CAMBRIA

NOV 01 2001

October 17, 2001

Ms. Eva Chu
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

slight increase in PH conc.
cont. w/ semi-annual monitoring

Re: **Third Quarter 2001 Monitoring Report**
ARCO Service Station No. 0771
899 Rincon Avenue
Livermore, California
Cambria Project #438-1607

Dear Ms. Chu:

On behalf of ARCO, Cambria Environmental Technology, Inc. (Cambria) is submitting the attached report which presents the results of the third quarter 2001 groundwater monitoring program at ARCO Service Station No. 0771, located at 899 Rincon Avenue, Livermore, California. The monitoring program complies with ACHCSA requirements regarding underground tank investigations.

Please call if you have questions.

Sincerely,
Cambria Environmental Technology, Inc.

Ron Scheele, RG
Senior Project Manager

Attachment: Quarterly Groundwater Monitoring Report, Third Quarter 2001

cc: Paul Supple, ARCO. PO Box 6549 Moraga, CA 94570
Danielle Stefani, LPFD, 4550 East Avenue, Livermore, CA 94550

Oakland, CA
San Ramon, CA
Sonoma, CA

Cambria Environmental Technology, Inc.

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

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Quarterly Groundwater Monitoring Report

Third Quarter 2001

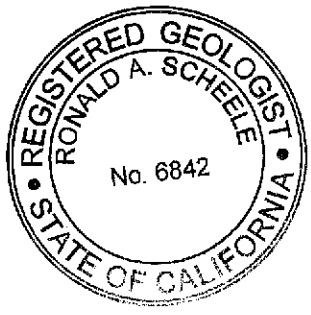
ARCO Service Station No. 0771
899 Rincon Avenue,
Livermore, California
Cambria Project #438-1607

Prepared For:

Mr. Paul Supple
ARCO

October 17, 2001

Prepared By:
Cambria Environmental Technology, Inc.
6262 Hollis Street
Emeryville, California 94608



Written by:

Sara Dwight
Staff Environmental Scientist

Ron Scheele, RG
Senior Project Manager

CAMBRIA

Date: October 17, 2001
Quarter: 3rd Quarter, 2001

ARCO QUARTERLY GROUNDWATER MONITORING REPORT

Station No.: 0771	Address: 899 Rincon Avenue, Livermore, California
ARCO Environmental Engineer	Paul Supple /(925) 299-8891
Consulting Co./Contact Person:	Cambria Environmental Technology, Inc. / Ron Scheele, RG
Consultant Project No.:	438-1607
Primary Agency/Regulatory ID No.:	ACHCSA

WORK PERFORMED THIS QUARTER (THIRD - 2001):

1. Submitted quarterly status report for second quarter 2000.
2. Performed third quarter groundwater monitoring and sampling on September 17, 2001.

WORK PROPOSED FOR NEXT QUARTER (FOURTH - 2001):

1. Prepare and submit quarterly groundwater monitoring report for third quarter 2001.

QUARTERLY MONITORING:

Current Phase of Project:	Monitoring
Frequency of Sampling:	Annual (3rd Quarter): MW-2, MW-5, MW-11 Semi-Annual (1st/3rd Quarter): MW-4, MW-6, MW-7, RW-1, VW-1
Frequency of Monitoring:	Semi-annual (groundwater)
Is Free Product (FP) Present On-site:	No
Cumulative FP Recovered to Date :	3.06 gallons, Wells MW-1, MW-2, and MW-5
FP Recovered This Quarter :	None (FP was last recovered in 1992.)
Bulk Soil Removed to Date :	1,700 cubic yards of TPH-impacted soil
Water Wells or Surface Waters Within 2000 ft., impacted by site:	None
Current Remediation Techniques:	Natural Attenuation
Average Depth to Groundwater:	29.55 feet
Groundwater Flow Direction and Gradient	0.061 ft/ft towards north-northeast

DISCUSSION:

Based on field measurements collected on September 17, 2001, groundwater beneath the site flows towards the north-northeast at a gradient of 0.061 ft/ft. This is consistent with the historic groundwater flow direction and gradient.

Hydrocarbon concentrations detected this quarter are inconsistent with the previous sampling event. Wells MW-2, MW-4, and MW-5 showed increases in TPHg, benzene, and MTBE concentrations, and well MW-6 showed a decrease in TPHg, benzene, and MTBE concentrations. The maximum TPHg concentration was detected in well MW-7 at 4,800 micrograms per liter (µg/L). The maximum benzene concentration was detected in well MW-2 at 300 µg/L. The maximum MTBE concentration was detected in well MW-4 at 360 µg/L.

ATTACHMENTS:

- Figure 1 - Groundwater Elevation Contour and Analytical Summary Map
- Table 1 - Groundwater Monitoring Data
- Table 2 - Groundwater Flow Direction and Gradient
- Appendix A - Sampling and Analysis Procedures
- Appendix B - Certified Analytical Reports and Chain-of-Custody Documentation
- Appendix C - Field Data Sheets

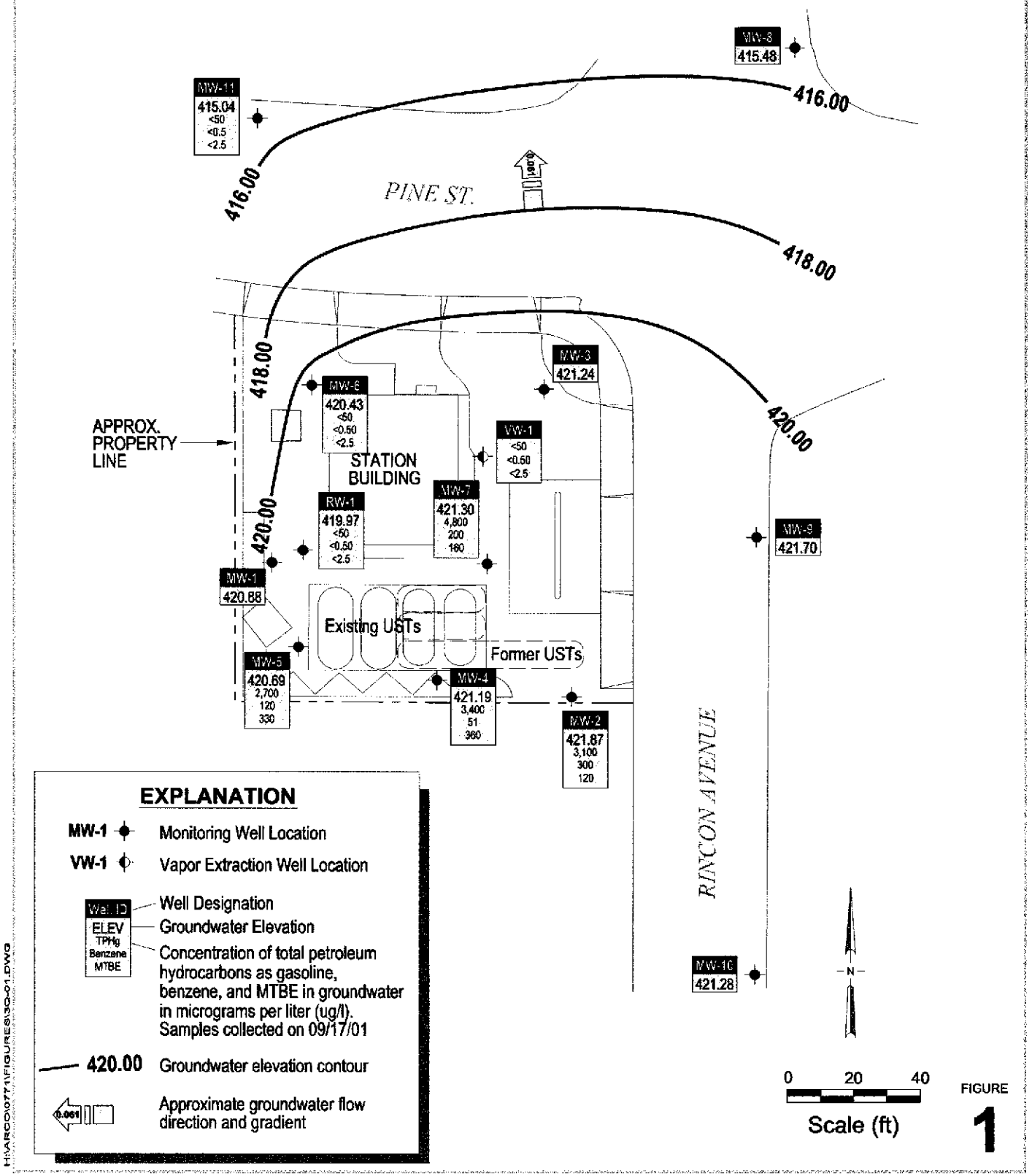


FIGURE 1

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ARCO Service Station 0771

899 Rincon Avenue

Livermore, California

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Groundwater Elevation Contour and Analytical Summary Map

September 17, 2001

Table 1
Groundwater Monitoring Data

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Well Designation	Monitoring Date	Top of Casing Elevation ft-MSL	Depth to Water	Free Product Thickness feet	Ground-water Elevation ft-MSL	Sample Date	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	MTBE µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged (P/NP)
MW-1	03-20-95	451.73	24.50	0.00	427.23	03-20-95	90,000	1,800	1,100	1,000	5,600	--	--	--
MW-1	06-02-95	451.73	25.60	0.00	426.13	06-03-95	81,000	2,000	1,400	990	4,600	--	--	--
MW-1	08-23-95	451.73	29.04	0.00	422.69	08-23-95	44,000	2,400	1,900	670	3,800	<300	--	--
MW-1	12-04-95	451.73	31.31	0.00	420.42	12-04-95	22,000	870	660	390	2,200	--	--	--
MW-1	02-20-96	451.73	22.26	0.00	429.47	02-20-96	21,000	1,500	1,200	650	3,500	<300	--	--
MW-1	05-15-96	451.73	23.42	0.00	428.31	05-15-96	36,000	3,000	2,500	960	5,700	<250	--	--
MW-1	08-13-96	451.73	26.83	0.00	424.90	08-13-96	19,000	730	580	450	2,500	<200	--	--
MW-1	11-13-96	451.73	31.05	0.00	420.68	11-13-96	6,600	47	16	74	160	<30	--	--
MW-1	03-26-97	451.73	26.29	0.00	425.44	03-27-97	1,900	100	55	37	200	<30	--	--
MW-1	05-15-97	451.73	28.65	0.00	423.08	05-15-97	16,000	490	250	250	1,100	<120	--	--
MW-1	08-26-97	451.73	31.53	0.00	420.20	08-26-97	190	7	3	6	25	<3	--	--
MW-1	11-05-97	451.73	33.93	0.00	417.80	11-05-97	63	1	<0.5	1	2	29	--	--
MW-1	02-18-98	451.73	20.46	0.00	431.27	02-18-98	23,000	1,500	610	550	3,000	<120	--	--
MW-1	05-20-98	451.73	23.84	0.00	427.89	05-21-98	50,000	4,400	1,900	1,400	80,000	<300	--	--
MW-1	07-30-98	451.73	26.94	0.00	424.79	07-30-98	150	<0.5	<0.5	<0.5	2	<3	8.7	P
MW-1	10-29-98	451.73	32.58	0.00	419.15	10-29-98	<50	<0.5	<0.5	<0.5	2	<3	2.0	NP
MW-1	03-16-99	451.73	26.20	0.00	425.53	03-16-99	3,200	160	32	89	390	270	2.0	P
MW-1	05-05-99	451.73	27.57	0.00	424.16	05-05-99	3,600	140	46	76	290	170	11.65	P
MW-1	08-26-99	451.73	30.25	0.00	421.48	08-26-99	3,200	210	29	100	220	120	1.43	P
MW-1	12-03-99	451.73	32.70	0.00	419.03	12-03-99	53	<0.5	<0.5	<0.5	1	<3	2.12	NP
MW-1	03-13-00	451.73	24.45	0.00	427.28	03-13-00	<50	<0.5	<0.5	<0.5	<1	<3	5.81	P
DUP	06-20-00	--	--	--	--	06-20-00	67.4	3.88	<0.500	1.78	1.48	<2.50	--	--
MW-1	06-20-00	451.73	27.79	0.00	423.94	06-20-00	356	40.1	7.17	11.9	22.7	<2.50	5.10	P
MW-1	08-31-00	451.73	30.35	0.00	421.38	08-31-00	Well no longer part of sampling schedule----------							
MW-1	02-09-01	451.73	30.95	0.00	420.78	02-09-01	Well no longer part of sampling schedule----------							
MW-1	**09-17-01**	**451.73**	**30.85**	**0.00**	**420.88**	**09-17-01**	**Well no longer part of sampling schedule----------**							

Table 1
Groundwater Monitoring Data

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Well Designation	Monitoring Date	Top of Casing Elevation ft-MSL	Depth to Water	Free Product Thickness feet	Ground-water Elevation ft-MSL	Sample Date	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	MTBE µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged (P/NP)
MW-2	03-20-95	449.49	20.27	0.00	429.22	03-20-95	54,000	2,600	1,600	1,200	7,600	--	--	--
MW-2	06-02-95	449.49	22.32	0.00	427.17	06-03-95	37,000	2,200	800	980	4,800	--	--	--
MW-2	08-23-95	449.49	25.69	0.00	423.80	08-23-95	65,000	1,100	310	840	3,000	<500	--	--
MW-2	12-04-95	449.49	28.52	0.00	420.97	12-04-95	19,000	680	150	410	1,600	--	--	--
MW-2	02-20-96	449.49	19.00	0.00	430.49	02-20-96	22,000	1,200	240	590	2,200	<300	--	--
MW-2	05-15-96	449.49	20.03	0.00	429.46	05-15-96	25,000	1,200	240	610	2,100	<300	--	--
MW-2	08-13-96	449.49	24.44	0.00	425.05	08-13-96	19,000	640	110	420	1,200	<300	--	--
MW-2	11-13-96	449.49	28.42	0.00	421.07	11-13-96	15,000	260	52	220	640	<200	--	--
MW-2	03-26-97	449.49	22.98	0.00	426.51	03-27-97	17,000	580	120	360	980	<120	--	--
MW-2	05-15-97	449.49	25.40	0.00	424.09	05-15-97	18,000	420	63	340	730	<120	--	--
MW-2	08-26-97	449.49	28.38	0.00	421.11	08-26-97	5,300	210	26	140	270	<120	--	--
MW-2	11-05-97	449.49	31.93	0.00	417.56	11-05-97	560	42	3	7	9	<40	--	--
MW-2	02-18-98	449.49	16.87	0.00	432.62	02-18-98	18,000	710	120	480	1,100	130	--	--
MW-2	05-20-98	449.49	20.29	0.00	429.20	05-21-98	16,000	480	72	440	1,100	<120	--	--
MW-2	07-30-98	449.49	23.51	0.00	425.98	07-30-98	9,700	240	33	210	490	<120	9.2	P
MW-2	10-29-98	449.49	30.08	0.00	419.41	10-29-98	58	<0.5	<0.5	<0.5	1	<3	1.0	NP
MW-2	03-16-99	449.49	23.22	0.00	426.27	03-16-99	4,700	120	13	90	220	60	2.0	P
MW-2	05-05-99	449.49	24.05	0.00	425.44	05-05-99	5,500	58	7.1	58	98	17	9.09	P
MW-2	08-26-99	449.49	26.44	0.00	423.05	08-26-99	3,700	55	11	60	64	26	1.90	P
MW-2	12-03-99	449.49	30.15	0.00	419.34	12-03-99	130	<0.5	<0.5	0.7	1.8	<3	1.96	NP
MW-2	03-13-00	449.49	20.68	0.00	428.81	03-13-00	<50	<0.5	<0.5	<0.5	<1	<3	--	P
MW-2	06-20-00	449.49	23.08	0.00	426.41	06-20-00	226	2.20	<0.500	4.83	7.88	<2.50	4.90	P
MW-2	08-31-00	449.49	26.71	0.00	422.78	08-31-00	87.1	1.78	<0.500	1.33	1.15	<2.50	1.59	P
MW-2	02-09-01	449.49	29.65	0.00	419.84	02-09-01	Well sampled annually during the third quarter							
MW-2	**09-17-01**	**449.49**	**27.62**	**0.00**	**421.87**	**09-17-01**	**3,100**	**300**	**12**	**8.8**	**18**	**120**	**1.70**	**P**

Table 1
Groundwater Monitoring Data

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Well Designation	Monitoring Date	Top of Casing Elevation ft-MSL	Depth to Water	Free Product Thickness feet	Ground-water Elevation ft-MSL	Sample Date	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	MTBE µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged (P/NP)
MW-3	03-20-95	450.28	22.19	0.00	428.09	03-20-95	94	<0.5	<0.5	<0.5	<0.5	--	--	--
MW-3	06-02-95	450.28	23.28	0.00	427.00	06-02-95	72	<0.5	<0.5	<0.5	<0.5	--	--	--
MW-3	08-23-95	450.28	26.55	0.00	423.73	08-23-95	98	<0.5	<0.5	<0.6	1	<3	--	--
MW-3	12-04-95	450.28	29.52	0.00	420.76	12-04-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
MW-3	02-20-96	450.28	19.83	0.00	430.45	02-20-96	130	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-3	05-15-96	450.28	21.03	0.00	429.25	05-15-96	120	<0.5	<0.5	<0.5	<0.5	<0.5	--	--
MW-3	08-13-96	450.28	25.67	0.00	424.61	08-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-3	11-13-96	450.28	21.57	0.00	428.71	11-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-3	03-26-97	450.28	24.15	0.00	426.13	03-26-97	<50	1	<0.5	<0.5	<0.5	<3	--	--
MW-3	05-15-97	450.28	26.85	0.00	423.43	05-15-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-3	08-26-97	450.28	30.07	0.00	420.21	08-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-3	11-05-97	450.28	32.46	0.00	417.82	11-05-97	<50	<0.5	1	<0.5	<0.5	<3	--	--
MW-3	02-18-98	450.28	17.82	0.00	432.46	02-18-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-3	05-20-98	450.28	21.41	0.00	428.87	05-20-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-3	07-30-98	450.28	26.41	0.00	423.87	07-30-98	<50	<0.5	<0.5	<0.5	<0.5	<3	9.6	P
MW-3	10-29-98	450.28	31.33	0.00	418.95	10-29-98	<50	<0.5	<0.5	<0.5	<0.5	<3	1.0	P
MW-3	03-16-99	450.28	24.61	0.00	425.67	03-16-99	<50	<0.5	<0.5	<0.5	<0.5	<3	1.0	P
MW-3	05-05-99	450.28	25.75	0.00	424.53	05-05-99	140	<0.5	<0.5	0.6	<0.5	<3	4.43	P
MW-3	08-26-99	450.28	28.49	0.00	421.79	08-26-99	80	0.6	0.6	0.6	1	<3	1.69	P
MW-3	12-03-99	450.28	31.45	0.00	418.83	12-03-99	<50	<0.5	<0.5	<0.5	<1	<3	2.26	P
MW-3	03-13-00	450.28	22.18	0.00	428.10	03-13-00	<50	<0.5	<0.5	<0.5	<1	<3	4.41	P
MW-3	06-20-00	450.28	26.03	0.00	424.25	06-20-00	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	2.30	P
MW-3	08-31-00	450.28	28.75	0.00	421.53	08-31-00	Well no longer part of sampling schedule----------							
MW-3	02-09-01	450.28	31.04	0.00	419.24	02-09-01	Well no longer part of sampling schedule----------							
MW-3	**09-17-01**	**450.28**	**29.04**	**0.00**	**421.24**	**09-17-01**	**Well no longer part of sampling schedule----------**							

Table 1
Groundwater Monitoring Data

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Well Designation	Monitoring Date	Top of Casing Elevation ft-MSL	Depth to Water	Free Product Thickness feet	Ground-water Elevation ft-MSL	Sample Date	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	MTBE µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged (P/NP)
MW-4	03-20-95	451.09	22.68	0.00	428.41	03-20-95	12,000	1,000	100	450	700	--	--	--
MW-4	06-02-95	451.09	24.41	0.00	426.68	06-02-95	9,000	850	56	380	430	--	--	--
MW-4	08-23-95	451.09	27.72	0.00	423.37	08-23-95	5,300	400	25	240	170	<100	--	--
MW-4	12-04-95	451.09	29.85	0.00	421.24	12-04-95	6,700	100	<10	90	38	--	--	--
MW-4	02-20-96	451.09	21.16	0.00	429.93	02-20-96	7,000	360	22	180	160	<70	--	--
MW-4	05-15-96	451.09	22.18	0.00	428.91	05-15-96	Not sampled: well sampled annually, during the first quarter							
MW-4	08-13-96	451.09	26.20	0.00	424.89	08-13-96	Not sampled: well sampled annually, during the first quarter							
MW-4	11-13-96	451.09	29.72	0.00	421.37	11-13-96	Not sampled: well sampled annually, during the first quarter							
MW-4	03-26-97	451.09	21.86	0.00	429.23	03-27-97	8,900	390	33	200	250	<70	--	--
MW-4	05-15-97	451.09	26.92	0.00	424.17	05-15-97	Not sampled: well sampled annually, during the first quarter							
MW-4	08-26-97	451.09	29.30	0.00	421.79	08-26-97	Not sampled: well sampled annually, during the first quarter							
MW-4	11-05-97	451.09	32.14	0.00	418.95	11-05-97	Not sampled: well sampled annually, during the first quarter							
MW-4	02-18-98	451.09	19.30	0.00	431.79	02-18-98	5,300	220	19	160	130	120	--	--
MW-4	05-20-98	451.09	22.40	0.00	428.69	05-21-98	Not sampled: well sampled annually, during the first quarter							
MW-4	07-30-98	451.09	25.74	0.00	425.35	07-30-98	Not sampled: well sampled annually, during the first quarter							
MW-4	10-29-98	451.09	31.26	0.00	419.83	10-29-98	Not sampled: well sampled annually, during the first quarter							
MW-4	03-16-99	451.09	25.05	0.00	426.04	03-16-99	1,900	49	<5	43	<5	82	1.5	P
MW-4	05-05-99	451.09	26.15	0.00	424.94	05-05-99	Not sampled: well sampled annually, during the first quarter							
MW-4	08-26-99	451.09	28.60	0.00	422.49	08-26-99	Not sampled: well sampled annually, during the first quarter						1.43	
MW-4	12-03-99	451.09	31.53	0.00	419.56	12-03-99	Not sampled: well sampled annually, during the first quarter							
MW-4	03-13-00	451.09	23.61	0.00	427.48	03-13-00	<50	<0.5	<0.5	<0.5	<1	<3	3.82	P
MW-4	06-20-00	451.09	26.38	0.00	424.71	06-20-00	Not sampled: well sampled annually, during the first quarter						0.40	
MW-4	08-31-00	451.09	29.55	0.00	421.54	08-31-00	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	1.04	NP
MW-4	02-09-01	451.09	30.30	0.00	420.79	02-09-01	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	1.39	NP
MW-4	**09-17-01**	**451.09**	**29.90**	**0.00**	**421.19**	**09-17-01**	**3,400**	**51**	**<5.0**	**16**	**23**	**360**	**0.92**	**NP**

Table 1
Groundwater Monitoring Data

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Well Designation	Monitoring Date	Top of Casing Elevation ft-MSL	Depth to Water	Free Product Thickness feet	Ground-water Elevation ft-MSL	Sample Date	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	MTBE µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged (P/NP)
MW-5	03-20-95	451.40	23.20	0.00	428.20	03-20-95	26,000	1,300	180	890	2,900	--	--	--
MW-5	06-02-95	451.40	24.80	0.00	426.60	06-02-95	39,000	940	160	740	1,900	--	--	--
MW-5	08-23-95	451.40	28.10	0.00	423.30	08-23-95	14,000	490	74	250	890	<300	--	--
MW-5	12-04-95	451.40	29.83	0.00	421.57	12-04-95	7,600	230	13	61	80	--	--	--
MW-5	02-20-96	451.40	21.63	0.00	429.77	02-20-96	4,300	220	12	45	130	<50	--	--
MW-5	05-15-96	451.40	22.87	0.00	428.53	05-15-96	2,200	380	17	58	84	<40	--	--
MW-5	08-13-96	451.40	26.48	0.00	424.92	08-13-96	1,700	150	16	24	35	47	--	--
MW-5	11-13-96	451.40	29.68	0.00	421.72	11-13-96	850	150	11	19	37	66	--	--
MW-5	03-26-97	451.40	25.14	0.00	426.26	03-26-97	2,400	440	21	79	210	68	--	--
MW-5	05-15-97	451.40	27.38	0.00	424.02	05-15-97	3,900	510	19	140	240	48	--	--
MW-5	08-26-97	451.40	29.89	0.00	421.51	08-26-97	76	5	<0.5	2	2	9	--	--
MW-5	11-05-97	451.40	32.57	0.00	418.83	11-05-97	63	1	<0.5	<0.5	1	34	--	--
MW-5	02-18-98	451.40	19.99	0.00	431.41	02-18-98	6,200	630	70	320	640	320	--	--
MW-5	05-20-98	451.40	23.21	0.00	428.19	05-20-98	2,300	340	21	110	140	62	--	--
MW-5	07-30-98	451.40	26.19	0.00	425.21	07-30-98	<50	1	<0.5	1	1	<3	8.8	P
MW-5	10-29-98	451.40	31.92	0.00	419.48	10-29-98	<50	<0.5	<0.5	<0.5	<0.5	<3	2.0	NP
MW-5	03-16-99	451.40	25.80	0.00	425.60	03-16-99	1,300	170	8	59	65	120	2.0	P
MW-5	05-05-99	451.40	27.09	0.00	424.31	05-05-99	320	31	1.1	13	13	19	12.09	P
MW-5	08-26-99	451.40	29.67	0.00	421.73	08-26-99	260	13	1.7	4.2	6.3	150	1.31	P
MW-5	12-03-99	451.40	Not surveyed: well inaccessible											
MW-5	03-13-00	451.40	24.51	0.00	426.89	03-13-00	<50	<0.5	<0.5	<0.5	<1	<3	4.41	P
MW-5	06-20-00	451.40	27.37	0.00	424.03	06-20-00	60.8	4.84	<0.500	1.90	1.59	<2.50	5.30	P
MW-5	08-31-00	451.40	30.21	0.00	421.19	08-31-00	<50.0	1.18	<0.500	<0.500	<0.500	3.83	0.97	P
MW-5	02-09-01	451.40	30.19	0.00	421.21	02-09-01	Well sampled annually during the third quarter							
MW-5	**09-17-01**	**451.40**	**30.71**	**0.00**	**420.69**	**09-17-01**	**2,700**	**120**	**10**	**90**	**77**	**330**	**0.81**	**P**

Table 1
Groundwater Monitoring Data

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Well Designation	Monitoring Date	Top of Casing Elevation ft-MSL	Depth to Water	Free Product Thickness feet	Ground-water Elevation ft-MSL	Sample Date	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	MTBE µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged (P/NP)
MW-6	03-20-95	451.37	25.19	0.00	426.18	03-20-95	2,600	210	87	82	140	--	--	--
MW-6	06-02-95	451.37	25.75	0.00	425.62	06-02-95	1,600	55	8	40	26	--	--	--
MW-6	08-23-95	451.37	29.53	0.00	421.84	08-23-95	1,400	42	3	36	13	<20	--	--
MW-6	12-04-95	451.37	32.28	0.00	419.09	12-04-95	2,500	52	6	59	13	--	--	--
MW-6	02-20-96	451.37	22.27	0.00	429.10	02-20-96	2,500	120	16	73	12	<30	--	--
MW-6	05-15-96	451.37	23.86	0.00	427.51	05-15-96	2,000	71	6	47	25	<15	--	--
MW-6	08-13-96	451.37	28.55	0.00	422.82	08-13-96	3,800	91	8	69	25	<20	--	--
MW-6	11-13-96	451.37	32.04	0.00	419.33	11-13-96	1,900	55	3	55	9	16	--	--
MW-6	03-26-97	451.37	26.84	0.00	424.53	03-26-97	1,800	51	5	32	15	<30	--	--
MW-6	05-15-97	451.37	29.58	0.00	421.79	05-15-97	2,400	46	3	29	9	<12	--	--
MW-6	08-26-97	451.37	32.67	0.00	418.70	08-26-97	1,400	61	6	33	10	<12	--	--
MW-6	11-05-97	451.37	34.62	0.00	416.75	11-05-97	690	29	3	18	3	9	--	--
MW-6	02-18-98	451.37	20.09	0.00	431.28	02-18-98	1,800	74	5	24	12	19	--	--
MW-6	05-20-98	451.37	24.05	0.00	427.32	05-20-98	1,900	280	4	31	16	9	--	--
MW-6	07-30-98	451.37	28.72	0.00	422.65	07-30-98	2,300	110	7	36	20	<15	--	P
MW-6	10-29-98	451.37	32.77	0.00	418.60	10-29-98	2,500	14	13	17	12	<12	1.0	P
MW-6	03-16-99	451.37	26.45	0.00	424.92	03-16-99	1,200	65	4	27	13	18	0.5	P
MW-6	05-05-99	451.37	27.86	0.00	423.51	05-05-99	2,200	53	4	26	6	25	5.59	P
MW-6	08-26-99	451.37	30.49	0.00	420.88	08-26-99	1,100	11	6	10	4	13	2.35	P
MW-6	12-03-99	451.37	32.35	0.00	419.02	12-03-99	370	<0.5	<0.5	0.8	<1	4	2.36	P
MW-6	03-13-00	451.37	28.36	0.00	423.01	03-13-00	54	2.1	0.5	0.9	1.4	<3	4.22	P
MW-6	06-20-00	451.37	28.35	0.00	423.02	06-20-00	195	1.83	<0.500	0.528	<0.500	<2.50	3.50	P
MW-6	08-31-00	451.37	30.20	0.00	421.17	08-31-00	276	3.52	0.788	1.15	0.621	8.73	7.00	P
MW-6	02-09-01	451.37	30.70	0.00	420.67	02-09-01	253	5.44	2.93	0.924	0.977	48.9	0.59	P
DUP	02-09-01	--	--	--	--	02-09-01	222	4.49	2.73	0.579	0.523	57.1	--	--
MW-6	**09-17-01**	**451.37**	**30.94**	**0.00**	**420.43**	**09-17-01**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<2.5**	**2.79**	**P**
DUP	**09-17-01**	**--**	**--**	**--**	**--**	**09-17-01**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<2.5**	**--**	**--**

Table 1
Groundwater Monitoring Data

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Well Designation	Monitoring Date	Top of Casing Elevation ft-MSL	Depth to Water	Free Product Thickness feet	Ground-water Elevation ft-MSL	Sample Date	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	MTBE µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged (P/NP)
MW-7	03-20-95	450.33	22.07	0.00	428.26	03-20-95	31,000	2,300	400	620	2,900	--	--	--
MW-7	06-02-95	450.33	23.42	0.00	426.91	06-03-95	40,000	1,400	280	610	2,400	--	--	--
MW-7	08-23-95	450.33	27.13	0.00	423.20	08-23-95	25,000	1,400	200	600	1,600	350	--	--
MW-7	12-04-95	450.33	29.45	0.00	420.88	12-04-95	23,000	1,100	74	490	720	--	--	--
MW-7	02-20-96	450.33	20.25	0.00	430.08	02-20-96	39,000	1,200	140	640	1,800	<400	--	--
MW-7	05-15-96	450.33	21.38	0.00	428.95	05-15-96	Not sampled: well sampled annually, during the first quarter							
MW-7	08-13-96	450.33	25.52	0.00	424.81	08-13-96	Not sampled: well sampled annually, during the first quarter							
MW-7	11-13-96	450.33	29.38	0.00	420.95	11-13-96	Not sampled: well sampled annually, during the first quarter							
MW-7	03-26-97	450.33	24.36	0.00	425.97	03-27-97	35,000	1,100	180	460	1,700	<300	--	--
MW-7	05-15-97	450.33	26.90	0.00	423.43	05-15-97	Not sampled: well sampled annually, during the first quarter							
MW-7	08-26-97	450.33	30.21	0.00	420.12	08-26-97	Not sampled: well sampled annually, during the first quarter							
MW-7	11-05-97	450.33	32.49	0.00	417.84	11-05-97	Not sampled: well sampled annually, during the first quarter							
MW-7	02-18-98	450.33	18.10	0.00	432.23	02-18-98	19,000	1,100	120	460	1,700	240	--	--
MW-7	05-20-98	450.33	21.68	0.00	428.65	05-21-98	Not sampled: well sampled annually, during the first quarter							
MW-7	07-30-98	450.33	26.07	0.00	424.26	07-30-98	Not sampled: well sampled annually, during the first quarter							
MW-7	10-29-98	450.33	31.13	0.00	419.20	10-29-98	Not sampled: well sampled annually, during the first quarter							
MW-7	03-16-99	450.33	24.45	0.00	425.88	03-16-99	8,600	430	51	200	680	<120	1.5	P
MW-7	05-05-99	450.33	25.84	0.00	424.49	05-05-99	Not sampled: well sampled annually, during the first quarter							
MW-7	08-26-99	450.33	28.28	0.00	422.05	08-26-99	Not sampled: well sampled annually, during the first quarter						1.51	
MW-7	12-03-99	450.33	31.57	0.00	418.76	12-03-99	Not sampled: well sampled annually, during the first quarter							
MW-7	03-13-00	450.33	Not surveyed: well inaccessible											
MW-7	06-20-00	450.33	25.91	0.00	424.42	06-20-00	Not sampled: well sampled annually, during the first quarter						5.40	
MW-7	08-31-00	450.33	28.40	0.00	421.93	08-31-00	8,410	344	58.9	276	581	202	0.09	
MW-7	02-09-01	450.33	30.04	0.00	420.29	02-09-01	2,030	203	12.0	17.9	49.4	128	1.55	
MW-7	**09-17-01**	**450.33**	**29.03**	**0.00**	**421.30**	**09-17-01**	**4,800**	**200**	**14**	**9.9**	**27**	**160**	**0.29**	**P**

Table 1
Groundwater Monitoring Data

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Well Designation	Monitoring Date	Top of Casing Elevation ft-MSL	Depth to Water	Free Product Thickness feet	Ground-water Elevation ft-MSL	Sample Date	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	MTBE µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged (P/NP)
MW-8	03-20-95	449.43	24.75	0.00	424.68	03-20-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
MW-8	06-02-95	449.43	24.95	0.00	424.48	06-02-95	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-8	08-23-95	449.43	30.94	0.00	418.49	08-23-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-8	12-04-95	449.43	31.99	0.00	417.44	12-04-95	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-8	02-20-96	449.43	21.13	0.00	428.30	02-20-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-8	05-15-96	449.43	21.96	0.00	427.47	05-15-96	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-8	08-13-96	449.43	30.20	0.00	419.23	08-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-8	11-13-96	449.43	33.24	0.00	416.19	11-13-96	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-8	03-26-97	449.43	26.85	0.00	422.58	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-8	05-15-97	449.43	29.69	0.00	419.74	05-15-97	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-8	08-26-97	449.43	34.00	0.00	415.43	08-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-8	11-05-97	449.43	35.94	0.00	413.49	11-05-97	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-8	02-18-98	449.43	18.18	0.00	431.25	02-18-98	<50	1	1	<0.5	1	<3	--	--
MW-8	05-20-98	449.43	22.85	0.00	426.58	05-20-98	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-8	07-30-98	449.43	30.31	0.00	419.12	07-30-98	<50	<0.5	<0.5	<0.5	<0.5	<3	8.2	NP
MW-8	10-29-98	449.43	35.88	0.00	413.55	10-29-98	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-8	03-16-99	449.43	28.50	0.00	420.93	03-16-99	<50	<0.5	<0.5	<0.5	<0.5	<3	1.0	NP
MW-8	05-05-99	449.43	29.76	0.00	419.67	05-05-99	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-8	08-26-99	449.43	33.51	0.00	415.92	08-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	4.93	P
MW-8	12-03-99	449.43	35.83	0.00	413.60	12-03-99	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-8	03-13-00	449.43	26.12	0.00	423.31	03-13-00	<50	<0.5	<0.5	<0.5	<1	<3	2.81	P
MW-8	06-20-00	449.43	30.91	0.00	418.52	06-20-00	Not sampled: well sampled semi-annually						5.80	
MW-8	08-31-00	449.43	33.70	0.00	415.73	08-31-00	Well no longer part of sampling schedule----------							
MW-8	02-09-01	449.43	30.90	0.00	418.53	02-09-01	Well no longer part of sampling schedule----------							
MW-8	**09-17-01**	**449.43**	**33.95**	**0.00**	**415.48**	**09-17-01**	**Well no longer part of sampling schedule----------**							

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Groundwater Monitoring Data

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Well Designation	Monitoring Date	Top of Casing Elevation ft-MSL	Depth to Water	Free Product Thickness feet	Ground-water Elevation ft-MSL	Sample Date	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	MTBE µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged (P/NP)
MW-9	03-20-95	449.21	19.11	0.00	430.10	03-20-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
MW-9	06-02-95	449.21	21.23	0.00	427.98	06-02-95	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-9	08-23-95	449.21	24.33	0.00	424.88	08-23-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-9	12-04-95	449.21	27.90	0.00	421.31	12-04-95	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-9	02-20-96	449.21	17.86	0.00	431.35	02-20-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-9	05-15-96	449.21	18.69	0.00	430.52	05-15-96	Not sampled: well sampled annually, during the first quarter							
MW-9	08-13-96	449.21	24.17	0.00	425.04	08-13-96	Not sampled: well sampled annually, during the first quarter							
MW-9	11-13-96	449.21	28.01	0.00	421.20	11-13-96	Not sampled: well sampled annually, during the first quarter							
MW-9	03-26-97	449.21	22.58	0.00	426.63	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-9	05-15-97	449.21	25.12	0.00	424.09	05-15-97	Not sampled: well sampled annually, during the first quarter							
MW-9	08-26-97	449.21	28.28	0.00	420.93	08-26-97	Not sampled: well sampled annually, during the first quarter							
MW-9	11-05-97	449.21	31.18	0.00	418.03	11-05-97	Not sampled: well sampled annually, during the first quarter							
MW-9	02-18-98	449.21	16.03	0.00	433.18	02-18-98	<50	1	1	<0.5	1	<3	--	--
MW-9	05-20-98	449.21	19.31	0.00	429.90	05-20-98	Not sampled: well sampled annually, during the first quarter							
MW-9	07-30-98	449.21	24.90	0.00	424.31	07-30-98	Not sampled: well sampled annually, during the first quarter							
MW-9	10-29-98	449.21	30.08	0.00	419.13	10-29-98	Not sampled: well sampled annually, during the first quarter							
MW-9	03-16-99	449.21	22.68	0.00	426.53	03-16-99	<50	<0.5	<0.5	<0.5	<0.5	<3	1.0	P
MW-9	05-05-99	449.21	23.82	0.00	425.39	05-05-99	Not sampled: well sampled annually, during the first quarter							
MW-9	08-26-99	449.21	26.57	0.00	422.64	08-26-99	Not sampled: well sampled annually, during the first quarter						5.08	
MW-9	12-03-99	449.21	Not surveyed: well inaccessible											
MW-9	03-13-00	449.21	25.62	0.00	423.59	03-13-00	<50	<0.5	<0.5	<0.5	<1	<3	5.43	P
MW-9	06-20-00	449.21	23.55	0.00	425.66	06-20-00	Not sampled: well sampled annually, during the first quarter						6.20	
MW-9	08-31-00	449.21	27.39	0.00	421.82	08-31-00	Well no longer part of sampling schedule----------							
MW-9	02-09-01	449.21	28.65	0.00	420.56	02-09-01	Well no longer part of sampling schedule----------							
MW-9	**09-17-01**	**449.21**	**27.51**	**0.00**	**421.70**	**09-17-01**	**Well no longer part of sampling schedule----------**							

Table 1
Groundwater Monitoring Data

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Well Designation	Monitoring Date	Top of Casing Elevation ft-MSL	Depth to Water	Free Product Thickness feet	Ground-water Elevation ft-MSL	Sample Date	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	MTBE µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged (P/NP)
MW-10	03-20-95	449.22	20.96	0.00	428.26	03-20-95	Not sampled: well sampled annually, during the third quarter							
MW-10	06-02-95	449.22	22.15	0.00	427.07	06-02-95	Not sampled: well sampled annually, during the third quarter							
MW-10	08-23-95	449.22	24.47	0.00	424.75	08-23-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-10	12-04-95	449.22	26.97	0.00	422.25	12-04-95	Not sampled: well sampled annually, during the third quarter							
MW-10	02-20-96	449.22	18.40	0.00	430.82	02-20-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-10	05-15-96	449.22	--	--	--	05-15-96	Not surveyed: vehicle was parked on well							
MW-10	08-13-96	449.22	23.70	0.00	425.52	08-13-96	Not sampled: well sampled annually, during the first quarter							
MW-10	11-13-96	449.22	27.15	0.00	422.07	11-13-96	Not sampled: well sampled annually, during the first quarter							
MW-10	03-26-97	449.22	22.23	0.00	426.99	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-10	05-15-97	449.22	24.57	0.00	424.65	05-15-97	Not sampled: well sampled annually, during the first quarter							
MW-10	08-26-97	449.22	27.62	0.00	421.60	08-26-97	Not sampled: well sampled annually, during the first quarter							
MW-10	11-05-97	449.22	30.79	0.00	418.43	11-05-97	Not sampled: well sampled annually, during the first quarter							
MW-10	02-18-98	449.22	--	--	--	02-18-98	Not surveyed: vehicle was parked on well							
MW-10	05-20-98	449.22	--	--	--	05-20-98	Not sampled: well sampled annually, during the first quarter							
MW-10	07-30-98	449.22	23.90	0.00	425.32	07-30-98	Not sampled: well sampled annually, during the first quarter							
MW-10	10-29-98	449.22	30.55	0.00	418.67	10-29-98	Not sampled: well sampled annually, during the first quarter							
MW-10	03-16-99	449.22	23.05	0.00	426.17	03-16-99	<50	<0.5	<0.5	<0.5	<0.5	<3	1.0	P
MW-10	05-05-99	449.22	24.00	0.00	425.22	05-05-99	Not sampled: well sampled annually, during the first quarter							
MW-10	08-26-99	449.22	26.50	0.00	422.72	08-26-99	Not sampled: well sampled annually, during the first quarter						5.15	
MW-10	12-03-99	449.22	30.80	0.00	418.42	12-03-99	Not sampled: well sampled annually, during the first quarter							
MW-10	03-13-00	449.22	26.21	0.00	423.01	03-13-00	Not sampled: vehicle was parked on well							
MW-10	06-20-00	449.22	23.52	0.00	425.70	06-20-00	Not sampled: well sampled annually, during the first quarter						5.5	
MW-10	08-31-00	449.22	27.52	0.00	421.70	08-31-00	Well no longer part of sampling schedule----------							
MW-10	02-09-01	449.22	28.71	0.00	420.51	02-09-01	Well no longer part of sampling schedule----------							
MW-10	**09-17-01**	**449.22**	**27.94**	**0.00**	**421.28**	**09-17-01**	**Well no longer part of sampling schedule----------**							

Table 1
Groundwater Monitoring Data

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Well Designation	Monitoring Date	Top of Casing Elevation ft-MSL	Depth to Water	Free Product Thickness feet	Ground-water Elevation ft-MSL	Sample Date	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	MTBE µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged (P/NP)
MW-11	03-20-95	448.02	25.02	0.00	423.00	03-20-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
MW-11	06-02-95	448.02	23.82	0.00	424.20	06-02-95	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-11	08-23-95	448.02	30.15	0.00	417.87	08-23-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-11	12-04-95	448.02	31.63	0.00	416.39	12-04-95	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-11	02-20-96	448.02	20.94	0.00	427.08	02-20-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-11	05-15-96	448.02	23.03	0.00	424.99	05-15-96	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-11	08-13-96	448.02	29.19	0.00	418.83	08-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-11	11-13-96	448.02	31.96	0.00	416.06	11-13-96	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-11	03-26-97	448.02	26.61	0.00	421.41	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-11	05-15-97	448.02	29.39	0.00	418.63	05-15-97	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-11	08-26-97	448.02	33.47	0.00	414.55	08-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-11	11-05-97	448.02	35.12	0.00	412.90	11-05-97	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-11	02-18-98	448.02	18.03	0.00	429.99	02-18-98	<50	<0.5	<0.5	<0.5	1	<3	--	--
MW-11	05-20-98	448.02	23.00	0.00	425.02	05-20-98	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-11	07-30-98	448.02	29.30	0.00	418.72	07-30-98	<50	<0.5	<0.5	<0.5	<0.5	<3	5.6	P
MW-11	10-29-98	448.02	34.47	0.00	413.55	10-29-98	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-11	03-16-99	448.02	27.88	0.00	420.14	03-16-99	<50	<0.5	<0.5	<0.5	<0.5	<3	1.0	P
MW-11	05-05-99	448.02	26.85	0.00	421.17	05-05-99	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-11	08-26-99	448.02	32.74	0.00	415.28	08-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	4.59	P
MW-11	12-03-99	448.02	34.70	0.00	413.32	12-03-99	Not sampled: well sampled semi-annually, during the first and third quarters							
MW-11	03-13-00	448.02	25.94	0.00	422.08	03-13-00	<50	<0.5	<0.5	<0.5	<1	<3	3.21	P
MW-11	06-20-00	448.02	30.40	0.00	417.62	06-20-00	Not sampled: well sampled semi-annually						3.30	
DUP	08-31-00	--	--	--	--	08-31-00	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	--	--
MW-11	08-31-00	448.02	32.68	0.00	415.34	08-31-00	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	0.40	NP
MW-11	02-09-01	448.02	31.17	0.00	416.85	02-09-01	Well sampled annually during the third quarter							
MW-11	**09-17-01**	**448.02**	**32.98**	**0.00**	**415.04**	**09-17-01**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<2.5**	**0.62**	**NP**

Table 1
Groundwater Monitoring Data

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Well Designation	Monitoring Date	Top of Casing Elevation ft-MSL	Depth to Water	Free Product Thickness feet	Ground-water Elevation ft-MSL	Sample Date	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	MTBE µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged (P/NP)
RW-1	03-20-95	451.67	23.76	0.00	427.91	03-20-95	15,000	1,000	140	310	950	--	--	--
RW-1	06-02-95	451.67	25.12	0.00	426.55	06-02-95	12,000	1,300	280	420	1,100	--	--	--
RW-1	08-23-95	451.67	28.80	0.00	422.87	08-23-95	8,200	520	190	240	610	<50	--	--
RW-1	12-04-95	451.67	31.15	0.00	420.52	12-04-95	2,600	140	59	83	210	--	--	--
RW-1	02-20-96	451.67	21.45	0.00	430.22	02-20-96	6,300	410	160	180	650	<40	--	--
RW-1	05-15-96	451.67	22.97	0.00	428.70	05-15-96	Not sampled: well sampled annually, during the first quarter							
RW-1	08-13-96	451.67	24.74	0.00	426.93	08-13-96	Not sampled: well sampled annually, during the first quarter							
RW-1	11-13-96	451.67	30.69	0.00	420.98	11-13-96	Not sampled: well sampled annually, during the first quarter							
RW-1	03-26-97	451.67	25.69	0.00	425.98	03-26-97	500	57	3	6	18	54	--	--
RW-1	05-15-97	451.67	28.19	0.00	423.48	05-15-97	Not sampled: well sampled annually, during the first quarter							
RW-1	08-26-97	451.67	31.21	0.00	420.46	08-26-97	Not sampled: well sampled annually, during the first quarter							
RW-1	11-05-97	451.67	33.67	0.00	418.00	11-05-97	Not sampled: well sampled annually, during the first quarter							
RW-1	02-18-98	451.67	20.14	0.00	431.53	02-18-98	9,400	200	70	190	710	<60	--	--
RW-1	05-20-98	451.67	23.43	0.00	428.24	05-20-98	Not sampled: well sampled annually, during the first quarter							
RW-1	07-30-98	451.67	27.42	0.00	424.25	07-30-98	Not sampled: well sampled annually, during the first quarter							
RW-1	10-29-98	451.67	32.47	0.00	419.20	10-29-98	Not sampled: well sampled annually, during the first quarter							
RW-1	03-16-99	451.67	25.45	0.00	426.22	03-16-99	1,100	140	19	45	83	530	1.0	NP
RW-1	05-05-99	451.67	27.23	0.00	424.44	05-05-99	Not sampled: well sampled annually, during the first quarter							
RW-1	08-26-99	451.67	29.98	0.00	421.69	08-26-99	Not sampled: well sampled annually, during the first quarter						1.39	
RW-1	12-03-99	451.67	32.38	0.00	419.29	12-03-99	Not sampled: well sampled annually, during the first quarter							
RW-1	03-13-00	451.67	25.53	0.00	426.14	03-13-00	1,100	130	3.5	0.7	95	230	4.43	NP
RW-1	06-20-00	451.67	28.31	0.00	423.36	06-20-00	Not sampled: well sampled annually, during the first quarter						1.90	
RW-1	08-31-00	451.67	30.61	0.00	421.06	08-31-00	<50.0	<0.500	<0.500	<0.500	<0.500	82.5	3.21	NP
RW-1	02-09-01	451.67	31.14	0.00	420.53	02-09-01	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	0.84	NP
RW-1	**09-17-01**	**451.67**	**31.70**	**0.00**	**419.97**	**09-17-01**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<2.5**	**1.51**	**NP**
VW-1	08-31-00	--	20.61	0.00	--	08-31-00	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	10.08	P
VW-1	02-09-01	--	22.10	0.00	--	02-09-01	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	0.53	P
VW-1	**09-17-01**	**--**	**21.99**	**0.00**	**--**	**09-17-01**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<2.5**	**6.59**	**P**

Table 1
Groundwater Monitoring Data

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Well Designation	Monitoring Date	Top of Casing Elevation ft-MSL	Depth to Water	Free Product Thickness feet	Ground-water Elevation ft-MSL	Sample Date	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethyl-benzene µg/L	Total Xylenes µg/L	MTBE µg/L	Dissolved Oxygen mg/L	Purged/ Not Purged (P/NP)

Notes

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

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

MTBE: Methyl tert-butyl ether

EPA: United States Environmental Protection Agency

*: EPA method 8020 prior to 12/03/99

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

TRPH: total recoverable petroleum hydrocarbons

µg/L: micrograms per liter

mg/L: milligrams per liter

- -: not analyzed or not applicable

<: less than laboratory detection limit stated to the right

**: For previous historical groundwater elevation and analytical data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results and Remediation System Performance Evaluation Report, ARCO Service Station 771, Livermore, California*, (EMCON, March 1, 1996).

DUP: duplicate

Table 2
Groundwater Flow Direction and Gradient
1995 - Present

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Date Measured	Average Flow Direction	Average Hydraulic Gradient
03-20-95	Northwest	0.03
06-02-95	North-Northwest	0.014
08-23-95	North-Northwest	0.03
12-04-95	North-Northwest	0.03
02-20-96	Northwest	0.016
05-15-96	Northwest	0.024
08-13-96	North-Northwest	0.03
11-13-96	North-Northwest	0.031
03-26-97	North-Northwest	0.044
05-15-97	North-Northwest	0.031
08-26-97	North-Northwest	0.042
11-05-97	North-Northwest	0.03
02-18-98	Northwest	0.01
05-20-98	Northwest	0.03
07-30-98	North	0.04
10-29-98	North	0.005
03-16-99	North-Northwest	0.03
05-05-99	North	0.04
08-26-99	North-Northwest	0.05
12-03-99	North-Northeast	0.06
03-13-00	North-Northwest	0.066
06/20/00	North-Northwest	0.050
08/31/00	North-Northwest	0.062
02/09/01	North-Northeast	0.014
09/17/01	**North-Northwest**	**0.061**

APPENDIX A

SAMPLING AND ANALYSIS PROCEDURES

APPENDIX A

SAMPLING AND ANALYSIS PROCEDURES

The sampling and analysis procedures for water quality monitoring programs are contained in this appendix. The procedures provided for consistent and reproducible sampling methods, proper application of analytical methods, and accurate and precise analytical results. Finally, these procedures provided guidelines so that the overall objectives of the monitoring program were achieved.

The following documents have been used as guidelines for developing these procedures:

- Procedures Manual for Groundwater Monitoring at Solid Waste Disposal Facilities, Environmental Protection Agency (EPA)-530/SW-611, August 1977
- Resource Conservation and Recovery Act (RCRA) Groundwater Monitoring Technical Enforcement Guidance Document, Office of Solid Waste and Emergency Response (OSWER) 9950.1, September 1986
- Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, EPA SW-846, 3rd edition, November 1986
- Methods for Organic Chemical Analysis of Municipal and Industrial Waste Water, EPA-600/4-82-057, July 1982
- Methods for Organic Chemical Analysis of Water and Wastes, EPA-600/4-79-020, revised March 1983
- Leaking Underground Fuel Tank (LUFT) Field Manual, California State Water Resources Control Board, revised October 1989

Sample Collection

Sample collection procedures include equipment cleaning, water level and total well depth measurements, and well purging and sampling.

Equipment Cleaning

Before the sampling event was started, equipment that was used to sample groundwater was disassembled and cleaned with detergent water and then rinsed with tap water. During field sampling, equipment surfaces that were placed in the well or came into

contact with groundwater during field sampling were washed with detergent and double rinsed with tap water before the next well was purged or sampled.

Water Level, Floating Hydrocarbon, and Total Well Depth Measurements

Before purging and sampling occurred, the depth to water, floating hydrocarbon thickness and total well depth were measured using an oil/water interface measuring system. The oil/water interface measuring system consists of a probe that emits a continuous audible tone when immersed in a nonconductive fluid, such as oil or gasoline and an intermittent tone when immersed in a conductive fluid, such as water. The floating hydrocarbon thickness and water level were measured by lowering the probe into the well. Liquid levels were recorded relative to the tone emitted at the groundwater surface. The sonic probe was decontaminated after each use. A bottom-filling, clear disposable bailer was used to verify floating hydrocarbon thickness measurements of less than 0.02 foot. Alternatively, an electric sounder and a bottom-filling Teflon bailer may have been used to record floating hydrocarbon thickness and depth to water.

The electric sounder is a transistorized instrument that uses a reel-mounted, two-conductor, coaxial cable that connects the control panel to the sensor. Cable markings are stamped at 1-foot intervals. The water level was measured by lowering the sensor into the monitoring well. A low-current circuit was completed when the sensor contacted the water, which served as an electrolyte. The current was amplified and fed into an indicator light and audible buzzer, signaling when water had been contacted. A sensitivity control compensated for highly saline or conductive water. The electric sounder was decontaminated after each use. The bailer was lowered to a point just below the liquid level, retrieved, and observed for floating hydrocarbon.

Liquid measurements were recorded to the nearest 0.01 foot on the depth to water/floating product survey form. The groundwater elevation at each monitoring well was calculated by subtracting the measured depth to water from the surveyed elevation of the top of the well casing. (Every attempt was made to measure depth to water for all wells on the same day.) Total well depth was then measured by lowering the sensor to the bottom of the well. Total well depth, used to calculate purge volumes and to determine whether the well screen was partially obstructed by silt, was recorded to the nearest 0.1 foot on the depth to water/floating product survey form.

Well Purging

If the depth to groundwater was above the top of screens of the monitoring wells, then the wells were purged, otherwise non-purge groundwater samples were collected. Before sampling occurred, a polyvinyl chloride (PVC) bailer, centrifugal pump, low-flow submersible pump, or disposable bailer was used to purge standing water in the casing and gravel pack from the monitoring well. In most monitoring wells, the amount of water purged before sampling was greater than or equal to three casing volumes. Some monitoring wells were expected to be evacuated to dryness after removing fewer than three casing volumes. These low-yield monitoring wells were allowed to recharge for up to 24 hours. Samples were obtained as soon as the monitoring wells recharged to a level

sufficient for sample collection. If insufficient water recharged after 24 hours, the monitoring well was recorded as dry for the sampling event.

Groundwater purged from the monitoring wells was transported in a 240-gallon truck-mounted tank to Integrated Waste Management's Milpitas storage facility for disposal.

Field measurements of pH, specific conductance, and temperature were recorded in a waterproof field logbook. Field data sheets were reviewed for completeness by the sampling coordinator after the sampling event was completed.

The pH, specific conductance, and temperature meter were calibrated each day before field activities were begun. The calibration was checked once each day to verify meter performance. Field meter calibrations were recorded on the water sample field data sheet.

Well Sampling

A disposable bailer was the only equipment acceptable for well sampling. When samples for volatile organic analysis were being collected, the flow of groundwater from the bailer was regulated to minimize turbulence and aeration. Glass bottles of at least 40-milliliters volume and fitted with Teflon-lined septa were used in sampling for volatile organics. These bottles were filled completely to prevent air from remaining in the bottle. A positive meniscus formed when the bottle was completely full. A convex Teflon septum was placed over the positive meniscus to eliminate air. After the bottle was capped, it was inverted and tapped to verify that it contained no air bubbles. The sample containers for other parameters were filled, filtered as required, and capped.

When required, dissolved concentrations of metals were determined using appropriate field filtration techniques. The sample was filtered by emptying the contents of the disposable bailer into a pressure transfer vessel. A disposable 0.45-micron acrylic copolymer filter was threaded onto the transfer vessel at the discharge point, and the vessel was sealed. Pressure was applied to the vessel with a hand pump and the filtrate directed into the appropriate containers. Each filter was used once and discarded.

Sample Preservation and Handling

The following section specifies sample containers, preservation methods, and sample handling procedures.

Sample Containers and Preservation

Sample containers vary with each type of analytical parameter. Container types and materials were selected to be nonreactive with the particular analytical parameter tested.

Sample Handling

Sample containers were labeled immediately prior to sample collection. Samples were kept cool with cold packs or ice until received by the laboratory. At the time of

sampling, each sample was logged on an ARCO chain-of-custody record that accompanied the sample to the laboratory. Samples that required overnight storage prior to shipping to the laboratory were kept cool (4° C) in a refrigerator.

Samples were transferred from Cambria to an ARCO-approved laboratory by courier or taken directly to the laboratory by the environmental sampler. Sample shipments from Cambria to laboratories performing the selected analyses routinely occurred within two to three days of sample collection.

Sample Documentation

The following procedures were used during sampling and analysis to provide chain-of-custody control during sample handling from collection through storage. Sample documentation included the use of the following:

- Water sample field data sheets to document sampling activities in the field
- Labels to identify individual samples
- Chain-of-custody record sheets for documenting possession and transfer of samples
- Laboratory analysis request sheets for documenting analyses to be performed

Field Logbook

In the field, the sampler recorded the following information on the water sample field data sheet (see Figure A-2) for each sample collected:

- Project number
- Client's name
- Location
- Name of sampler
- Date and time
- Well accessibility and integrity
- Pertinent well data (e.g., casing diameter, depth to water, well depth)
- Calculated and actual purge volumes
- Purging equipment used
- Sampling equipment used
- Appearance of each sample (e.g., color, turbidity, sediment)
- Results of field analyses (temperature, pH, specific conductance)
- General comments

The water sample field data sheet was signed by the sampler and reviewed by the sampling coordinator.

Labels

Sample labels contained the following information:

- Project number
- Sample number (i.e., well designation)
- Sample depth
- Sampler's initials
- Date and time of collection
- Type of preservation used (if any)

Sampling and Analysis Chain-of-Custody Record

The ARCO chain-of-custody record initiated at the time of sampling contained, at a minimum, the sample designation (including the depth at which the sample was collected), sample type, analytical request, date of sampling, and the name of the sampler. The record sheet was signed, timed, and dated by the sampler when transferring the samples. The number of custodians in the chain of possession was minimized. A copy of the ARCO chain-of-custody record was returned to Cambria with the analytical results.

Groundwater Sampling and Analysis Request Form

A groundwater sampling and analysis request form (see Figure A-3) was used to communicate to the environmental sampler the requirements of the monitoring event. At a minimum, the groundwater sampling and analysis request form included the following information:

- Date scheduled
- Site-specific instructions
- Specific analytical parameters
- Well number
- Well specifications (expected total depth, depth of water, and product thickness)

APPENDIX B

CERTIFIED ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION

Sequoia Analytical

1455 McDowell Blvd. North Ste D
Petaluma, CA 94954
(707) 792-1865
FAX (707) 792-0342
www.sequoialabs.com

20 September, 2001

Ron Scheele
Cambria Environmental - Emeryville
6262 Hollis Street
Emeryville, CA 94608

RE: ARCO
Sequoia Report: P109269

Enclosed are the results of analyses for samples received by the laboratory on 09/18/01 14:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Angelee Cari

Angelee Cari
Client Services Representative

CA ELAP Certificate #2374

Sequoia Analytical

1455 McDowell Blvd. North Ste D
Petaluma, CA 94954
(707) 792-1865
FAX (707) 792-0342
www.sequoialabs.com

Cambria Environmental - Emeryville	Project: ARCO	
6262 Hollis Street	Project Number: 771/Livermore	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	09/20/01 17:35

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-2	P109269-01	Water	09/17/01 09:55	09/18/01 14:00
MW-4	P109269-02	Water	09/17/01 09:00	09/18/01 14:00
MW-5	P109269-03	Water	09/17/01 10:30	09/18/01 14:00
MW-6	P109269-04	Water	09/17/01 11:00	09/18/01 14:00
MW-7	P109269-05	Water	09/17/01 11:40	09/18/01 14:00
MW-11	P109269-06	Water	09/17/01 09:15	09/18/01 14:00
RW-1	P109269-07	Water	09/17/01 09:30	09/18/01 14:00
VW-1	P109269-08	Water	09/17/01 12:15	09/18/01 14:00
DUP	P109269-09	Water	09/17/01 00:00	09/18/01 14:00

Sequoia Analytical - Petaluma

Angelee Cari

Angelee Cari, Client Services Representative

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Sequoia Analytical

1455 McDowell Blvd. North Ste D
Petaluma, CA 94954
(707) 792-1865
FAX (707) 792-0342
www.sequoialabs.com

Cambria Environmental - Emeryville	Project: ARCO	
6262 Hollis Street	Project Number: 771/Livermore	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	09/20/01 17:35

Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-2 (P109269-01) Water Sampled: 09/17/01 09:55 Received: 09/18/01 14:00									
Gasoline (C6-C12)	**3100**	250	ug/l	5	1090360	09/19/01	09/19/01	EPA 8015M/8020M	
Benzene	**300**	2.5	"	"	"	"	"	"	
Toluene	**12**	2.5	"	"	"	"	"	"	
Ethylbenzene	**8.8**	2.5	"	"	"	"	"	"	
Xylenes (total)	**18**	2.5	"	"	"	"	"	"	
Methyl tert-butyl ether	**120**	12	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*106 %*	*65-135*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*101 %*	*65-135*		"	"	"	"	
MW-4 (P109269-02) Water Sampled: 09/17/01 09:00 Received: 09/18/01 14:00									
Gasoline (C6-C12)	**3400**	500	ug/l	10	1090360	09/19/01	09/19/01	EPA 8015M/8020M	
Benzene	**51**	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
Ethylbenzene	**16**	5.0	"	"	"	"	"	"	
Xylenes (total)	**23**	5.0	"	"	"	"	"	"	
Methyl tert-butyl ether	**360**	25	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*104 %*	*65-135*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*	*65-135*		"	"	"	"	
MW-5 (P109269-03) Water Sampled: 09/17/01 10:30 Received: 09/18/01 14:00									
Gasoline (C6-C12)	**2700**	250	ug/l	5	1090360	09/19/01	09/19/01	EPA 8015M/8020M	
Benzene	**120**	2.5	"	"	"	"	"	"	
Toluene	**10**	2.5	"	"	"	"	"	"	
Ethylbenzene	**90**	2.5	"	"	"	"	"	"	
Xylenes (total)	**77**	2.5	"	"	"	"	"	"	
Methyl tert-butyl ether	**330**	12	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*103 %*	*65-135*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*	*65-135*		"	"	"	"	

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Cambria Environmental - Emeryville	Project: ARCO	
6262 Hollis Street	Project Number: 771/Livermore	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	09/20/01 17:35

Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-6 (P109269-04) Water Sampled: 09/17/01 11:00 Received: 09/18/01 14:00									
Gasoline (C6-C12)	ND	50	ug/l	1	1090360	09/19/01	09/19/01	EPA 8015M/8020M	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.5	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*103 %*	*65-135*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*101 %*	*65-135*		"	"	"	"	
MW-7 (P109269-05) Water Sampled: 09/17/01 11:40 Received: 09/18/01 14:00									
Gasoline (C6-C12)	**4800**	250	ug/l	5	1090360	09/19/01	09/19/01	EPA 8015M/8020M	
Benzene	**200**	2.5	"	"	"	"	"	"	
Toluene	**14**	2.5	"	"	"	"	"	"	
Ethylbenzene	**9.9**	2.5	"	"	"	"	"	"	
Xylenes (total)	**27**	2.5	"	"	"	"	"	"	
Methyl tert-butyl ether	**160**	12	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*96.0 %*	*65-135*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*103 %*	*65-135*		"	"	"	"	
MW-11 (P109269-06) Water Sampled: 09/17/01 09:15 Received: 09/18/01 14:00									
Gasoline (C6-C12)	ND	50	ug/l	1	1090360	09/19/01	09/19/01	EPA 8015M/8020M	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.5	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*101 %*	*65-135*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*	*65-135*		"	"	"	"	

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Cambria Environmental - Emeryville	Project: ARCO	
6262 Hollis Street	Project Number: 771/Livermore	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	09/20/01 17:35

Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
RW-1 (P109269-07) Water Sampled: 09/17/01 09:30 Received: 09/18/01 14:00									
Gasoline (C6-C12)	ND	50	ug/l	1	1090360	09/19/01	09/19/01	EPA 8015M/8020M	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.5	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*102 %*	*65-135*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*	*65-135*		"	"	"	"	
VW-1 (P109269-08) Water Sampled: 09/17/01 12:15 Received: 09/18/01 14:00									
Gasoline (C6-C12)	ND	50	ug/l	1	1090360	09/19/01	09/19/01	EPA 8015M/8020M	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.5	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*103 %*	*65-135*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*101 %*	*65-135*		"	"	"	"	
DUP (P109269-09) Water Sampled: 09/17/01 00:00 Received: 09/18/01 14:00									
Gasoline (C6-C12)	ND	50	ug/l	1	1090360	09/19/01	09/19/01	EPA 8015M/8020M	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.5	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*103 %*	*65-135*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*101 %*	*65-135*		"	"	"	"	

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Cambria Environmental - Emeryville	Project: ARCO	
6262 Hollis Street	Project Number: 771/Livermore	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	09/20/01 17:35

Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M - Quality Control

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1090360 - EPA 5030, waters										
Blank (1090360-BLK1)				Prepared & Analyzed: 09/19/01						
Gasoline (C6-C12)	ND	50	ug/l							
Benzene	ND	0.50	"							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Methyl tert-butyl ether	ND	2.5	"							
Surrogate: a,a,a-Trifluorotoluene	*304*		"	*300*		*101*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*295*		"	*300*		*98.3*	*65-135*			
LCS (1090360-BS1)				Prepared & Analyzed: 09/19/01						
Gasoline (C6-C12)	2570	50	ug/l	2750		93.5	65-135			
Benzene	39.8	0.50	"	33.0		121	65-135			
Toluene	210	0.50	"	198		106	65-135			
Ethylbenzene	44.6	0.50	"	46.0		97.0	65-135			
Xylenes (total)	228	0.50	"	230		99.1	65-135			
Methyl tert-butyl ether	66.1	2.5	"	52.5		126	65-135			
Surrogate: a,a,a-Trifluorotoluene	*353*		"	*300*		*118*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*312*		"	*300*		*104*	*65-135*			
Matrix Spike (1090360-MS1)	**Source: P109238-01**			Prepared & Analyzed: 09/19/01						
Gasoline (C6-C12)	2610	50	ug/l	2750	ND	94.9	65-135			
Benzene	37.1	0.50	"	33.0	ND	112	65-135			
Toluene	205	0.50	"	198	ND	104	65-135			
Ethylbenzene	44.2	0.50	"	46.0	ND	96.1	65-135			
Xylenes (total)	224	0.50	"	230	ND	97.4	65-135			
Methyl tert-butyl ether	59.1	2.5	"	52.5	ND	113	65-135			
Surrogate: a,a,a-Trifluorotoluene	*340*		"	*300*		*113*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*318*		"	*300*		*106*	*65-135*			

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Cambria Environmental - Emeryville	Project: ARCO	
6262 Hollis Street	Project Number: 771/Livermore	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	09/20/01 17:35

Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M - Quality Control

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1090360 - EPA 5030, waters										
Matrix Spike Dup (1090360-MSD1)	**Source: P109238-01**			Prepared & Analyzed: 09/19/01						
Gasoline (C6-C12)	2730	50	ug/l	2750	ND	99.3	65-135	4.49	20	
Benzene	38.8	0.50	"	33.0	ND	118	65-135	4.48	20	
Toluene	208	0.50	"	198	ND	105	65-135	1.45	20	
Ethylbenzene	44.1	0.50	"	46.0	ND	95.9	65-135	0.227	20	
Xylenes (total)	220	0.50	"	230	ND	95.7	65-135	1.80	20	
Methyl tert-butyl ether	65.4	2.5	"	52.5	ND	125	65-135	10.1	20	
Surrogate: a,a,a-Trifluorotoluene	*339*		"	*300*		*113*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*325*		"	*300*		*108*	*65-135*			

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Cambria Environmental - Emeryville	Project: ARCO	
6262 Hollis Street	Project Number: 771/Livermore	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	09/20/01 17:35

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

ARCO Products Company — Chain of Custody

RAT#38 — Task Order No. WAR# 27070.00

ARCO facility no. 771 — Facility Livermore — Project manager (Consultant) Ron Scheele — Laboratory name Sequoia

ARCO engineer Paul Supple — Telephone no. 925-299-8891 — Telephone no. (Consultant) 510-450-1983 — Fax no. (Consultant) — Contract number

Consultant name Cambria Env. Tech — Address (Consultant) 6262 Hollis St. Emeryville, Ca — Method of shipment

Sample ID	Lab no	Container no.	Matrix: Soil	Water	Other	Preservation: Ice	Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH as gas EPA M602/8015	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 ☐ VOA ☐ VOA ☐ Semi	CAM METALS EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐
MW-2		4		X		X	X	9-17-01	9:55		X	Mop 0.05				1				
MW-4		4		X		X	X	9-17-01	9:00		X					2				
MW-5		4		X		X	X	9-17-01	10:30		X					3				
MW-6		4		X		X	X	9-17-01	11:00		X					4				
MW-7		4		X		X	X	9-17-01	11:40		X					5				
MW-11		4		X		X	X	9-17-01	9:15		X					6				
RW-1		4		X		X	X	9-17-01	9:30		X					7				
VW-1		4		X		X	X	9-17-01	12:15		X					8				
DUP		4		X		X	X	9-17-01			X					9				

COOLER CUSTODY SEALS INTACT ☐

NOT INTACT ☐

COOLER TEMPERATURE 3.0 °C

Special detection Limit/reporting: Lowest possible

Special QA/QC

Remarks: Report Results in EDF format also

Lab number

Turnaround time

- Priority Rush 1 Business Day [ ]
- Rush 2 Business Days [ ]
- Expedited 5 Business Days [ ]
- Standard 10 Business Days [X]

Condition of sample:		Temperature received:	
Relinquished by sampler: S. Jull	Date 9-17-01 Time 18:30	Received by Secure location	
Relinquished by	Date Time	Received by	Date 9/18-01 Time 1201
Relinquished by	Date Time	Received by	Date Time NLab 1400

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

APC-3292 (2-91)

APPENDIX C

FIELD DATA SHEETS

CAMBR.

WELL DEPTH MEASUREMENTS

Well ID	Time	Product Depth	Water Depth	Product Thickness	Well Depth	Comments
MW-1			30.85			
MW-2			27.62		37.90	purge
MW-3			29.04			
MW-4			29.90			no purge
MW-5			30.71		40.20	purge
MW-6			30.94		43.30	purge
MW-7			29.03		39.70	purge
MW-8			33.95			
MW-9			27.51			
MW-10			27.94			
MW-11			32.98			no purge
RW-1			31.70			no purge
VW-1			21.99		28.06	purge

Project Name: Arco 771

Project Number: 438-1607

Measured By: S. Hill

Date: 9-17-01

CAMBRIA

WELL SAMPLING FORM

Project Name: **ARCO 771**	Cambria Mgr: **Ron Scheele**	Well ID: MW-2
Project Number: **438 - 1607**	Date: 9-17-01	Well Yield:
Site Address: **899 Rincon Ave, Livermore**	Sampling Method: **Disposable bailer**	Well Diameter: 4" pvc
		Technician(s): SG
Initial Depth to Water: 27.62	Total Well Depth: 37.90	Water Column Height: 10.28
Volume/ft: 0.65	1 Casing Volume: 6.68	3 Casing Volumes: 20.04
Purge/No Purge:		
Purging Device: ~~Submersible Pump~~ 4" pvc bailer	Did Well Dewater?: no	Total Gallons Purged: 20
Start Purge Time: 9:35	Stop Purge Time: 9:49	Total Time: 14 mins

1 Casing Volume = Water column height x Volume/ ft.

Well Diam.	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp. C	pH	Cond. uS	Comments
9:40	7	19.7	7.27	864	
9:45	14	20.4	7.39	892	
9:50	20	19.3	7.34	870	
					DO = 1.70 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-2	9-17-01	9:55	4 VOA	HCL	BTEX, TPHg, MTBE	8021B / 8240

CAMBRIA

WELL SAMPLING FORM

Project Name: **ARCO 771**	Cambria Mgr: **Ron Scheele**	Well ID: MW-4
Project Number: **438 - 1607**	Date: 9-17-01	Well Yield:
Site Address: **899 Rincon Ave, Livermore**	Sampling Method: **Disposable bailer**	Well Diameter: 4" pvc
		Technician(s): SG
Initial Depth to Water: 29.90	Total Well Depth:	Water Column Height:
Volume/ft:	1 Casing Volume:	3 Casing Volumes:
Purge/No Purge:		
Purging Device: **Submersible Pump**	Did Well Dewater?:	Total Gallons Purged:
Start Purge Time:	Stop Purge Time:	Total Time:

1 Casing Volume = Water column height x Volume/ ft.

Well Diam.	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp. C	pH	Cond. uS	Comments
		no purge			
					DO = 0.92 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-4	9-17-01	9:00	4 VOA	HCL	BTEX, TPHg, MTBE	8021B / 8240

CAMBRIA

WELL SAMPLING FORM

Project Name: **ARCO 771**	Cambria Mgr: **Ron Scheele**	Well ID: MW-5
Project Number: **438 - 1607**	Date: 9-17-01	Well Yield:
Site Address: **899 Rincon Ave, Livermore**	Sampling Method: **Disposable bailer**	Well Diameter: 4" pvc
		Technician(s): SG
Initial Depth to Water: 30.71	Total Well Depth: 40.20	Water Column Height: 9.49
Volume/ft: 0.65	1 Casing Volume: 6.16	3 Casing Volumes: 18.50
Purge/No Purge:		
Purging Device: ~~Submersible Pump~~ 4" pvc	Did Well Dewater?: NO	Total Gallons Purged: 18.50
Start Purge Time: 10:10	Stop Purge Time: 10:24	Total Time: 14 mins

1 Casing Volume = Water column height x Volume/ ft.

Well Diam.	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp. C	pH	Cond. uS	Comments
10:15	6	18.4	7.50	890	
10:20	12	19.7	7.59	1019	
10:25	18.5	19.7	7.63	974	
					DO = 0.81 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-5	9-17-01	10:30	4 VOA	HCL	BTEX, TPHg, MTBE	8021B / 8240

CAMBRIA

WELL SAMPLING FORM

Project Name: **ARCO 771**	Cambria Mgr: **Ron Scheele**	Well ID: MW-6
Project Number: **438 - 1607**	Date: 9-17-01	Well Yield:
Site Address: **899 Rincon Ave, Livermore**	Sampling Method: **Disposable bailer**	Well Diameter: 4" pvc
		Technician(s): SG
Initial Depth to Water: 30.94	Total Well Depth: 43.30	Water Column Height: 12.36
Volume/ft: 0.65	1 Casing Volume: 8.03	3 Casing Volumes: 24.09
Purge/No Purge:		
Purging Device: ~~Submersible Pump~~ 4" pvc bailer	Did Well Dewater?: NO	Total Gallons Purged: 24
Start Purge Time: 10:40	Stop Purge Time: 10:54	Total Time: 14 mins

1 Casing Volume = Water column height x Volume/ ft.

Well Diam.	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp. C	pH	Cond. uS	Comments
10:45	8	19.5	7.30	972	
10:50	16	20.3	7.80	954	
10:55	24	19.7	7.85	971	
					DO = 2.74 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-6	9-17-01	11:00	4 VOA	HCL	BTEX, TPHg, MTBE	8021B / 8240
DUP						

CAMBRIA

WELL SAMPLING FORM

Project Name: **ARCO 771**	Cambria Mgr: **Ron Scheele**	Well ID: MW-7
Project Number: **438 - 1607**	Date: 9-17-01	Well Yield:
Site Address: **899 Rincon Ave, Livermore**	Sampling Method: **Disposable bailer**	Well Diameter: 4" pvc
		Technician(s): SG
Initial Depth to Water: 29.03	Total Well Depth: 39.70	Water Column Height: 10.67
Volume/ft: 0.65	1 Casing Volume: 6.93	3 Casing Volumes: 20.80
Purge/No Purge:		
Purging Device: ~~Submersible Pump~~ purge	Did Well Dewater?: NO	Total Gallons Purged: 20.80
Start Purge Time: 11:20	Stop Purge Time: 11:34	Total Time: 14 mins

1 Casing Volume = Water column height x Volume/ ft.

Well Diam.	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp. C	pH	Cond. uS	Comments
11:25	7	19.2	7.65	850	
11:30	14	19.9	7.60	724	
11:35	21	19.9	7.68	719	
					DO= 0.29mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-7	9-17-01	11:40	4 VOA	HCL	BTEX, TPHg, MTBE	8021B / 8240

CAMBRIA

WELL SAMPLING FORM

Project Name: **ARCO 771**	Cambria Mgr: **Ron Scheele**	Well ID: MW-11
Project Number: **438 - 1607**	Date: 9-17-01	Well Yield:
Site Address: **899 Rincon Ave, Livermore**	Sampling Method: **Disposable bailer**	Well Diameter: 4" pvc
		Technician(s): SG
Initial Depth to Water: 32.98	Total Well Depth:	Water Column Height:
Volume/ft:	1 Casing Volume:	3 Casing Volumes:
Purge/No Purge:		
Purging Device: **Submersible Pump**	Did Well Dewater?:	Total Gallons Purged:
Start Purge Time:	Stop Purge Time:	Total Time:

1 Casing Volume = Water column height x Volume/ ft.

Well Diam.	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp. C	pH	Cond. uS	Comments
		NO PURGE			DO= 0.62mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-11	9-17-01	9:15	4 VOA	HCL	BTEX, TPHg, MTBE	8021B / 8240

CAMBRIA

WELL SAMPLING FORM

Project Name: **ARCO 771**	Cambria Mgr: **Ron Scheele**	Well ID: RW-1
Project Number: **438 - 1607**	Date: 9-17-01	Well Yield:
Site Address: **899 Rincon Ave, Livermore**	Sampling Method: **Disposable bailer**	Well Diameter: 4" pvc
		Technician(s): SG
Initial Depth to Water: 31.70	Total Well Depth:	Water Column Height:
Volume/ft:	1 Casing Volume:	3 Casing Volumes:
Purge/No Purge:		
Purging Device: **Submersible Pump**	Did Well Dewater?:	Total Gallons Purged:
Start Purge Time:	Stop Purge Time:	Total Time:

1 Casing Volume = Water column height x Volume/ ft.

Well Diam.	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp. C	pH	Cond. uS	Comments
	no purge				
					DO = 1.51 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
RW-1	9-17-01	9:30	4 VOA	HCL	BTEX, TPHg, MTBE	8021B / 8240

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WELL SAMPLING FORM

Project Name: ARCO 771	Cambria Mgr: Ron Scheele	Well ID: VW-1
Project Number: 438 - 1607	Date: 9-17-01	Well Yield:
Site Address: 899 Rincon Ave, Livermore	Sampling Method: Disposable bailer	Well Diameter: 4" pvc
		Technician(s): SG
Initial Depth to Water: 21.99	Total Well Depth: 28.06	Water Column Height: 6.07
Volume/ft: 0.65	1 Casing Volume: 3.94	3 Casing Volumes: 11.83
Purge/No Purge:		
Purging Device: Submersible Pump	Did Well Dewater?: no	Total Gallons Purged: 12
Start Purge Time: 11:55	Stop Purge Time: 12:09	Total Time: 14 mins

1 Casing Volume = Water column height x Volume/ ft.

Well Diam.	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp. C	pH	Cond. uS	Comments
12:00	4	19.7	7.69	874	
12:05	8	20.4	7.42	890	
12:10	12	20.1	7.35	895	
					DO = 6.59 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
~~MW-2~~ VW-1	9-17-01	12:15	4 VOA	HCL	BTEX, TPHg, MTBE	8021B / 8240