

**EMCON**

1921 Ringwood Avenue • San Jose, California 95131-1721 • (408) 453-7300 • Fax (408) 437-9526

Date APR March 31, 1998Project 20805-121.005

To:

Mr. Scott Seery
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harborbay Parkway, Suite 250
Alameda, California 94502

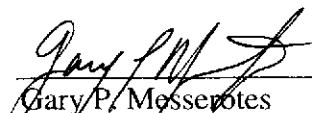
We are enclosing:

Copies	Description
<u>1</u>	<u>Fourth quarter 1997 groundwater monitoring results report,</u> <u>ARCO service station 601, San Leandro, California</u>
<u>1</u>	<u>John Sullivan letter</u>

For your:	<u>X</u>	Use	Sent by:	<u>X</u>	Regular Mail
		Approval			Standard Air
		Review			Courier
		Information			Other: <u>Cert. Mail</u>

Comments:

The enclosed groundwater monitoring report is being sent to you per the request of ARCO Products Company. Please call if you have questions or comments.



Gary P. Messerotes
Project Manager

cc: Mike Bakaldin, SLFD
Paul Supple, ARCO Products Company
File





Date:

March 31, 1998

Re: ARCO Station #

601 • 712 Lewelling Boulevard • San Leandro, CA
Fourth Quarter 1997 Groundwater Monitoring Results

"I declare, that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached proposal or report are true and correct."

Submitted by:

A handwritten signature in black ink, appearing to read "Paul Supple". The signature is written in a cursive, flowing style.

Paul Supple
Environmental Engineer



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1921 Ringwood Avenue • San Jose, California 95131-1721 • (408) 453-7300 • Fax (408) 437-9526

March 13, 1998
Project 20805-121.005

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

Re: Fourth quarter 1997 groundwater monitoring results, ARCO service station 601,
San Leandro, California

Dear Mr. Supple:

This letter presents the results of the fourth quarter 1997 groundwater monitoring program at ARCO Products Company (ARCO) service station 601, 712 Lewelling Boulevard, San Leandro, California (Figure 1). The quarterly monitoring program complies with Alameda County Health Care Services Agency (ACHCSA) requirements regarding underground tank investigations.

LIMITATIONS

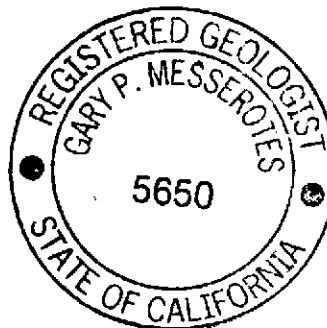
No monitoring event is thorough enough to describe all geologic and hydrogeologic conditions of interest at a given site. If conditions have not been identified during the monitoring event, results should not be construed as a guarantee of the absence of such conditions at the site, but rather as the product of the scope and limitations of work performed during the monitoring event.

Please call if you have questions.

Sincerely,

EMCON

Gary P. Messerotes, R.G. 5650
Project Manager



EMCON



ARCO QUARTERLY REPORT

Station No.: 601 Address: 712 Lewelling Boulevard, San Leandro, California
 EMCON Project No. 20805-121.005
 ARCO Environmental Engineer/Phone No.: Paul Supple /(510) 299-8891
 EMCON Project Manager/Phone No.: Gary P. Messerotes /(408) 453-7300
 Primary Agency/Regulatory ID No.: ACHCSA /Scott Seery

WORK PERFORMED THIS QUARTER (Fourth- 1997):

1. Prepared and submitted quarterly groundwater monitoring report for third quarter 1997.
2. Performed quarterly groundwater monitoring and sampling for fourth quarter 1997.
3. Stimulated natural biodegradation with oxygen releasing compounds (ORCs) in groundwater monitoring well MW-8.

WORK PROPOSED FOR NEXT QUARTER (First- 1998):

1. Prepare and submit quarterly groundwater monitoring report for fourth quarter 1997.
2. Perform quarterly groundwater monitoring and sampling for first quarter 1998.
3. Continue to monitor dissolved oxygen in groundwater monitoring wells MW-2, MW-3, MW-5, and MW-8.
4. Evaluate potential off-site plume migration.

QUARTERLY MONITORING:

Current Phase of Project: Quarterly Groundwater Monitoring
 Frequency of Sampling: Quarterly (groundwater)
 Frequency of Monitoring: Quarterly (groundwater)
 Is Floating Product (FP) Present On-site: ☐ Yes ☒ No
 Cumulative FP Recovered to Date : 3.45 gallons, Well MW-1
 FP Recovered This Quarter : None
 Bulk Soil Removed to Date : 1,565 cubic yards of TPH impacted soil
 Bulk Soil Removed This Quarter : None
 Water Wells or Surface Waters
 within 2000 ft., impacted by site: None
 Current Remediation Techniques: Enhanced bioremediation
 Average Depth to Groundwater: 7.93 feet
 Groundwater Gradient (Average): 0.016 ft/ft toward southeast (consistent with past events)

ATTACHED:

- Table 1 - Groundwater Monitoring Data, Fourth Quarter 1997
- Table 2 - Historical Groundwater Elevation and Analytical Data, Petroleum Hydrocarbons and Their Constituents
- Table 3 - Historical Groundwater Analytical Data, Metals
- Table 4 - Historical Groundwater Analytical Data, Volatile and Semivolatile Organic Compounds
- Table 5 - Approximate Cumulative Floating Product Recovered, Monitoring Well MW-1
- Figure 1 - Site Location
- Figure 2 - Site Plan

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- Figure 3 - Groundwater Data, Fourth Quarter 1997
- Appendix A - Analytical Results and Chain of Custody Documentation, Fourth Quarter 1997
Groundwater Monitoring Event

cc: Scott Seery, ACHCSA
Mike Bakaldin, SLFD

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Table 1
Groundwater Monitoring Data
Fourth Quarter 1997

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 03-09-98

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TRPH EPA 418.1	TPHD LUFT Method		
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
MW-1	11-19-97	19.19	8.54	10.65	ND	SE	0.016	11-19-97	250000	4400	<500^	3800	9900	<3000^	--	--	--		
MW-2	11-19-97	21.12	7.70	13.42	ND	SE	0.016	11-19-97	Not sampled: well sampled annually, during the first quarter									--	--
MW-3	11-19-97	22.99	7.15	15.84	ND	SE	0.016	11-19-97	93000	1700	2400	2800	16000	<600^	--	--	--		
MW-4	11-19-97	22.38	7.67	14.71	ND	SE	0.016	11-19-97	3700*	600	93	120	710	<60^	--	--	--		
MW-5	11-19-97	22.45	7.63	14.82	ND	SE	0.016	11-19-97	22000	5800	1300	380	1300	<300^	--	--	--		
MW-6	11-19-97	22.77	--	--	ND	SE	0.016	11-19-97	Not sampled: well is dry									--	--
MW-7	11-19-97	22.89	--	--	ND	SE	0.016	11-19-97	Not sampled: well is dry									--	--
MW-8	11-19-97	20.89	7.52	13.37	ND	SE	0.016	11-19-97	<200^	<2^	<2^	<2^	<2^	260	--	--	--		
MW-9	11-19-97	22.26	7.93	14.33	ND	SE	0.016	11-19-97	Not sampled: well sampled semi-annually, during the first and third quarters									--	--
MW-10	11-19-97	21.33	7.92	13.41	ND	SE	0.016	11-19-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-11	11-19-97	20.97	8.71	12.26	ND	SE	0.016	11-19-97	Not sampled: well sampled annually, during the first quarter									--	--
MW-12	11-19-97	20.11	9.10	11.01	ND	SE	0.016	11-19-97	Not sampled: well sampled annually, during the first quarter									--	--
MW-13	11-19-97	20.75	8.47	12.28	ND	SE	0.016	11-19-97	Not sampled: well sampled annually, during the first quarter									--	--
MW-14	11-19-97	20.90	9.70	11.20	ND	SE	0.016	11-19-97	<50	1.7	<0.5	0.6	3	<3	--	--	--		
MW-15	11-19-97	22.08	5.85	16.23	ND	SE	0.016	11-19-97	Not sampled: well sampled semi-annually, during the first and third quarters									--	--

ft-MSL: elevation in feet, relative to mean sea level

MWN: ground-water flow direction and gradient apply to the entire monitoring well network

ft/ft: foot per foot

TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method

µg/L: micrograms per liter

EPA: United States Environmental Protection Agency

MTBE: Methyl tert-butyl ether

TRPH: total recoverable petroleum hydrocarbons

TPHD: total petroleum hydrocarbons as diesel, California DHS LUFT Method

SE: southeast

--: not analyzed or not applicable

ND: none detected

[^]: method reporting limit was raised due to: (1) high analyte concentration requiring sample dilution, or (2) matrix interference

*: Sample contains a higher boiling point hydrocarbon mixture quantitated as gasoline. The chromatogram did not match the typical gasoline fingerprint.

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 03-09-98

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-1	03-17-95	22.26	6.57	15.69	ND	WSW	0.006	03-17-95	120000	5300	370	1500	13000	--	--	48000	6200*
MW-1	06-01-95	22.26	7.87	14.39	ND	SW	0.003	06-01-95	250000	7100	950	3500	21000	--	--	38000	190000*
MW-1	08-31-95	22.26	8.12	** 14.15	0.01	SSW	0.005	08-31-95	Not sampled: well contained floating product								
MW-1	11-27-95	22.26	8.42	13.84	Sheen	SSW	0.004	11-27-95	310000	4600	770	5700	21000	--	--	--	--
MW-1	02-22-96	22.26	6.01	** 16.26	0.01	NW	0.007	03-14-96	100000	6200	320	2500	12000	<1000*	--	--	--
MW-1	05-20-96	22.26	7.03	15.23	ND	SW	0.007	05-21-96	340000	6600	240	4500	22000	<1000^	--	150	<2500*
MW-1	08-26-96	22.26	8.16	14.10	ND	SSW	0.004	08-26-96	210000	7900	320	3400	15000	<1000^	--	--	--
MW-1	11-20-96	22.26	7.84	14.42	ND	SSE	0.004	11-20-96	62000	5900	77	2000	7700	<300^	--	--	--
MW-1	03-24-97	19.19	8.05	11.14	ND	SE	0.013	03-24-97	170000	6500	<200^	2400	9900	<1000^	--	--	--
MW-1	05-23-97	19.19	8.42	10.77	ND	SE	0.014	05-23-97	83000	6200	84	2500	9000	<300^	--	--	--
MW-1	08-19-97	19.19	8.65	10.54	ND	SE	0.04	08-19-97	83000	4500	<100^	2200	8100	<600^	--	--	--
MW-1	11-19-97	19.19	8.54	10.65	ND	SE	0.016	11-19-97	250000	4400	<500^	3800	9900	<3000^	--	--	--
MW-2	03-17-95	21.33	6.12	15.21	ND	WSW	0.006	03-17-95	10000	460	77	260	550	--	--	--	--
MW-2	06-01-95	21.33	6.56	14.77	ND	SW	0.003	06-01-95	13000	400	78	210	410	--	--	--	--
MW-2	08-31-95	21.33	7.18	14.15	ND	SSW	0.005	08-31-95	5000	280	18	120	140	<50^	--	--	--
MW-2	11-27-95	21.33	7.39	13.94	ND	SSW	0.004	11-27-95	3200	230	12	77	90	--	--	--	--
MW-2	02-22-96	21.33	5.78	15.55	ND	NW	0.007	03-14-96	11000	290	67	190	330	<50^	--	--	--
MW-2	05-20-96	21.33	6.27	15.06	ND	SW	0.007	05-21-96	Not sampled: well sampled annually, during the first quarter								
MW-2	08-26-96	21.33	7.30	14.03	ND	SSW	0.004	08-26-96	Not sampled: well sampled annually, during the first quarter								
MW-2	11-20-96	21.33	7.28	14.05	ND	SSE	0.004	11-20-96	Not sampled: well sampled annually, during the first quarter								
MW-2	03-24-97	21.12	7.11	14.01	ND	SE	0.013	03-24-97	4800	570	6	71	32	67	--	--	--
MW-2	05-23-97	21.12	7.44	13.68	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter								
MW-2	08-19-97	21.12	7.64	13.48	ND	SE	0.04	08-19-97	Not sampled: well sampled annually, during the first quarter								
MW-2	11-19-97	21.12	7.70	13.42	ND	SE	0.016	11-19-97	Not sampled: well sampled annually, during the first quarter								

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MW-3	03-17-95	20.11	5.46	14.65	ND	WSW	0.006	03-17-95	370000	4800	12000	5800	34000	--	--	--	--
MW-3	06-01-95	20.11	6.34	13.77	ND	SW	0.003	06-01-95	270000	6000	11000	5200	28000	--	--	--	--
MW-3	08-31-95	20.11	6.60	** 13.52	0.02	SSW	0.005	08-31-95	Not sampled: well contained floating product								
MW-3	11-27-95	20.11	6.76	** 13.36	0.01	SSW	0.004	11-27-95	150000	5100	8800	3900	21000	--	--	--	--
MW-3	02-22-96	20.11	5.14	** 14.98	0.01	NW	0.007	03-14-96	150000	4400	7600	4100	22000	<3000^	--	--	--
MW-3	05-20-96	20.11	5.17	14.94	ND	SW	0.007	05-21-96	410000	4700	8000	6300	36000	<3000^	--	--	--
MW-3	08-26-96	20.11	7.04	13.07	ND	SSW	0.004	08-26-96	260000	4000	6100	4200	24000	<2000^	--	--	--
MW-3	11-20-96	20.11	6.26	13.85	ND	SSE	0.004	11-20-96	190000	3200	5800	3300	20000	<1000^	--	--	--
MW-3	03-24-97	22.99	6.94	16.05	ND	SE	0.013	03-24-97	430000	2700	7600	7000	39000	<5000^	--	--	--
MW-3	05-23-97	22.99	6.98	16.01	ND	SE	0.014	05-23-97	130000	2100	4300	3500	19000	<700^	--	--	--
MW-3	08-19-97	22.99	7.25	15.74	ND	SE	0.04	08-19-97	100000	2000	3200	<100^	19000	<600^	--	--	--
MW-3	11-19-97	22.99	7.15	15.84	ND	SE	0.016	11-19-97	93000	1700	2400	2800	16000	<600^	--	--	--
MW-4	03-17-95	20.75	6.65	14.10	ND	WSW	0.006	03-17-95	16000	1800	970	310	2500	--	--	--	--
MW-4	06-01-95	20.75	7.25	13.50	ND	SW	0.003	06-01-95	16000	2800	870	380	2700	--	--	--	--
MW-4	08-31-95	20.75	7.75	13.00	ND	SSW	0.005	08-31-95	9000	2000	270	270	1400	<100^	--	--	--
MW-4	11-27-95	20.75	7.87	12.88	ND	SSW	0.004	11-27-95	3800	890	130	130	550	--	--	--	--
MW-4	02-22-96	20.75	7.29	13.46	ND	NW	0.007	03-14-96	940	150	82	19	130	<20^	--	--	--
MW-4	05-20-96	20.75	7.30	13.45	ND	SW	0.007	05-21-96	6700	1100	330	120	1100	<100^	--	--	--
MW-4	08-26-96	20.75	7.57	13.18	ND	SSW	0.004	08-26-96	14000	2400	510	350	2100	<100^	--	--	--
MW-4	11-20-96	20.75	7.89	12.86	ND	SSE	0.004	11-20-96	420	55	17	11	62	<3	--	--	--
MW-4	03-24-97	22.38	6.90	15.48	ND	SE	0.013	03-24-97	6800	620	150	81	1300	<50^	--	--	--
MW-4	05-23-97	22.38	7.80	14.58	ND	SE	0.014	05-23-97	9000	1300	240	200	1600	<60^	--	--	--
MW-4	08-19-97	22.38	--	--	ND	SE	0.04	08-19-97	Not sampled: well is dry								
MW-4	11-19-97	22.38	7.67	14.71	ND	SE	0.016	11-19-97	3700*	600	93	120	710	<60^	--	--	--

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Date: 03-09-98

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MW-5	03-17-95	20.90	5.51	15.39	ND	WSW	0.006	03-17-95	48000	6400	2000	740	5100	--	--	--	--
MW-5	06-01-95	20.90	6.55	14.35	ND	SW	0.003	06-01-95	76000	11000	5400	1400	7700	--	--	--	--
MW-5	08-31-95	20.90	6.80	14.10	ND	SSW	0.005	08-31-95	53000	12000	1600	1000	6000	<500^	--	--	--
MW-5	11-27-95	20.90	7.13	13.77	ND	SSW	0.004	11-27-95	43000	7900	3300	950	4900	--	--	--	--
MW-5	02-22-96	20.90	5.12	15.78	ND	NW	0.007	03-14-96	52000	9100	3300	940	5000	<500^	--	--	--
MW-5	05-20-96	20.90	5.87	15.03	ND	SW	0.007	05-21-96	55000	9300	3800	1100	5400	<500^	--	--	--
MW-5	08-26-96	20.90	7.15	13.75	ND	SSW	0.004	08-26-96	47000	5300	2100	780	3200	<300^	--	--	--
MW-5	11-20-96	20.90	6.88	14.02	ND	SSE	0.004	11-20-96	53000	8700	5700	920	4400	<500^	--	--	--
MW-5	03-24-97	22.45	7.13	15.32	ND	SE	0.013	03-24-97	39000	8200	3200	720	3100	<500^	--	--	--
MW-5	05-23-97	22.45	7.42	15.03	ND	SE	0.014	05-23-97	29000	6600	1700	400	1500	<600^	--	--	--
MW-5	08-19-97	22.45	7.58	14.87	ND	SE	0.04	08-19-97	16000	4600	790	<50^	1300	<300^	--	--	--
MW-5	11-19-97	22.45	7.63	14.82	ND	SE	0.016	11-19-97	22000	5800	1300	380	1300	<300^	--	--	--
MW-6	03-17-95	22.08	6.66	15.42	ND	WSW	0.006	03-17-95	45000	9300	<100^	1900	3600	--	--	--	--
MW-6	06-01-95	22.08	7.60	14.48	ND	SW	0.003	06-01-95	23000	5600	<50^	1300	1900	--	--	--	--
MW-6	08-31-95	22.08	7.92	14.16	ND	SSW	0.005	08-31-95	26000	8000	<100^	1900	900	<500^	--	--	--
MW-6	11-27-95	22.08	8.21	13.87	ND	SSW	0.004	11-27-95	6700	1800	<20^	480	230	--	--	--	--
MW-6	02-22-96	22.08	6.21	15.87	ND	NW	0.007	03-14-96	17000	3100	69	810	1500	<300^	--	--	--
MW-6	05-20-96	22.08	7.07	15.01	ND	SW	0.007	05-21-96	16000	3700	<50^	1100	1100	<300^	--	--	--
MW-6	08-26-96	22.08	7.93	14.15	ND	SSW	0.004	08-26-96	23000	5800	<50^	2000	560	<300^	--	--	--
MW-6	11-20-96	22.08	8.02	14.06	ND	SSE	0.004	11-20-96	11000	3300	<50*	480	370	<300^	--	--	--
MW-6	03-24-97	22.77	7.95	14.82	ND	SE	0.013	03-24-97	9700	1900	<20^	800	270	<100^	--	--	--
MW-6	05-23-97	22.77	8.17	14.60	ND	SE	0.014	05-23-97	16000	4300	<50^	1400	180	<300^	--	--	--
MW-6	08-19-97	22.77	--	--	ND	SE	0.04	08-19-97	Not sampled: well is dry								
MW-6	11-19-97	22.77	--	--	ND	SE	0.016	11-19-97	Not sampled: well is dry								

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 601
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Date: 03-09-98

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-7	03-17-95	22.89	7.68	15.21	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-7	06-01-95	22.89	8.40	14.49	ND	SW	0.003	06-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-7	08-31-95	22.89	9.09	13.80	ND	SSW	0.005	08-31-95	<50	<0.5	<0.5	0.6	<0.5	<3	--	--	--
MW-7	11-27-95	22.89	9.15	13.74	ND	SSW	0.004	11-27-95	<50	<0.5	<0.5	0.9	<0.5	--	--	--	--
MW-7	02-22-96	22.89	7.44	15.45	ND	NW	0.007	03-14-96	110	1.4	<0.5	3.8	3	<3	--	--	--
MW-7	05-20-96	22.89	8.47	14.42	ND	SW	0.007	05-21-96	Not sampled: well sampled annually, during the first quarter								
MW-7	08-26-96	22.89	8.81	14.08	ND	SSW	0.004	08-26-96	Not sampled: well sampled annually, during the first quarter								
MW-7	11-20-96	22.89	9.17	13.72	ND	SSE	0.004	11-20-96	Not sampled: well sampled annually, during the first quarter								
MW-7	03-24-97	22.89	8.31	14.58	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-7	05-23-97	22.89	9.26	13.63	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter								
MW-7	08-19-97	22.89	--	--	ND	SE	0.04	08-19-97	Not sampled: well is dry								
MW-7	11-19-97	22.89	--	--	ND	SE	0.016	11-19-97	Not sampled: well is dry								
MW-8	03-17-95	20.97	6.14	14.83	ND	WSW	0.006	03-17-95	5400	<5 ^A	<5 ^A	35	<5 ^A	--	--	--	--
MW-8	06-01-95	20.97	6.50	14.47	ND	SW	0.003	06-01-95	2600	<2.5 ^A	<2.5 ^A	15	<2.5 ^A	--	--	--	--
MW-8	08-31-95	20.97	7.35	13.62	ND	SSW	0.005	08-31-95	1400	<3 ^A	<3 ^A	5	<3 ^A	520	--	900	--
MW-8	11-27-95	20.97	7.60	13.37	ND	SSW	0.004	11-27-95	620	<0.5	<0.5	<0.5	0.5	--	560	900	510*
MW-8	02-22-96	20.97	5.35	15.62	ND	NW	0.007	03-14-96	5800	<5 ^A	<5 ^A	28	<5 ^A	110	--	1900	6800*
MW-8	05-20-96	20.97	5.92	15.05	ND	SW	0.007	05-21-96	6100	<5 ^A	<5 ^A	26	<5 ^A	240	--	--	--
MW-8	08-26-96	20.97	7.08	13.89	ND	SSW	0.004	08-26-96	970	<1 ^A	<1 ^A	3	<1 ^A	710	--	--	--
MW-8	11-20-96	20.97	7.01	13.96	ND	SSE	0.004	11-20-96	3900	<2.5 ^A	<2.5 ^A	12	<2.5 ^A	930	--	--	--
MW-8	03-24-97	20.89	7.33	13.56	ND	SE	0.013	03-24-97	1400	<10 ^A	<10 ^A	<10 ^A	12	1300	--	--	--
MW-8	05-23-97	20.89	7.55	13.34	ND	SE	0.014	05-23-97	730	<5 ^A	<5 ^A	<5 ^A	<5 ^A	630	--	--	--
MW-8	08-19-97	20.89	7.87	13.02	ND	SE	0.04	08-19-97	<500 ^A	<5 ^A	<5 ^A	<5 ^A	<5 ^A	290	--	--	--
MW-8	11-19-97	20.89	7.52	13.37	ND	SE	0.016	11-19-97	<200 ^A	<2 ^A	<2 ^A	<2 ^A	<2 ^A	260	--	--	--

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 03-09-98

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L		
MW-9	03-17-95	20.89	6.94	13.95	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-9	06-01-95	20.89	8.15	12.74	ND	SW	0.003	06-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-9	08-31-95	20.89	8.10	12.79	ND	SSW	0.005	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-9	11-27-95	20.89	8.38	12.51	ND	SSW	0.004	11-27-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-9	02-22-96	20.89	7.36	13.53	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-9	05-20-96	20.89	7.81	13.08	ND	SW	0.007	05-21-96	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-9	08-26-96	20.89	8.00	12.89	ND	SSW	0.004	08-26-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-9	11-20-96	20.89	7.06	13.83	ND	SSE	0.004	11-20-96	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-9	03-24-97	22.26	7.74	14.52	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-9	05-23-97	22.26	8.28	13.98	ND	SE	0.014	05-23-97	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-9	08-19-97	22.26	8.32	13.94	ND	SE	0.04	08-19-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-9	11-19-97	22.26	7.93	14.33	ND	SE	0.016	11-19-97	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-10	03-17-95	21.12	6.26	14.86	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-10	06-01-95	21.12	7.63	13.49	ND	SW	0.003	06-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-10	08-31-95	21.12	8.17	12.95	ND	SSW	0.005	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-10	11-27-95	21.12	8.38	12.74	ND	SSW	0.004	11-27-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--		
MW-10	02-22-96	21.12	5.41	15.71	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-10	05-20-96	21.12	6.78	14.34	ND	SW	0.007	05-21-96	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-10	08-26-96	21.12	8.00	13.12	ND	SSW	0.004	08-26-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-10	11-20-96	21.12	7.81	13.31	ND	SSE	0.004	11-20-96	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-10	03-24-97	21.33	7.87	13.46	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-10	05-23-97	21.33	8.33	13.00	ND	SE	0.014	05-23-97	Not sampled: well sampled semi-annually, during the first and third quarters										
MW-10	08-19-97	21.33	8.39	12.94	ND	SE	0.04	08-19-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		
MW-10	11-19-97	21.33	7.92	13.41	ND	SE	0.016	11-19-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--		

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 03-09-98

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-11	03-17-95	22.38	6.94	15.44	ND	WSW	0.006	03-17-95	100	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-11	06-01-95	22.38	7.90	14.48	ND	SW	0.003	06-01-95	210	<0.5	<0.5	0.9	0.7	--	--	--	--
MW-11	08-31-95	22.38	8.18	14.20	ND	SSW	0.005	08-31-95	680	<0.5	<0.5	4	1.8	<3	--	--	--
MW-11	11-27-95	22.38	8.48	13.90	ND	SSW	0.004	11-27-95	340	<0.5	<0.5	2.2	1.6	--	--	--	--
MW-11	02-22-96	22.38	6.63	15.75	ND	NW	0.007	03-14-96	150	<0.5	<0.5	<0.8^	0.8	<3	--	--	--
MW-11	05-20-96	22.38	7.25	15.13	ND	SW	0.007	05-21-96	Not sampled: well sampled annually, during the first quarter								
MW-11	08-26-96	22.38	8.22	14.16	ND	SSW	0.004	08-26-96	Not sampled: well sampled annually, during the first quarter								
MW-11	11-20-96	22.38	8.37	14.01	ND	SSE	0.004	11-20-96	Not sampled: well sampled annually, during the first quarter								
MW-11	03-24-97	20.97	8.15	12.82	ND	SE	0.013	03-24-97	63	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-11	05-23-97	20.97	8.48	12.49	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter								
MW-11	08-19-97	20.97	8.67	12.30	ND	SE	0.04	08-19-97	Not sampled: well sampled annually, during the first quarter								
MW-11	11-19-97	20.97	8.71	12.26	ND	SE	0.016	11-19-97	Not sampled: well sampled annually, during the first quarter								
MW-12	03-17-95	22.77	7.09	15.68	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-12	06-01-95	22.77	8.40	14.37	ND	SW	0.003	06-01-95	Not sampled: well sampled semi-annually, during the first and third quarters								
MW-12	08-31-95	22.77	8.55	14.22	ND	SSW	0.005	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-12	11-27-95	22.77	8.95	13.82	ND	SSW	0.004	11-27-95	Not sampled: well sampled semi-annually, during the first and third quarters								
MW-12	02-22-96	22.77	6.81	15.96	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-12	05-20-96	22.77	7.56	15.21	ND	SW	0.007	05-21-96	Not sampled: well sampled annually, during the first quarter								
MW-12	08-26-96	22.77	8.63	14.14	ND	SSW	0.004	08-26-96	Not sampled: well sampled annually, during the first quarter								
MW-12	11-20-96	22.77	8.38	14.39	ND	SSE	0.004	11-20-96	Not sampled: well sampled annually, during the first quarter								
MW-12	03-24-97	20.11	8.75	11.36	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-12	05-23-97	20.11	8.92	11.19	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter								
MW-12	08-19-97	20.11	9.20	10.91	ND	SE	0.04	08-19-97	Not sampled: well sampled annually, during the first quarter								
MW-12	11-19-97	20.11	9.10	11.01	ND	SE	0.016	11-19-97	Not sampled: well sampled annually, during the first quarter								

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 03-09-98

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L				
MW-13	03-17-95	22.45	6.91	15.54	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--				
MW-13	06-01-95	22.45	7.72	14.73	ND	SW	0.003	06-01-95	Not sampled: well sampled annually, during the first quarter												
MW-13	08-31-95	22.45	7.58	14.87	ND	SSW	0.005	08-31-95	Not sampled: well sampled annually, during the first quarter												
MW-13	11-27-95	22.45	7.98	14.47	ND	SSW	0.004	11-27-95	Not sampled: well sampled annually, during the first quarter												
MW-13	02-22-96	22.45	6.71	15.74	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--				
MW-13	05-20-96	22.45	6.98	15.47	ND	SW	0.007	05-21-96	Not sampled: well sampled annually, during the first quarter												
MW-13	08-26-96	22.45	7.85	14.60	ND	SSW	0.004	08-26-96	Not sampled: well sampled annually, during the first quarter												
MW-13	11-20-96	22.45	7.76	14.69	ND	SSE	0.004	11-20-96	Not sampled: well sampled annually, during the first quarter												
MW-13	03-24-97	20.75	7.85	12.90	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--				
MW-13	05-23-97	20.75	8.16	12.59	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter												
MW-13	08-19-97	20.75	8.40	12.35	ND	SE	0.04	08-19-97	Not sampled: well sampled annually, during the first quarter												
MW-13	11-19-97	20.75	8.47	12.28	ND	SE	0.016	11-19-97	Not sampled: well sampled annually, during the first quarter												
MW-14	03-17-95	22.99	8.17	14.82	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--				
MW-14	06-01-95	22.99	8.57	14.42	ND	SW	0.003	06-01-95	Not sampled: well sampled annually, during the first quarter												
MW-14	08-31-95	22.99	9.05	13.94	ND	SSW	0.005	08-31-95	Not sampled: well sampled annually, during the first quarter												
MW-14	11-27-95	22.99	9.19	13.80	ND	SSW	0.004	11-27-95	Not sampled: well sampled annually, during the first quarter												
MW-14	02-22-96	22.99	6.52	16.47	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--				
MW-14	05-20-96	22.99	7.88	15.11	ND	SW	0.007	05-21-96	Not sampled: well sampled annually, during the first quarter												
MW-14	08-26-96	22.99	8.83	14.16	ND	SSW	0.004	08-26-96	Not sampled: well sampled annually, during the first quarter												
MW-14	11-20-96	22.99	8.95	14.04	ND	SSE	0.004	11-20-96	Not sampled: well sampled annually, during the first quarter												
MW-14	03-24-97	20.90	8.98	11.92	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--				
MW-14	05-23-97	20.90	9.61	11.29	ND	SE	0.014	05-23-97	Not sampled: well sampled annually, during the first quarter												
MW-14	08-19-97	20.90	9.80	11.10	ND	SE	0.04	08-19-97	Not sampled: well sampled annually, during the first quarter												
MW-14	11-19-97	20.90	9.70	11.20	ND	SE	0.016	11-19-97	<50	1.7	<0.5	0.6	3	<3							

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Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 03-09-98

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-15	03-17-95	19.19	5.21	13.98	ND	WSW	0.006	03-17-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-15	06-01-95	19.19	5.84	13.35	ND	SW	0.003	06-01-95	Not sampled: well sampled semi-annually, during the first and third quarters								
MW-15	08-31-95	19.19	6.18	13.01	ND	SSW	0.005	08-31-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-15	11-27-95	19.19	6.42	12.77	ND	SSW	0.004	11-27-95	Not sampled: well sampled semi-annually, during the first and third quarters								
MW-15	02-22-96	19.19	4.84	14.35	ND	NW	0.007	03-14-96	<50	<0.5	<0.5	<0.5	<0.5	12	--	--	--
MW-15	05-20-96	19.19	5.31	13.88	ND	SW	0.007	05-21-96	Not sampled: well sampled semi-annually, during the first and third quarters								
MW-15	08-26-96	19.19	6.05	13.14	ND	SSW	0.004	08-26-96	<50	<0.5	<0.5	<0.5	<0.5	8	--	--	--
MW-15	11-20-96	19.19	5.46	13.73	ND	SSE	0.004	11-20-96	Not sampled: well sampled semi-annually, during the first and third quarters								
MW-15	03-24-97	22.08	6.00	16.08	ND	SE	0.013	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	15	--	--	--
MW-15	05-23-97	22.08	6.25	15.83	ND	SE	0.014	05-23-97	Not sampled: well sampled semi-annually, during the first and third quarters								
MW-15	08-19-97	22.08	6.34	15.74	ND	SE	0.04	08-19-97	99*	<0.5	<0.5	<0.5	0.7	6	--	--	--
MW-15	11-19-97	22.08	5.85	16.23	ND	SE	0.016	11-19-97	Not sampled: well sampled semi-annually, during the first and third quarters								

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 03-09-98

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TRPH EPA 418.1	TPHD LUFT Method
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L

ft-MSL: elevation in feet, relative to mean sea level

MWN: ground-water flow direction and gradient apply to the entire monitoring well network

ft/ft: foot per foot

TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method

µg/L: micrograms per liter

EPA: United States Environmental Protection Agency

MTBE: Methyl tert-butyl ether

TRPH: total recoverable petroleum hydrocarbons

TPHD: total petroleum hydrocarbons as diesel, California DHS LUFT Method

ND: none detected

SE: southeast

- : not analyzed or not applicable

^: method reporting limit was raised due to: (1) high analyte concentration requiring sample dilution, or (2) matrix interference

*: Sample contains a higher boiling point hydrocarbon mixture quantitated as gasoline. The chromatogram did not match the typical gasoline fingerprint.

**: (corrected elevation (Z')) = Z + (h * 0.73) where: Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water

***: For previous historical groundwater elevation and analytical data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 601, San Leandro, California*, (EMCON, March 14, 1996).

Table 3
Historical Groundwater Analytical Data
Metals*
1994 - Present**

ARCO Service Station 601

712 Lewelling Boulevard, San Leandro, California

Date: 01-19-98

Well Designation	Water Sample Field Date	Cadmium EPA 6010 µg/L	Chromium EPA 6010 µg/L	Lead EPA 7421 µg/L	Nickel EPA 6010 µg/L	Zinc EPA 6010 µg/L
MW-1	03-17-95	<5	20	20	<40	60
MW-1	06-01-95	<5	20	22	70	100
MW-1	08-31-95	Not sampled: well contained floating product				
MW-1	11-27-95	Not sampled: well contained floating product				
MW-1	03-14-96	Not sampled: well contained floating product				
MW-1	05-21-96	0.006	<0.01	<0.005	<0.02	<0.02
MW-1	08-26-96	--	--	--	--	--
MW-1	11-20-96	--	--	--	--	--
MW-1	03-24-97	--	--	--	--	--
MW-1	05-23-97	Not analyzed: well MW-8 was sampled for additional parameters in lieu of well MW-1				
MW-1	08-19-97	--	--	--	--	--
MW-1	11-19-97	--	--	--	--	--
MW-2	03-23-92	Not analyzed: sampling for additional parameters was discontinued				
MW-3	03-23-92	Not analyzed: sampling for additional parameters was discontinued				
MW-5	06-08-92	Not analyzed: sampling for additional parameters was discontinued				
MW-4	06-10-91	Not analyzed: sampling for additional parameters was discontinued				
MW-6	06-10-91	Not analyzed: sampling for additional parameters was discontinued				
MW-7	06-10-91	Not analyzed: sampling for additional parameters was discontinued				
MW-8	03-17-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8				
MW-8	06-01-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8				
MW-8	08-31-95	<5	40	16	50	90
MW-8	11-27-95	<5	130	77	170	280
MW-8	03-14-96	<5	30	7	40	60
MW-8	05-21-96	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8				
MW-8	08-26-96	--	--	--	--	--
MW-8	11-20-96	--	--	--	--	--
MW-8	03-24-97	--	--	--	--	--
MW-8	05-23-97	<0.005	<0.01	<0.005	<0.02	<0.02
MW-8	08-19-97	--	--	--	--	--
MW-9	06-11-93	Not analyzed: sampling for additional parameters was discontinued				
MW-10	06-11-93	Not analyzed: sampling for additional parameters was discontinued				
MW-11	11-16-92	Not analyzed: sampling for additional parameters was discontinued				
MW-12	11-16-92	Not analyzed: sampling for additional parameters was discontinued				
MW-13	11-16-92	Not analyzed: sampling for additional parameters was discontinued				
MW-14	09-15-92	Not analyzed: sampling for additional parameters was discontinued				
MW-15	05-13-93	Not analyzed: sampling for additional parameters was discontinued				

EPA: United States Environmental Protection Agency

µg/L: micrograms per liter

--: not analyzed

*: Historically samples were analyzed for total metals. Since March 14, 1996, the samples were filtered and analyzed for dissolved metals.

Table 3
Historical Groundwater Analytical Data
Metals*
1994 - Present**

ARCO Service Station 601

712 Lewelling Boulevard, San Leandro, California

Date: 01-19-98

Well Designation	Water Sample Field Date	Cadmium EPA 6010 µg/L	Chromium EPA 6010 µg/L	Lead EPA 7421 µg/L	Nickel EPA 6010 µg/L	Zinc EPA 6010 µg/L
**: For previous historical analytical data please refer to <i>Fourth Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 601, San Leandro, California</i> , (EMCON, March 14, 1996).						

Table 4
Historical Groundwater Analytical Data
Volatile and Semivolatile Organic Compounds
1995 - Present*

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 01-19-98

Well Designation	Water Sample Field Date	Volatile Organic Compounds by EPA Method 601/8010 or 624/8240							Semivolatile Organic Compounds by EPA Method 3520/8270				
		Methylene Chloride µg/L	1,2-Dichloroethane µg/L	1,1-Dichloroethane µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Total Xylenes µg/L	Naphthalene µg/L	2-Methylnaphthalene µg/L	Bis (2-ethylhexyl) Phthalate µg/L	Phenol µg/L	2,4-Di-methyl-phenol µg/L
MW-1	03-17-95	--	--	--	--	--	--	--	1300	730	<50	ND	150
MW-1	06-01-95	--	--	--	--	--	--	--	2200	1700	<100	240	<100
MW-1	08-31-95	Not sampled: well contained floating product											
MW-1	11-27-95	Not sampled: well contained floating product											
MW-1	03-14-96	Not sampled: well contained floating product											
MW-1	05-21-96	--	--	--	--	--	--	--	1200	860	<50	<50	<50
MW-1	08-26-96	--	--	--	--	--	--	--	2300	1800	<500	<500	<1000
MW-1	11-20-96	--	--	--	--	--	--	--	590	250	91	<50^	<100^
MW-1	03-24-97	--	--	--	--	--	--	--	730	610	<50^	<50^	<100^
MW-1	05-23-97	Not analyzed: well MW-8 was sampled for additional parameters in lieu of well MW-1											
MW-1	08-19-97	--	--	--	--	--	--	--	1300	790	<50^	<50^	<100^
MW-1	11-19-97	--	--	--	--	--	--	--	<5	<5	5	<5	<10
MW-8	03-17-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	06-01-95	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	08-31-95	--	--	--	--	--	--	--	62	8	<5	<5	<5
MW-8	11-27-95	--	--	--	--	--	--	--	15	<5	<5	<5	<5
MW-8	03-14-96	--	--	--	--	--	--	--	400	55	<50	<50	<50
MW-8	05-21-96	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	08-26-96	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	11-20-96	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	03-24-97	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	05-23-97	--	--	--	--	--	--	--	26	<5	<5	<5	<10
MW-8	08-19-97	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											
MW-8	11-19-97	Not analyzed: well MW-1 was sampled for additional parameters in lieu of well MW-8											

Table 4
Historical Groundwater Analytical Data
Volatile and Semivolatile Organic Compounds
1995 - Present*

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 01-19-98

Well Designation	Water Sample Field Date	Volatile Organic Compounds by EPA Method 601/8010 or 624/8240							Semivolatile Organic Compounds by EPA Method 3520/8270				
		Methylene Chloride µg/L	1,2-Dichloro- ethane µg/L	1,1-Dichloro- ethane µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Total Xylenes µg/L	Naphthalene µg/L	2-Methyl- naphthalene µg/L	Bis (2-ethylhexyl) Phthalate µg/L	Phenol µg/L	2,4-Di-methyl- phenol µg/L

EPA: United States Environmental Protection Agency

µg/L: micrograms per liter

--: not analyzed

^: method reporting limit was raised due to: (1) high analyte concentration requiring sample dilution, or (2) matrix interference

*: For previous historical analytical data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 601, San Leandro, California*, (EMCON, March 14, 1996).

** The sample was analyzed initially on 8/22/97, within the recommended holding time, and the surrogates were below normal CAS control limits.

The sample was reextracted on 9/2/97, 7 days past the recommended holding time, and the QA/QC results for reanalysis are within CAS acceptance criteria.

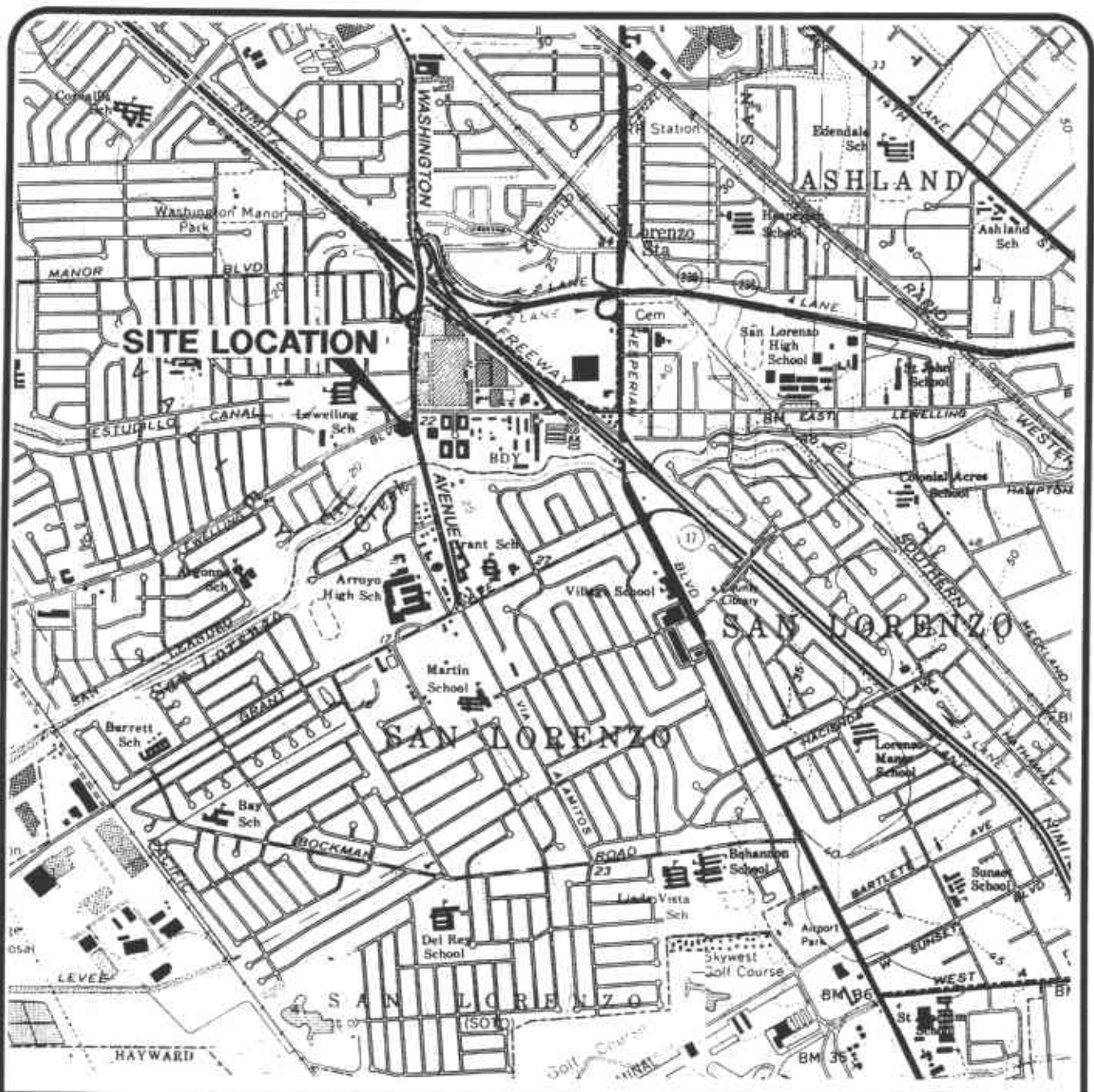
Table 5
Approximate Cumulative Floating Product Recovered

ARCO Service Station 601
712 Lewelling Boulevard, San Leandro, California

Date: 01-19-98

Well Desig- nation	Date	Floating Product Recovered gallons
MW-1	1991	3.43
MW-1	1992	0.02
MW-1	1993	0.00
MW-1	1994	0.00
MW-1	1995	0.00
MW-1	1996	0.00
MW-1	1997	0.00
1991 to 1997 Total:		3.45

EA-SANJOSE-CAD/DRAWINGS: I:\DZ002\SITELOC.dwg Xrefs: <NONE>
Scale: 1" = 1.00' Date: 3/12/97 Time: 5:19 PM Operator: KAJ

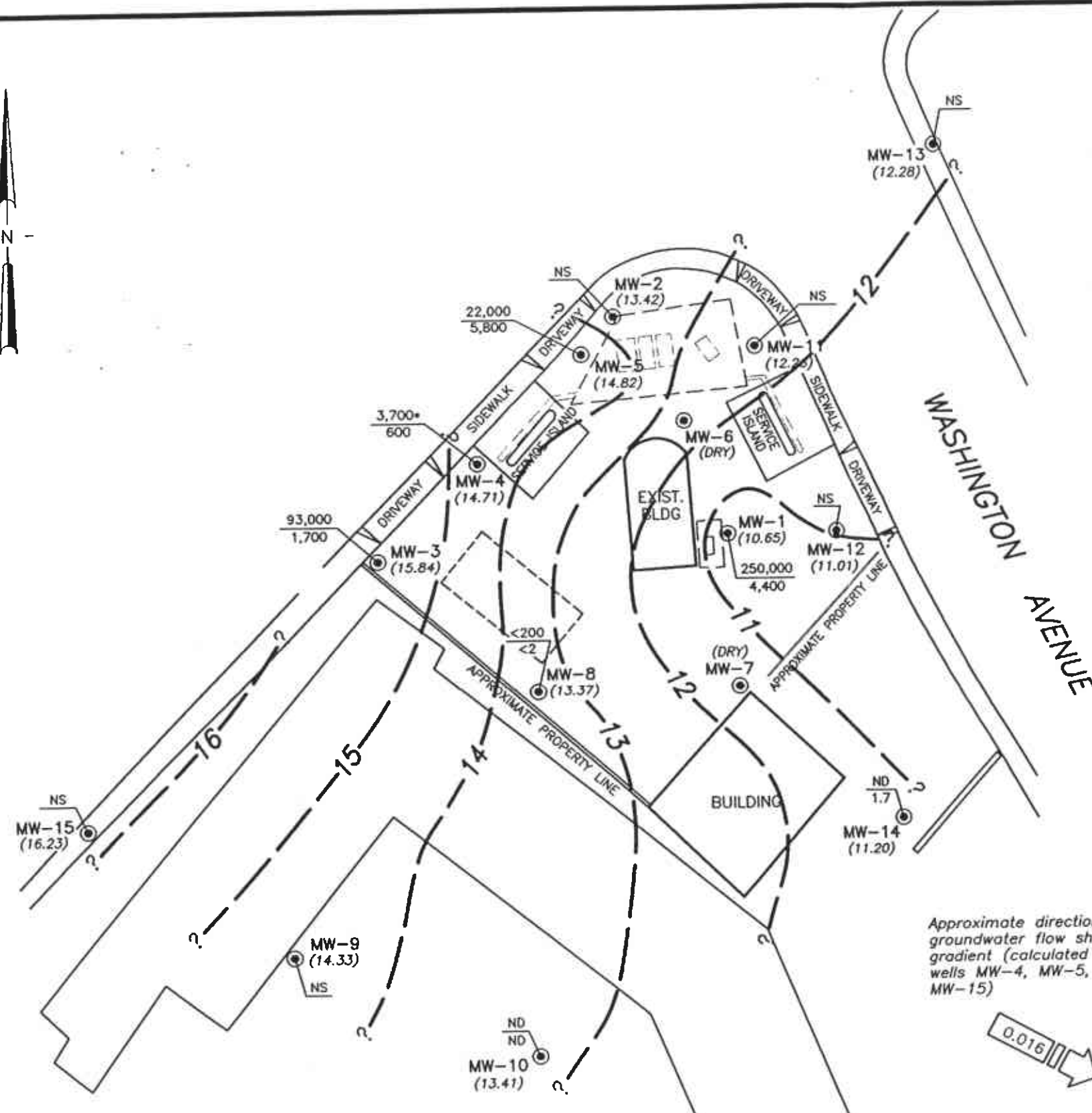


Base map from USGS 7.5' Quad. Maps:
Hayward and San Leandro, California.
Photorevised 1980.



DATE NOV. 1997
DWN KAJ
APP _____
REV _____
PROJECT NO.
805-121.005

FIGURE 1
ARCO PRODUCTS COMPANY
SERVICE STATION 601, 712 LEWELLING BLVD.
SAN LEANDRO, CALIFORNIA
**QUARTERLY GROUNDWATER MONITORING
SITE LOCATION**



0 50 100
 SCALE IN FEET
 (Approximate)

EXPLANATION

- Groundwater monitoring well
- Former underground gasoline storage tank
- Existing underground gasoline storage tank
- Approximate limit of gasoline tank excavation
- === Former product line
- (10.65) Groundwater elevation (Ft.-MSL) measured 11/19/97
- ?- Groundwater elevation contour (Ft.-MSL)
- 250,000 / 4,400 TPHG, concentration in groundwater (ug/L); sampled 11/19/97
- 250,000 / 4,400 Benzene concentration in groundwater (ug/L); sampled 11/19/97
- ND Not detected at or above the method reporting limit for TPHG (50 ug/L) or benzene (0.5 ug/L)
- NS Not sampled; not scheduled for chemical analysis
- < Raised method reporting limit due to high analyte concentration requiring sample dilution or matrix interference
- Sample contains a high-boiling-point hydrocarbon mixture quantitated as gasoline. The chromatogram does not match the typical gasoline footprint.

DATE MAR. 1998
 DWN KAJ
 APP
 REV
 PROJECT NO.
 805-121.005

FIGURE 2
 ARCO PRODUCTS COMPANY
 SERVICE STATION 601, 712 LEWELLING BLVD.
 SAN LEANDRO, CALIFORNIA
 QUARTERLY GROUNDWATER MONITORING
 GROUNDWATER DATA - 4TH QUARTER 1997

APPENDIX A

ANALYTICAL RESULTS AND CHAIN OF CUSTODY DOCUMENTATION, FOURTH QUARTER 1997 GROUNDWATER MONITORING EVENT



December 23, 1997

Service Request No.: S9702406

Gary Messerotes
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

RE: 20805-121.005/TO#21133.00/601 SAN LEANDRO

Dear Mr. Messerotes:

The following pages contain analytical results for sample(s) received by the laboratory on November 19, 1997. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. listed above. To help expedite our service, please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 20, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

Please feel welcome to contact me should you have questions or further needs.

Sincerely,

A handwritten signature in black ink, appearing to read "S. L. Green", written over a series of horizontal lines.

Steven L. Green
Project Chemist

A handwritten signature in black ink, appearing to read "Bernadette J. Cox for", written in a cursive style.

Greg Anderson
Regional QA Coordinator

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

A2LA	American Association for Laboratory Accreditation
ASTM	American Society for Testing and Materials
BOD	Biochemical Oxygen Demand
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAM	California Assessment Metals
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
COD	Chemical Oxygen Demand
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank sample
ICP	Inductively Coupled Plasma atomic emission spectrometry
ICV	Initial Calibration Verification sample
J	Estimated concentration. The value is less than the MRL, but greater than or equal to the MDL. If the value is equal to the MRL, the result is actually <MRL before rounding.
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified
MBAS	Methylene Blue Active Substances
MCL	Maximum Contaminant Level. The highest permissible concentration of a substance allowed in drinking water as established by the U. S. EPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl tert-Butyl Ether
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the paper industry for Air and Stream Improvement
ND	Not Detected at or above the method reporting/detection limit (MRL/MDL)
NIOSH	National Institute for Occupational Safety and Health
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	Standard Methods for the Examination of Water and Wastewater, 18th Ed., 1992
STLC	Solubility Threshold Limit Concentration
SW	Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., 1986 and as amended by Updates I, II, IIA, and IIB.
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
tr	Trace level. The concentration of an analyte that is less than the PQL but greater than or equal to the MDL. If the value is equal to the PQL, the result is actually <PQL before rounding.
TRPH	Total Recoverable Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)

ACRONLST.DOC 7/14/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702406
Date Collected: 11/19/97
Date Received: 11/19/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-14(12)
Lab Code: S9702406-001
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	11/26/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	11/26/97	1.7	
Toluene	EPA 5030	8020	0.5	1	NA	11/26/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	11/26/97	0.6	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	11/26/97	3.0	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	11/26/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702406
Date Collected: 11/19/97
Date Received: 11/19/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-4(8.5)
Lab Code: S9702406-002
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	20	NA	11/29/97	3700	G1
Benzene	EPA 5030	8020	0.5	20	NA	11/29/97	600	
Toluene	EPA 5030	8020	0.5	20	NA	11/29/97	93	
Ethylbenzene	EPA 5030	8020	0.5	20	NA	11/29/97	120	
Xylenes, Total	EPA 5030	8020	0.5	20	NA	11/29/97	710	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	20	NA	11/29/97	<60	C1

C1 The MRL was elevated due to high analyte concentration requiring sample dilution.
G1 The sample contained components eluting in the gasoline range quantitated as gasoline.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702406
Date Collected: 11/19/97
Date Received: 11/19/97

BTX, MTBE and TPH as Gasoline

Sample Name: MW-1(11)
Lab Code: S9702406-003
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1000	NA	11/29/97	250000	
Benzene	EPA 5030	8020	0.5	1000	NA	11/29/97	4400	
Toluene	EPA 5030	8020	0.5	1000	NA	11/29/97	<500	C1
Ethylbenzene	EPA 5030	8020	0.5	1000	NA	11/29/97	3800	
Xylenes, Total	EPA 5030	8020	0.5	1000	NA	11/29/97	9900	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1000	NA	11/29/97	<3000	C1

C1 The MRL was elevated due to high analyte concentration requiring sample dilution.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702406
Date Collected: 11/19/97
Date Received: 11/19/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-5(10)
Lab Code: S9702406-004
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	100	NA	11/29/97	22000	
Benzene	EPA 5030	8020	0.5	100	NA	11/29/97	5800	
Toluene	EPA 5030	8020	0.5	100	NA	11/29/97	1300	
Ethylbenzene	EPA 5030	8020	0.5	100	NA	11/29/97	380	
Xylenes, Total	EPA 5030	8020	0.5	100	NA	11/29/97	1300	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	100	NA	11/29/97	<300	C1

C1 The MRL was elevated due to high analyte concentration requiring sample dilution.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702406
Date Collected: 11/19/97
Date Received: 11/19/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-3(11)
Lab Code: S9702406-005
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	200	NA	11/29/97	93000	
Benzene	EPA 5030	8020	0.5	200	NA	11/29/97	1700	
Toluene	EPA 5030	8020	0.5	200	NA	11/29/97	2400	
Ethylbenzene	EPA 5030	8020	0.5	200	NA	11/29/97	2800	
Xylenes, Total	EPA 5030	8020	0.5	200	NA	11/29/97	16000	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	200	NA	11/29/97	<600	C1

C1 The MRL was elevated due to high analyte concentration requiring sample dilution.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702406
Date Collected: 11/19/97
Date Received: 11/19/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-8(10)
Lab Code: S9702406-006
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	4	NA	11/29/97	<200	C1
Benzene	EPA 5030	8020	0.5	4	NA	11/29/97	<2	C1
Toluene	EPA 5030	8020	0.5	4	NA	11/29/97	<2	C1
Ethylbenzene	EPA 5030	8020	0.5	4	NA	11/29/97	<2	C1
Xylenes, Total	EPA 5030	8020	0.5	4	NA	11/29/97	<2	C1
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	4	NA	11/29/97	260	

C1 The MRL was elevated due to high analyte concentration requiring sample dilution.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702406
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S971125-WB1
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	11/25/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	11/25/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	11/25/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	11/25/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	11/25/97	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	11/25/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702406
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S971129-WB1
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	11/29/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	11/29/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	11/29/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	11/29/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	11/29/97	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	11/29/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
 Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
 Sample Matrix: Water

Service Request: S9702406
 Date Collected: 11/19/97
 Date Received: 11/19/97

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: MW-8(10)
 Lab Code: S9702406-006
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Aniline	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Bis(2-chloroethyl) Ether	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Phenol	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2-Chlorophenol	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
1,3-Dichlorobenzene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
1,4-Dichlorobenzene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
1,2-Dichlorobenzene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Benzyl Alcohol	EPA 3510	8270B	10	1	11/24/97	11/25/97	ND	
Bis(2-chloroisopropyl) Ether	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2-Methylphenol	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Hexachloroethane	EPA 3510	8270B	10	1	11/24/97	11/25/97	ND	
N-Nitrosodi-n-propylamine	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
3- and 4-Methylphenol*	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Nitrobenzene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Isophorone	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2-Nitrophenol	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2,4-Dimethylphenol	EPA 3510	8270B	10	1	11/24/97	11/25/97	ND	
Bis(2-chloroethoxy)methane	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2,4-Dichlorophenol	EPA 3510	8270B	50	1	11/24/97	11/25/97	ND	
Benzoic Acid	EPA 3510	8270B	50	1	11/24/97	11/25/97	ND	
1,2,4-Trichlorobenzene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Naphthalene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
4-Chloroaniline	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Hexachlorobutadiene	EPA 3510	8270B	10	1	11/24/97	11/25/97	ND	
4-Chloro-3-methylphenol	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2-Methylnaphthalene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Hexachlorocyclopentadiene	EPA 3510	8270B	10	1	11/24/97	11/25/97	ND	
2,4,6-Trichlorophenol	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2,4,5-Trichlorophenol	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2-Chloronaphthalene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2-Nitroaniline	EPA 3510	8270B	20	1	11/24/97	11/25/97	ND	
Acenaphthylene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Dimethyl Phthalate	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2,6-Dinitrotoluene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Acenaphthene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
3-Nitroaniline	EPA 3510	8270B	20	1	11/24/97	11/25/97	ND	
2,4-Dinitrophenol	EPA 3510	8270B	50	1	11/24/97	11/25/97	ND	
Dibenzofuran	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
4-Nitrophenol	EPA 3510	8270B	50	1	11/24/97	11/25/97	ND	
2,4-Dinitrotoluene	EPA 3510	8270B	50	1	11/24/97	11/25/97	ND	
Fluorene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
4-Chlorophenyl Phenyl Ether	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	

* Quantified as 4-methylphenol.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
 Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
 Sample Matrix: Water

Service Request: S9702406
 Date Collected: 11/19/97
 Date Received: 11/19/97

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: MW-8(10)
 Lab Code: S9702406-006
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Diethyl Phthalate	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
4-Nitroaniline	EPA 3510	8270B	20	1	11/24/97	11/25/97	ND	
2-Methyl-4,6-dinitrophenol	EPA 3510	8270B	20	1	11/24/97	11/25/97	ND	
N-Nitrosodiphenylamine	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
4-Bromophenyl Phenyl Ether	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Hexachlorobenzene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Pentachlorophenol	EPA 3510	8270B	30	1	11/24/97	11/25/97	ND	
Phenanthrene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Anthracene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Di-n-butyl Phthalate	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Fluoranthene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Pyrene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Butylbenzyl Phthalate	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
3,3'-Dichlorobenzidine	EPA 3510	8270B	20	1	11/24/97	11/25/97	ND	
Benz(a)anthracene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Chrysene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Bis(2-ethylhexyl) Phthalate	EPA 3510	8270B	5	1	11/24/97	11/25/97	5	
Di-n-octyl Phthalate	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Benzo(b)fluoranthene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Benzo(k)fluoranthene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Benzo(a)pyrene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Indeno(1,2,3-cd)pyrene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Dibenz(a,h)anthracene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Benzo(g,h,i)perylene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	

* Quantified as 4-methylphenol.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
 Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
 Sample Matrix: Water

Service Request: S9702406
 Date Collected: NA
 Date Received: NA

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: Method Blank
 Lab Code: S971124-WB1
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
N-Nitrosodimethylamine	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Aniline	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Bis(2-chloroethyl) Ether	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Phenol	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2-Chlorophenol	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
1,3-Dichlorobenzene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
1,4-Dichlorobenzene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
1,2-Dichlorobenzene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Benzyl Alcohol	EPA 3510	8270B	10	1	11/24/97	11/25/97	ND	
Bis(2-chloroisopropyl) Ether	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2-Methylphenol	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Hexachloroethane	EPA 3510	8270B	10	1	11/24/97	11/25/97	ND	
N-Nitrosodi-n-propylamine	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
3- and 4-Methylphenol*	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Nitrobenzene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Isophorone	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2-Nitrophenol	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2,4-Dimethylphenol	EPA 3510	8270B	10	1	11/24/97	11/25/97	ND	
Bis(2-chloroethoxy)methane	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2,4-Dichlorophenol	EPA 3510	8270B	50	1	11/24/97	11/25/97	ND	
Benzoic Acid	EPA 3510	8270B	50	1	11/24/97	11/25/97	ND	
1,2,4-Trichlorobenzene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Naphthalene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
4-Chloroaniline	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Hexachlorobutadiene	EPA 3510	8270B	10	1	11/24/97	11/25/97	ND	
4-Chloro-3-methylphenol	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2-Methylnaphthalene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Hexachlorocyclopentadiene	EPA 3510	8270B	10	1	11/24/97	11/25/97	ND	
2,4,6-Trichlorophenol	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2,4,5-Trichlorophenol	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2-Chloronaphthalene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2-Nitroaniline	EPA 3510	8270B	20	1	11/24/97	11/25/97	ND	
Acenaphthylene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Dimethyl Phthalate	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
2,6-Dinitrotoluene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Acenaphthene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
3-Nitroaniline	EPA 3510	8270B	20	1	11/24/97	11/25/97	ND	
2,4-Dinitrophenol	EPA 3510	8270B	50	1	11/24/97	11/25/97	ND	
Dibenzofuran	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
4-Nitrophenol	EPA 3510	8270B	50	1	11/24/97	11/25/97	ND	
2,4-Dinitrotoluene	EPA 3510	8270B	50	1	11/24/97	11/25/97	ND	
Fluorene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
4-Chlorophenyl Phenyl Ether	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	

* Quantified as 4-methylphenol.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
 Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
 Sample Matrix: Water

Service Request: S9702406
 Date Collected: NA
 Date Received: NA

Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: Method Blank
 Lab Code: S971124-WB1
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Diethyl Phthalate	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
4-Nitroaniline	EPA 3510	8270B	20	1	11/24/97	11/25/97	ND	
2-Methyl-4,6-dinitrophenol	EPA 3510	8270B	20	1	11/24/97	11/25/97	ND	
N-Nitrosodiphenylamine	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
4-Bromophenyl Phenyl Ether	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Hexachlorobenzene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Pentachlorophenol	EPA 3510	8270B	30	1	11/24/97	11/25/97	ND	
Phenanthrene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Anthracene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Di-n-butyl Phthalate	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Fluoranthene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Pyrene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Butylbenzyl Phthalate	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
3,3'-Dichlorobenzidine	EPA 3510	8270B	20	1	11/24/97	11/25/97	ND	
Benz(a)anthracene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Chrysene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Bis(2-ethylhexyl) Phthalate	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Di-n-octyl Phthalate	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Benzo(b)fluoranthene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Benzo(k)fluoranthene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Benzo(a)pyrene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Indeno(1,2,3-cd)pyrene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Dibenz(a,h)anthracene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	
Benzo(g,h,i)perylene	EPA 3510	8270B	5	1	11/24/97	11/25/97	ND	

*

Quantified as 4-methylphenol.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702406
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: NA

**Surrogate Recovery Summary
 BTEX, MTBE and TPH as Gasoline**

Prep Method: EPA 5030
Analysis Method: 8020 CA/LUFT

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery	
			4-Bromofluorobenzene	a,a,a-Trifluorotoluene
MW-14(12)	S9702406-001		102	92
MW-4(8.5)	S9702406-002		97	94
MW-1(11)	S9702406-003		95	100
MW-5(10)	S9702406-004		94	99
MW-3(11)	S9702406-005		94	104
MW-8(10)	S9702406-006		105	84
BATCH QC	S9702368-002MS		103	98
BATCH QC	S9702368-002DMS		104	96
Method Blank	S971125-WB1		103	97
Method Blank	S971129-WB1		96	101

CAS Acceptance Limits: 69-116 69-116

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702406
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 11/25/97

Matrix Spike/Duplicate Matrix Spike Summary
BTE

Sample Name: BATCH QC
Lab Code: S9702368-002MS, S9702368-002DMS
Test Notes:

Units: ug/L (ppb)
Basis: NA

Percent Recovery

Analyte	Prep Method	Analysis Method	MRL	Spike Level			Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
				MS	DMS			MS	DMS	MS	DMS		
Benzene	EPA 5030	8020	0.5	25	25	ND	26	26	104	104		75-135	<1
Toluene	EPA 5030	8020	0.5	25	25	ND	25	25	100	100		73-136	<1
Ethylbenzene	EPA 5030	8020	0.5	25	25	ND	25	25	100	100		69-142	<1

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO

Service Request: S9702406
Date Analyzed: 11/25/97

Initial Calibration Verification (ICV) Summary
BTEX, MTBE and TPH as Gasoline

Sample Name: ICV
Lab Code: ICV1
Test Notes:

Units: ug/L (ppb)
Basis: NA

ICV Source:

Analyte	Prep Method	Analysis Method	True Value	Result	CAS	Percent Recovery	Result Notes
					Percent Recovery Acceptance Limits		
TPH as Gasoline	EPA 5030	CA/LUFT	250	250	90-110	100	
Benzene	EPA 5030	8020	25	24	85-115	96	
Toluene	EPA 5030	8020	25	24	85-115	96	
Ethylbenzene	EPA 5030	8020	25	24	85-115	96	
Xylenes, Total	EPA 5030	8020	75	72	85-115	96	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	25	26	85-115	104	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702406
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: NA

Surrogate Recovery Summary
 Base Neutral/Acid Semivolatile Organic Compounds

Prep Method: EPA 3510
Analysis Method: 8270B

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	P e r c e n t					R e c o v e r y	
			2FP	PHL	NBZ	FBP	TBP	TPH	
MW-8(10)	S9702406-006		11	7	63	68	47		63
LCS	S971124-I.CS		30	24	59	71	80		77
LCSD	S971124-I.CSD		29	22	62	67	72		86
Method Blank	S971124-WB1		34	12	50	61	65		66

CAS Acceptance Limits: D-50 D-58 47-100 53-85 D-119 50-107

2FP 2-Fluorophenol
 PHL Phenol-D6
 NBZ Nitrobenzene-D5
 FBP 2-Fluorobiphenyl
 TBP 2,4,6-Tribromophenol
 TPH Terphenyl-D14

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
LCS Matrix: Water

Service Request: S9702406
Date Collected: NA
Date Received: NA
Date Extracted: 11/24/97
Date Analyzed: 11/25/97

Laboratory Control Sample/Duplicate Laboratory Control Sample Summary
 Base Neutral/Acid Semivolatile Organic Compounds

Sample Name: Lab Control Sample
Lab Code: S971124-LCS S971124-LCSD
Test Notes:

Units: ug/L (ppb)
Basis: NA

Percent Recovery

Analyte	Prep Method	Analysis Method	True Value		Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference	Result Notes
			LCS	DLCS	LCS	DLCS	LCS	DLCS			
Phenol	EPA 3510	8270B	100	100	26	25	26	25	5-112	4	
2-Chlorophenol	EPA 3510	8270B	100	100	69	68	69	68	23-134	1	
1,4-Dichlorobenzene	EPA 3510	8270B	50	50	49	47	98	94	20-124	4	
N-Nitrosodi-n-propylamine	EPA 3510	8270B	50	50	40	42	80	84	D-230	5	
1,2,4-Trichlorobenzene	EPA 3510	8270B	50	50	45	44	90	88	44-142	2	
4-Chloro-3-methylphenol	EPA 3510	8270B	100	100	64	58	64	58	22-147	10	
Acenaphthene	EPA 3510	8270B	50	50	41	38	82	76	47-145	8	
4-Nitrophenol	EPA 3510	8270B	100	100	38	34	38	34	D-132	11	
2,4-Dinitrotoluene	EPA 3510	8270B	50	50	36	30	72	60	39-139	18	
Pentachlorophenol	EPA 3510	8270B	100	100	57	49	57	49	14-176	15	
Pyrene	EPA 3510	8270B	50	50	40	45	80	90	52-115	12	

ARCO Products Company

Division of Atlantic/Richfield Company

Task Order No. 2133.00

Chain of Custody

ARCO Facility no. 0601		City (Facility) San Leandro		Project manager (Consultant) Gary Messerotes		Laboratory Name CAS																	
ARCO engineer Paul Supple		Telephone no. (ARCO)		Telephone no. (Consultant) (408) 453-7300		Fax no. (Consultant) (408) 453-0452																	
Consultant name EMCON		Address (Consultant) 1921 Ringwood Ave. San Jose, CA 95131				Contract Number																	
Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH incldg. HPA EPA Method 8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM 503E	EPA 801/8010	EPA 824/8240	EPA 826/8270	TCIP Semi Metals ☐ VOAD ☐	CMM Metals EPA 6010/7000 TLC ☐ STLC ☐	Lead Org/DMS ☐	Lead EPA 7420/7421 ☐	Method of shipment Sampler will deliver	
			Soil	Water	Other	Ice	Acid																
MW-1 (12)	2	2		X		X	HCL	11-19-97	11:38		X												Special Detection Limit/reporting Lowest Possible
MW-7 ()	2	2		X		X	HCL				X		NO	SAMPLE (DRY WELL)									Special QA/QC As Normal
MW-4 (8.5)	2	2		X		X	HCL		12:05		X												Remarks MW-1 (12) had only 2 bottles MW-8 (10) had 4 bottles 8270 analysis added to MW-3 deleted from MW-1 #20805-121.00
MW-6 ()	2	2		X		X	HCL				X		NO	SAMPLE (DRY WELL)									Lab Number 59702406
MW-1 (11)	4	4		X		X	HCL		12:20		X												Turnaround Time: Priority Rush 1 Business Day ☐
MW-5 (10)	2	2		X		X	HCL		12:39		X												Expedited 5 Business Days ☐
MW-3 (11)	2	2		X		X	HCL		12:56		X												Standard 10 Business Days ☒
MW-8 (10)	2	2		X		X	HCL		13:17		X												
Condition of sample:										Temperature received:													
Relinquished by sampler										Received by													
Date 11/19/97 Time 1402										Date Time Received by													



December 5, 1997

Service Request No.: S9702407

Gary Messerotes
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

RE: 20805-121.005/TO#21133.00/601 SAN LEANDRO

Dear Mr. Messerotes:

The following pages contain analytical results for sample(s) received by the laboratory on November 19, 1997. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. listed above. To help expedite our service, please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 8, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

Please feel welcome to contact me should you have questions or further needs.

Sincerely,

A handwritten signature in cursive script that reads "Steven L. Green".

Steven L. Green
Project Chemist

A handwritten signature in cursive script that reads "Greg Anderson".

Greg Anderson
Regional QA Coordinator

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

A2LA	American Association for Laboratory Accreditation
ASTM	American Society for Testing and Materials
BOD	Biochemical Oxygen Demand
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAM	California Assessment Metals
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
COD	Chemical Oxygen Demand
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank sample
ICP	Inductively Coupled Plasma atomic emission spectrometry
ICV	Initial Calibration Verification sample
J	Estimated concentration. The value is less than the MRL, but greater than or equal to the MDL. If the value is equal to the MRL, the result is actually <MRL before rounding.
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified
MBAS	Methylene Blue Active Substances
MCL	Maximum Contaminant Level. The highest permissible concentration of a substance allowed in drinking water as established by the U. S. EPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl tert-Butyl Ether
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the paper industry for Air and Stream Improvement
ND	Not Detected at or above the method reporting/detection limit (MR/MDL)
NIOSH	National Institute for Occupational Safety and Health
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	Standard Methods for the Examination of Water and Wastewater, 18th Ed., 1992
STLC	Solubility Threshold Limit Concentration
SW	Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., 1986 and as amended by Updates I, II, IIA, and IIB.
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
tr	Trace level. The concentration of an analyte that is less than the PQL but greater than or equal to the MDL. If the value is equal to the PQL, the result is actually <PQL before rounding.
TRPH	Total Recoverable Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702407
Date Collected: 11/19/97
Date Received: 11/19/97

BTX, MTBE and TPH as Gasoline

Sample Name: MW-10(9)
Lab Code: S9702407-001
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	11/26/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	11/26/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	11/26/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	11/26/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	11/26/97	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	11/26/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702407
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S971125-WB1
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	11/25/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	11/25/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	11/25/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	11/25/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	11/25/97	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	11/25/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702407
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: NA

Surrogate Recovery Summary
BTEX, MTBE and TPH as Gasoline

Prep Method: EPA 5030
Analysis Method: 8020 CALUFT

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery	
			4-Bromofluorobenzene	a,a,a-Trifluorotoluene
MW-10(9')	S9702407-001		98	96
BATCH QC	S9702368-002MS		103	98
BATCH QC	S9702368-002DMS		104	96
Method Blank	S971125-WB1		103	97

CAS Acceptance Limits: 69-116 69-116

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702407
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 11/25/97

Matrix Spike/Duplicate Matrix Spike Summary
 BTE

Sample Name: BATCH QC
Lab Code: S9702368-002MS, S9702368-002DMS
Test Notes:

Units: ug/L (ppb)
Basis: NA

Percent Recovery

Analyte	Prep Method	Analysis Method	Spike Level			Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
			MRL	MS	DMS		MS	DMS	MS	DMS		
Benzene	EPA 5030	8020	0.5	25	25	ND	26	26	104	104	75-135	<1
Toluene	EPA 5030	8020	0.5	25	25	ND	25	25	100	100	73-136	<1
Ethylbenzene	EPA 5030	8020	0.5	25	25	ND	25	25	100	100	69-142	<1

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO

Service Request: S9702407
Date Analyzed: 11/25/97

Initial Calibration Verification (ICV) Summary
 BTEX, MTBE and TPH as Gasoline

Sample Name: ICV
Lab Code: ICV1
Test Notes:

Units: ug/L (ppb)
Basis: NA

ICV Source:

Analyte	Prep Method	Analysis Method	True Value	Result	CAS	Percent Recovery	Result Notes
					Percent Recovery Acceptance Limits		
TPH as Gasoline	EPA 5030	CA/LUFT	250	250	90-110	100	
Benzene	EPA 5030	8020	25	24	85-115	96	
Toluene	EPA 5030	8020	25	24	85-115	96	
Ethylbenzene	EPA 5030	8020	25	24	85-115	96	
Xylenes, Total	EPA 5030	8020	75	72	85-115	96	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	25	26	85-115	104	

Chain of Custody

[illegible]



EMCON

1921 Ringwood Avenue • San Jose, California 95131-1721 • (408) 453-7300 • Fax (408) 437-9526

February 18, 1998
Project 20805-121.005

Mr. John Sullivan
17760 Sweetbriar Place
Castro Valley, California 94546

Re: Fourth quarter 1997 laboratory analytical results, groundwater samples, Chateau
Manor Apartments, 724 Lewelling Boulevard, San Leandro, California

Dear Mr. Sullivan:

Enclosed please find copies of the laboratory analytical results for groundwater samples collected from well MW-10 during the fourth quarter of 1997. These wells are located at Chateau Manor Apartments, 724 Lewelling Boulevard, San Leandro, California. The groundwater samples were collected on November 19, 1997, during quarterly sampling of the ARCO Products Company service station 601, 712 Lewelling Boulevard, San Leandro. The laboratory analytical results indicate that the groundwater sample concentrations were not detectable for total petroleum hydrocarbons as gasoline, and the gasoline constituents benzene, toluene, ethylbenzene, and total xylenes.

Please call if you have questions.

Sincerely,

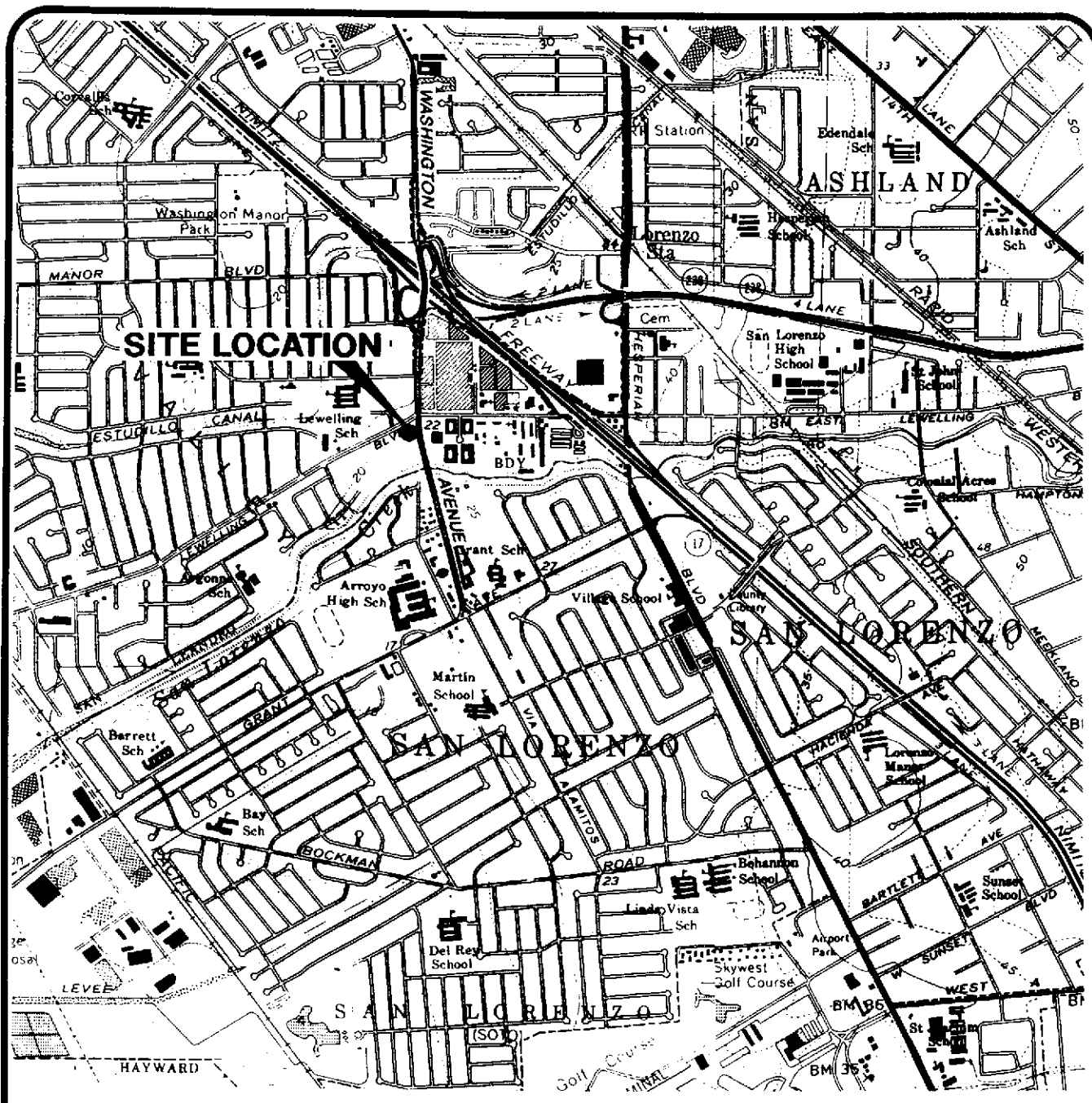
EMCON

Gary P. Messerotes
Project Manager

Attachments: Figure 1 - Generalized Site Plan
Attachment A - Copy of Analytical Results and Chain-of-Custody
Documentation, Well MW-10,
Fourth Quarter 1997

cc: Scott Seery, ACHCSA
Paul Supple, ARCO Products Company
File





Base map from USGS 7.5' Quad. Maps:
Hayward and San Leandro, California.
Photorevised 1980.



DATE NOV. 1997
DWN KAJ
APP _____
REV _____
PROJECT NO.
805-121.005

FIGURE 1
ARCO PRODUCTS COMPANY
SERVICE STATION 601, 712 LEWELLING BLVD.
SAN LEANDRO, CALIFORNIA
QUARTERLY GROUNDWATER MONITORING
SITE LOCATION

ATTACHMENT A

**COPY OF ANALYTICAL RESULTS AND CHAIN-OF-CUSTODY
DOCUMENTATION, WELL MW-10,
FOURTH QUARTER 1997**



December 5, 1997

Service Request No.: S9702407

Gary Messerotes
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

RE: 20805-121.005/TO#21133.00/601 SAN LEANDRO

Dear Mr. Messerotes:

The following pages contain analytical results for sample(s) received by the laboratory on November 19, 1997. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. listed above. To help expedite our service, please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 8, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

Please feel welcome to contact me should you have questions or further needs.

Sincerely,

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Steven L. Green
Project Chemist

A handwritten signature in cursive script that reads "Greg Anderson".

Greg Anderson
Regional QA Coordinator

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

A2LA	American Association for Laboratory Accreditation
ASTM	American Society for Testing and Materials
BOD	Biochemical Oxygen Demand
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAM	California Assessment Metals
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
COD	Chemical Oxygen Demand
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank sample
ICP	Inductively Coupled Plasma atomic emission spectrometry
ICV	Initial Calibration Verification sample
J	Estimated concentration. The value is less than the MRL, but greater than or equal to the MDL. If the value is equal to the MRL, the result is actually <MRL before rounding.
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified
MBAS	Methylene Blue Active Substances
MCL	Maximum Contaminant Level. The highest permissible concentration of a substance allowed in drinking water as established by the U. S. EPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl tert-Butyl Ether
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the paper industry for Air and Stream Improvement
ND	Not Detected at or above the method reporting/detection limit (MRL/MDL)
NIOSH	National Institute for Occupational Safety and Health
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	Standard Methods for the Examination of Water and Wastewater, 18th Ed., 1992
STLC	Solubility Threshold Limit Concentration
SW	Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., 1986 and as amended by Updates I, II, IIA, and IIB.
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
tr	Trace level. The concentration of an analyte that is less than the PQL but greater than or equal to the MDL. If the value is equal to the PQL, the result is actually <PQL before rounding.
TRPH	Total Recoverable Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)

ACRONLST.DOC 7/14/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702407
Date Collected: 11/19/97
Date Received: 11/19/97

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-10(9')
Lab Code: S9702407-001
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	11/26/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	11/26/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	11/26/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	11/26/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	11/26/97	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	11/26/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702407
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S971125-WB1
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	11/25/97	ND	
Benzene	EPA 5030	8020	0.5	1	NA	11/25/97	ND	
Toluene	EPA 5030	8020	0.5	1	NA	11/25/97	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	11/25/97	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	11/25/97	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	11/25/97	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702407
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: NA

Surrogate Recovery Summary
BTEX, MTBE and TPH as Gasoline

Prep Method: EPA 5030
Analysis Method: 8020 CA/LUFT

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery	
			4-Bromofluorobenzene	a,a,a-Trifluorotoluene
MW-10(9')	S9702407-001		98	96
BATCH QC	S9702368-002MS		103	98
BATCH QC	S9702368-002DMS		104	96
Method Blank	S971125-WB1		103	97

CAS Acceptance Limits: 69-116 69-116

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO
Sample Matrix: Water

Service Request: S9702407
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 11/25/97

Matrix Spike/Duplicate Matrix Spike Summary
BTE

Sample Name: BATCH QC Units: ug/L (ppb)
Lab Code: S9702368-002MS, S9702368-002DMS Basis: NA
Test Notes:

Percent Recovery

Analyte	Prep Method	Analysis Method	MRL	Spike Level		Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
				MS	DMS		MS	DMS	MS	DMS		
Benzene	EPA 5030	8020	0.5	25	25	ND	26	26	104	104	75-135	<1
Toluene	EPA 5030	8020	0.5	25	25	ND	25	25	100	100	73-136	<1
Ethylbenzene	EPA 5030	8020	0.5	25	25	ND	25	25	100	100	69-142	<1

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-121.005/TO#21133.00/601 SAN LEANDRO

Service Request: S9702407
Date Analyzed: 11/25/97

**Initial Calibration Verification (ICV) Summary
 BTEX, MTBE and TPH as Gasoline**

Sample Name: ICV **Units:** ug/L (ppb)
Lab Code: ICV1 **Basis:** NA
Test Notes:

ICV Source:

Analyte	Prep Method	Analysis Method	True Value	Result	CAS	Percent Recovery	Result Notes
					Percent Recovery Acceptance Limits		
TPH as Gasoline	EPA 5030	CA/LUFT	250	250	90-110	100	
Benzene	EPA 5030	8020	25	24	85-115	96	
Toluene	EPA 5030	8020	25	24	85-115	96	
Ethylbenzene	EPA 5030	8020	25	24	85-115	96	
Xylenes, Total	EPA 5030	8020	75	72	85-115	96	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	25	26	85-115	104	

ICV032196

Chain of Custody

Task Order No. 21133.00

R20 / 541