M	ASTMD 3416M
Prep Method:			
Reporting Units:	Inert Gases %	Inert Gases %	Inert Gases %
Analyst:	D. Sharma	D. Sharma	D. Sharma
Sample #:	Ambient Air	Ambient Air	Ambient Air
Prepared Date:	6/28/97	6/28/97	6/28/97
Analyzed Date:	5/28/97	5/28/97	5/28/97
Instrument I.D.#:	GCHP8A	GCHP8A	GCHP8A
Sample Concentration:	0.076	20	77
Dup. Sample Concentration:	0.066	20	77
RPD:	14	0.0	0.0
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

ARCO Products Company Division of AtlanticRichfieldCompany — 330-006.2K Task Order No. 21334-00 — **Chain of Custody**

ARCO Facility no. 0608	City (Facility) San Lorenzo	Project manager (Consultant) Gary Pestana	Laboratory name Sequoia
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) 408-441-7500	Fax no. (Consultant) 408-441-7539	Contract number
Consultant name Pacific Environmental Group	Address (Consultant) 2025 Gateway Place #440 San Jose CA 95110		Method of shipment

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Water	Other	Preservation: Ice	Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH/MTBE EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	Nitrate, Sulfate, Alkalinity	Methane
17372	1	3		X		Y	HCL	6/25/97	1445		X											
MW-23	2	3					↓		1535		X											
↓		1					N		↓												X	
↓		3					↓		↓													X
MW-10	3	3					HCL		1650		X											
↓		1					N		↓												X	
↓		3					↓		↓													X
MW-9	4	3					HCL		1625		X											
↓		1					N		↓												X	
↓		3					↓		↓				9706E18/EW									X
17349	5	3					HCL		1435		X											
17203	6	3							1415													
17197	7	1							1405													
675	8								1338													
EI-A	9								1300													
MW-7	10	↓		↓		↓	↓	↓	1225		↓											

Condition of sample:

Temperature received:

	Date	Time
Relinquished by sampler		
Relinquished by: Krissy Flesoras	6/26/97	10:15
Relinquished by: Steve Ten	6/26/97	

	Date	Time
Received by: Krissy Flesoras		
Received by: Steve Ten		
Received by laboratory: Ten	06-26-97	12:42

Turnaround time

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

JUN 26 12 42

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

ARPC 3292 (2-91)

ARCO Products Company Division of AtlanticRichfieldCompany — 330-006.2K Task Order No. 21334-00 — **Chain of Custody**

ARCO Facility no. 0608	City (Facility) San Lorenzo	Project manager (Consultant) Gary Pestana	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	Address (Consultant) 2025 Gateway Pl #440 San Jose CA 95110		Contract number

Method of shipment

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH/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 Semi Metals ☐ VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐
MW-7	16	3		X		Y	HCl	6/25/97	1225		X									
MW-9	12								1210											
MW-26	13								1155											
MW-25	19								1145											
MW-24	14								1055											
MW-11	15								1035											
MW-13	16								1010											
MW-14	17								0955											
MW-15	18								0935											
MW-16	19								0910											
MW-10	20								0850											
MW-19	21								0820											
MW-22	22								0800											
MW-21	23								0740											

97 06E18 / E20

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 ☒

JN 26 12 42

Condition of sample:

Temperature received:

	Date	Time			
Relinquished by sampler: C. R. Wright			Received by: Krissy Flessoras		
Relinquished by: Krissy Flessoras	Date 6/26/97	Time 10:15	Received by: Steve Tan		
Relinquished by: Steve Tan	Date 6/26/97	Time	Received by laboratory:	Date 06-26-97	Time 12:42

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: 9706E18/620
DATE OF LOG-IN: 6-27-97

CIRCLE THE APPROPRIATE RESPONSE

1. Custody Seal(s): Present / (Absent) Intact / Broken*
2. Custody Seal #: Put in Remarks Section
3. Chain-of-Custody: (Present) / Absent*
4. Traffic Reports or Packing List: Present / (Absent)
5. Airbill: Airbill / Sticker Present / (Absent)
6. Airbill #: —
7. Sample Tags: (Present) / Absent
   Sample Tags #s: (Listed) / Not Listed on Chain-of-Custody
8. Sample Condition: (Intact) / Broken* / Leaking*
9. Does information on custody reports, traffic reports and sample tags agree? (Yes) / No*
10. Proper Preservatives used: (Yes) / No*
11. Date Rec. at Lab: 06-26-97
12. Time Rec. at Lab: 12:42
13. Temp Rec. at Lab: 8°C

LAB SAMPLE #	DASH #	CLIENT IDENTIFICATION	CONTAINER DESCRIPTION	SAMPLE MATRIX	DATE SAMP.	REMARKS: CONDITION (ETC.)
20		MW-18	VOA (3)	liquid	6/25/97	
21		19				
22		22				
23		21				

Phil 06-26-97

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

Revision 6/18/97
RCPTLOG.XLS

SEQUOIA ANALYTICAL SAMPLE RECEIPT LOG

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

WORKORDER: 9706E18/E20
DATE OF LOG-IN: 6 27 97

CIRCLE THE APPROPRIATE RESPONSE

1. Custody Seal(s): Present / (Absent) Intact / Broken*
2. Custody Seal #: Put in Remarks Section
3. Chain-of-Custody: (Present) / Absent*
4. Traffic Reports or Packing List: Present / (Absent)
5. Airbill: Airbill / Sticker Present / (Absent)
6. Airbill #:
7. Sample Tags: (Present) / Absent
   Sample Tags #s: (Listed) / Not Listed on Chain-of-Custody
8. Sample Condition: (Intact) / Broken* / Leaking*
9. Does information on custody reports, traffic reports and sample tags agree? (Yes) / No*
10. Proper Preservatives used: (Yes) / No*
11. Date Rec. at Lab: 06.26.97
12. Time Rec. at Lab: 12:42
13. Temp Rec. at Lab: 8°C

LAB SAMPLE #	DASH #	CLIENT IDENTIFICATION	CONTAINER DESCRIPTION	SAMPLE MATRIX	DATE SAMP.	REMARKS: CONDITION (ETC.)
1		17372	VOA (3)	liquid	6/25-97	
2		MW-3	VOA (6)			3 VOA's are unpreserved & 3 VOA's are HCl pres.
		1	1L Plastic			
3		MW-10	same			
4		MW-8	1			
5		17349	VOA (3)			
6		17203				
7		17197				
8		675				
9		EI-A				
10		MW-7				
11		9				
12		26				
13		25				
14		24				
15		11				
16		13				
17		14				
18		15				
19		16				

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

Revision 6/18/97
RCPTLOG.XLS

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (650) 364-9600, FAX (650) 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

acific Environmental Group
2025 Gateway Place, Suite 440
n Jose, CA 95110
ention: Shaw Garakani

Project: 330-006.5D/0608, Oakland

Enclosed are the results from samples received at Sequoia Analytical on August 19, 1997. The requested analyses are listed below:

MPLE #	SAMPLE DESCRIPTION	DATE COLLECTED	TEST METHOD
9708960 -01	LIQUID, 17349VM	08/18/97	MTBE_W Methyl t-Butyl Ethe
8960 -01	LIQUID, 17349VM	08/18/97	TPHGBW Purgeable TPH/BTEX
9708960 -01	LIQUID, 17349VM	08/18/97	MTBEMW Methyl t-Butyl Ethe

se contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on project.

truly yours,

EQUOIA ANALYTICAL

ject Manager

Quality Assurance Department

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (650) 364-9600, FAX (650) 364-9233
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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110

Attention: Shaw Garakani

Client Proj. ID: 330-006.5D/0608, Oakland
Sample Descript: 17349VM
Matrix: LIQUID
Analysis Method: EPA 8020
Lab Number: 9708960-01

Sampled: 08/18/97
Received: 08/19/97

Analyzed: 08/20/97
Reported: 08/21/97

QC Batch Number: GC082097BTEX21A
Instrument ID: GCHP21

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.5	34

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	89

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

SEQUOIA ANALYTICAL - ELAP #1210

Todd Granicher
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (650) 364-9600, FAX (650) 364-9233
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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110

Attention: Shaw Garakani

Client Proj. ID: 330-006.5D/0608, Oakland
Sample Descript: 17349VM
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9708960-01

Sampled: 08/18/97
Received: 08/19/97

Analyzed: 08/20/97
Reported: 08/21/97

QC Batch Number: GC082097BTEX21A
Instrument ID: GCHP21

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	**50**	**320**
Benzene	**0.50**	**2.0**
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		
Weathered Gas		**C6-C12**

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	89

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

SEQUOIA ANALYTICAL - ELAP #1210

Ted Granicher
Project Manager

Sequoia Analytical

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

Attention: Shaw Garakani

Client Proj. ID: 330-006.5D/0608, Oakland
Sample Descript: 17349VM
Matrix: LIQUID
Analysis Method: EPA 8260
Lab Number: 9708960-01

Sampled: 08/18/97
Received: 08/19/97

Analyzed: 08/21/97
Reported: 08/21/97

QC Batch Number: MS082097MTBEF3A
Instrument ID: F3

Methyl t-Butyl Ether (MTBE)

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	2.0	31

Surrogates	Control Limits %		% Recovery
1,2-Dichloroethane-d4	76	114	109

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

SEQUOIA ANALYTICAL - ELAP #1210

Granicher
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (650) 364-9600, FAX (650) 364-9233
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Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Shaw Garakani

Client Project ID: 330-006.5D/0608, Oakland
Matrix: LIQUID
Work Order #: 9708960 01

Reported: Aug 22, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC082097BTEX21A	GC082097BTEX21A	GC082097BTEX21A	GC082097BTEX21A	GC02097BTEX21A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	A. Miraftab	A. Miraftab	A. Miraftab	A. Miraftab	A. Miraftab
MS/MSD #:	970878801	970878801	970878801	970878801	970878801
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	8/20/97	8/20/97	8/20/97	8/20/97	8/20/97
Analyzed Date:	8/20/97	8/20/97	8/20/97	8/20/97	8/20/97
Instrument I.D.#:	GCHP21	GCHP21	GCHP21	GCHP21	GCHP21
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	8.5	10	11	33	60
MS % Recovery:	85	100	110	110	100
Dup. Result:	8.4	10	11	33	59
MSD % Recov.:	84	100	110	110	98
RPD:	1.2	0.0	0.0	0.0	1.7
RPD Limit:	0-25	0-25	0-25	0-25	0-25
LCS #:	BLK082097	BLK082097	BLK082097	BLK082097	BLK082097
Prepared Date:	8/20/97	8/20/97	8/20/97	8/20/97	8/20/97
Analyzed Date:	8/20/97	8/20/97	8/20/97	8/20/97	8/20/97
Instrument I.D.#:	GCHP21	GCHP21	GCHP21	GCHP21	GCHP21
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	30 µg/L
LCS Result:	8.2	9.8	11	32	59
LCS % Recov.:	82	98	110	107	98
MS/MSD Control Limits	60-140	60-140	60-140	60-140	60-140
LCS Control Limits	70-130	70-130	70-130	70-130	70-130

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

SEQUOIA ANALYTICAL

Tod Granicher
Project Manager

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

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

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 Project ID:	330-006.5D/0608, Oakland	
2025 Gateway Place, Suite 440	Matrix:	LIQUID	
San Jose, CA 95110			
Attention: Shaw Garakani	Work Order #:	9708960 01	Reported: Aug 22, 1997

QUALITY CONTROL DATA REPORT

Analyte:	MTBE
QC Batch#:	MS082097MTBEF2A
Analy. Method:	EPA 8260
Prep. Method:	

Analyst:	L. Zhu
MS/MSD #:	970895204
Sample Conc.:	88
Prepared Date:	8/20/97
Analyzed Date:	8/20/97
Instrument I.D.#:	F3
Conc. Spiked:	50 µg/L
Result:	140
MS % Recovery:	104
Dup. Result:	140
MSD % Recov.:	104
RPD:	0.0
RPD Limit:	0-25

LCS #:	VDB082197
Prepared Date:	8/21/97
Analyzed Date:	8/21/97
Instrument I.D.#:	F3
Conc. Spiked:	50 µg/L
LCS Result:	45
LCS % Recov.:	90

MS/MSD	60-140
LCS	70-130
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

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: 330-006.5D/0608, Oakland
Lab Proj. ID: 9708960

Received: 08/19/97
Reported: 08/21/97

LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of 9 pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

SEQUOIA ANALYTICAL

d Granicher
Project Manager

[redacted]EQ[redacted] ANALYTICAL SAMPLE RECEIPT LOG

CLIENT NAME: PEG
REC. BY (PRINT): M. Sykes

WORKORDER: 9708960
DATE OF LOG-IN: 08-19-97

CIRCLE THE APPROPRIATE RESPONSE

1. Custody Seal(s): Present / ~~Absent~~ Intact / Broken*
2. Custody Seal #: Put in Remarks Section
3. Chain-of-Custody: Present / Absent*
4. Traffic Reports or Packing List: Present / ~~Absent~~
5. Airbill: Airbill / Sticker Present / ~~Absent~~
6. Airbill #: 7
7. Sample Tags: Present / Absent
   Sample Tags #s: Listed / Not Listed on Chain-of-Custody
8. Sample Condition: Intact / Broken* / Leaking*
9. Does information on custody reports, traffic reports and sample tags agree? Yes / No*
10. Proper Preservatives used: Yes / No*
11. Date Rec. at Lab: 8-19-97
12. Time Rec. at Lab: 1355
13. Temp Rec. at Lab: 14°C

LAB SAMPLE #	DASH #	CLIENT IDENTIFICATION	CONTAINER DESCRIPTION	SAMPLE MATRIX	DATE SAMP.	REMARKS: CONDITION (ETC.)
01	A-C	17349 VM	3 VOAs	Liq	8/18/97	

8-19-97

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

Revision 6/18/97
RCPTLOG.XLS

ARCO Products Company
Division of AtlanticRichfieldCompany

330006.5D **Task Order No.**

Chain of Custody

ARCO Facility no. 0608	City (Facility) 1760 Hesperian Blvd Oakland	Project manager (Consultant) Shaw Garakani	Laboratory name Sequoia
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) 408.441.7500	Fax no. (Consultant) 4084417539
Consultant name Pacific Env. Group Inc	Address (Consultant) 2025 GATEWAY pl. suite 440, SAN JOSE CA 95110		Contract number 21245

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH/MTBE EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
17349VM	01	3		X		X	HCl	8/18/97	13:15		X											

Special detection Limit/reporting

Special QA/QC

AU 19 1 55

Remarks
Confirm MtBE if greater than 2.5 ppb with EPA 8240

Lab number 9708960

Condition of sample:

Temperature received:

Relinquished by sampler Don Watenpaugh	Date 8/18/97	Time 14:40	Received by 8/19/97 12:20
Relinquished by Julie Warren	Date 8/19/97	Time	Received by Julie Warren
Relinquished by	Date 8/19/97	Time	Received by laboratory M.S. Date 8-19-97 Time 1355

Turnaround time

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

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

FIELD SERVICES / O & M REQUEST

SITE INFORMATION FORM

Project #:330-006.2K

☐ 1st time visit

Station #:0608

☐ 1st ☒ 2nd ☐ 3rd ☐ 4th

Date of Request:2Q

Site Address:17601 Hesperian Blvd.
San Lorenzo, California

☐ Monthly

Ideal Field Date:

☐ Semi-Monthly

Purge water @ 250

County: Alameda

☐ Weekly

Budget Hrs.____

Project Manager: Gary Pestana

☐ One time Event

Actual Hrs. 16

Requestor: David Nanstad

☐ Other._____

Mob de Mob 3

Client: Arco

Client P.O.C.: Paul Supple

Total Wells 23

Prefield contacts:All Homeowners are to be contacted 1-2 weeks in advance of arrival.

Field Tasks: For General Description

Perform 2q97 sampling event with intrinsic bioremediation parameter study. Discuss with Shaw before going into field regarding purge protocal and field analysis's. Use both the DO meter and do ampoules. Make sure you have all bottles before hand.

WA#21334

Comments, remarks, from Field Staff (include problems encountered

Completed

Completed by: TFW Date: 6/25/97

Checked by:_____

FIELD REPORT

DEPTH TO WATER/SEPARATE-PHASE HYDROCARBON SURVEY

PROJECT No.: 330-0062K LOCATION: 1760 HESPERIAN DATE: 6/25/97

CLIENT/STATION NO.: ARCO/0608 FIELD TECHNICIAN: TW DAY OF WEEK: WED

PROBE TYPE/ID No.
- [X] Oil/Water IF/ ~~5~~
- [X] H_2O level indicator 1
- [ ] Other:

Dtw Order	Well ID	Time	Surface Seal	Lid Secure	Gasket	Lock	Expanding Cap	Total Depth (feet)	First Depth to Water (feet) TOB/TOC	Second Depth to Water (feet) TOB/TOC	SERARATE-PHASE HYDROCARBONS (SPH) SPH Depth (feet) TOB/TOC	SPH Thickness (feet)	COLOR: Fresh	COLOR: Weathered	COLOR: Gas	COLOR: Oil	VISCOSITY: Lite	VISCOSITY: Medium	VISCOSITY: Heavy	LIQUID REMOVED (gallons) SPH / H_2O
	MW5	0507							12.21	12.64										
	MW7	0511							12.18	12.98										
	MW8	0513							10.81	11.65										
	MW9	0515							10.33	10.85										
	MW10	0520							10.40	10.99										
	MW11	0522							11.24	11.65										
	MW13	0526							13.52	13.98										
	MW14	0529							9.67	9.94										
	MW15	0535							10.92	11.39										

Comments:

FIELD REPORT

DEPTH TO WATER/SEPARATE-PHASE HYDROCARBON SURVEY

PROJECT No.: 330-0006.2 LOCATION: 1760 HESPERIAN BLVD SAN LORENZO DATE: 6/25/97

CLIENT/STATION NO.: ARCO/0608 FIELD TECHNICIAN: HW DAY OF WEEK: WED

PROBE TYPE/ID No.
- ☐ Oil/Water IF/ _____
- ☒ H_2O level indicator 1
- ☐ Other: _____

Dtw Order	Well ID	Time	Surface Seal	Lid Secure	Gasket	Lock	Expanding Cap	Total Depth (feet)	First Depth to Water (feet) TOB/TOC	Second Depth to Water (feet) TOB/TOC	SEPARATE-PHASE HYDROCARBONS (SPH): SPH Depth (feet) TOB/TOC	SPH Thickness (feet)	COLOR: Fresh	Weathered	Gas	Oil	VISCOSITY: Lite	Medium	Heavy	LIQUID REMOVED (gallons): SPH / H_2O
	MW-16	0538							11.50	11.92										
	MW-17	~	~	~	~	~	~	~	N/A											
	MW-18	0541							10.63	10.94										
	MW-19	0544							10.26	10.41										
	MW-20	~	~	~	~	~	~	~	N/A											
	MW-21	0547							10.48	10.83										
	MW-22	0552							11.21	11.51										
	MW-23	0558							12.13	12.39										
	EI-A	0604							~~11.92~~ 10.21	11.92										

Comments:

FIELD REPORT

DEPTH TO WATER/SEPARATE-PHASE HYDROCARBON SURVEY

PROJECT No.: 330-006.2 LOCATION: 1760 HESPERIA BLVD SAN LORENZO DATE: 6/25/97

CLIENT/STATION NO.: ARCO/0605 FIELD TECHNICIAN: TPW DAY OF WEEK: WED

PROBE TYPE/ID No.
- ☐ Oil/Water IF/ _____
- ☒ H_2O level indicator 1
- ☐ Other: _____

Dtw Order	Well ID	Time	Surface Seal	Lid Secure	Gasket	Lock	Expanding Cap	Total Depth (feet)	First Depth to Water (feet) TOB/TOC	Second Depth to Water (feet) TOB/TOC	SEPARATE-PHASE HYDROCARBONS (SPH)									
											SPH Depth (feet) TOB/TOC	SPH Thickness (feet)	COLOR				VISCOSITY			LIQUID REMOVED (gallons)
													Fresh	Weathered	Gas	Oil	Lite	Medium	Heavy	SPH / H_2O
	MW-24	0610							13.12	13.38										
	MW-25	0613							14.04	14.57										
	MW-26	0616							12.25	12.94										

Comments: _____

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2K LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: ~~MW~~ 1737

CLIENT/STATION No.: ARCO / 0608 FIELD TECHNICIAN: TPW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: _____ TOB _____ TOC
Total depth: _____ TOB _____ TOC
Date: 6/25/97 Time (2400): _____

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ Other: _____

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☑	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☒ ~~Groundwater~~
- ☐ Duplicate
- ☒ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other: _____

TD ~~_____~~ - DTW ~~_____~~ = ~~_____~~ x Gal/Linear Foot 0.38 = ~~_____~~ x Number of Casings 3 = Calculated Purge _____

DATE PURGED: ~~6/97~~ START: ~~_____~~ END (2400 hr): ~~_____~~ PURGED BY: TPW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 1445 SAMPLED BY: TPW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
1440	~~_____~~	7.14	1041	78.1	clear	trace	none

Pumped dry Yes / No

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

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: _____ TOB/TOC

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

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
~~MW~~-1737	6/25/97	1445	3	40ml	VOA	HCl	GAS/BTEX + MTBE

REMARKS: _____

SIGNATURE: T.R. Wright

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2 LOCATION: 7160 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: ~~MW~~-7349

CLIENT/STATION No.: ARCO / 0608 FIELD TECHNICIAN: TW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: _____ TOB _____ TOC
Total depth: _____ TOB _____ TOC
Date: 6/ /97 Time (2400): _____

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

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☑	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☑ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other: _____

TD _____ - DTW _____ =- _____ x Gal/Linear Foot 0.38 = _____ x Number of Casings 3 = Calculated Purge _____

DATE PURGED: 6/ /97 START: _____ END (2400 hr): _____ PURGED BY: TW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 1435 SAMPLED BY: TW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR
1430	/	6.95	1006	78.1	Clear	Trace	none

Pumped dry Yes / No

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

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: _____ TOB/TOC _____

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

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
~~MW~~-7349	6/25/97	1435	3	40ml	VOA	HCl	GAS/BTEX & MTBE

REMARKS: purged Dry @ 5 min

SIGNATURE: [signature]

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2 LOCATION: 1710 HESPERIAN BLVD SAN LORENZO CA WELL ID #: ~~EW1~~ 1720

CLIENT/STATION No.: ARCO / 0608 FIELD TECHNICIAN: TRW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: _____ TOB 14.18 TOC
Total depth: _____ TOB _____ TOC
Date: 6/25/97 Time (2400): _____

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ Other: _____

CASING DIAMETER		GAL/ LINEAR FT.
☐ 2		0.17
☑ 3		0.38
☐ 4		0.66
☐ 4.5		0.83
☐ 5		1.02
☐ 6		1.5
☐ 8		2.6

SAMPLE TYPE
- ☑ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other: _____

TD _____ - DTW _____ = _____ x Gal/Linear Foot 0.38 = _____ x Number of Casings 3 = Calculated Purge _____

DATE PURGED: 6/ /97 START: _____ END (2400 hr): _____ PURGED BY: TRW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 1415 SAMPLED BY: TRW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
1410	/	7.05	974	71.9	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: disposable
- ☐ Dedicated: _____
- ☐ Other: _____

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
~~A150~~ 7203	6/25/97	1415	3	40ml	VOA	HCl	GAS/BTEX + MTBE

REMARKS: no purge

SIGNATURE: [signature]

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2 LOCATION: 17401 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: ~~MW-1~~ 7197

CLIENT/STATION No.: ARCO / 0608 FIELD TECHNICIAN: TW

WELL INFORMATION

Depth to Liquid: ____ TOB ____ TOC
Depth to water: — TOB — TOC
Total depth: — TOB — TOC
Date: 6/25/97 Time (2400): —

Probe Type and I.D. #
- ☐ Oil/Water interface ____
- ☒ Electronic indicator 1
- ☐ Other: ____

CASING DIAMETER		GAL/ LINEAR FT.
☐ 2	———	0.17
☑ 3	———	0.38
☐ 4	———	0.66
☐ 4.5	———	0.83
☐ 5	———	1.02
☐ 6	———	1.5
☐ 8	———	2.6

SAMPLE TYPE
- ☒ ~~Groundwater~~
- ☐ Duplicate
- ☒ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other: ____

TD — - DTW — = — x Gal/Linear Foot 0.38 = ____ x Number of Casings 3 = Calculated Purge ____

DATE PURGED: 6/ —/97 START: — END (2400 hr): — PURGED BY: TW

DATE SAMPLED: 6/25/97 START: ____ END (2400 hr): 1405 SAMPLED BY: TW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
~~1400~~	—	7.19	966	76.9	clear	trace	none

Pumped dry Yes / No

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

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: ____ TOB/TOC ____

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

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
~~MW-1~~ 7197	6/25/97	1405	3	40ml	VOA	HCl	GAS/BTEX/MTBE

REMARKS: purged for @ 5 min

SIGNATURE: [signature]

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2K LOCATION: 17401 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: ~~MW~~675

CLIENT/STATION No.: ARCO/0608 FIELD TECHNICIAN: TPW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: _____ TOB 14.00 TOC
Total depth: _____ TOB _____ TOC
Date: 6/25/97 Time (2400): _____

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ Other; _____

CASING DIAMETER		GAL/ LINEAR FT.
☐ 2		0.17
☑ 3		0.38
☐ 4		0.66
☐ 4.5		0.83
☐ 5		1.02
☐ 6		1.5
☐ 8		2.6

SAMPLE TYPE
- ☑ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other; _____

TD ~~—~~ - DTW ~~—~~ = ~~—~~ x Gal/Linear Foot 0.38 = ~~—~~ x Number of Casings 3 = Calculated Purge ~~—~~

DATE PURGED: 6/~~—~~/97 START: ~~—~~ END (2400 hr): ~~—~~ PURGED BY: TPW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 1338 SAMPLED BY: TPW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
1337	~~—~~	7.04	1006	74.9	Clear	trace	none

Pumped dry Yes / No

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

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: _____ TOB/TOC _____

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

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
~~MW~~675	6/25/97	1338	3	40ml	VOA	HCl	GAS/BTEX/MTBE

REMARKS: sampled no purge

SIGNATURE: [signature]

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2K LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: [illegible] EI-A

CLIENT/STATION No.: ARCO / 0608 FIELD TECHNICIAN: YPW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: 10.82 TOB ~~10.99~~ 10.21 TOC
Total depth: 26.20 TOB _____ TOC
Date: 6/25/97 Time (2400): 0604

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ 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 26.20 - DTW 10.21 = 15.99 x Gal/Linear Foot 1.5 = 23.98 x Number of Casings 3 = Calculated Purge 71.95

DATE PURGED: 6/25/97 START: 1239 END (2400 hr): _____ PURGED BY: YPW
DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 1300 SAMPLED BY: YPW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 2.5°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
1243	24	6.81	916	73.0	Cloudy	light	faint
1248	48	6.96	988	73.2	Clear	trace	"
1253	72	6.92	976	73.4	"	"	"

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

Pumped dry Yes / No

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: _____ TOB/TOC _____

PURGING EQUIPMENT/I.D. #
- ☐ Bailer: _____
- ☒ Centrifugal Pump: 1
- ☒ Other: _____
- ☐ Airlift Pump: _____
- ☐ Dedicated: _____

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
[illegible] EI-A	6/25/97	1300	3	40ml	VOA	HCl	GAS/BTEX/MTBE

REMARKS: _____

SIGNATURE: [signature]

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2K LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: MW-7

CLIENT/STATION No.: ARCO/0608 FIELD TECHNICIAN: TRW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: 12.98 TOB 12.18 TOC
Total depth: 19 TOB _____ TOC
Date: 6/25/97 Time (2400): 0511

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ Other: _____

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☒	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☑ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other: _____

TD 19 - DTW 12.98 = 6.02 x Gal/Linear Foot .038 = 2.28 x Number of Casings 3 = Calculated Purge 6.86

DATE PURGED: 6/25/97 START: 1215 END (2400 hr): _____ PURGED BY: TRW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 1225 SAMPLED BY: TRW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
1216	2	6.95	1060	72.4	Clear	Trace	None
1218	5	6.97	1020	73.2	"	"	"
1220	7	7.00	953	71.3	"	"	"

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: 1
- ☒ Other: _____
- ☐ Airlift Pump: _____
- ☐ Dedicated: _____

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-7	6/25/97	1225	3	40ml	VOA	HCl	GAS/BTEX/MTBE

REMARKS: _____

SIGNATURE: _____

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2 LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: MW-9

CLIENT/STATION No.: ARCO / 0608 FIELD TECHNICIAN: THW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: 10.85 TOB 10.33 TOC
Total depth: 19 TOB _____ TOC
Date: 6/25/97 Time (2400): 0515

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ Other; _____

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☑	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☑ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other; _____

TD 19 - DTW 10.85 = 8.15 x Gal/Linear Foot 0.38 = 3.09 x Number of Casings 3 = Calculated Purge 9.29

DATE PURGED: 6/25/97 START: 1200 END (2400 hr): _____ PURGED BY: THW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 1210 SAMPLED BY: THW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
1202	3	6.95	975	71.1	Cloudy	light	none
1204	6	6.96	973	70.7	Clear	trace	"
1206	9.5	6.98	977	70.6	"	"	"

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: 1
- ☒ Other: _____
- ☐ Airlift Pump: _____
- ☐ Dedicated: _____

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-9	6/25/97	1210	3	40ml	VOA	HCl	GAS/BTEX/MTBE

REMARKS: _____

SIGNATURE: _____

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2K LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: MW-26

CLIENT/STATION No.: ARCO / 0608 FIELD TECHNICIAN: THW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: 12.94 TOB 12.25 TOC
Total depth: 20 TOB _____ TOC
Date: 6/ /97 Time (2400): 0614

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ Other; _____

CASING DIAMETER		GAL/ LINEAR FT.
☒	2	0.17
☐	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☑ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other; _____

TD 20 - DTW 12.94 = 7.06 x Gal/Linear Foot 0.17 = 1.20 x Number of Casings 5 = Calculated Purge 3.6

DATE PURGED: 6/25/97 START: 1149 END (2400 hr): _____ PURGED BY: THW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 1155 SAMPLED BY: THW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
1151	1.2	7.04	981	74.2	Clear	Trace	none
1152	2.4	6.98	952	73.9	"	"	"
1154	3.6	6.97	955	73.7	"	"	"

Pumped dry Yes / No

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

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: _____ TOB/TOC _____

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

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-26	6/25/97	1155	3	40ml	VOA	HCl	GAS/BTEX/MTBE

REMARKS: _____

SIGNATURE: _____

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2K LOCATION: 1710 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: MW-25

CLIENT/STATION No.: ARCO / 0608 FIELD TECHNICIAN: TPW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: 14.57 TOB 14.04 TOC
Total depth: 21 TOB _____ TOC
Date: 6/25/97 Time (2400): 0613

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ 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 21 - DTW 14.57 = 6.43 x Gal/Linear Foot 0.17 = 1.09 x Number of Casings 3 = Calculated Purge 3.27

DATE PURGED: 6/25/97 START: 1132 END (2400 hr): _____ PURGED BY: TPW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 1145 SAMPLED BY: TPW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
1135	1	7.03	968	75.0	Clear	Mod	none
1137	2	7.05	956	72.5	"	"	"
1139	3.5	7.06	959	72.4	"	"	"

Pumped dry Yes / No

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

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: _____ TOB/TOC _____

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

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-25	6/25/97	1145	3	40ml	VOA	HCl	GAS/BTEX/MTBE

REMARKS: _____

SIGNATURE: _____

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2K LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: MW-24

CLIENT/STATION No.: ARCO / 0608 FIELD TECHNICIAN: TPW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: 13.38 TOB 13.12 TOC
Total depth: 20 TOB _____ TOC
Date: 6/25/97 Time (2400): 0610

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ Other; _____

CASING DIAMETER		GAL/ LINEAR FT.
☒	2	0.17
☐	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☑ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other; _____

TD 20 - DTW 13.38 = 6.62 x Gal/Linear Foot 0.17 = 1.12 x Number of Casings 3 = Calculated Purge 3.37

DATE PURGED: 6/25/97 START: 1045 END (2400 hr): _____ PURGED BY: TPW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 1055 SAMPLED BY: TPW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
1042	1.5	7.11	837	86.0	Cloudy	Light	None
1049	2.5	7.12	862	85.1	"	"	"
1051	3.5	7.14	903	84.9	"	"	"

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

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-24	6/25/97	1055	3	40ml	VOA	HCl	GAS/BTEX + MTBE

REMARKS: _____

SIGNATURE: _____

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2K LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: MW-11

CLIENT/STATION No.: ARCO / 0608 FIELD TECHNICIAN: TFW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: 11.65 TOB 11.24 TOC
Total depth: 19 TOB _____ TOC
Date: 6/25/97 Time (2400): 0522

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ Other; _____

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☑	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☑ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other; _____

TD 19 - DTW 11.65 = 7.35 x Gal/Linear Foot 0.38 = 2.79 x Number of Casings 3 = Calculated Purge 8.37

DATE PURGED: 6/25/97 START: 1025 END (2400 hr): _____ PURGED BY: TFW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 1035 SAMPLED BY: TFW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
1027	3	6.97	906	69.0	cloudy	light	none
1029	6	6.99	904		"	"	"
1031	9	7.02	900	68.3	"	"	"

Pumped dry Yes / No

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

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: _____ TOB/TOC _____

PURGING EQUIPMENT/I.D. #
- ☐ Bailer: _____
- ☐ Airlift Pump: _____
- ☒ Centrifugal Pump: 1
- ☐ Dedicated: _____
- ☒ Other: _____

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-11	6/25/97	1035	3	40ml	VOA	HCl	8015/BTEX/MTBE

REMARKS: _____

SIGNATURE: _____

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2H LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: MW-13

CLIENT/STATION No.: ARCO / 0608 FIELD TECHNICIAN: TPW

WELL INFORMATION

Depth to Liquid: ____ TOB ____ TOC
Depth to water: 13.98 TOB 13.52 TOC
Total depth: 23.5 TOB ____ TOC
Date: 6/25/97 Time (2400): 0526

Probe Type and I.D. #
- ☐ Oil/Water interface ____
- ☒ Electronic indicator 1
- ☐ 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 23.5 - DTW 13.98 = 9.52 x Gal/Linear Foot 0.38 = 3.61 x Number of Casings 3 = Calculated Purge 10.85

DATE PURGED: 6/25/97 START: 1001 END (2400 hr): ____ PURGED BY: TPW

DATE SAMPLED: 6/25/97 START: ____ END (2400 hr): 1010 SAMPLED BY: TPW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
1002	3	7.00	958	72.5	Clear	Trace	None
1004	7	7.04	938	70.3	"	"	"
1006	11	7.02	933	69.3	"	"	"

Pumped dry Yes / No

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

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: ____ TOB/TOC ____

PURGING EQUIPMENT/I.D. #
- ☐ Bailer: ____
- ☐ Airlift Pump: ____
- ☒ Centrifugal Pump: 1
- ☐ Dedicated: ____
- ☒ Other: ____

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-13	6/25/97	1010	3	40ml	VOA	HCl	GAS/BTEX/MTBE

REMARKS: ____

SIGNATURE: [signature]

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2 LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: MW-14

CLIENT/STATION No.: ARCO/0608 FIELD TECHNICIAN: THW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: 9.94 TOB 9.67 TOC
Total depth: 24 TOB _____ TOC
Date: 6/25/97 Time (2400): 0524

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ Other; _____

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☑	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☑ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other; _____

TD 24 - DTW 9.94 = 14.06 x Gal/Linear Foot 0.38 = 5.34 x Number of Casings 3 = Calculated Purge 16.02

DATE PURGED: 6/25/97 START: 0944 END (2400 hr): _____ PURGED BY: THW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 0955 SAMPLED BY: THW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR
0946	5	7.02	758	70.9	Clear	Trace	none
0948	11	7.03	966	71.2	"	"	"
0950	16	7.11	967	71.1	"	"	"

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: 1
- ☒ Other: _____
- ☐ Airlift Pump: _____
- ☐ Dedicated: _____

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-14	6/25/97	0955	3	40ml	VOA	HCl	GAS/BTEX/MTBE

REMARKS: _____

SIGNATURE: THW

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2K LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: MW-15

CLIENT/STATION No.: ARCO/0608 FIELD TECHNICIAN: TRW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: 11.39 TOB 10.92 TOC
Total depth: 24 TOB _____ TOC
Date: 6/25/97 Time (2400): 0535

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ Other: _____

CASING DIAMETER / GAL/LINEAR FT.

☐	2	0.17
☑	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☑ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other: _____

TD 24 - DTW 11.39 = 12.61 x Gal/Linear Foot 0.38 = 4.79 x Number of Casings 3 = Calculated Purge 14.37

DATE PURGED: 6/25/97 START: 0925 END (2400 hr): _____ PURGED BY: TRW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 0935 SAMPLED BY: TRW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
0927	5	6.87	865	68.2	clear	trace	none
0929	10	6.84	876	67.3	"	"	"
0931	15	6.92	873	66.9	"	"	"

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: _____
- ☐ Airlift Pump: _____
- ☒ Centrifugal Pump: 1
- ☐ Dedicated: _____
- ☒ Other: _____

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-15	6/25/97	0935	3	40ml	VOA	HCl	GAS/BTEX/MTBE

REMARKS: _____

SIGNATURE: T.R. Wolf

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2K LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: MW-16

CLIENT/STATION No.: ARCO/0608 FIELD TECHNICIAN: TPW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: 11.92 TOB 11.50 TOC
Total depth: 23 TOB _____ TOC
Date: 6/25/97 Time (2400): 0536

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ Other; _____

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☑	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☑ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other; _____

TD 23 - DTW 11.92 = 11.08 x Gal/Linear Foot 0.38 = 4.21 x Number of Casings 3 = Calculated Purge 12.63

DATE PURGED: 6/25/97 START: 0859 END (2400 hr): _____ PURGED BY: TPW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 0910 SAMPLED BY: TPW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 2 5°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR
0901	4	7.05	961	70.5	Clear	Trace	none
0903	9	7.11	896	68.6	"	"	"
0905	13	7.10	892	68.7	"	"	"

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: 1
- ☒ Other: _____
- ☐ Airlift Pump: _____
- ☐ Dedicated: _____

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-16	6/25/97	0910	3	40ml	VOA	HCl	GAS/BTEX

REMARKS: _____

SIGNATURE: _____

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2K LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: MW-18

CLIENT/STATION No.: ARCO/0608 FIELD TECHNICIAN: TRW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: 10.94 TOB 10.43 TOC
Total depth: 22 TOB _____ TOC
Date: 6/25/97 Time (2400): 0541

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ 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 22 - DTW 10.94 = 11.06 x Gal/Linear Foot 0.38 = 4.20 x Number of Casings 3 = Calculated Purge 12.60

DATE PURGED: 6/25/97 START: 0840 END (2400 hr): _____ PURGED BY: TRW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 0850 SAMPLED BY: TRW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
0842	4	7.01	976	68.0	Cloudy	light	none
0844	9	7.02	981		Clear	trace	"
0846	13	7.06	1001	70.0	Clear	"	"

Pumped dry Yes / No

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

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: _____ TOB/TOC _____

PURGING EQUIPMENT/I.D. #
- ☐ Bailer: _____
- ☐ Airlift Pump: _____
- ☒ Centrifugal Pump: 1
- ☐ Dedicated: _____
- ☒ Other: _____

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-18	6/25/97	0850	3	40ml	VOA	HCl	GAS/BTEX/MTBE

REMARKS: _____

SIGNATURE: _____

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2K LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: MW-19

CLIENT/STATION No.: ARCO/0608 FIELD TECHNICIAN: TRW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: 10.41 TOB 10.26 TOC
Total depth: 22 TOB _____ TOC
Date: 6/25/97 Time (2400): 0544

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ 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 22 - DTW 10.41 = 11.59 x Gal/Linear Foot 0.38 = 4.40 x Number of Casings 3 = Calculated Purge 13.21

DATE PURGED: 6/25/97 START: 0810 END (2400 hr): _____ PURGED BY: TRW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 0820 SAMPLED BY: TRW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
0812	4	7.05	1046	70.9	Clear	Trace	None
0814	9	6.97	1021	68.2	"	"	"
0816	14	6.95	981	67.4	"	"	"

Pumped dry Yes / No

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

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: _____ TOB/TOC _____

PURGING EQUIPMENT/I.D. #
- ☐ Bailer: _____
- ☐ Airlift Pump: _____
- ☒ Centrifugal Pump: 1
- ☐ Dedicated: _____
- ☒ Other: _____

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-19	6/25/97	0820	3	40ml	VOA	HCl	GAS/BTEX/MTBE

REMARKS: _____

SIGNATURE: _____

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2K LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: MW-22

CLIENT/STATION No.: ARCO / 0608 FIELD TECHNICIAN: _____

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: ~~11.51~~ TOB 11.21 TOC
Total depth: 22 TOB _____ TOC
Date: 6/25/97 Time (2400): 0552

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ 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 22 - DTW 11.51 = 10.49 x Gal/Linear Foot 0.38 = 3.98 x Number of Casings 3 = Calculated Purge 11.95

DATE PURGED: 6/25/97 START: 0750 END (2400 hr): _____ PURGED BY: TFA

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 0800 SAMPLED BY: TFA

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
0752	4	7.18	968	65.2	clear	trace	none
0754	8	7.34	976	65.7	"	"	"
0756	12	7.36	980	66.0	"	"	"

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: _____
- ☐ Airlift Pump: _____
- ☒ Centrifugal Pump: 1
- ☐ Dedicated: _____
- ☒ Other: _____

SAMPLING EQUIPMENT/I.D.

- ☒ Bailer: disposable
- ☐ Dedicated: _____
- ☐ Other: _____

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-22	6/25/97	0800	3	40ml	VOA	HCl	GAS/BTEX/MTBE

REMARKS: _____

SIGNATURE: R. Wright

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2K LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: MW-21

CLIENT/STATION No.: ARCO/0608 FIELD TECHNICIAN: TPW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: 10.83 TOB 10.40 TOC
Total depth: 22 TOB _____ TOC
Date: 6/25/97 Time (2400): 0547

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ 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 22 - DTW 10.83 = 11.17 x Gal/Linear Foot 0.38 = 4.24 x Number of Casings 3 = Calculated Purge 12.73

DATE PURGED: 6/25/97 START: 0730 END (2400 hr): _____ PURGED BY: TPW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 0740 SAMPLED BY: TPW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
0732	4	6.39	934	63.8	clear	trace	none
0734	9	6.75	925	64.7	"	"	"
0736	13	6.78	921	64.5	"	"	"

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: 1
- ☒ Other: _____
- ☐ Airlift Pump: _____
- ☐ Dedicated: _____

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-21	6/25/97	0740	3	40ml	VOA	HCl	GAS/BTEX/MTBE

REMARKS: _____

SIGNATURE: TPW

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2 LOCATION: 1710 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: MW-23

CLIENT/STATION No.: ARCO / 0608 FIELD TECHNICIAN: TRW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: ~~12.42~~ TOB 12.14 TOC
Total depth: 22 TOB _____ TOC
Date: 6/29/97 Time (2400): 0558

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ 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 22 - DTW 12.42 = 9.58 x Gal/Linear Foot 0.38 = 3.64 x Number of Casings 3 = Calculated Purge 10.92

DATE PURGED: 6/25/97 START: 1520 END (2400 hr): _____ PURGED BY: TRW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 1535 SAMPLED BY: TRW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
1522	5	7.11	1022	71.7	clear	trace	none
1524	7	7.08	1011	71.5	"	"	"
1526	11	6.96	999	71.2	clear	"	"

Pumped dry Yes / No

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

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: _____ TOB/TOC _____

PURGING EQUIPMENT/I.D. #
- ☐ Bailer: _____
- ☐ Airlift Pump: _____
- ☒ Centrifugal Pump: 1
- ☐ Dedicated: _____
- ☒ Other: _____

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-23	6/25/97	1535	3	40ml	VOA	HCl	GAS/BTEX/MTBE
			1	1L	Plastic	N	Nitrate as Nitrate
			3	40mL	VOA	AP	Sulfate/Alkalinity/CO_2
							methane

REMARKS: _____

SIGNATURE: _____

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2 LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: MW-10

CLIENT/STATION No.: ARCO/0608 FIELD TECHNICIAN: TFW

WELL INFORMATION

Depth to Liquid: ____ TOB ____ TOC
Depth to water: 10.99 TOB 10.40 TOC
Total depth: 22 TOB ____ TOC
Date: 6/25/97 Time (2400): 0520

Probe Type and I.D. #
- ☐ Oil/Water interface ____
- ☒ Electronic indicator 1
- ☐ 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 22 - DTW 10.99 = 11.01 x Gal/Linear Foot .038 = 4.18 x Number of Casings 3 = Calculated Purge 12.55

DATE PURGED: 6/25/97 START: 1640 END (2400 hr): ____ PURGED BY: TFW

DATE SAMPLED: 6/25/97 START: ____ END (2400 hr): 1650 SAMPLED BY: TFW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR
1642	4	6.85	904	70.4	Clear	Trace	none
1644	9	6.91	912	70.3	"	"	"
1646	13	6.93	918	70.3	"	"	"

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: 1
- ☒ Other: ____
- ☐ Airlift Pump: ____
- ☐ Dedicated: ____

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-10	6/25/97	1650	3	40ml	VOA	HCl	GAS/BTEX/MTBE
			1	1L	Plastic	N	Nitrate as nitrate Sulfate alkalinity, + CO_2
			3	40mL	VOA	N	methane

REMARKS: ____

SIGNATURE: [signature]

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2 LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: MW-8

CLIENT/STATION No.: ARCO / 0608 FIELD TECHNICIAN: TRW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: 11.65 TOB 10-51 TOC
Total depth: 22 TOB _____ TOC
Date: 6/25/97 Time (2400): 0513

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ 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 22 - DTW 11.65 = 10.39 x Gal/Linear Foot 0.38 = 3.94 x Number of Casings 3 = Calculated Purge 11.84

DATE PURGED: 6/25/97 START: 1612 END (2400 hr): _____ PURGED BY: TRW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): 1625 SAMPLED BY: TRW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (° F)	COLOR	TURBIDITY	ODOR
1614	4	7.43	892	77.5	Clear	Heavy	Strong
1616	8	7.41	910	76.4	"	"	"
1618	12	7.37	912	76.0	"	"	"

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: 1
- ☒ Other: _____
- ☐ Airlift Pump: _____
- ☐ Dedicated: _____

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-8	6/25/97	1625	3	40ml	VOA	HCl	GAS/BTEX/MTBE
			1	1L	Plastic	N	Nitrate 93 Nitrate Sulfate alkalinity & CO_2
			3	40ML	VOA	N	Methane

REMARKS: _____

SIGNATURE: TRW

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2 LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: MW-5

CLIENT/STATION No.: ARCO/0608 FIELD TECHNICIAN: TRW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: 12.64 TOB 12.21 TOC
Total depth: 14 TOB _____ TOC
Date: 6/25/97 Time (2400): 0507

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ 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 - DTW 12.64 = 1.36 x Gal/Linear Foot 0.66 = 1.22 x Number of Casings 3 = Calculated Purge 3.66

DATE PURGED: 6/25/97 START: _____ END (2400 hr): _____ PURGED BY: TRW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): _____ SAMPLED BY: TRW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
	1.						
	2.5						
	3.6						

NOT sampled

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

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
MW-5	6/ /97		3	40ml	VOA	HCl	GAS/BTEX + MTBE

REMARKS: ARC's STOCK in well

NOT sampled

SIGNATURE: T. R. W.

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2 LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: ~~MW-1~~ 1734S

CLIENT/STATION No.: ARCO / 0608 FIELD TECHNICIAN: _____

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: _____ TOB _____ TOC
Total depth: _____ TOB _____ TOC
Date: 6/ /97 Time (2400): _____

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ Other; _____

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☑	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☑ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other; _____

TD _____ - DTW _____ = _____ x Gal/Linear Foot 0.38 = _____ x Number of Casings 3 = Calculated Purge _____

DATE PURGED: 6/ /97 START: _____ END (2400 hr): _____ PURGED BY: TRW

DATE SAMPLED: 6/ /97 START: _____ END (2400 hr): _____ SAMPLED BY: TRW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
			NO sample				

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

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
~~MW-1~~ 1734S	6/ /97		3	40ml	VOA	HCl	GAS/BTEX / MTBE

REMARKS: appear to be blockage @ 14' from TOC preventing bailer or sounder to access water

SIGNATURE: _____

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2 LOCATION: 17601 HESPERIAN BLVD. SAN LORENZO CA. WELL ID #: ~~MW~~633

CLIENT/STATION No.: ARCO / 0608 FIELD TECHNICIAN: TRW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: _____ TOB _____ TOC
Total depth: _____ TOB _____ TOC
Date: 6/ /97 Time (2400): _____

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ Other: _____

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☑	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☑ Groundwater
- ☐ Duplicate
- ☐ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other: _____

TD _____ - DTW _____ = _____ x Gal/Linear Foot 0.38 = _____ x Number of Casings 3 = Calculated Purge _____

DATE PURGED: 6/ /97 START: _____ END (2400 hr): _____ PURGED BY: TRW

DATE SAMPLED: 6/ /97 START: _____ END (2400 hr): _____ SAMPLED BY: TRW

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

NOT Sampled

Pumped dry Yes / No

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

FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:

DTW: _____ TOB/TOC _____

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

SAMPLING EQUIPMENT/I.D. #
- ☑ Bailer: disposable
- ☐ Dedicated: _____
- ☐ Other: _____

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
~~MW~~633	6/ /97		3	40ml	VOA	HCL	GAS/BTEX/MTBE

REMARKS: Cannot locate homeowner
Checked at 1300, 1500 & 1700

SIGNATURE: [signature]

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2 LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: ~~MW~~ 7302

CLIENT/STATION No.: ARCO / 0608 FIELD TECHNICIAN: TRW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: _____ TOB _____ TOC
Total depth: _____ TOB _____ TOC
Date: 6/ /97 Time (2400): _____

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ Other: _____

CASING DIAMETER		GAL/ LINEAR FT.
☐	2	0.17
☑	3	0.38
☐	4	0.66
☐	4.5	0.83
☐	5	1.02
☐	6	1.5
☐	8	2.6

SAMPLE TYPE
- ☑ Groundwater
- ☐ Duplicate
- ☒ Extraction well
- ☐ Trip blank
- ☐ Field blank
- ☐ Equipment blank
- ☐ Other: _____

TD _____ - DTW _____ = _____ x Gal/Linear Foot 0.38 = _____ x Number of Casings 3 = Calculated Purge _____

DATE PURGED: 6/ /97 START: _____ END (2400 hr): _____ PURGED BY: TRW

DATE SAMPLED: 6/ /97 START: _____ END (2400 hr): _____ SAMPLED BY: TRW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
			No Sample				

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

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
~~MW~~ 7302	6/25/97	1430	3	40ml	VOA	HCl	GAS/BTEX + MTBE

REMARKS: CANNOT Sample Pump Failed (foot valve) Unknown location of well to access w/ bailer

SIGNATURE: [signature]

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2K LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: ~~MW-2~~ 633

CLIENT/STATION No.: ARCO / 0608 FIELD TECHNICIAN: TRW

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC
Depth to water: _____ TOB _____ TOC
Total depth: ~~22~~ _____ TOB _____ TOC
Date: 6/25/97 Time (2400): _____

Probe Type and I.D. #
- ☐ Oil/Water interface _____
- ☒ Electronic indicator 1
- ☐ 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 ~~22~~ - DTW _____ = _____ x Gal/Linear Foot 0.38 = _____ x Number of Casings 3 = Calculated Purge _____

DATE PURGED: 6/25/97 START: _____ END (2400 hr): _____ PURGED BY: TRW

DATE SAMPLED: 6/25/97 START: _____ END (2400 hr): _____ SAMPLED BY: TRW

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
		1101	Sampled				

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

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
~~MW-2~~ 633	6/25/97		3	40ml	VOA	HCl	GAS/BTEX + MTBE

REMARKS: Cannot locate Homeowner
Checked at 1300, 1500 + 1700

SIGNATURE: [signature]

PACIFIC ENVIRONMENTAL GROUP, INC.

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 330-006.2K LOCATION: 17601 HESPERIAN BLVD SAN LORENZO CA. WELL ID #: ~~MW~~-590

CLIENT/STATION No.: ARCO/0608 FIELD TECHNICIAN: TRW

WELL INFORMATION

Depth to Liquid:____ TOB____ TOC
Depth to water:____ TOB____ TOC
Total depth:____ TOB____ TOC
Date: 6/ /97 Time (2400):____

Probe Type and I.D. #
- ☐ Oil/Water interface____
- ☒ Electronic indicator 1
- ☐ 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 Cal/Linear Foot .038 = ____ x Number of Casings 3 = Calculated Purge____

DATE PURGED: 6/ /97 START:____ END (2400 hr):____ PURGED BY: TRW

DATE SAMPLED: 6/ /97 START:____ END (2400 hr):____ SAMPLED BY: TRW

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

NOT sampled

Pumped dry Yes / No

Color: Gal/1 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:____
- ☐ Airlift Pump:____
- ☐ Centrifugal Pump:____
- ☐ Dedicated:____
- ☒ Other:____

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

SAMP. CNTRL #	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
~~MW~~-590	6/25/97		3	40ml	VOA	HCl	GAS/BTEX + MTBE

REMARKS: Home owner not available

SIGNATURE:____

PACIFIC ENVIRONMENTAL GROUP, INC.

Sampling Device bailer
Purging Device pump 1

Time Started 1600
Time Completed 1610

Well MW-8	*D.O. AMPOULE (mg/L)	*D.O. PROBE (mg/L)	HYDROGEN SULFIDE (mg/L)	FERROUS IRON (mg/L)
	<1	.35	—	@.9

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

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

ORP = 32

CHECK LAB SAMPLES COLLECTED

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

Sampling Device bailer
Purging Device pump 1

Time Started @ 1508
Time Completed 1515

Well MW-23	*D.O. AMPOULE (mg/L)	*D.O. PROBE (mg/L)	HYDROGEN SULFIDE (mg/L)	FERROUS IRON (mg/L)
	@1.5	1.47	—	~~0~~

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

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

ORP = 138

CHECK LAB SAMPLES COLLECTED

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

Sampling Device ____
Purging Device ____

Time Started ____
Time Completed ____

Well MW-9R	*D.O. AMPOULE (mg/L)	*D.O. PROBE (mg/L)	HYDROGEN SULFIDE (mg/L)	FERROUS IRON (mg/L)

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
Purging Device pump 1

Time Started 1633
Time Completed 1638

Well MW-10 SP-1	*D.O. AMPOULE (mg/L)	*D.O. PROBE (mg/L)	HYDROGEN SULFIDE (mg/L)	FERROUS IRON (mg/L)
	@1.5	2.11	—	1.2

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

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

ORP = -060

CHECK LAB SAMPLES COLLECTED

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

Sampling Device _____ Time Started _____
Purging Device _____ Time Completed _____

Well SP-2	*D.O. AMPOULE (mg/L)	*D.O. PROBE (mg/L)	HYDROGEN SULFIDE (mg/L)	FERROUS IRON (mg/L)

**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 _____ Time Started _____
Purging Device _____ Time Completed _____

	*D.O. AMPOULE (mg/L)	*D.O. PROBE (mg/L)	HYDROGEN SULFIDE (mg/L)	FERROUS IRON (mg/L)

**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 _____ Time Started _____
Purging Device _____ Time Completed _____

	*D.O. AMPOULE (mg/L)	*D.O. PROBE (mg/L)	HYDROGEN SULFIDE (mg/L)	FERROUS IRON (mg/L)

**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)	____		

2nd Quarter Intrinsic Groundwater Bioremediation Enhancement Program Monitoring Schedule

ARCO Service Station 0608
17601 Hesperian Blvd.
San Lorenzo, 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-g/ BTEX
633H	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y
MW-8	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y
MW-23	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y
MW-10 SP-1	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y
SP-2	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
BTEX = Benzene, toluene, ethylbenzene, xylenes
Y/N = Monitor/Don't Monitor

***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.*

Dissolved Oxygen Meter Checklist and Data Sheet

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

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

BEFORE MEASUREMENTS

INSPECT MEMBRANE (DAMAGED OR 1/8"BUBBLES)?	NO	WARM UP UNIT FOR 20 MINUTES?	✓

CALIBRATION

INSPECT MEMBRANE (DAMAGED OR 1/8"BUBBLES)?	NO	CALIBRATE UNIT?	
4a. CALIBRATION TEMPERATURE (C)	24.9	4b. CALIBRATION DO READING (mg/L)	

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

FIELD MEASUREMENTS

Sampling Device _____ **Time Started** _____
Purging Device _____ **Time Completed** _____

Well 633H	*D.O. AMPOULE (mg/L)	*D.O. PROBE (mg/L)	HYDROGEN SULFIDE (mg/L)	FERROUS IRON (mg/L)

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)	____		

ATTACHMENT C

REMEDIAL SYSTEM PERFORMANCE EVALUATION

ATTACHMENT C
REMEDIAL SYSTEM PERFORMANCE EVALUATION

Remedial History

Remedial action consisting of groundwater extraction (GWE) was initiated on September 25, 1991. Remedial objectives for the GWE system included migration control of the impacted groundwater plume, and petroleum hydrocarbon mass reduction. Operation of the GWE system created a small area of hydraulic influence extending no greater than 20 feet radially around the extraction well, and proved to be minimally effective in achieving the mass reduction objective (between September 1991 and August 1995, approximately 4.6 million gallons of groundwater were extracted and only 0.8 gallon of TPPH-g and 0.04 gallon of benzene were removed). A brief description and historical operational data for the GWE system are presented as Attachment C-A. Field data sheets, certified analytical reports, and chain-of-custody documentation are presented as Attachment C-B.

Intrinsic bioremediation parameters obtained during second quarter 1995 indicated the presence of anaerobic conditions within the impacted groundwater plume. As part of a strategy to enhance the intrinsic bioremediation process, at the request of ARCO, PACIFIC initiated an oxygen enhancement pilot study program (OEPSP) according to an Alameda County Health Care Services Agency (ACHCSA)-approved work plan. The purpose of the OEPSP was to determine if the addition of oxygen releasing compound (ORC) to groundwater would be effective in the enhancement of dissolved oxygen (DO) concentrations within the impacted groundwater plume. With the approval of the ACHCSA, GWE was temporarily deactivated on August 21, 1995, and ORC installation was performed on September 21, 1995.

The OEPSP consisted of installing ORC "socks" in Extraction Well E-1A and groundwater Monitoring Well MW-10, and monitoring intrinsic bioremediation indicator parameters (bioparameters) in those wells and existing nearby observation wells on a monthly basis during fourth quarter 1995. Bioparameters collected during the OEPSP were then compared to baseline data collected during second quarter 1995.

The results of the OEPSP were mixed. Several geochemical parameters including ferrous iron, nitrates, and sulfates, suggest that anaerobic conditions continued to exist within the ORC-containing wells. However, oxidation reduction potential (ORP) and DO data suggest

the presence of aerobic conditions in the ORC-containing wells. Total purgeable petroleum hydrocarbons calculated as gasoline (TPPH-g) and benzene concentration data further supported that the OEPSP may have increased the rate of intrinsic biodegradation locally. Considering the low permeability soils at the site, PACIFIC concluded that modification of the OEPSP consisting of longer periods of monitoring and ORC installations at Well MW-5, would be required to obtain more conclusive results. At the request of ARCO, PACIFIC expanded the OEPSP to include ORC installation at Well MW-5. Additional bioremediation indicator data collected during the second and third quarter 1996 monitoring events clearly indicates that intrinsic bioremediation remains active at the site. A summary of field and laboratory data is presented in Table C-1. A detailed description and results of the OEPSP were presented in PACIFIC's fourth quarter 1995 groundwater monitoring and remedial system performance evaluation report.

Second Quarter 1997 GWE System and OEPSP Status

As previously indicated, the GWE system has been deactivated since August 21, 1991. No evidence of further plume migration has been observed since deactivation. Therefore, with concurrence from the ACHCSA, the GWE system at the site will remain deactivated indefinitely unless a change in site conditions may warrant additional operation.

During an April 29, 1997 meeting attended by PACIFIC, ARCO, and ACHCSA it was decided that the OEPSP program should be terminated during the second quarter, so that natural attenuation at the site can be more accurately evaluated. Therefore on May 15, 1997, ORC units were removed from the wells. However, during the removal of the ORC units from monitoring Well MW-5 the last two ORC units become lodged in the well. Several attempts were made to dislodge the ORC units but were unsuccessful. The two lodged ORC units are currently located near the bottom of the well approximately 8 feet below the top of the well screen. The position of the lodged ORC units should not hinder groundwater monitoring operations at this well.

Intrinsic Bioremediation Evaluation

At the request of ARCO, PACIFIC performed additional intrinsic bioremediation evaluation during the second quarter 1997 groundwater monitoring event. The purpose of the evaluation was to confirm that the previously documented intrinsic bioremediation continued to be active. Groundwater samples from Wells MW-8, MW-10, and MW-23 were analyzed for dissolved oxygen (DO), ferrous iron, nitrate, sulfate, total alkalinity, methane, oxidation reduction potential (ORP) and carbon dioxide (CO_2). Table C-1 displays the parameters monitored and the associated values.

Generally, depleted concentrations of electron acceptors (DO, nitrate, and sulfate) and elevated concentrations of anaerobic bioremediation byproducts (ferrous iron, carbon dioxide, and methane) within the impacted plume compared to background conditions are known to be indicative of intrinsic bioremediation. Additionally, an increase in alkalinity and a decrease in oxidation reduction potential (ORP) within the impacted plume compared to background conditions are also know to be indicative of intrinsic bioremediation. All intrinsic bioremediation parameters evaluated, except DO, at this site followed the expected trend, which is indicative of intrinsic bioremediation within the impacted plume. The nonadherence of the DO data may be associated with the recent presence of ORC units in Well MW-10, or field measurement error. PACIFIC will reevaluate DO data during the next quarterly monitoring event. Therefore, PACIFIC concluded that intrinsic bioremediation remains active at the site. Bioparameters are present in Table C-1, graphical presentation of bioparameters versus total BTEX are shown on Figures C-1 through C-8. Certified analytical reports, chain-of-custody documentation, and field data sheets are presented as Attachment C-A.

Conclusions

In light of evidence of intrinsic biodegradation, plume stability, and concurrence from the ACHCSA, both GWE and oxygen enhancement programs have been terminated. PACIFIC, on behalf of ARCO, will pursue case closure for the site.

Attachments: Table C-1 - Intrinsic Biodegradation Indicator Parameters
Figure C-1 - Total BTEX vs. Dissolved Oxygen Concentrations
Figure C-2 - Total BTEX vs. Nitrate as Nitrate Concentrations
Figure C-3 - Total BTEX vs. Ferrous Iron Concentrations
Figure C-4 - Total BTEX vs. Sulfate Concentrations
Figure C-5 - Total BTEX vs. Carbon Dioxide Concentrations
Figure C-6 - Total BTEX vs. Methane Concentrations
Figure C-7 - Total BTEX vs. Total Alkalinity
Figure C-8 - Total BTEX vs. Oxidation Reduction Potential
Attachment C-A - Groundwater Extraction System Description and Historical Operational Data
Attachment C-B - Intrinsic Bioremediation Indicator Parameter Field Data Sheets, Certified Analytical Reports, and Chain-of-Custody Documentation

Table C-1

Intrinsic Bioremediation Indicator Parameters

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

		Field Analyses									Laboratory Analyses									
Well	Date Sampled	Color	Odor	pH (units)	E.C (millionhs)	O.R.P. (millivolts)	Temp (deg C)	Turbidity (NTU)	Chemets D.O.† (mg/L)	D.O.‡ (mg/L)	Ferrous Iron (mg/L)	Nitrate as Nitrate (mg/L)	Sulfate (mg/L)	B.O.D. (mg/L)	Total Alkalinity (mg $CaCO_3$/L)	C.O.D. (mg/L)	Carbon Dioxide (mg/L)	Methane (percent)	TPPH as Gasoline (µg/L)	Total BTEX (µg/L)	Benzene (µg/L)
633 H	05/31/95	Clear	None	7.09	1,295	-203	18.9	Trace	1.0	N/A +	0.2	38	61	N/A	N/A	N/A	N/A	N/A	<50	17.83	0.93
	09/12/95	Clear	None	7.36	876	N/A	20.0	Light	1.5	N/A +	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<50	9.94	0.64
	11/28/95	Clear	None	7.10	914	-4.7	20.4	Light	1.0	N/A +	0.1	48	68	N/A	N/A	N/A	N/A	N/A	<50	9.69	<0.50
	03/14/96	Brown	None	7.16	760	-207	18.5	Mod	2.79 b	N/A +	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	480	162.8	10
	05/31/96	Cloudy	None	7.06	1,000	-442	19.0	Light	1.0	N/A +	0.80	41	76	2.4	N/A	N/A	N/A	N/A	<50	<2.0	<0.50
	08/28/96	Clear	None	7.23	1,140	N/A	18.8	Trace	3.0	N/A +	0.20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<50	<2.0	<0.50
	11/26/96	Clear	None	8.29	1,360	N/A	17.3	Trace	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<50	<2.0	<0.50
	06/25/97 j	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
E-1A a	06/01/95	Clear	None	7.63	1,340	-155	20.4	Trace	0.0	2.0	0.1	23	54	N/A	N/A	N/A	N/A	N/A	680	25.8	4.9
	09/15/95	Clear	Mod	7.36	1,208	N/A	15.9	Light	N/A	1.25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	73	6.6	3.3
	10/13/95 b,c,d	N/A	N/A	7.76	1,300	N/A	21.8	N/A	N/A	3.36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<250	<10	<2.5
	11/28/95 b	Brown	Faint	9.11	1,070	40	23.1	Heavy	N/A	OS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	69	<2.0	<0.50
	11/28/95	Clear	None	7.40	880	-21	21.4	Light	0.0	3.06	0.15	18	74	N/A	N/A	N/A	N/A	N/A	220	66.9	3.9
	12/21/95 b	N/A	N/A	7.88	489	N/A	15.8	N/A	N/A	16.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	230	26.94	5.7
	03/14/96 b	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	03/14/96	Brown	None	7.16	800	-318	20.7	Mod	N/A	0.41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2,700	179.2	38
	05/31/96 f,g	Brown	None	7.39	1,000	-339	21.6	Mod	N/A	2.34	N/A	8.1	N/A	6.0	N/A	35	N/A	N/A	1,400	488.5	410
	08/28/96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0	N/A	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	09/13/96 g	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/26/96	Brown	Faint	7.34	1,370	N/A	18.8	Mod	N/A	17.9 b	1.60 b	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4,300	133	13
	11/27/96 g	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.00 b	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	03/14/97	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.00	0.17 b	2.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	06/25/97 k	Clear	Faint	6.92	976	N/A	23.0	Trace	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-5	06/01/95	Brown	Faint	7.10	1,400	-119	20.2	Mod	0.0	2.0	*	19	<0.1	N/A	N/A	N/A	N/A	N/A	750	15.1	13
	09/15/95	Clear	Heavy	7.20	1,068	N/A	17.7	Light	N/A	1.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	550	14	11
	10/13/95 b	N/A	N/A	7.59	1,329	N/A	25.6	N/A	N/A	1.24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/95	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	03/14/96 b	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	03/14/96	Brown	None	6.88	900	-14.3	18.7	Mod	N/A	0.72	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	05/31/96 f,g	Brown	None	6.98	900	-392	23.5	Mod	N/A	3.64	N/A	<0.10	N/A	3.0	N/A	<20	N/A	N/A	1,600	63	30
	08/28/96	Cloudy	None	6.93	1,100	N/A	22.7	Light	N/A	2.0	3.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	240	3.9	2.4
	09/13/96 g	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	250	220	210
	11/26/96	Brown	None	7.37	2,040	N/A	18.8	Mod	N/A	3.41 b	1.60 b	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/27/96 g	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.65 b	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<500	<20	<5.0
	03/14/97	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.00	1.85 b	0.03	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	06/25/97 k	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MW-7	06/01/95	Brown	None	7.11	1,156	-99	20.7	Light	0.0	*	*	42	68	N/A	N/A	N/A	N/A	N/A	<50	<2.0	<0.50
	09/15/95	Brown	None	7.20	1,406	N/A	18.3	Light	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<50	<2.0	<0.50
	10/13/95 b	N/A	N/A	7.23	1,075	N/A	23.2	N/A	N/A	0.56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/95	Brown	None	7.05	832	N/A	20.7	Heavy	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<50	<2.0	<0.50
	03/15/96	Cloudy	None	7.69	800	N/A	17.5	Light	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<50	<2.0	<0.50
	05/29/96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<50	<2.0	<0.50
	08/28/96	Cloudy	None	7.16	1,170	N/A	19.7	Light	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<50	<2.0	<0.50
	11/25/96 h	Brown	None	7.17	1,120	N/A	20.1	Mod	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<50	<2.0	<0.50
	06/25/97	Clear	None	7.00	953	N/A	21.8	Trace	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<50	<2.0	<0.50

Table C-1 (continued)

Intrinsic Bioremediation Indicator Parameters

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

		Field Analyses									Laboratory Analyses									
Well	Date Sampled	Color	Odor	pH (units)	E.C (millimhs)	O.R.P. (millivolts)	Temp (deg C)	Turbidity (NTU)	Chemets D.O.† (mg/L)	D.O.‡ (mg/L)	Ferrous Iron (mg/L)	Nitrate as Nitrate (mg/L)	Sulfate (mg/L)	B.O.D. (mg/L)	Total Alkalinity (mg $CaCO_3$/L)	C.O.D. (mg/L)	Carbon Dioxide (mg/L)	Methane (percent)	TPPH as Gasoline (µg/L)	Total BTEX (µg/L)	Benzene (µg/L)
MW-8	06/01/95	Brown	Strong	7.09	1,071	-199	20.4	Light	0.0	1.0	0.1	<0.10	33	N/A	N/A	N/A	N/A	N/A	810	7.1	5.2
	09/15/95	Clear	Mod	7.01	1,000	N/A	17.3	Light	N/A	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	850	33	30
	10/13/95 b,e	N/A	N/A	6.96	972	N/A	22.6	N/A	N/A	0.35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	760	6.72	<2.5
	11/28/95 b	Clear	None	7.01	811	0	25.7	Trace	N/A	0.10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/95	Clear	None	6.73	846	0	22.2	Trace	0.0	0.07	0.4	<1.0	<1.0	N/A	N/A	N/A	N/A	N/A	1,200	54	39
	12/21/95 b	Clear	None	6.75	640	N/A	17.0	Trace	N/A	0.06	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/21/95	Clear	None	6.80	652	N/A	16.7	Trace	N/A	0.08	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	560	29.5	28
	03/14/96 b	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.33	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	03/14/96	Cloudy	None	6.87	793	-266	19.6	Light	N/A	0.62	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	670	11.1	5.1
	05/31/96 f	Brown	None	6.79	800	-467	19.9	Mod	0.0	1.62	1.40	2.2	58	3.0	N/A	N/A	N/A	N/A	490	3.8	<1.0
	08/28/96	Cloudy	None	6.93	1,000	N/A	22.8	Light	1.5	N/A	1.4	N/A	N/A	N/A	N/A	N/A	500	0.26	680	37	29
	11/26/96	Brown	None	6.85	1,230	N/A	18.4	Mod	N/A	0.13	1.40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	620	8.7	1.2
	06/25/97	Clear	Faint	7.37	912	32	24.4	Trace	<1.0	0.35	0.9	<1.0	18	N/A	440	N/A	470	<0.020	480	8.9	6.7
MW-10 a	06/01/95	Clear	Mod	7.00	1,301	-199	18.0	Trace	0.0	1.0	0.2	<0.10	8.1	N/A	N/A	N/A	N/A	N/A	1,100	<4.8	<1.2
	09/14/95	Clear	Mod	7.10	968	N/A	20.0	Light	N/A	1.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	<8	<2.0
	10/13/95 b,e	N/A	N/A	7.33	1,397	N/A	23.6	N/A	N/A	17.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	510	<2.0	<0.50
	11/28/95 b	Cloudy	None	6.43	868	16	19.2	Light	N/A	9.74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	770	<4.0	<1.0
	11/28/95	Clear	None	6.99	1,021	5	21.8	Trace	0.0	0.71	0.40	<1.0	<1.0	N/A	N/A	N/A	N/A	N/A	840	<4.8	<1.0
	12/21/95 b	N/A	N/A	7.18	787	N/A	17.1	N/A	N/A	2.16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	440	6.6	5.1
	03/14/96 b	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.89	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	03/14/96	Clear	None	6.87	830	-244	19.1	Trace	N/A	1.92	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	870	52.2	35
	05/31/96 f,g	Clear	None	6.84	900	-470	19.1	Trace	N/A	2.07	N/A	<0.10	N/A	16	N/A	46	N/A	N/A	800	<4	<1.0
	09/13/96 g	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/26/96	Brown	None	6.72	1,330	N/A	19.9	Mod	N/A	6.35 b	1.80 b	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,100	24	6.0
	11/27/96 g	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.36 b	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	03/14/97	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.00	1.30 b	2.20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	06/25/97 k	Clear	None	6.93	918	-60	21.3	Trace	1.5	2.11	1.2	<1.0	<1.0	N/A	490	N/A	520	0.26	800	8.5	4.2
MW-23	05/31/96 f	Cloudy	None	7.65	1,000	-328	18.5	Light	0.0	4.23	0.40	39	85	<1.0	N/A	N/A	N/A	N/A	<50	<2.0	<0.50
	08/28/96	Brown	None	6.76	1,120	N/A	19.4	Mod	2.0	N/A	0.0	N/A	N/A	N/A	N/A	N/A	420	<0.020	<50	<2.0	<0.50
	11/25/96	Brown	None	6.81	1,040	N/A	18.4	Mod	N/A	0.19	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<50	<2.0	<0.50
	06/25/97	Clear	None	6.96	999	138	21.8	Trace	1.5	1.47	0.0	38	82	N/A	420	N/A	440	<0.020	<50	<2.0	<0.50
SP-1	09/15/95	Clear	None	6.94	1,040	N/A	18.3	Mod	N/A	1.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<50	<2.0	<0.50
	10/13/95 b,e	N/A	N/A	7.30	1,062	N/A	22.6	N/A	N/A	0.37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<50	<2.0	<0.50
	11/28/95 b	Brown	None	7.37	837	88	22.7	Heavy	N/A	0.18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/95	Cloudy	None	6.89	956	72	21.8	Heavy	0.0	0.13	0.20	16	44	N/A	N/A	N/A	N/A	N/A	<50	<2.0	<0.50
	12/21/95 b	Clear	None	7.02	644	N/A	15.0	Trace	N/A	0.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/21/95	Clear	None	7.05	710	N/A	15.7	Trace	N/A	0.16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<50	<2.0	<0.50
	03/14/96 b	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	03/14/96	Cloudy	None	6.99	840	-198	21.0	Light	N/A	1.17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<50	<2.0	<0.50
	05/31/96	Brown	None	6.85	900	-455	20.7	Mod	N/A	1.34	0.40	18	17	3.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	08/28/96	Cloudy	None	7.38	1,120	N/A	20.6	Light	2.0	N/A	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/26/96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.19	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/27/96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	06/25/97	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table C-1 (continued)

Intrinsic Bioremediation Indicator Parameters

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

		Field Analyses										Laboratory Analyses									
Well	Date Sampled	Color	Odor	pH (units)	E.C (millimhs)	O.R.P. (millivolts)	Temp (deg C)	Turbidity (NTU)	Chemets D.O.† (mg/L)	D.O.‡ (mg/L)	Ferrous Iron (mg/L)	Nitrate as Nitrate (mg/L)	Sulfate (mg/L)	B.O.D. (mg/L)	Total Alkalinity (mg $CaCO_3$/L)	C.O.D. (mg/L)	Carbon Dioxide (mg/L)	Methane (percent)	TPPH as Gasoline (µg/L)	Total BTEX (µg/L)	Benzene (µg/L)
SP-2	09/15/95	Clear	None	7.18	1,110	N/A	20.1	Light	N/A	2.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	94	<2.0	<0.50
	10/13/95 b,e	N/A	N/A	7.11	1,090	N/A	23.0	N/A	N/A	0.53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	80	<2.0	<0.50
	11/28/95 b	Brown	None	7.10	866	2	23.3	Heavy	N/A	0.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/28/95	Brown	None	6.74	690	36	25.7	Heavy	0.0	0.72	0.6	<1.0	25	N/A	N/A	N/A	N/A	N/A	94	<2.0	<0.50
	12/21/95 b	Clear	None	7.25	662	N/A	15.6	Trace	N/A	3.87	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	12/21/95	Clear	None	7.19	710	N/A	16.7	Trace	N/A	3.49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<50	<2.0	<0.50
	03/14/96 b	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	03/14/96	Brown	None	6.84	810	-231	19.8	Heavy	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<50	<2.0	0.50
	05/31/96	Brown	None	6.95	900	-388	19.8	Mod	0.0	2.63	0.60	<0.10	24	2.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	08/28/96	Cloudy	None	7.55	1,150	N/A	21.9	Light	3.0	N/A	0.60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/26/96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.38	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	11/27/96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	06/25/97	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

E.C. = Electrical conductivity
O.R.P = Oxygen reduction potential
D.O. = Dissolved oxygen
B.O. = Biochemical oxygen demand
C.O. = Chemical oxygen demand
Temp = Temperature
deg C = Degrees Centigrade
NTU = Nepholemetric turbidity unit
mg/L = Milligrams per liter
µg/L = Micrograms per liter
TPPH = Total purgeable petroleum hydrocarbons
N/A = Not available or not applicable
Mod = Moderate
OS = Off scale
< = Denotes sample method detection limit

† = Dissolved oxygen measured using Chemets colorometric analysis kit amputes
‡ = Dissolved oxygen measured using a YSI Model #SODB D.O. meter
* = High sample turbidity prevented colorimetric analysis
@ = Turbidity measured greater than 200 NTU's.
+ = Well was sealed; unable to lower D.O. probe into well. Obtained D.O. measurement from extracted water using Chemets dissolved oxygen test kit.
a. ORC's installed September 21, 1995 in Wells E-1A and MW-10, and replaced on May 31, 1996.
b. Measurements and samples taken before purging.
c. ORCs were jammed in Well E-1A, therefore no sampling was performed.
d. October monthly data obtained 11/01/95 following removal of jammed ORCs from Well E-1A.
e. TPPH and BTEX samples taken on October 23, 1995.
f. TPPH and BTEX samples taken on May 29, 1996 (Well MW-23 samples taken May 28, 1996).
g. Fresh ORC installed in Wells MW-5, MW-10, and E1-A following data collection.
h. Samples for analysis collected on November 26, 1996.
j. Well not sampled due to lack of access from homeowner.
k. ORCs removed from all wells on May 14, 1997. Two ORCs were lodged at the bottom of Well MW-10 and could not be removed.

Turbidity measured using a Nepholemetric turbidity unit or assessed visually.
All data collected after purging well, except where noted.

Figure C-1
Total BTEX vs. Dissolved Oxygen Concentrations
June 25, 1997

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

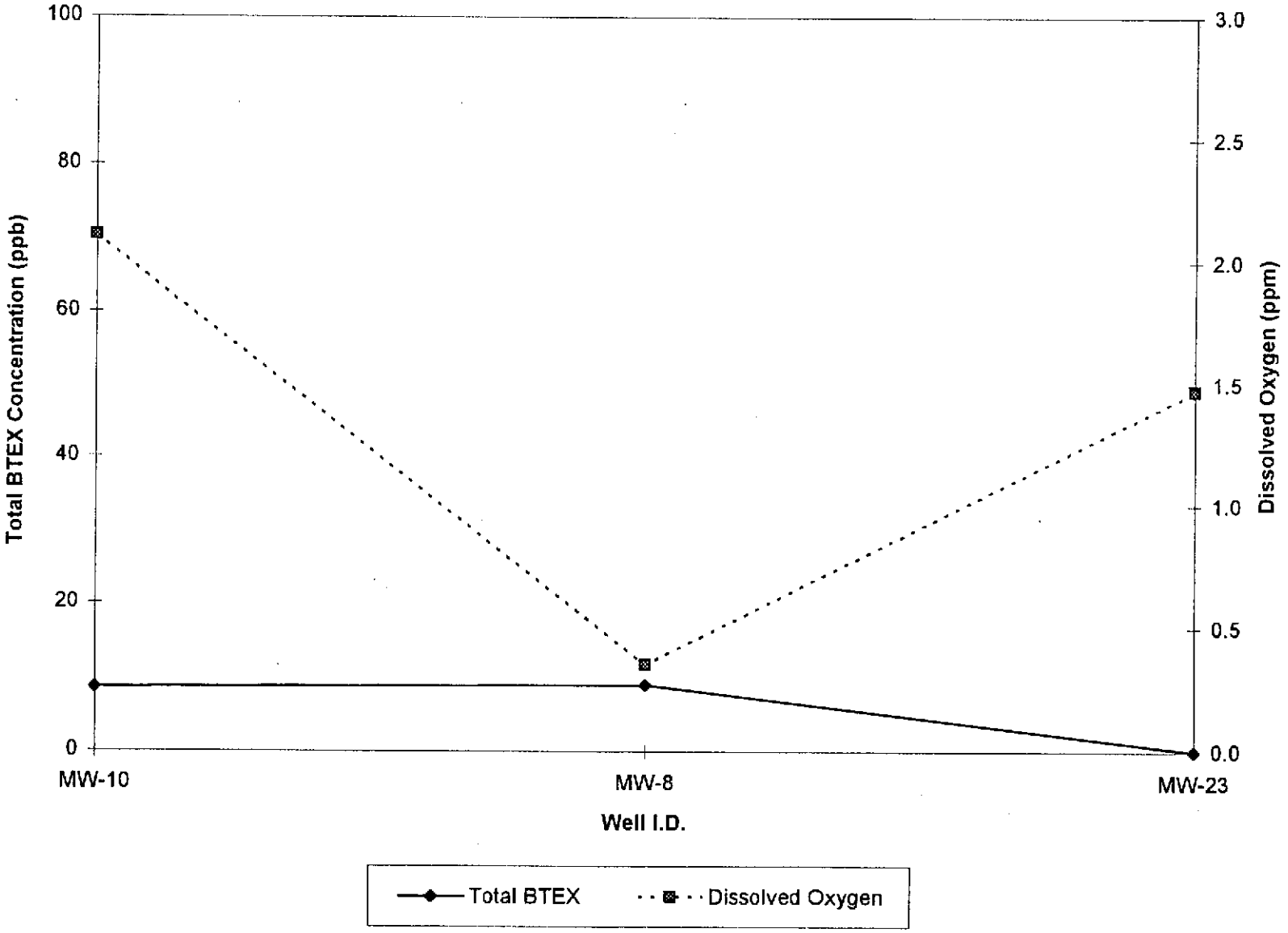


Figure C-2
Total BTEX vs. Nitrate as Nitrate Concentrations
June 25, 1997

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

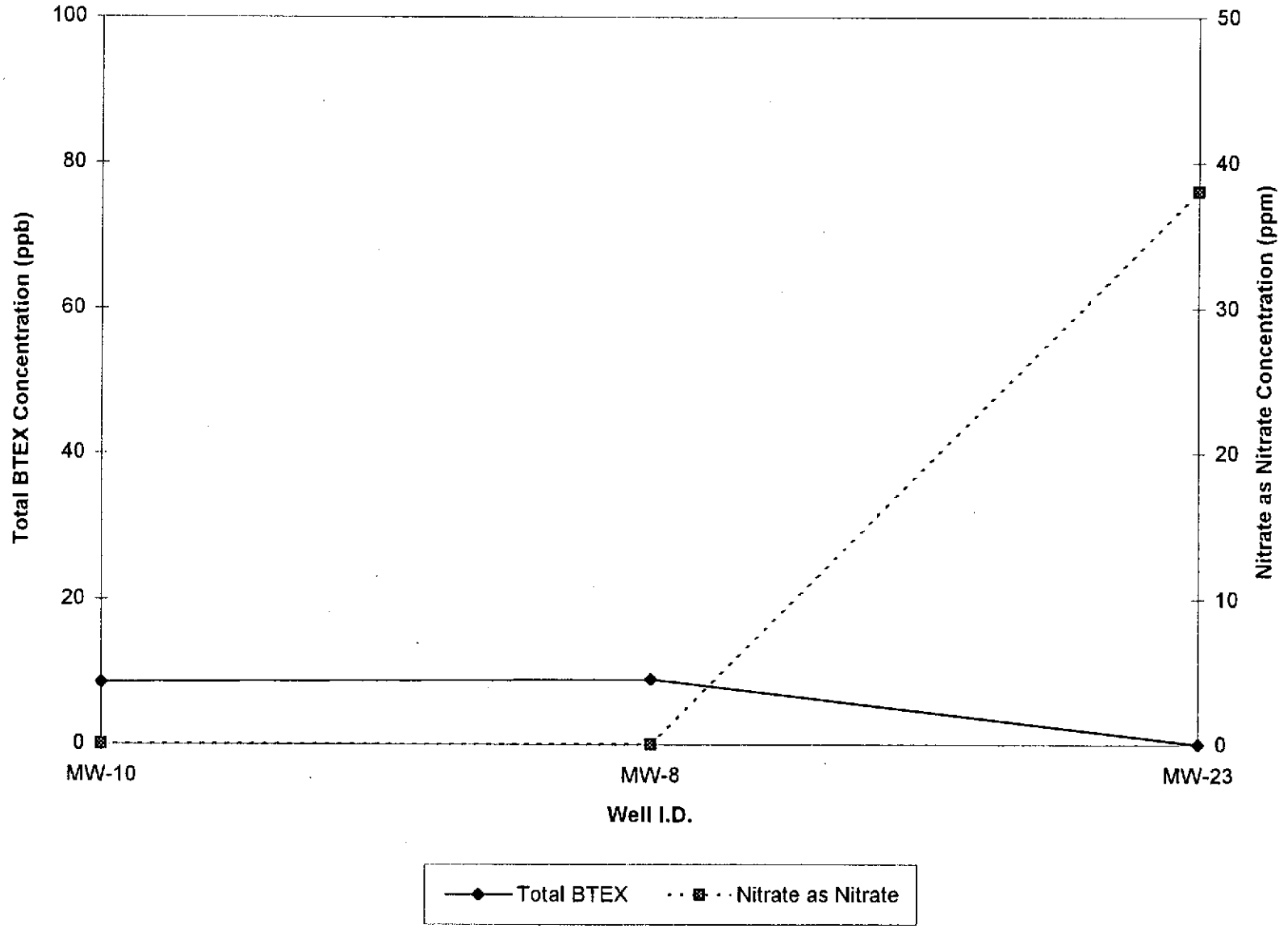


Figure C-3
Total BTEX vs. Ferrous Iron Concentrations
June 25, 1997

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

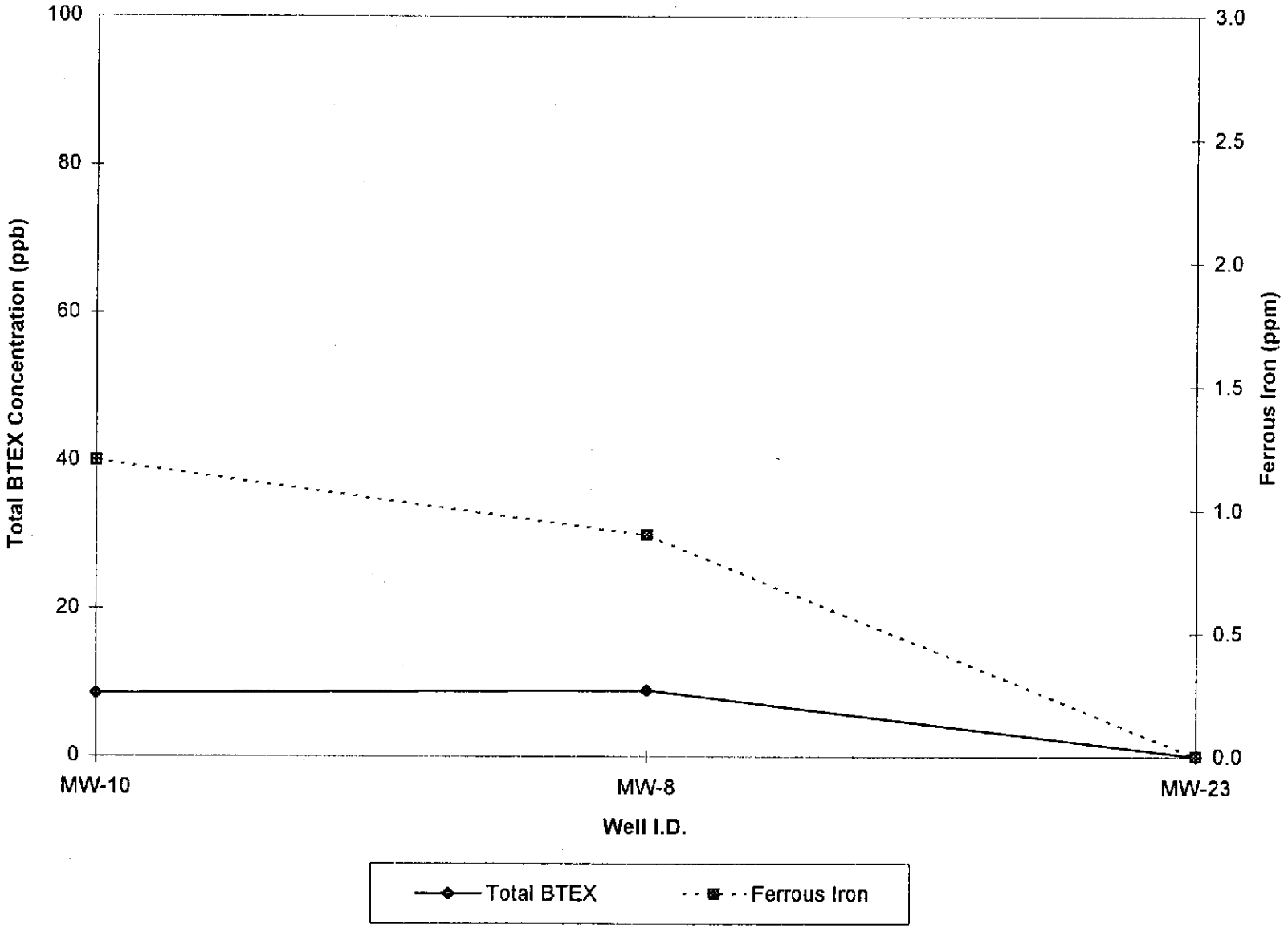


Figure C-4
Total BTEX vs. Sulfate Concentrations
June 25, 1997

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

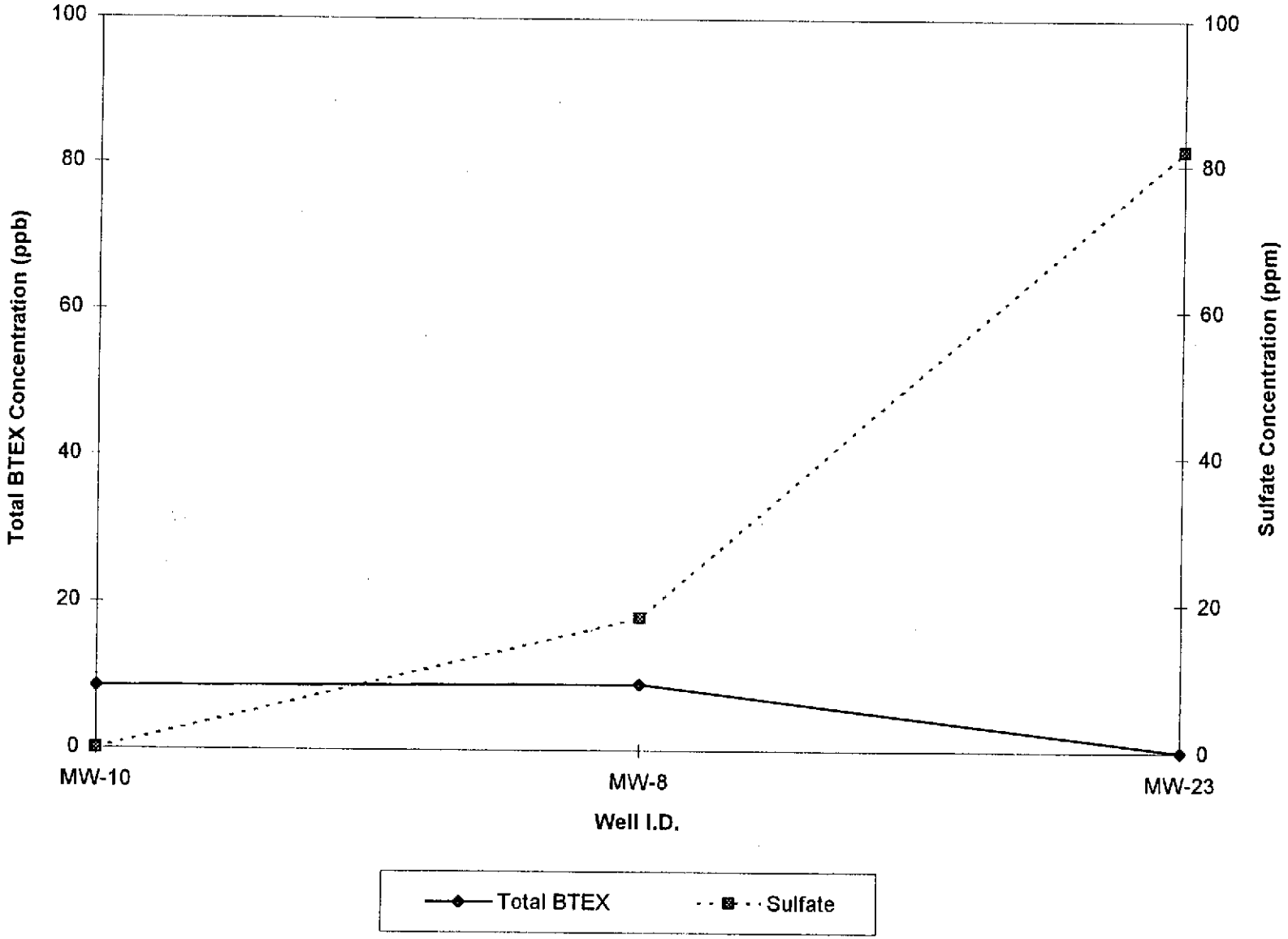


Figure C-5
Total BTEX vs. Carbon Dioxide Concentrations
June 25, 1997

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

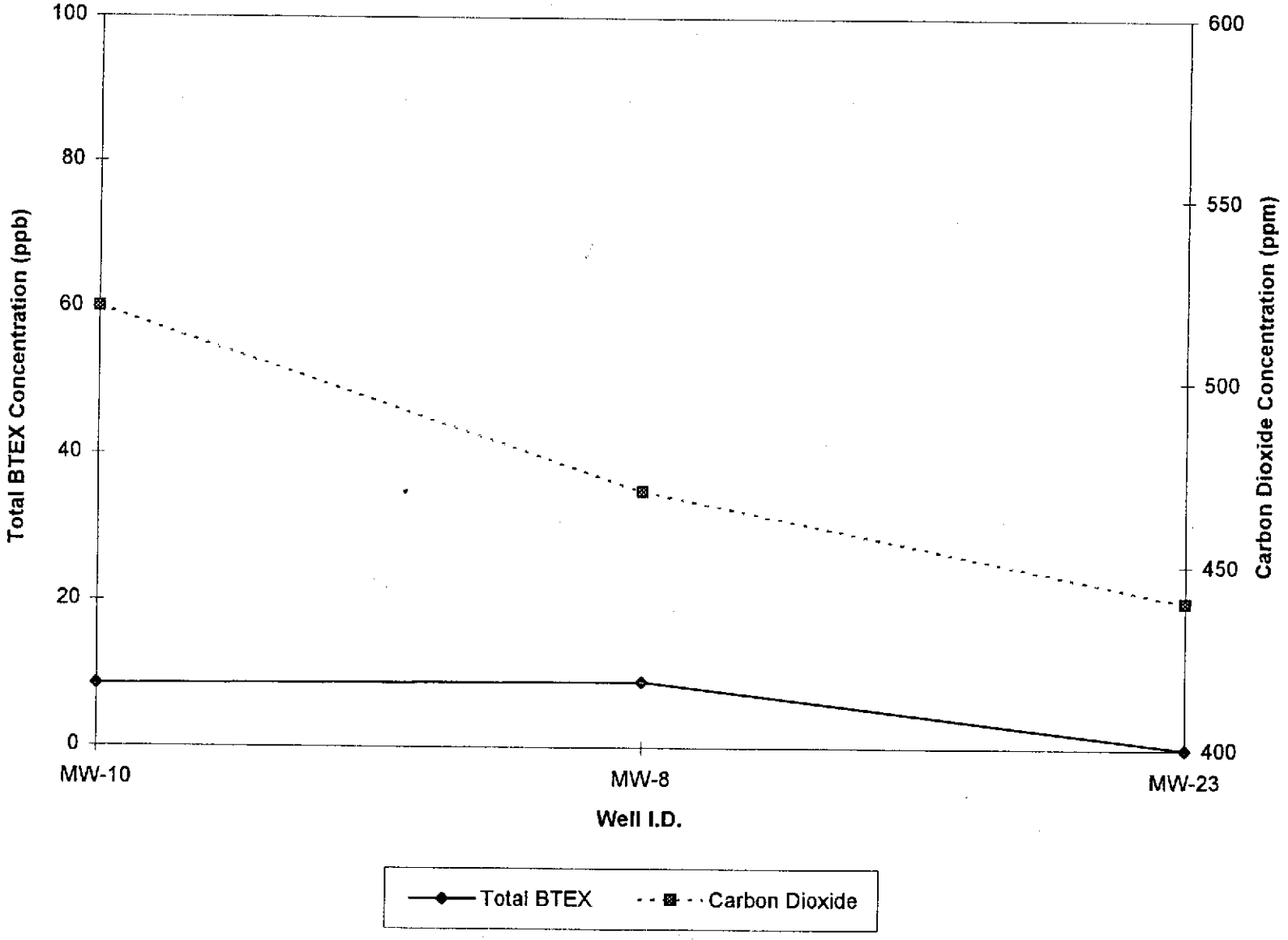


Figure C-6
Total BTEX vs. Methane Concentrations
June 25, 1997

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

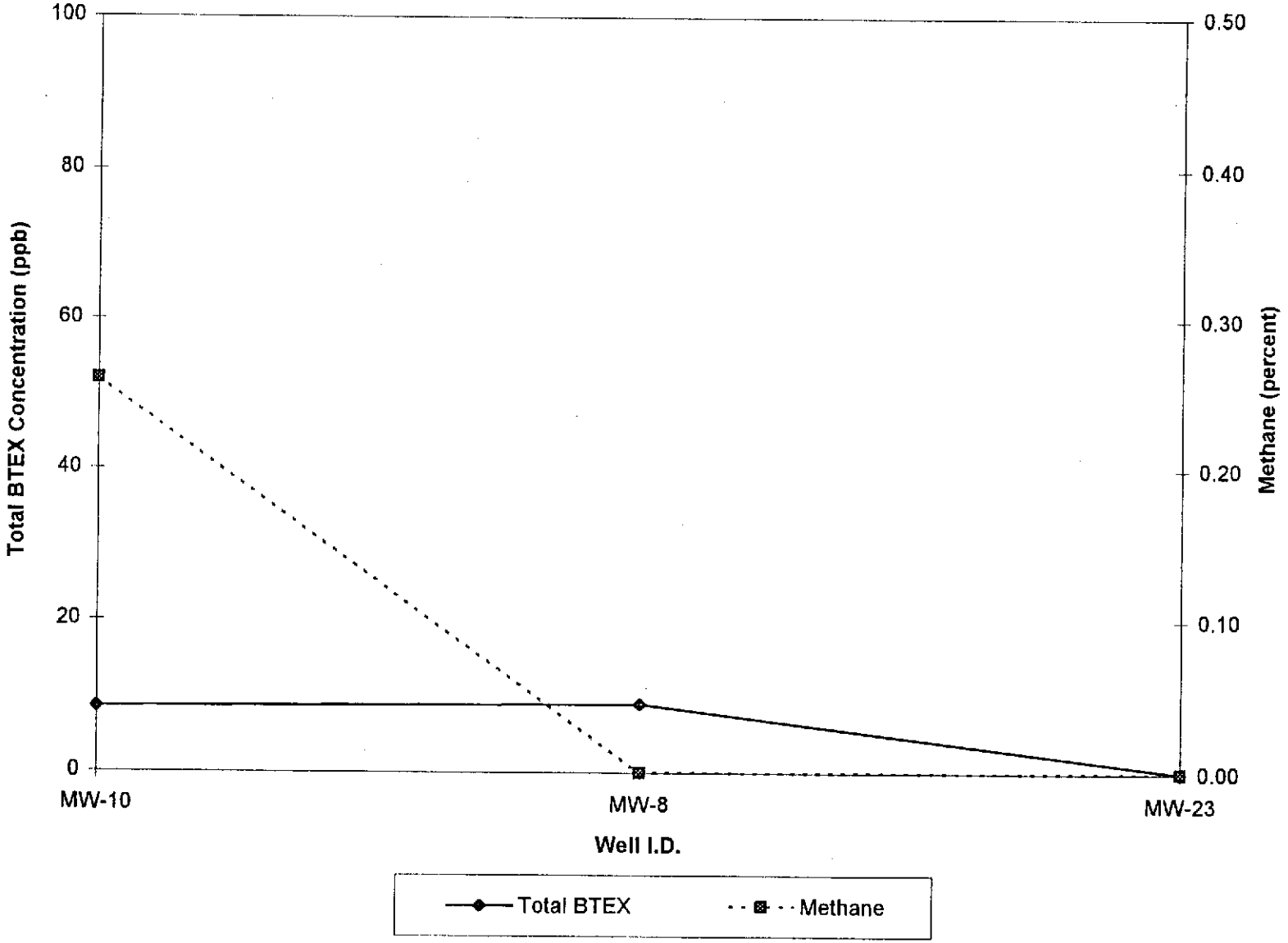


Figure C-7
Total BTEX vs. Total Alkalinity
June 25, 1997

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

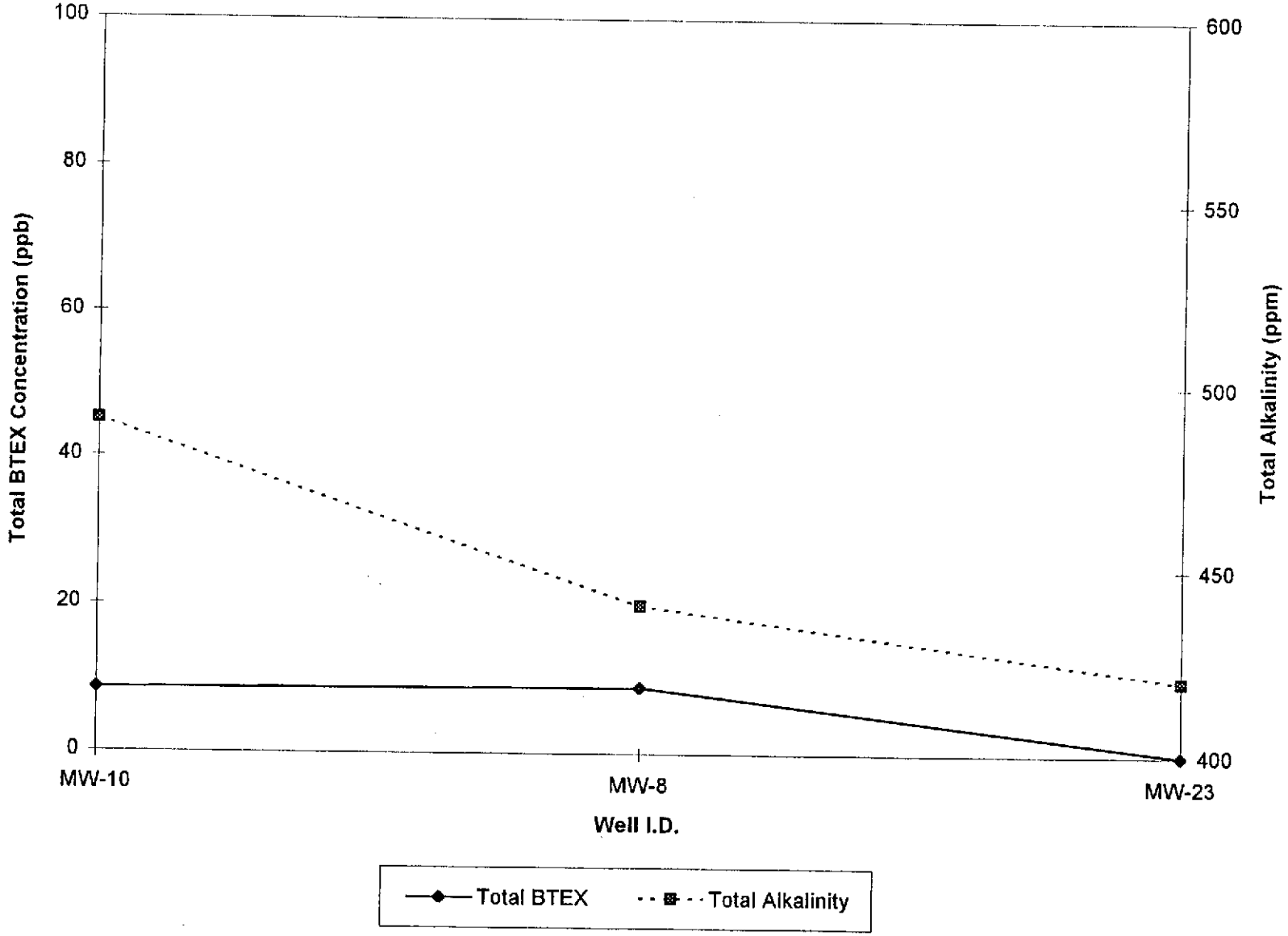
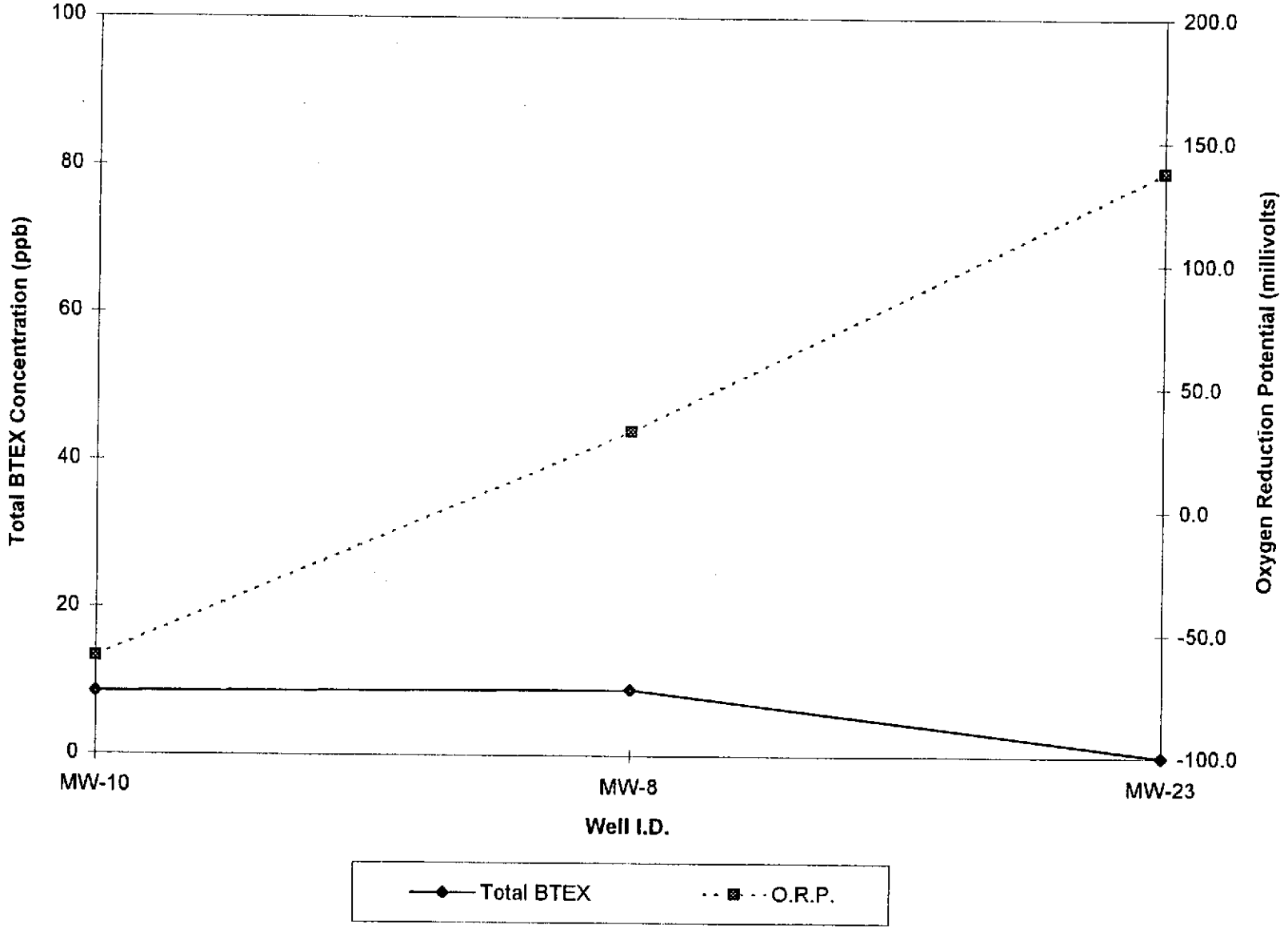


Figure C-8
Total BTEX vs. Oxidation Reduction Potential
June 25, 1997

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California



ATTACHMENT C-A

GROUNDWATER EXTRACTION SYSTEM DESCRIPTION AND HISTORICAL OPERATIONAL DATA

ATTACHMENT C-A
GROUNDWATER EXTRACTION SYSTEM DESCRIPTION

GWE System Description

The GWE system is comprised of an extraction well (designated E-1A) containing an electric submersible pump, and three 1,200-pound granular activated carbon vessels to treat the influent groundwater stream before it is discharged into the sanitary sewer. The carbon vessels are arranged in series, with valving to permit bed order rotation. This allows for the primary vessel to become the secondary vessel after the carbon has been renewed. The third vessel serves as a polishing vessel. Sample ports are located at the treatment system influent, effluent, the mid-point between the carbon vessels, and at each individual well head. Treatment system effluent is discharged into the sanitary sewer system in accordance with Permit Number 90-073-91, issued by the Oro Loma Sanitary District on April 4, 1991. The permit was recently renewed through April 4, 1997.

Attachments:
- Table C-A-1 - Groundwater Extraction System Performance Data
- Table C-A-2 - Treatment System Analytical Data - Total Purgeable Petroleum Hydrocarbons (TPPH as Gasoline and BTEX Compounds)
- Figure C-A-1 - Groundwater Extraction System Mass Removal Trend
- Figure C-A-2 - Groundwater Extraction System Concentration Trend

Table C-A-1
Groundwater Extraction System Performance Data

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

Influent Sample Date	Hour Meter Reading (hours)	System Down Time (%)	Volume Reading (gallons)	Net Volume (gallons)	Average Flow (gpm)	TPPH as Gasoline: Influent Concentration (µg/L)	TPPH as Gasoline: Net Removed (pounds)	TPPH as Gasoline: Removed To Date (pounds)	Benzene: Influent Concentration (µg/L)	Benzene: Net Removed (pounds)	Benzene: Removed To Date (pounds)	Primary Carbon Loading (%)
09/25/91	0	N/A	0	0	0.0	ND	N/A	0.0	N/A	0.00	0.00	0.0
09/26/91	N/A	N/A	1,144	1,144	N/A	38	0.0	0.0	4.8	0.00	0.00	0.0
10/22/91	26	96	12,844	11,700	7.6	ND	N/A	0.0	ND	0.00	0.00	0.0
11/22/91	77	93	52,532	39,688	13.0	ND	N/A	0.0	0.52	0.00	0.00	0.0
12/19/91	322	62	122,540	70,008	4.8	ND	N/A	0.0	ND	0.00	0.00	0.0
01/16/92	994	0	283,289	160,749	4.0	ND	N/A	0.0	ND	0.00	0.00	0.0
02/19/92	1,809	0	485,200	201,911	4.1	370	0.3	0.3	14	0.01	0.01	0.4
03/17/92	2,462	0	662,847	177,647	4.5	160	0.4	0.7	18	0.02	0.04	0.9
04/15/92	3,150	1	851,100	188,253	4.6	200	0.3	1.0	11	0.02	0.06	1.2
05/14/92	3,849	0	1,030,086	178,986	4.3	45	0.2	1.2	1.4	0.01	0.07	1.5
06/19/92	4,712	0	1,229,960	199,874	3.9	ND	N/A	1.2	ND	0.00	0.07	1.5
07/14/92	5,001	52	1,291,201	61,241	3.5	97	0.0	1.2	25.0	0.01	0.08	1.5
08/18/92	N/A	N/A	1,410,018	118,817	N/A	ND	N/A	1.2	ND	0.01	0.09	1.5
09/15/92	6,298	N/A	1,535,640	125,622	3.1	ND	N/A	1.2	ND	0.00	0.09	1.5
10/16/92	7,012	4	1,651,623	115,983	2.7	ND	N/A	1.2	ND	0.00	0.09	1.5
11/18/92	7,809	0	1,768,076	116,453	2.4	ND	N/A	1.2	ND	0.00	0.09	1.5
12/17/92	8,502	0	1,864,300	96,224	2.3	96	0.0	1.2	7.7	0.00	0.09	1.5
01/18/93	8,798	61	1,915,165	50,865	2.9	100	0.0	1.3	13	0.00	0.10	1.6
02/22/93	9,607	0	2,096,930	181,765	3.7	480	0.4	1.7	36	0.04	0.13	2.1
03/15/93	10,113	0	2,205,833	108,903	3.6	310	0.4	2.1	29	0.03	0.16	2.6
04/09/93	10,517	33	2,298,770	92,937	3.8	140	0.2	2.2	11	0.02	0.18	2.8
05/13/93	11,211	15	2,449,160	150,390	3.6	530	0.4	2.7	27	0.02	0.20	3.3
06/04/93	11,734	1	2,543,500	94,340	3.0	170	0.3	2.9	5.2	0.01	0.21	3.7
07/20/93	12,573	24	2,689,697	146,197	2.9	200	0.2	3.2	12	0.01	0.22	4.0
08/16/93	13,219	0	2,791,366	101,669	2.6	150	0.1	3.3	4.9	0.01	0.23	4.1
09/13/93	13,888	0	2,884,736	93,370	2.3	80	0.1	3.4	2.2	0.00	0.23	4.3
10/08/93	14,485	1	2,951,737	67,001	1.9	ND	0.0	3.4	ND	0.00	0.24	4.3
11/19/93	15,494	0	3,036,032	84,295	1.4	ND	0.0	3.4	ND	0.00	0.24	4.3
12/21/93	16,260	0	3,113,565	77,533	1.7	73	0.0	3.5	3.5	0.00	0.24	4.3
01/18/94	16,939	0	3,190,900	77,335	1.9	60	0.0	3.5	3.1	0.00	0.24	4.4
02/17/94	17,658	0	3,273,720	82,820	1.9	ND	0.0	3.5	2.5	0.00	0.24	4.4
03/15/94	18,235	7	3,344,249	70,529	2.0	ND	0.0	3.5	ND	0.00	0.24	4.4
04/21/94	18,849	31	3,418,537	74,288	2.0	110	0.0	3.5	7.8	0.00	0.24	4.4
05/13/94	19,351	5	3,478,910	60,373	2.0	230	0.1	3.6	8.3	0.00	0.25	4.5
06/14/94	19,680	57	3,518,608 a	39,698	2.0	230	0.1	3.7	12	0.00	0.25	4.6
07/14/94	20,145	35	3,574,408 b	55,800	2.0	270	0.1	3.8	6.9	0.00	0.26	4.8
08/17/94	20,920	5	51,260 c	91,580 c	2.0	ND	0.1	3.9	1.8	0.00	0.26	4.9
09/12/94	21,549	0	120,910	69,650	1.8	ND	0.0	3.9	ND	0.00	0.26	4.9
10/18/94	22,408	1	211,880	90,970	1.8	ND	0.0	3.9	ND	0.00	0.26	4.9
11/15/94	23,080	0	280,840	68,960	1.7	ND	0.0	3.9	0.66	0.00	0.26	4.9
12/05/94	23,489	15	325,830	44,990	1.8	470	0.1	4.0	32	0.01	0.27	5.0
01/04/95	24,205	1	408,740	82,910	1.9	ND	0.2	4.2	1.1	0.01	0.28	5.2
02/06/95	24,926	9	499,690	90,950	2.1	100	0.0	4.2	2.4	0.00	0.28	5.2
03/02/95	25,465	6	569,180	69,490	2.1	ND	0.0	4.2	ND	0.00	0.28	5.3

Table C-A-1 (continued)
Groundwater Extraction System Performance Data

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

Influent Sample Date	Hour Meter Reading (hours)	System Down Time (%)	Volume Reading (gallons)	Net Volume (gallons)	Average Flow (gpm)	TPPH as Gasoline: Influent Concentration (µg/L)	TPPH as Gasoline: Net Removed (pounds)	TPPH as Gasoline: Removed To Date (pounds)	Benzene: Influent Concentration (µg/L)	Benzene: Net Removed (pounds)	Benzene: Removed To Date (pounds)	Primary Carbon Loading (%)
04/04/95	26,253	1	672,510	103,330	2.2	290	0.1	4.3	6.6	0.00	0.28	5.4
05/02/95	26,924	0	760,350	87,840	2.2	240	0.2	4.5	7.1	0.01	0.29	5.7
06/05/95	27,721	2	848,810	88,460	1.9	ND	0.1	4.6	ND	0.00	0.29	5.8
07/06/95	28,464	0	921,260	72,450	1.6	270	0.1	4.7	2.4	0.00	0.29	5.9
08/21/95 d	29,568	0	993,320	72,060	1.1	230	0.2	4.9	1.8	0.00	0.29	6.1
REPORTING PERIOD: 01/01/97 - 03/31/97 (d)												
TOTAL GALLONS EXTRACTED:				**4,608,048**								
PERIOD GALLONS EXTRACTED:				**0**								
TOTAL POUNDS REMOVED:								**4.9**			**0.29**	
TOTAL GALLONS REMOVED:								**0.8**			**0.04**	
PERIOD POUNDS REMOVED:							**0.0**			**0.00**		
PERIOD GALLONS REMOVED:							**0.00**			**0.00**		
AVERAGE PERIOD FLOW RATE (gpm):												**0.0**
AVERAGE PERCENT DOWNTIME SINCE START-UP UNTIL SHUTDOWN (d):												**13.6%**
PERIOD PERCENT OPERATIONAL:												**0%**

TPPH = Total purgeable petroleum hydrocarbons
gpm = Gallons per minute
µg/L = Micrograms per liter
N/A = Not available or not applicable
ND = Not detected above detection limit
Densities: Gasoline = 6.1 lbs/gallon; Benzene = 7.34 lbs/gallon.

a. Totalizer broken; volume estimated from hourmeter and flow rate.
b. Volume estimated from hourmeter and instantaneous flow rate.
c. Sewer totalizer replaced July 28, 1994; volume discharged estimated between July 14 and 28, 1994 at 2.0 gpm.
d. GWE system temporarily shut down August 21, 1995.
Primary carbon loading estimated using isotherm of 8 percent by weight.

Equations: Net Dissolved TPH-g Removed [pounds] = TPH-g concentration, [ug/L] x net volume (gallon) x density of gasoline [pound/gallon]
(Net dissolved TPH-g removed is calculated by averaging influent concentrations)

Table C-A-2
Treatment System Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

Date Sampled	TPPH as Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)
INFL (influent to primary carbon)					
09/26/91	38	4.8	0.6	1.6	1.1
10/22/91	<30	<0.3	<0.3	<0.3	<0.3
11/22/91	<30	0.5	<0.3	<0.3	<0.3
12/19/91	<30	<0.3	<0.3	<0.3	<0.3
01/16/91	<30	<0.3	<0.3	<0.3	<0.3
02/19/92	370	14	0.34	14	2.4
03/17/92	160	18	0.32	0.56	1.6
04/15/92	200	11	<0.3	7.3	0.77
05/14/92	45	1.4	<0.3	<0.3	<0.3
06/19/92	<30	<0.3	<0.3	<0.3	<0.3
07/14/92	97	25	<0.5	8.5	<0.5
08/18/92	<50	<0.5	<0.5	<0.5	<0.5
09/15/92	<50	<0.5	<0.5	<0.5	<0.5
10/16/92	<50	<0.5	<0.5	<0.5	<0.5
11/18/92	<50	<0.5	<0.5	<0.5	<0.5
12/17/92	96	7.7	13	0.56	9.7
01/18/93	100	13	6.6	1.1	11
02/22/93	480	36	29	4.9	96
03/15/93	310	29	14	4.9	55
04/09/93	140	11	2.8	2.6	17
05/13/93	530	27	12	18	96
06/04/93	170	5.2	1.6	2.5	23
07/20/93	200	12	0.91	8.2	29
08/16/93	150	4.9	0.63	2.9	15
09/13/93	80	2.2	<0.5	<0.5	4.8
10/08/93	<50	<0.5	<0.5	<0.5	<0.5
11/19/93	<50	<0.5	<0.5	<0.5	<0.5
12/21/93	73	3.5	<0.5	1.9	8.4
01/18/94	60	3.1	<0.5	3.2	4.3
02/17/94	<50	2.5	<0.5	2.1	3.1
03/15/94	<50	<0.5	<0.5	<0.5	<0.5
04/21/94	110	7.8	<1.0	9.6	<1.0
05/13/94	230	8.3	<0.5	14	6.0
06/14/94	230	12	<0.5	16	1.5
07/14/94	270	6.9	<0.5	15	1.9
08/18/94	<50	1.8	<0.5	1.5	<0.5
09/12/94	<50	<0.5	<0.5	<0.5	<0.5
10/18/94	<50	<0.5	<0.5	<0.5	<0.5
11/05/94	<50	0.66	<0.5	2.6	<0.5
12/05/94	470	32	0.59	29	6.2
01/04/95	<50	1.1	<0.50	1.4	<0.50
02/06/95	100	2.4	1.1	1.2	2.8
03/02/95	<50	<0.50	<0.50	<0.50	<0.50
04/04/95	290	6.6	<0.50	10	1.7
05/02/95	240	7.1	<0.50	3.2	1.6
06/05/95	<50	<0.50	<0.50	<0.50	<0.50
07/06/95	270	2.4	<0.50	7.6	1.0
08/21/95	230	1.8	<0.50	1.6	0.9

Table C-A-2 (continued)
Treatment System Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

Date Sampled	TPPH as Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)
MID-1 (between carbons)					
09/26/91	<30	<0.3	<0.3	<0.3	<0.3
10/22/91	<30	<0.3	<0.3	<0.3	<0.3
12/19/91	<30	<0.3	<0.3	<0.3	<0.3
01/16/91	<30	<0.3	<0.3	<0.3	<0.3
02/19/92	<30	<0.3	<0.3	<0.3	<0.3
03/17/92	<30	<0.3	<0.3	<0.3	<0.3
04/15/92	<30	<0.3	<0.3	<0.3	<0.3
05/14/92	<30	<0.3	<0.3	<0.3	<0.3
06/19/92	<30	<0.3	<0.3	<0.3	<0.3
07/14/92	NS	NS	NS	NS	NS
08/18/92	NS	NS	NS	NS	NS
09/15/92	NS	NS	NS	NS	NS
10/16/92	NS	NS	NS	NS	NS
11/18/92	NS	NS	NS	NS	NS
12/17/92	NS	NS	NS	NS	NS
01/18/93	NS	NS	NS	NS	NS
02/22/93	NS	NS	NS	NS	NS
03/15/93	NS	NS	NS	NS	NS
04/09/93	NS	NS	NS	NS	NS
05/13/93	NS	NS	NS	NS	NS
06/04/93	NS	NS	NS	NS	NS
07/14/94	ND	ND	ND	ND	ND
08/17/94	NS	NS	NS	NS	NS
09/12/94	NS	NS	NS	NS	NS
10/18/94	NS	NS	NS	NS	NS
11/05/94	NS	NS	NS	NS	NS
12/05/94	NS	NS	NS	NS	NS
01/04/95	NS	NS	NS	NS	NS
02/06/95	NS	NS	NS	NS	NS
03/02/95	NS	NS	NS	NS	NS
EFFL (effluent to sewer)					
09/26/91	<30	<0.3	<0.3	<0.3	<0.3
10/22/91	<30	<0.3	<0.3	<0.3	<0.3
11/22/91	<30	<0.3	<0.3	<0.3	<0.3
12/19/91	<30	<0.3	<0.3	<0.3	<0.3
01/16/91	<30	<0.3	<0.3	<0.3	<0.3
02/19/92	<30	<0.3	<0.3	<0.3	<0.3
03/17/92	<30	<0.3	<0.3	<0.3	<0.3
04/15/92	<30	<0.3	<0.3	<0.3	<0.3
05/14/92	<30	<0.3	<0.3	<0.3	<0.3
06/19/92	<30	<0.3	<0.3	<0.3	<0.3
07/14/92	<50	<0.5	<0.5	<0.5	<0.5
08/18/92	<50	<0.5	<0.5	<0.5	<0.5
09/15/92	<50	<0.5	<0.5	<0.5	<0.5
10/16/92	<50	<0.5	<0.5	<0.5	<0.5
11/18/92	<50	<0.5	<0.5	<0.5	<0.5
12/17/92	<50	<0.5	<0.5	<0.5	<0.5

Table C-A-2 (continued)
Treatment System Analytical Data
Total Purgeable Petroleum Hydrocarbons
(TPPH as Gasoline and BTEX Compounds)

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

Date Sampled	TPPH as Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)
EFFL (effluent to sewer) (cont.)					
01/18/93	<50	<0.5	<0.5	<0.5	<0.5
02/22/93	<50	<0.5	<0.5	<0.5	<0.5
03/15/93	<50	<0.5	<0.5	<0.5	<0.5
04/09/93	<50	<0.5	<0.5	<0.5	<0.5
05/13/93	<50	<0.5	<0.5	<0.5	<0.5
06/04/93	<50	<0.5	<0.5	<0.5	<0.5
07/20/93	<50	<0.5	<0.5	<0.5	<0.5
08/16/93	<50	<0.5	<0.5	<0.5	<0.5
09/13/93	<50	<0.5	<0.5	<0.5	<0.5
10/08/93	<50	<0.5	<0.5	<0.5	<0.5
11/19/93	<50	<0.5	<0.5	<0.5	<0.5
12/21/93	<50	<0.5	<0.5	<0.5	<0.5
01/18/94	<50	<0.5	<0.5	<0.5	<0.5
02/17/94	<50	<0.5	<0.5	<0.5	<0.5
03/15/94	<50	<0.5	<0.5	<0.5	<0.5
04/21/94	<50	<0.5	<0.5	<0.5	<0.5
05/13/94	<50	<0.5	<0.5	<0.5	<0.5
06/14/94	<50	<0.5	<0.5	<0.5	<0.5
07/14/94	<50	<0.5	<0.5	<0.5	<0.5
08/17/94	<50	<0.5	<0.5	<0.5	<0.5
09/12/94	<50	<0.5	<0.5	<0.5	<0.5
10/18/94	<50	<0.5	<0.5	<0.5	<0.5
11/05/94	<50	<0.5	<0.5	<0.5	<0.5
12/05/94	<50	<0.5	<0.5	<0.5	<0.5
01/04/95	<50	<0.50	<0.50	<0.50	<0.50
02/06/95	<50	<0.50	<0.50	<0.50	<0.50
03/02/95	<50	<0.50	<0.50	<0.50	<0.50
04/04/95	<50	<0.50	<0.50	<0.50	<0.50
05/02/95	<50	<0.50	<0.50	<0.50	<0.50
06/05/95	<50	<0.50	<0.50	<0.50	<0.50
07/06/95	<50	<0.50	<0.50	<0.50	<0.50
08/21/95	<50	<0.50	<0.50	<0.50	<0.50

ppb = Parts per billion
< = Less than laboratory detection limit at right.
NS = Not sampled
ND = Not detected
Prior to June 1995, TPPH as gasoline was reported as TPH as gasoline.

Figure C-A-1
Groundwater Extraction System Mass Removal Trend

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California

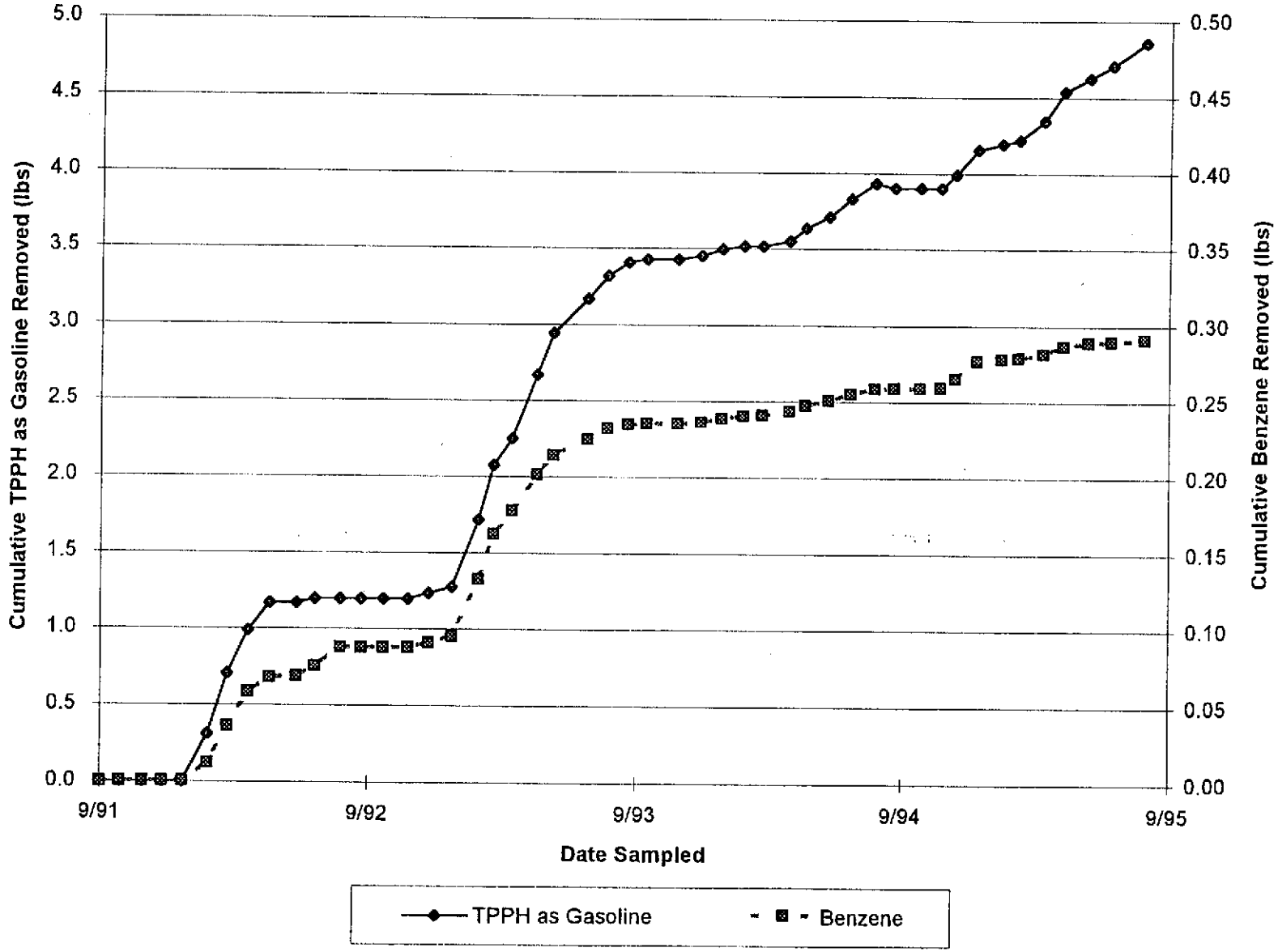
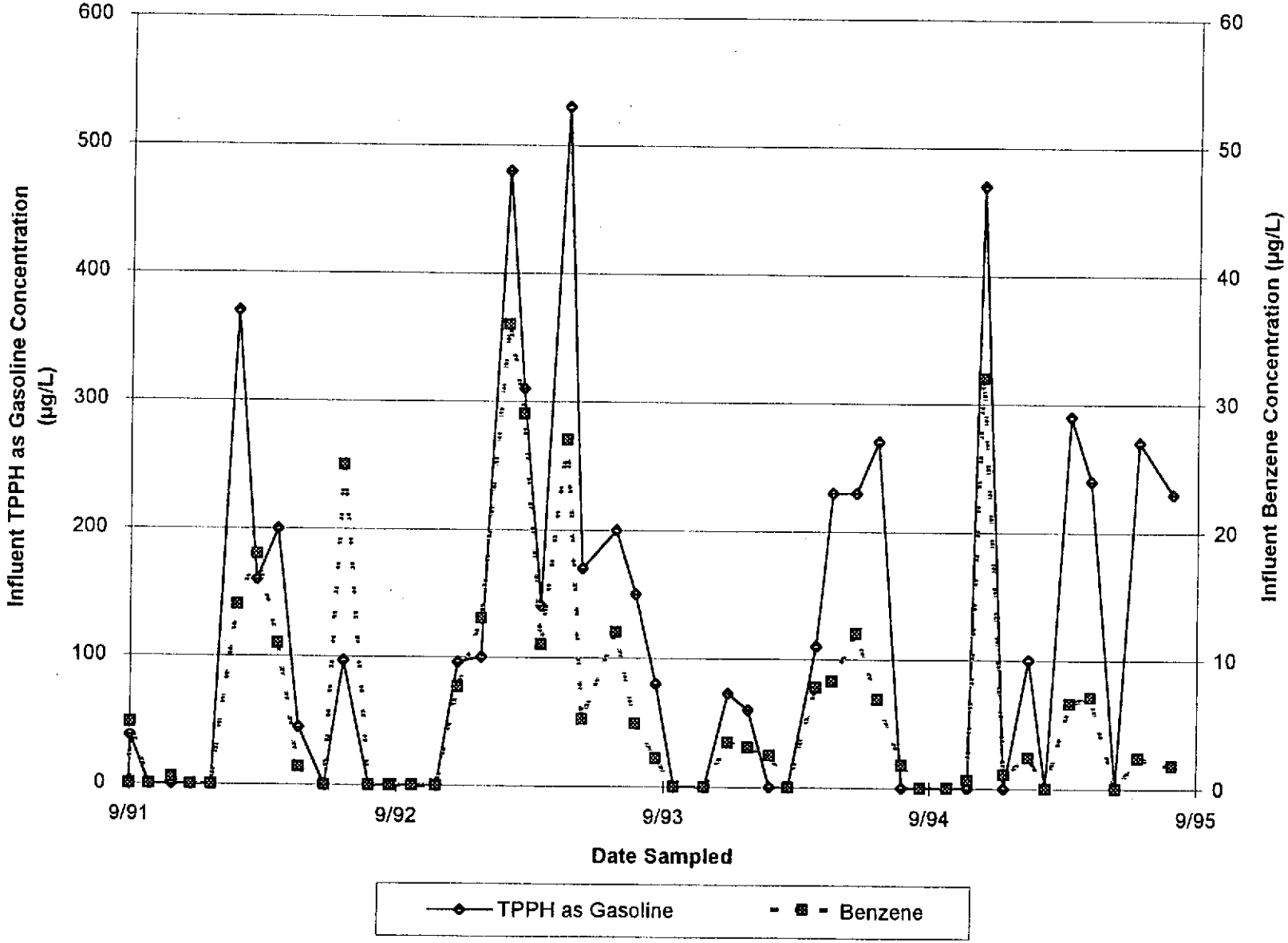


Figure C-A-2
Groundwater Extraction System Concentration Trend

ARCO Service Station 0608
17601 Hesperian Boulevard at Hacienda Avenue
San Lorenzo, California



ATTACHMENT C-B

INTRINSIC BIOREMEDIATION INDICATOR PARAMETER FIELD DATA SHEETS, CERTIFIED ANALYTICAL REPORTS, AND CHAIN-OF-CUSTODY DOCUMENTATION

[redacted] Quarter Intrinsic Groundwater Bioremediation Enhancement Program Monitoring Schedule
ARCO Service Station 0608
17601 Hesperian Blvd.
San Lorenzo, 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-g/ BTEX
633H	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y
MW-8	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y
MW-23	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y
MW-10 ~~SP-1~~	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y
~~SP-2~~	~~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
BTEX = Benzene, toluene, ethylbenzene, xylenes
Y/N = Monitor/Don't Monitor

***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.*

Sampling Device bailer
Purging Device pump 1

Time Started 1600
Time Completed 1610

Well MW-8	*D.O. AMPOULE (mg/L)	*D.O. PROBE (mg/L)	HYDROGEN SULFIDE (mg/L)	FERROUS IRON (mg/L)
	<1	.35	—	@.9

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

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

ORP = 32

CHECK LAB SAMPLES COLLECTED

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

Sampling Device bailer
Purging Device pump 1

Time Started @ 1508
Time Completed 1515

Well MW-23	*D.O. AMPOULE (mg/L)	*D.O. PROBE (mg/L)	HYDROGEN SULFIDE (mg/L)	FERROUS IRON (mg/L)
	@1.5	1.47	—	~~0~~

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

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

ORP = 138

CHECK LAB SAMPLES COLLECTED

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

Sampling Device ____
Purging Device ____

Time Started ____
Time Completed ____

Well ~~MW-8~~	*D.O. AMPOULE (mg/L)	*D.O. PROBE (mg/L)	HYDROGEN SULFIDE (mg/L)	FERROUS IRON (mg/L)

*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
Purging Device pump 1

Time Started 1633
Time Completed 1638

Well ~~MW-18~~	*D.O. AMPOULE (mg/L)	*D.O. PROBE (mg/L)	HYDROGEN SULFIDE (mg/L)	FERROUS IRON (mg/L)
	@1.5	2.11	—	1.2

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

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

ORP = -060

CHECK LAB SAMPLES COLLECTED

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

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MAY 15 1997
PACIFIC ENVIRONMENTAL GROUP, INC.

274

FIELD SERVICES REQUEST

SITE INFORMATION FORM

Identification

Project # 330-006.5d
Station ID #0608
Site Address: 17601 Hesperian Blvd, Oakland
Lab: Sequoia 1928100
County:
Project Manager: Shaw Garakani
Requester: David S. Nanstad
Client: ARCO
Client P.O.C: MIKE WHELAN
Date of Request: May 9, 1997

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: asap

Check Appropriate Category

X In Budget Site Visit
☐ Out of Budget Site Visit

Budget Hours: 3
Actual Hours: 3 2
Mob de Mob: 1.5

Site Safety Concerns

STANDARD

Field Tasks General Description

OBJECTIVE: Remove the ORC's from wells MW-10, E1-A and MW-5.

Place the removed ORC's in a bucket and leave on-site in the enclosure to dry out.

They are to be disposed of during the next quarterly event.

Obtain DTW measurements, DO and Ferrouse Iron measurements in each of the wells upon removing the ORC's.

Use both the DO ampoules and the in-situ probe for DO measurements.

Comments, remarks from field staff Removed ORCs from wells measure DTW checked DO with ampoules & with meter, checked Fe placed old ORCs in treatment compound.

Temp 23.8 DO Cal 8.44 DO value - 8.44

WELL E-1A

DISSOLVED OXYGEN (mg/L), **HYDROGEN SULFIDE and FERROUS IRON**

		D.O. (ampoule/probe)	Hydrogen Sulfide	Ferrous Iron	ORC's installed?
2' From top	Allow 2 minute minimum stabilization time	8.5 / 8.65	NA	5.5	ND

DTW TOC 2.90'

Removed 10 ORCs (4")

Completed By: Don Hunteyer Date: 5/14/97

Pacific Environmental Group, Inc.

PROBE & CORD RINSED?	yes
DO READING STABILIZED?	yes

WELL MW-5

DISSOLVED OXYGEN (mg/L), **HYDROGEN SULFIDE and FERROUS IRON**

DTW TOC 12.28

		D.O. (ampoule/probe)	Hydrogen Sulfide	Ferrous Iron	ORC's installed?
2' From top	Allow 2 minute minimum stabilization time	10 / 10.23	NA	2.8	NO
PROBE & CORD RINSED?		yes			
DO READING STABILIZED?		yes			

Removed 4 ORC (4")
*Bailer & O_2 probe would only go in ± 2FT
Possibly ORC's stuck in well

WELL MW-10

DISSOLVED OXYGEN (mg/L), **HYDROGEN SULFIDE and FERROUS IRON**

TW TOC 9.80

		D.O. (ampoule/probe)	Hydrogen Sulfide	Ferrous Iron	ORC's installed
2' From top	Allow 2 minute minimum stabilization time	12+ / 12.37	NA	1.4	NO
PROBE & CORD RINSED?		yes			
DO READING STABILIZED?		yes			

Removed 10 (2") ORCs

Completed By:_____ Date:_____

306

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JUN 24 1997
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FIELD SERVICES REQUEST

SITE INFORMATION FORM

Identification

ject # 330-006.5D
tation ID #0608
Address: 17601 Hesperian Blvd. Oakland
ab: Sequoia 21245
nty:
roject Manager: Shaw Garakani
uester: Shaw Garakani
nt: ARCO
lient P.O.C: MIKE WHELAN
e of Request: June 11, 1997

Project Type

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

ARRIVED=11:00
DEPART=~~14:00~~ 15:00

Ideal field date: **ASAP**

Check Appropriate Category

X In Budget Site Visit
☐ Out of Budget Site Visit

Budget Hours: 4
Actual Hours: 4.5
Mob de Mob:

Site Safety Concerns

STANDARD

Field Tasks General Description

OBJECTIVE: Remove the stuck ORC from well MW-5.

1) Purchase a variety of heavy duty hooks and strong chain (1500lb).

2) Snag a grommet on the ORC and attempt to remove the ORC using your truck winch.

It may help to vacuum out the water above the ORC so you can see the grommets (that is if the ORC's are acting like plugs from the water below.) If this works you may try injecting soap around the ORC before pulling.

3) Call shaw or myself before leaving site.

Comments, remarks from field staff

PURCHASED CHAIN/HOOKS/SOAP PRIOR TO SITE VISIT, COULD NOT HOOK ORC'S, THEY ARE SITTING @ 14', PURCHASED LARGE FISHING HOOK AND STILL COULD NOT GET GOOD GRAB, AFTER THREE TRIPS TO HARDWARE SITE AND ONE TRIP TO SPORTING GOODS AND NOT ABLE TO RECOVER ORS USED A 20' PIECE OF 1½" GALV. PIPE TO TRY AND PUSH THEM DOWN WELL, THEY WOULD NOT MOVE.

Dissolved Oxygen Meter Checklist and Data Sheet

PART A: WELL DATA MATERIALS

CALLED SHAW TWICE @ 13:00, HAD TO LEAVE MESSAGE,

TOO

LE WITH SHAW AND DECIDED TO TRY SMALL RIGID ROD TO ~~GET~~ ~~BOT~~ FEEL FOR SIZE OF ORC'S (FEELS LIKE WHOLE CASING IS PLUGGED WITH 4" ORC'S)

mpleted By: MG Date: 6/23/97

FIELD SERVICES / O&M REQUEST

Work Order # 5469

SITE INFORMATION FORM

Identification

Project # 330-006.5C

Station # 0608

Site Address: 17671 HESPERIAN BLVD. (E. HAYWARD AVE), SAN LORENZO

County: ALAMEDA

Project Manager: SHAWN G

Requestor: SUZANNE M.

Client: ARCO

Project Type

- [ ] 1st Time Visit
- [ ] Quarterly
  - [ ] 1st [ ] 2nd [ ] 3rd [ ] 4th
- [ ] Monthly
- [ ] Semi-Monthly
- [ ] Weekly
- [x] One time event
- [ ] Other: _____

Client P.O.C.: MIKE WHELAN

Date of Request 3/25/96

Ideal field date(s): NEXT SITE VISIT

Check Appropriate Category

Budget Hrs. C

Actual Hrs. _____

Mob de Mob _____

Field Tasks: For General Description

circle one:

Priority: 1. (emergency, must be done within 24 hrs); (2. (next visit)); 3. (when available)

PLEASE PLACE ATTACHED COPY OF THE DISCHARGE PERMIT ON SITE DURING YOUR NEXT SITE VISIT.

Comments, remarks, etc. from Field Staff (include problems encountered and out-of-scope work)

- [ ] Samples taken [ ] Samples not required [ ] Soil Vapor [ ] Groundwater
- [ ] Weekly [ ] Semi-Monthly [ ] Monthly [ ] Quarterly [ ] Semi-Annual

PACIFIC ENVIRONMENTAL GROUP, INC.

Completed by: _____ Date: _____

Checked by: _____

White Copy - Originator

Yellow Copy - O & M Tech

Pink Copy - File

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (650) 364-9600, FAX (650) 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: Gary Pestana

Client Proj. ID: 330-006.2K/0608, San Lorenzo

Lab Proj. ID: 9706E18

Sampled: 06/25/97
Received: 06/26/97
Analyzed: see below

Reported: 07/08/97

LABORATORY ANALYSIS

Analyte	Units	Date Analyzed	Detection Limit	Sample Results
Lab No: 9706E18-02				
Sample Desc : LIQUID,MW-23				
Alkalinity: Total	**mg CaCO3/L**	**07/07/97**	**2.0**	**420**
Carbon Dioxide	**mg/L**	**07/07/97**	**10**	**440**
#1271 Methane	%	06/28/97	0.020	N.D.
Nitrate as Nitrate	**mg/L**	**06/28/97**	**1.0**	**38**
Sulfate	**mg/L**	**06/28/97**	**1.0**	**82**
Lab No: 9706E18-03				
Sample Desc : LIQUID,MW-10				
Alkalinity: Total	**mg CaCO3/L**	**07/07/97**	**2.0**	**490**
Carbon Dioxide	**mg/L**	**07/07/97**	**10**	**520**
#1271 **Methane**	**%**	**06/28/97**	**0.020**	**0.26**
Nitrate as Nitrate	mg/L	06/28/97	1.0	N.D.
Sulfate	mg/L	06/28/97	1.0	N.D.
Lab No: 9706E18-04				
Sample Desc : LIQUID,MW-8				
Alkalinity: Total	**mg CaCO3/L**	**07/07/97**	**2.0**	**440**
Carbon Dioxide	**mg/L**	**07/07/97**	**10**	**470**
#1271 Methane	%	06/28/97	0.020	N.D.
Nitrate as Nitrate	mg/L	06/28/97	1.0	N.D.
Sulfate	**mg/L**	**06/28/97**	**1.0**	**18**

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

SEQUOIA ANALYTICAL - ELAP #1210

Tod Granicher
Project Manager