

C A M B R I A

February 23, 2001

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

Re: **Monitoring and Remediation Performance Report
Fourth Quarter 2000**
ARCO Service Station No. 6041
7249 Village Parkway
Dublin, California
Cambria Project # 436-1643

MAR 02 2001



Dear Ms. Chu:

On behalf of ARCO, Cambria Environmental Technology, Inc. (Cambria) is submitting the attached report which presents the results of the fourth quarter 2000 groundwater monitoring program at ARCO Service Station No. 6041, located at 7249 Village Parkway, Dublin, California. **Operation and performance data for the mobile dual-phase vacuum extraction (DVE) program is also presented.** As requested by Alameda County Health Care Services Agency (ACHCSA), the analytical results for primary oxygenates by 8260 for the third quarter 2000 have been included as Appendix D. The monitoring program complies with the ACHCSA requirements regarding underground tank investigations.

Please call if you have any questions.

Sincerely,

Cambria Environmental Technology, Inc.

Ron Scheele

436-1643

Ron Scheele, RG
Senior Project Manager

Oakland, CA
San Ramon, CA
Sonoma, CA
Portland, OR

Attachment: **Quarterly Groundwater Monitoring Report, Fourth Quarter 2000
DVE Quarterly Operation and Performance, Fourth Quarter 2000**

cc: Mr. Paul Supple, ARCO, PO Box 6549, Moraga, California 94570
Ms. Karen Petryna, Equiva Services, LLC, PO Box 7869, Burbank, California 91510-7869

**Cambria
Environmental
Technology, Inc.**

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
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C A M B R I A

Monitoring and Remediation Performance Report

Fourth Quarter 2000

ARCO Service Station No. 6041
7249 Village Parkway
Dublin, California
Cambria Project # 436-1643



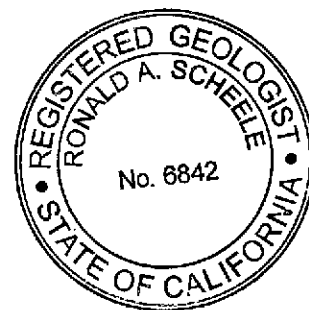
Prepared For:

Mr. Paul Supple
ARCO

February 23, 2001

Prepared By:

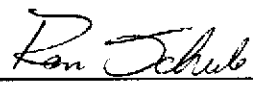
Cambria Environmental Technology, Inc.
1144 65th Street, Suite B
Oakland, California 94608



Written by:



Jason D. Olson
Senior Staff Environmental Scientist



Ron Scheele, RG
Senior Project Manager

ARCO QUARTERLY GROUNDWATER MONITORING REPORT

Station No.: 6041 Address: 7249 Village Parkway, Dublin, California
 ARCO Environmental Engineer/Phone No.: Paul Supple / (925) 299-8891
 Consulting Co./Contact Person: Cambria Environmental Technology, Inc. / Ron Scheele, RG
 Consultant Project No.: 436-1643
 Primary Agency/Regulatory ID No.: ACHCSA

WORK PERFORMED THIS QUARTER (FOURTH - 2000):



1. Submitted quarterly groundwater monitoring report for third quarter, 2000.
2. Performed quarterly groundwater monitoring and sampling on December 27, 2000.
3. Initiated monthly mobile dual phase vacuum extraction (DVE) remediation (November 22 and December 13, 2000).

WORK PROPOSED FOR NEXT QUARTER (FIRST - 2001):

1. Prepare and submit quarterly groundwater monitoring report for fourth quarter 2000.
2. Perform quarterly groundwater monitoring and sampling for first quarter 2001.
3. Perform monthly DVE remediation.
4. Prepare remediation piping design for upcoming station remodel.

MONITORING:

Current Phase of Project:	<u>Remediation</u>
Frequency of Groundwater Sampling	<u>Quarterly: MW-1, MW-3, VW-2, Shell MW-6, Shell MW-7</u> <u>Semi-annual: MW-2 (1st/3rd)</u>
Frequency of Groundwater Monitoring	<u>Quarterly</u>
Is Free Product (FP) Present On-site:	<u>No</u>
Bulk Soil Removed to Date :	<u>15 cubic yards of TPH impacted soil</u>
Water Wells or Surface Waters, within 2000 ft., impacted by site:	<u>None</u>
Current Remediation Techniques:	<u>DVE (8 hours monthly)</u>
Average Depth to Groundwater:	<u>9.07 feet</u>
Groundwater Flow Direction and Gradient	<u>0.03 ft/ft toward west-southwest</u>

MOBILE DVE QUARTERLY OPERATION AND PERFORMANCE

Event Frequency:	Monthly (began on 11/22/00)
Event Duration (average):	7.5 hours
Total Extraction Time – This Quarter:	15 hours
To Date:	15 hours
Extraction Wells:	MW-1, MW-3, VW-2 (discontinued 12/13/00)
Total TPHg removed this quarter:	<1.0 pounds
Total TPHg removed to date:	<1.0 pounds
Total Benzene removed this quarter:	<0.032 pounds
Total Benzene removed to date:	<0.032 pounds
Total MTBE removed this quarter:	0.40 pounds
Total MTBE removed to date:	0.40 pounds



SOIL VAPOR EXTRACTION

TPHg Vapor Conc. End of Period (lab):	2.979 ppmv (MW-1 on 12/13/00)
Benzene Vapor Conc. End of Period (lab):	<0.031 ppmv (MW-1 on 12/13/00)
MTBE Vapor Conc. End of Period (lab):	<0.111 ppmv (MW-1 on 12/13/00)
System vapor flow rates:	1.8 to 16.0 cfm

GROUNDWATER EXTRACTION

Groundwater extracted this quarter:	666 gallons
Total groundwater extracted:	666 gallons
System groundwater flow rates:	0.06 to 1.27 gallons per minute
Source of groundwater analytical data:	Third Quarter 2000
TPHg groundwater concentration (lab):	<10,000 ug/L (MW-1 and MW-3)
Benzene groundwater concentration (lab):	<100 ug/L (MW-1 and MW-3)
MTBE groundwater concentration (lab):	63,700 ug/L (MW-1)

DISCUSSION:

Based on field measurements collect on December 27, 2000, groundwater beneath the site flows towards the west-southwest at a gradient of 0.003 ft/ft. This is consistent with the historic groundwater flow direction and gradient.

Hydrocarbon concentrations detected this quarter are consistent with the previous sampling event, with the exception of MW-3, which showed an increase in TPHg. The maximum TPHg, benzene, and MTBE concentrations were detected in well MW-3 at 29,700, 1,620, and 62,600 micrograms per liter ($\mu\text{g/L}$), respectively.

Monthly mobile DVE events were initiated on November 22, 2000. Cambria will continue monthly DVE events in the first quarter 2001. Extraction from tank backfill wells (TP-1 and TP-2) will be initiated during monthly DVE events in the first quarter, 2001.

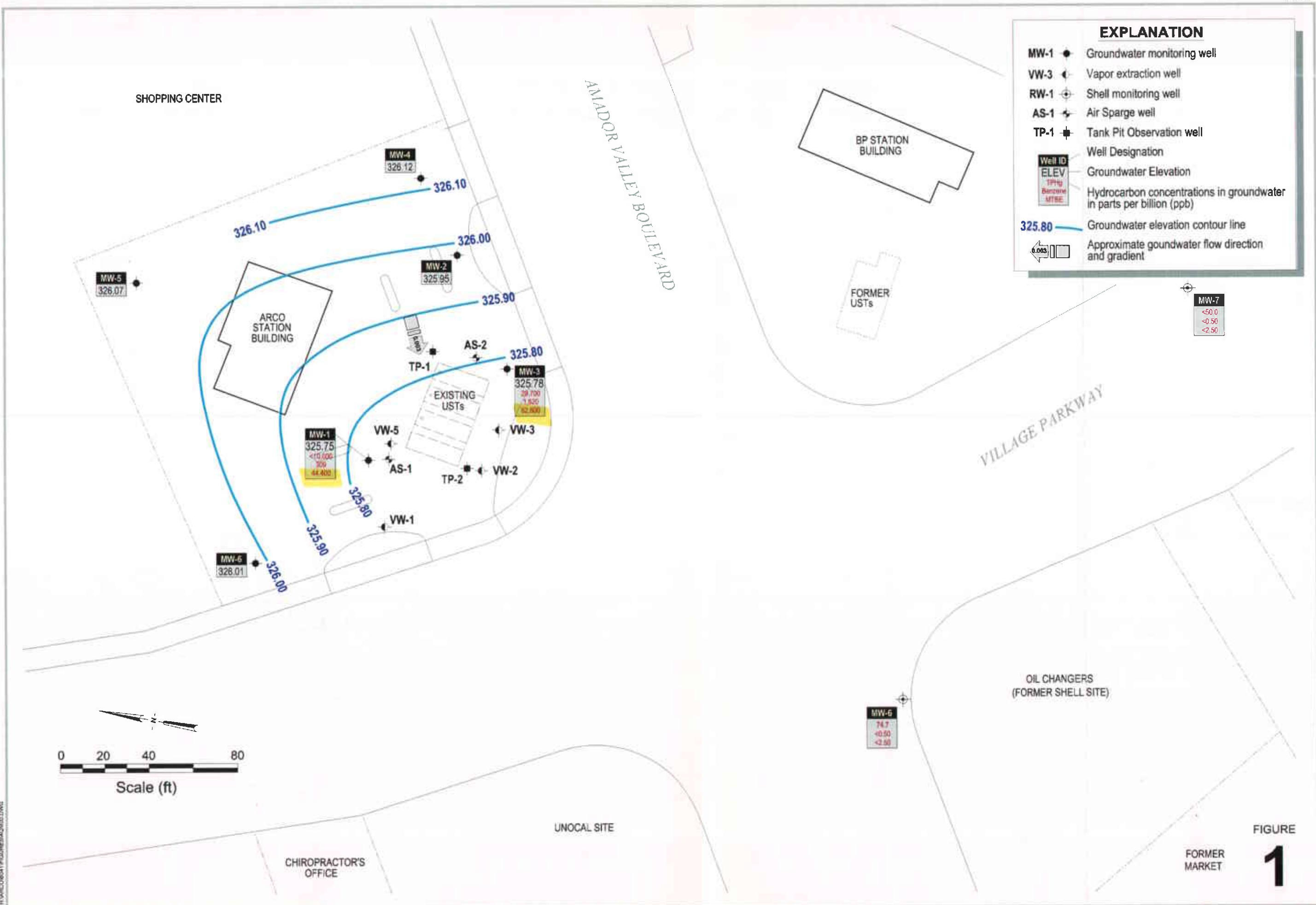
DISCUSSION (continued):

The MTBE concentration for well VW-2 was incorrectly shown in the third quarter 2000 report. The correct concentration is 537 µg/L. Due to a low MTBE concentration and extraction volume, extraction from VW-2 has been discontinued.

ATTACHMENTS:

- Figure 1 - Groundwater Elevation Contour and Analytical Summary Map
- Table 1 - Groundwater Monitoring Data
- Table 2 - Groundwater Flow Direction and Gradient
- Table 3 - Groundwater Extraction – Mass Removal Data
- Table 4 - Soil Vapor Extraction – Mass Removal Data
- Appendix A - Sampling and Analysis Procedures
- Appendix B - Certified Analytical Reports and Chain-of-Custody Documentation
- Appendix C - Field Data Sheets
- Appendix D - Certified Analytical Report Dated September 21, 2000





EXPLANATION

- MW-1 ● Groundwater monitoring well
- VW-3 ◀ Vapor extraction well
- RW-1 ⊕ Shell monitoring well
- AS-1 ↗ Air Sparge well
- TP-1 ⊕ Tank Pit Observation well

Well Designation

Well ID	ELEV	TPHg	Benzene	MTBE
MW-1	325.75	<15,000	300	44,400
MW-3	325.78	29,700	1,630	62,800
MW-6	74.7	<0.50	<2.50	
MW-7	<50.0	<0.50	<2.50	

Groundwater Elevation

Hydrocarbon concentrations in groundwater in parts per billion (ppb)

325.80 — Groundwater elevation contour line

← Approximate groundwater flow direction and gradient



FIGURE 1

HYDROCON/FIGURE/ARCO/03.DWG

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present**

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater		TPH			Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
					Elevation (ft-MSL)	Date Sampled	Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)						
MW-1	02-15-95	336.56	8.53	0.00	328.03	02-15-95	820	15	<1	5.2	1.4	--	--		
MW-1	05-24-95	336.56	9.00	0.00	327.56	05-24-95	640	12	<1	7.3	<1	--	--		
MW-1	08-25-95	336.56	10.30	0.00	326.26	08-25-95	780	2	<1	2	2	2,500	--		
MW-1	11-28-95	336.56	11.01	0.00	325.55	11-28-95	570	2.2	<0.5	1.4	0.9	--	--		
MW-1	02-26-96	336.56	7.35	0.00	329.21	03-13-96	1,100	28	<7	13	7	3,400	--		
MW-1	05-23-96	336.56	8.73	0.00	327.83	05-23-96	560	8.5	<1	1.1	<1	3,900	--		
MW-1	08-23-96	336.56	10.25	0.00	326.31	08-23-96	860	<1	<1	<4	2	5,600	--		
MW-1	03-21-97	336.56	9.35	0.00	327.21	03-21-97	520	12	<0.5	2.7	1.5	6,200	--		
MW-1	08-20-97	336.56	10.75	0.00	325.81	08-20-97	<5,000	<50	<50	<50	<50	7,400	--		
MW-1	11-21-97	336.56	11.10	0.00	325.46	11-21-97	<5,000	<50	<50	<50	<50	8,500	--		
MW-1	02-12-98	336.56	7.05	0.00	329.51	02-12-98	210	<0.5	<0.5	<0.5	<0.5	8,900	--	1.71	P
MW-1	07-31-98	336.56	10.04	0.00	326.52	07-31-98	<20,000	<200	<200	<200	<200	18,000	--	2.43	P
MW-1	02-17-99	336.56	8.50	0.00	328.06	02-17-99	<20,000	<200	<200	<200	<200	16,000	--	1.0	
MW-1	08-24-99	336.56	10.40	0.00	326.16	08-24-99	190	<0.5	4.4	<0.5	1.1	15,000	--	NR	P
MW-1	03-01-00	336.56	8.85	0.00	327.71	03-01-00	310	20	0.5	7.6	4	80,000	--	1.57	P
MW-1	08-18-00	336.56	9.35	0.00	327.21	08-18-00	<10,000	<100	<100	<100	<100	48,400	63,700	1.50	P
MW-1	12-27-00	336.56	10.81	0.00	325.75	12-27-00	<10,000	309	<100	<100	289	44,400	--	0.51	P
MW-2	02-15-95	334.80	6.75	0.00	328.05	02-15-95	730	110	1.7	25	66	--	--		
MW-2	05-24-95	334.80	6.88	0.00	327.92	05-24-95	370	110	<1	17	1.9	--	--		
MW-2	08-25-95	334.80	7.91	0.00	326.89	08-25-95	150	6	<1	<1	<1	2,700	--		
MW-2	11-28-95	334.80	9.06	0.00	325.74	11-28-95	<50	<0.5	<0.5	<0.5	0.8	--	--		
MW-2	02-26-96	334.80	6.65	0.00	328.15	03-13-96	350	66	<0.5	11	1.7	<3	--		
MW-2	05-23-96	334.80	6.90	0.00	327.90	05-23-96	540	140	<2.5	13	<2.5	4,600	--		
MW-2	08-23-96	334.80	8.45	0.00	326.35	08-23-96	180	0.8	2	0.7	2.6	4,000	--		
MW-2	03-21-97	334.80	7.28	0.00	327.52	03-21-97	410	90	<1	14	4	3,800	--		

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Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH			Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
							Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)						
MW-2	08-20-97	334.80	8.87	0.00	325.93	08-20-97	<5,000	<50	<50	<50	<50	3,100	--		
MW-2	11-21-97	334.80	9.28	0.00	325.52	11-21-97	<2,000	<20	<20	<20	<20	2,600	--		
MW-2	02-12-98	334.80	5.90	0.00	328.90	02-12-98	310	54	<0.5	6.2	1.1	3,800	--	3.76 P	
MW-2	07-31-98	334.80	8.12	0.00	326.68	07-31-98	6,100	52	220	110	1100	7,700	--	2.96 P	
MW-2	02-17-99	334.80	7.18	0.00	327.62	02-17-99	<5,000	<50	<50	<50	<50	4,200	--	1.0 P	
MW-2	08-24-99	334.80	8.68	0.00	326.12	08-24-99	200	1.8	16	3.0	32	3,100	--	NR P	
MW-2	03-01-00	334.80	7.02	0.00	327.78	03-01-00	760	24	12	13	59	6,300	--	1.92 P	
MW-2	08-18-00	334.80	7.75	0.00	327.05	08-18-00	<500	<5.00	<5.00	<5.00	<5.00	1,610	1,980	2.03 P	
MW-2	12-27-00	334.80	8.85	0.00	325.95	Not Sampled: Well sampled during first and third quarters								NR	
MW-3	02-15-95	335.53	8.55	0.00	326.98	02-15-95	100	14	<0.5	6.3	<0.5	--	--		
MW-3	05-24-95	335.53	8.17	0.00	327.36	05-24-95	110	8	<0.5	2.7	<0.5	--	--		
MW-3	08-25-95	335.53	9.27	0.00	326.26	08-25-95	210	3.6	<0.5	2.9	0.6	20,000	--		
MW-3	11-28-95	335.53	9.91	0.00	325.62	11-28-95	81	1.5	<0.5	1.4	<0.5	--	15,000		
MW-3	02-26-96	335.53	8.42	0.00	327.11	03-13-96	16,000	1,600	1,200	300	2,000	9,500	--		
MW-3	05-23-96	335.53	7.70	0.00	327.83	05-23-96	6,500	690	<10	120	14	8,600	--		
MW-3	08-23-96	335.53	9.25	0.00	326.28	08-23-96	1,700	85	2	61	5.3	11,000	--		
MW-3	03-21-97	335.53	8.72	0.00	326.81	03-21-97	100	2	<1	1	<1	6,600	--		
MW-3	08-20-97	335.53	9.73	0.00	325.80	08-20-97	<5,000	<50	<50	<50	<50	7,700	--		
MW-3	11-21-97	335.53	10.10	0.00	325.43	11-21-97	<5,000	<50	<50	<50	<50	9,700	--		
MW-3	02-12-98	335.53	6.68	0.00	328.85	02-12-98	110	11	<0.5	<0.5	1.9	10,000	--	1.02 P	
MW-3	07-31-98	335.53	7.98	0.00	327.55	07-31-98	<10,000	<100	<100	<100	<100	13,000	--	2.59 P	
MW-3	02-17-99	335.53	8.40	0.00	327.13	02-17-99	<20,000	<200	<200	<200	<200	23,000	--	1.0 P	
MW-3	08-24-99	335.53	9.45	0.00	326.08	08-24-99	200	0.6	5.6	0.6	1.7	22,000	--	NR P	
MW-3	03-01-00	335.53	8.32	0.00	327.21	03-01-00	320	32	1.0	6.1	4	58,000	--	2.42 P	
MW-3	08-18-00	335.53	8.35	0.00	327.18	08-18-00	<10,000	<100	<100	<100	<100	46,200	55,600	1.59 P	
DUP	08-18-00	NR	NR	NR	NR	08-18-00	<10,000	<100	<100	<100	<100	45,500	51,700	NR	
MW-3	12-27-00	335.53	9.75	0.00	325.78	12-27-00	29,700	1,620	1,730	<250	6,230	62,600	--	1.59 P	

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Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH				Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
							Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)					
MW-4	02-15-95	334.22	7.85	0.00	326.37	02-15-95	<50	<0.5	<0.5	<0.5	<0.5	--	--		
MW-4	05-24-95	334.22	6.68	0.00	327.54	Not sampled: well sampled semi-annually, during the first and third quarters									
MW-4	08-25-95	334.22	6.93	0.00	327.29	08-25-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-4	11-28-95	334.22	8.21	0.00	326.01	Not sampled: well sampled semi-annually, during the first and third quarters									
MW-4	02-26-96	334.22	6.65	0.00	327.57	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-4	05-23-96	334.22	6.47	0.00	327.75	Not sampled: well sampled semi-annually, during the first and third quarters									
MW-4	08-23-96	334.22	7.66	0.00	326.56	Not sampled: well not part of sampling program									
MW-4	03-21-97	334.22	6.84	0.00	327.38	Not sampled: well not part of sampling program									
MW-4	08-20-97	334.22	8.32	0.00	325.90	Not sampled: well not part of sampling program									
MW-4	11-21-97	334.22	8.65	0.00	325.57	Not sampled: well not part of sampling program									
MW-4	02-12-98	334.22	6.35	0.00	327.87	Not sampled: well not part of sampling program									
MW-4	07-31-98	334.22	6.84	0.00	327.38	Not sampled: well not part of sampling program									
MW-4	02-17-99	334.22	7.50	0.00	326.72	Not sampled: well not part of sampling program									
MW-4	08-24-99	334.22	9.50	0.00	324.72	Not sampled: well not part of sampling program									
MW-4	03-01-00	334.22	6.93	0.00	327.29	Not sampled: well not part of sampling program									
MW-4	08-18-00	334.22	7.03	0.00	327.19	Not sampled: well not part of sampling program									
MW-4	12-27-00	334.22	8.10	0.00	326.12	Not sampled: well not part of sampling program									
MW-5	02-15-95	335.87	7.80	0.00	328.07	02-15-95	<50	<0.5	<0.5	<0.5	<0.5	--	--		
MW-5	05-24-95	335.87	8.10	0.00	327.77	Not sampled: well sampled annually, during the first quarter									
MW-5	08-25-95	335.87	9.43	0.00	326.44	Not sampled: well sampled annually, during the first quarter									
MW-5	11-28-95	335.87	10.12	0.00	325.75	Not sampled: well sampled annually, during the first quarter									
MW-5	02-26-96	335.87	6.73	0.00	329.14	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-5	05-23-96	335.87	7.87	0.00	328.00	Not sampled: well sampled annually, during the first quarter									
MW-5	08-23-96	335.87	9.46	0.00	326.41	Not sampled: well not part of sampling program									
MW-5	03-21-97	335.87	8.23	0.00	327.64	Not sampled: well not part of sampling program									
MW-5	08-20-97	335.87	9.92	0.00	325.95	Not sampled: well not part of sampling program									

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Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH				Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
							Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)					
MW-5	11-21-97	335.87	10.18	0.00	325.69	Not sampled: well not part of sampling program									
MW-5	02-12-98	335.87	6.45	0.00	329.42	Not sampled: well not part of sampling program									
MW-5	07-31-98	335.87	8.98	0.00	326.89	Not sampled: well not part of sampling program									
MW-5	02-17-99	335.87	7.65	0.00	328.22	Not sampled: well not part of sampling program									
MW-5	08-24-99	335.87	8.10	0.00	327.77	Not sampled: well not part of sampling program									
MW-5	03-01-00	335.87	7.31	0.00	328.56	Not sampled: well not part of sampling program									
MW-5	08-18-00	335.87	8.65	0.00	327.22	Not sampled: well not part of sampling program									
MW-5	12-27-00	335.87	9.80	0.00	326.07	Not sampled: well not part of sampling program									
MW-6	02-15-95	335.84	7.81	0.00	328.03	02-15-95	<50	<0.5	<0.5	<0.5	<0.5	--	--		
MW-6	05-24-95	335.84	8.35	0.00	327.49	Not sampled: well sampled annually, during the first quarter									
MW-6	08-25-95	335.84	9.71	0.00	326.13	Not sampled: well sampled annually, during the first quarter									
MW-6	11-28-95	335.84	10.28	0.00	325.56	Not sampled: well sampled annually, during the first quarter									
MW-6	02-26-96	335.84	6.60	0.00	329.24	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-6	05-23-96	335.84	8.05	0.00	327.79	Not sampled: well sampled annually, during the first quarter									
MW-6	08-23-96	335.84	9.58	0.00	326.26	Not sampled: well not part of sampling program									
MW-6	03-21-97	335.84	8.39	0.00	327.45	Not sampled: well not part of sampling program									
MW-6	08-20-97	335.84	9.98	0.00	325.86	Not sampled: well not part of sampling program									
MW-6	11-21-97	335.84	10.31	0.00	325.53	Not sampled: well not part of sampling program									
MW-6	02-12-98	335.84	3.15	0.00	332.69	Not sampled: well not part of sampling program									
MW-6	07-31-98	335.84	9.29	0.00	326.55	Not sampled: well not part of sampling program									
MW-6	02-17-99	335.84	7.72	0.00	328.12	Not sampled: well not part of sampling program									
MW-6	08-24-99	335.84	9.65	0.00	326.19	Not sampled: well not part of sampling program									
MW-6	03-01-00	335.84	7.35	0.00	328.49	Not sampled: well not part of sampling program									
MW-6	08-18-00	335.84	8.65	0.00	327.19	Not sampled: well not part of sampling program									
MW-6	12-27-00	335.84	9.83	0.00	326.01	Not sampled: well not part of sampling program									

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present**

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH				Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
							Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)					
VW-2	03-21-97	NR	8.22	0.00	NR	03-21-97	150	8.9	<0.5	<0.5	0.6	270	--		
VW-2	08-20-97	NR	9.16	0.00	NR	08-20-97	Not sampled: well not part of sampling program								
VW-2	11-21-97	NR	8.27	0.00	NR	11-21-97	<200	3	<2	<2	<2	180	--		
VW-2	02-12-98	NR	6.65	0.00	NR	02-12-98	200	19	<0.5	0.6	<0.5	2,200	--		
VW-2	07-31-98	NR	7.01	0.00	NR	07-31-98	Not sampled: well not part of sampling program								
VW-2	02-17-99	NR	8.47	0.00	NR	02-17-99	Not sampled: well not part of sampling program								
VW-2	08-24-99	NR	8.20	0.00	NR	08-24-99	Not sampled: well not part of sampling program								
VW-2	03-01-00	NR	8.72	0.00	NR	03-01-00	Not sampled: well not part of sampling program								
VW-2	08-18-00	NR	8.40	0.00	NR	08-18-00	<250	<2.50	<2.50	<2.50	<2.50	537		1.59	NP
VW-2	12-27-00	NR	8.95	0.00	NR	Not sampled: Well Dry									
Shell MW-6	12-27-00	NR	9.13	0.00	NR	12-27-00	74.7	<0.500	<0.500	<0.500	<0.500	<2.50		1.30	P
DUP	12-27-00	NR	NR	NR	NR	12-27-00	79.3	<0.500	<0.500	<0.500	<0.500	<2.50		NR	
Shell MW-7	12-27-00	NR	6.45	0.00	NR	12-27-00	<50.0	<0.500	0.696	<0.500	0.795	<2.50		1.33	P

**Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present****

**ARCO Service Station 6041
7249 Village Parkway, Dublin, California**

Well Number	Date Gauged	TOC	Depth	FP	Groundwater	Date Sampled	TPH				Total	MTBE	MTBE	Dissolved	Purged/
		Elevation (ft-MSL)	to Water (feet)	Thickness (feet)	Elevation (ft-MSL)		Gasoline ($\mu\text{g/L}$)	Benzene ($\mu\text{g/L}$)	Toluene ($\mu\text{g/L}$)	ethyl- benzene ($\mu\text{g/L}$)	Xylenes ($\mu\text{g/L}$)	8021B* ($\mu\text{g/L}$)	8260 ($\mu\text{g/L}$)	Oxygen (mg/L)	Not Purged (P/NP)

Notes:

TOC: top of casing

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

TPH: total petroleum hydrocarbons, California DHS LUFT Method

BTEX: benzene, toluene, ethylbenzene, total xylenes by EPA method 8021B. (EPA method 8020 prior to 03/01/00).

MTBE: Methyl tert-butyl ether

EPA: United States Environmental Protection Agency

*: EPA method 8020 prior to 03/01/00

$\mu\text{g/L}$: micrograms per liter

mg/L : milligrams per liter

ND: none detected

NR: not reported; data not available or not measurable

- -: not analyzed or not applicable

<: denotes concentration not present at or above 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, ARCO Service Station 6041, Dublin, California, (EMCON, February 26, 1996).

Table 2
Groundwater Flow Direction and Gradient

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date Measured	Average Flow Direction	Average Hydraulic Gradient
02-15-95	NR	NR
05-24-95	East-Southeast	0.002
08-25-95	Northwest	0.006
11-28-95	North	0.006
02-26-96	East	0.012
05-23-96	Flat Gradient	Flat Gradient
08-23-96	Flat Gradient	Flat Gradient
03-21-97	South-Southeast	0.005
08-20-97	South-Southwest	0.001
11-21-97	South-Southwest	0.002
02-12-98	East	0.024
07-31-98	Northwest	0.01
02-17-99	Southeast	0.007
08-24-99	South-Southwest	0.013
03-01-00	South-Southeast	0.005
09-26-00	South-Southeast	0.002
12-27-00	West-Southwest	0.003

**Table 3
Groundwater Extraction
Mass Removal Data**

**ARCO Service Station 6041
7249 Village Parkway, Dublin, California**

Groundwater Extraction Data						Hydrocarbon Concentrations			TPHg Removal		Benzene Removal		MTBE Removal	
Event Date	Well ID	Groundwater Extraction Duration (hours)	Groundwater Extracted (gallons)	Extraction Flow Rate (gpm)	Groundwater Sample Date	TPHg (Concentrations in ug/L)	Benzene	MTBE	Mass	Mass	Mass	Mass	Mass	Mass
									Extracted Per Event (lbs)	Extracted To Date (lbs)	Extracted Per Event (lbs)	Extracted To Date (lbs)	Extracted Per Event (lbs)	Extracted To Date (lbs)
11/22/00	MW-1	3.08	235	1.27	09/26/00	<10,000	<100	63,700	<0.01961	<0.01961	<0.00020	<0.00020	0.1249	0.1249
12/13/00	MW-1	3.25	170	0.87	09/26/00	<10,000	<100	63,700	<0.01419	<0.03379	<0.00014	<0.00034	0.09036	0.2153
11/22/00	MW-3	2.00	71	0.59	09/26/00	<10,000	<100	55,600	<0.00592	<0.00592	<0.00006	<0.00006	0.03294	0.03294
12/13/00	MW-3	3.00	110	0.61	09/26/00	<10,000	<100	55,600	<0.00918	<0.01510	<0.00009	<0.00015	0.05103	0.08397
11/22/00	VW-1	2.17	75	0.58	09/26/2000*	<10,000	<100.00	63,700	<0.00626	<0.00626	<0.00006	<0.00006	0.03987	0.03987
12/13/00	VW-2	1.50	5	0.06	09/26/00	<250	<2.50	554	<0.00001	<0.00001	0.00000	0.00000	0.00002	0.00002
Total Gallons Extracted:			666	Total Pounds Removed:			<0.05517	<0.00055	0.3391					

Notes:

* = Concentrations inferred from closest monitoring well

TPHg = Total petroleum hydrocarbons as gasoline

MTBE = Methyl tertiary butyl ether

ug/L = Micrograms per liter

lbs = Pounds

gpm = Gallons per minute

TPHg and benzene analyzed by EPA Method 8015/8020

MTBE analyzed by EPA Method 8020 or 8260 (if available)

Groundwater extracted by vacuum trucks provided by ACTI.

Concentrations based on the groundwater monitoring results from prior quarterly sampling event.

**Table 4
Soil Vapor Extraction
Mass Removal Data**

**ARCO Service Station 6041
7249 Village Parkway, Dublin, California**

Soil Vapor Extraction Data				Hydrocarbon Concentrations			TPHg Removal			Benzene Removal			MTBE Removal		
Event Date	Well ID	Vapor Extraction	System Flow	TPHg (Concentrations in ppmv)	Benzene	MTBE	Mass Extraction	Mass Extracted	Mass Extracted	Mass Extraction	Mass Extracted	Mass Extracted	Mass Extraction	Mass Extracted	Mass Extracted
		Duration (hours)	Rate (cfm)				Rate (lbs/hour)	Per Event (lbs)	To Date (lbs)	Rate (lbs/hour)	Per Event (lbs)	To Date (lbs)	Rate (lbs/hour)	Per Event (lbs)	To Date (lbs)
11/22/00	MW-1	3.08	2.6	3,660	161	253	0.127	0.392	0.392	0.005	0.016	0.016	0.009	0.028	0.028
12/13/00	MW-1	3.25	3.8	2,979	<0.0310	<0.111	0.000	0.000	0.392	0.000	0.000	0.016	0.000	0.000	0.028
11/22/00	MW-3	2.00	3.0	3,462	119	333	0.139	0.278	0.278	0.004	0.009	0.009	0.014	0.027	0.027
12/13/00	MW-3	3.00	1.8	<2.838	<0.0310	<0.111	0.000	0.000	0.278	0.000	0.000	0.009	0.000	0.000	0.027
11/22/00	VW-1	2.17	14.7	653	19.5	21.8	0.128	0.278	0.278	0.003	0.008	0.008	0.004	0.010	0.010
12/13/00	VW-2	1.50	16.0	<2.838	<0.0310	<0.111	<0.001	<0.001	<0.001	0.000	0.000	0.000	0.000	0.000	0.000
Total Pounds Removed:							0.950			0.032			0.065		

Abbreviations and Notes:

TPHg = Total petroleum hydrocarbons as gasoline (C6-C12) by modified EPA Method 8015 in 1 liter tedlar bag samples

MTBE = Methyl tertiary butyl ether

cfm = Cubic feet per minute

ppmv = Parts per million by volume

lbs = Pounds

TPHG, Benzene, and MTBE analyzed by EPA Method 8015/8020 in 1 liter tedlar bag samples

TPHg / Benzene / MTBE Removal Rate = Based on Bay Area Air Quality Management District's Manual of Procedures for Soil Vapor Extraction dated July 17, 1991.

(Rate = Concentration (ppmv) x system flow rate (cfm) x (1lb-mole/386ft³) x molecular weight (86 lb/lb-mole for TPHg, 78 lb/lb-mole for benzene, 88 lb/lb-mole for MTBE) x 60 min/hour x 1/1,000,000)

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
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January 05 , 2001

Jason Olson
Cambria Environmental - Emeryville
6262 Hollis Street
Emeryville, CA 94608
RE: ARCO / P012624

Enclosed are the results of analyses for samples received by the laboratory on 12/28/00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Angelee Cari
Client Services Representative

CA ELAP Certificate Number 2374



Cambria Environmental - Emeryville
6262 Hollis Street
Emeryville CA, 94608

Project: ARCO
Project Number: 26046
Project Manager: Jason Olson

Reported:
01/05/01 14:34

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	P012624-01	Water	12/27/00 11:32	12/28/00 13:15
MW-3	P012624-02	Water	12/27/00 11:05	12/28/00 13:15
Shell MW-6	P012624-03	Water	12/27/00 10:22	12/28/00 13:15
Shell MW-7	P012624-04	Water	12/27/00 10:44	12/28/00 13:15
DUP	P012624-05	Water	12/27/00 00:00	12/28/00 13:15





Cambria Environmental - Emeryville 6262 Hollis Street Emeryville CA, 94608	Project: ARCO Project Number: 26046 Project Manager: Jason Olson	Reported: 01/05/01 14:34
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**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-1 (P012624-01) Water Sampled: 12/27/00 11:32 Received: 12/28/00 13:15									
Gasoline	ND	10000	ug/l	200	1010040	01/03/01	01/03/01	EPA 8015M/8020M	
Benzene	309	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	
Xylenes (total)	289	100	"	"	"	"	"	"	
Methyl tert-butyl ether	44400	500	"	"	"	"	"	"	
Surrogate: <i>a,a,a</i> -Trifluorotoluene		98.3 %		65-135	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.7 %		65-135	"	"	"	"	
MW-3 (P012624-02) Water Sampled: 12/27/00 11:05 Received: 12/28/00 13:15									
Gasoline	29700	25000	ug/l	500	1010040	01/03/01	01/03/01	EPA 8015M/8020M	
Benzene	1620	250	"	"	"	"	"	"	
Toluene	1730	250	"	"	"	"	"	"	
Ethylbenzene	ND	250	"	"	"	"	"	"	
Xylenes (total)	6230	250	"	"	"	"	"	"	
Methyl tert-butyl ether	62600	1250	"	"	"	"	"	"	
Surrogate: <i>a,a,a</i> -Trifluorotoluene		98.0 %		65-135	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %		65-135	"	"	"	"	
Shell MW-6 (P012624-03) Water Sampled: 12/27/00 10:22 Received: 12/28/00 13:15									
Gasoline	74.7	50.0	ug/l	1	1010040	01/03/01	01/03/01	EPA 8015M/8020M	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	0.500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.50	"	"	"	"	"	"	
Surrogate: <i>a,a,a</i> -Trifluorotoluene		101 %		65-135	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %		65-135	"	"	"	"	





Cambria Environmental - Emeryville
6262 Hollis Street
Emeryville CA, 94608

Project: ARCO
Project Number: 26046
Project Manager: Jason Olson

Reported:
01/05/01 14:34

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
Shell MW-7 (P012624-04) Water Sampled: 12/27/00 10:44 Received: 12/28/00 13:15									
Gasoline	ND	50.0	ug/l	1	1010040	01/03/01	01/03/01	EPA 8015M/8020M	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	0.696	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	0.795	0.500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.50	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		99.3 %		65-135	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		99.7 %		65-135	"	"	"	"	
DUP (P012624-05) Water Sampled: 12/27/00 00:00 Received: 12/28/00 13:15									
Gasoline	79.3	50.0	ug/l	1	1010040	01/03/01	01/03/01	EPA 8015M/8020M	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	0.500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.50	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		98.3 %		65-135	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		101 %		65-135	"	"	"	"	





Cambria Environmental - Emeryville
6262 Hollis Street
Emeryville CA, 94608

Project: ARCO
Project Number: 26046
Project Manager: Jason Olson

Reported:
01/05/01 14:34

**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
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Batch 1010040 - EPA 5030, waters

Blank (1010040-BLK1)

Prepared & Analyzed: 01/03/01

Gasoline	ND	50.0	ug/l							
Benzene	ND	0.500	"							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes (total)	ND	0.500	"							
Methyl tert-butyl ether	ND	2.50	"							
<i>Surrogate: a,a,a-Trifluorotoluene</i>	295		"	300		98.3	65-135			
<i>Surrogate: 4-Bromofluorobenzene</i>	286		"	300		95.3	65-135			

LCS (1010040-BS1)

Prepared & Analyzed: 01/03/01

Gasoline	2610	50.0	ug/l	2750		94.9	65-135			
Benzene	42.6	0.500	"	32.0		133	65-135			
Toluene	202	0.500	"	193		105	65-135			
Ethylbenzene	44.9	0.500	"	46.0		97.6	65-135			
Xylenes (total)	244	0.500	"	231		106	65-135			
Methyl tert-butyl ether	68.7	2.50	"	52.0		132	65-135			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	305		"	300		102	65-135			
<i>Surrogate: 4-Bromofluorobenzene</i>	307		"	300		100	65-135			

Matrix Spike (1010040-MS1)

Source: P101014-17

Prepared & Analyzed: 01/03/01

Gasoline	2800	50.0	ug/l	2750	ND	102	65-135			
Benzene	35.6	0.500	"	32.0	ND	111	65-135			
Toluene	206	0.500	"	193	ND	107	65-135			
Ethylbenzene	46.2	0.500	"	46.0	ND	100	65-135			
Xylenes (total)	251	0.500	"	231	ND	109	65-135			
Methyl tert-butyl ether	60.0	2.50	"	52.0	3.78	108	65-135			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	299		"	300		99.7	65-135			
<i>Surrogate: 4-Bromofluorobenzene</i>	303		"	300		101	65-135			





Cambria Environmental - Emeryville
6262 Hollis Street
Emeryville CA, 94608

Project: ARCO
Project Number: 26046
Project Manager: Jason Olson

Reported:
01/05/01 14:34

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
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Batch 1010040 - EPA 5030, waters

Matrix Spike Dup (1010040-MSD1)

Source: P101014-17

Prepared & Analyzed: 01/03/01

Gasoline	2860	50.0	ug/l	2750	ND	104	65-135	2.12	20	
Benzene	36.9	0.500	"	32.0	ND	115	65-135	3.59	20	
Toluene	209	0.500	"	193	ND	108	65-135	1.45	20	
Ethylbenzene	47.2	0.500	"	46.0	ND	103	65-135	2.14	20	
Xylenes (total)	255	0.500	"	231	ND	110	65-135	1.58	20	
Methyl tert-butyl ether	61.2	2.50	"	52.0	3.78	110	65-135	1.98	20	
Surrogate: a,a,a-Trifluorotoluene	302		"	300		101	65-135			
Surrogate: 4-Bromofluorobenzene	310		"	300		103	65-135			





Cambria Environmental - Emeryville
6262 Hollis Street
Emeryville CA, 94608

Project: ARCO
Project Number: 26046
Project Manager: Jason Olson

Reported:
01/05/01 14:34

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
Division of Atlantic Richfield Company

Rat

Task Order No.

WOR # 26046

Chain of Custody

P. 02/02

ARCO-Facility no. *6041* City (Facility) *Dublin* Project manager (Consultant) *Darryl Munde (Jason Olson)*
 ARCO engineer *Paul Supple* Telephone no. (ARCO) *925-251-2291* Telephone no. (Consultant) *510-470-3335* Fax no. (Consultant) *510-450-8291*
 Consultant name *Combric Env. Tech.* Address (Consultant) *6262 Hollis St, Emeryville, CA*

TOTAL P. 02

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	STEX EPA 802	BTEX/TPH EPA 146/200/300	TPH Modified 2015 Gas, Diesel	Oil and Grease 1311, 432L	TPH EPA 418.1/MS03E	EPA 801/8010	EPA 821/8240	EPA 825/8270	TCLP Metals VOAC VOAL	Cadmium Lead Copper Zinc Sulfide	Lead Org. DMS Lead EPA 7420/7421	Method of shipment
			Soil	Water	Other	Ice	Acid														
<i>MW-1</i>		<i>4</i>		<i>X</i>		<i>X</i>	<i>X</i>	<i>12-27-00</i>	<i>11:32</i>		<i>X</i>										
<i>MW-3</i>		<i>4</i>		<i>X</i>		<i>X</i>	<i>X</i>	<i>12-27-00</i>	<i>11:05</i>		<i>X</i>										
<i>Shell MW-6</i>		<i>4</i>		<i>X</i>		<i>X</i>	<i>X</i>	<i>12-27-00</i>	<i>10:22</i>		<i>X</i>										
<i>Shell MW-7</i>		<i>4</i>		<i>X</i>		<i>X</i>	<i>X</i>	<i>12-27-00</i>	<i>10:44</i>		<i>X</i>										
<i>DUP</i>		<i>4</i>		<i>X</i>		<i>X</i>	<i>X</i>	<i>12-27-00</i>			<i>X</i>										

Special direction
Limit reporting
Lowest possible

Remarks
*TPH, BTEX
MTBE*

CAMBRIA

09:10

DEC-29-2000

Condition of sample: Relinquished by sampler *[Signature]* Date *12-29-00* Time *1315* Temperature received: Received by *[Signature]*
 Relinquished by *[Signature]* Date *12-29-00* Time *1315* Received by *[Signature]*
 Relinquished by *[Signature]* Date *12-29-00* Time *1315* Received by *[Signature]*

Priority Rush
 1 Business Day
 Rush
 2 Business Days
 Expedited
 5 Business Days
 Standard
 10 Business Days



Sequoia Analytical

1551 Industrial Road
San Carlos, CA 94070-4111
(650) 232-9600
FAX (650) 232-9612
www.sequoialabs.com

December 18, 2000

Darryk Ataide
Cambria Environmental
1144 65th St., Suite C.
Oakland, CA 94608

RE: ARCO (1)/L012106

Dear Darryk Ataide

Enclosed are the results of analyses for sample(s) received by the laboratory on December 14, 2000. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Latonya Pelt
Project Manager

CA ELAP Certificate Number I2360





Cambria Environmental 1144 65th St., Suite C. Oakland, CA 94608	Project: ARCO (1) Project Number: ARCO#6041 Project Manager: Darryk Ataide	Sampled: 12/13/00 Received: 12/14/00 Reported: 12/18/00
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ANALYTICAL REPORT FOR L012106

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
MW-1	L012106-01	Air	12/13/00
MW-3	L012106-02	Air	12/13/00
VW-1	L012106-03	Air	12/13/00





Cambria Environmental 1144 65th St., Suite C. Oakland, CA 94608	Project: ARCO (1) Project Number: ARCO#6041 Project Manager: Darryk Ataide	Sampled: 12/13/00 Received: 12/14/00 Reported: 12/18/00
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**Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M
Sequoia Analytical - Petaluma**

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
MW-1				L012106-01			Air	
Gasoline	0120033	12/16/00	12/16/00	EPA 8015M/8020M	10.0	10.5	ug/l	
Benzene	"	"	"	EPA 8015M/8020M	0.100	ND	"	
Toluene	"	"	"	EPA 8015M/8020M	0.100	0.290	"	
Ethylbenzene	"	"	"	EPA 8015M/8020M	0.100	0.260	"	
Xylenes (total)	"	"	"	EPA 8015M/8020M	0.100	0.681	"	
Methyl tert-butyl ether	"	"	"	EPA 8015M/8020M	0.400	ND	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	65-135		98.3	%	
Surrogate: 4-Bromofluorobenzene	"	"	"	65-135		95.0	"	
MW-3				L012106-02			Air	
Gasoline	0120033	12/16/00	12/16/00	EPA 8015M/8020M	10.0	ND	ug/l	
Benzene	"	"	"	EPA 8015M/8020M	0.100	ND	"	
Toluene	"	"	"	EPA 8015M/8020M	0.100	ND	"	
Ethylbenzene	"	"	"	EPA 8015M/8020M	0.100	ND	"	
Xylenes (total)	"	"	"	EPA 8015M/8020M	0.100	0.179	"	
Methyl tert-butyl ether	"	"	"	EPA 8015M/8020M	0.400	ND	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	65-135		101	%	
Surrogate: 4-Bromofluorobenzene	"	"	"	65-135		92.3	"	
VW-12				L012106-03			Air	
Gasoline	0120033	12/16/00	12/16/00	EPA 8015M/8020M	10.0	ND	ug/l	
Benzene	"	"	"	EPA 8015M/8020M	0.100	ND	"	
Toluene	"	"	"	EPA 8015M/8020M	0.100	ND	"	
Ethylbenzene	"	"	"	EPA 8015M/8020M	0.100	ND	"	
Xylenes (total)	"	"	"	EPA 8015M/8020M	0.100	0.137	"	
Methyl tert-butyl ether	"	"	"	EPA 8015M/8020M	0.400	ND	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	65-135		99.0	%	
Surrogate: 4-Bromofluorobenzene	"	"	"	65-135		91.0	"	





Cambria Environmental 1144 65th St., Suite C. Oakland, CA 94608	Project: ARCO (1) Project Number: ARCO#6041 Project Manager: Darryk Ataide	Sampled: 12/13/00 Received: 12/14/00 Reported: 12/18/00
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Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M/Quality Control
Sequoia Analytical - Petaluma

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
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Batch: 0120033

Date Prepared: 12/16/00

Extraction Method: EPA 5030, waters

Blank 0120033-BLK2

Gasoline	12/16/00			ND	ug/l	50.0				
Benzene	"			ND	"	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	0.500				
Methyl tert-butyl ether	"			ND	"	2.00				
Surrogate: a,a,a-Trifluorotoluene	"	300		301	"	65-135	100			
Surrogate: 4-Bromofluorobenzene	"	300		279	"	65-135	93.0			

LCS

0120033-BS2

Gasoline	12/16/00	2750		2300	ug/l	65-135	83.6			
Benzene	"	32.0		33.7	"	65-135	105			
Toluene	"	193		185	"	65-135	95.9			
Ethylbenzene	"	46.0		41.4	"	65-135	90.0			
Xylenes (total)	"	231		207	"	65-135	89.6			
Methyl tert-butyl ether	"	52.0		53.8	"	65-135	103			
Surrogate: a,a,a-Trifluorotoluene	"	300		328	"	65-135	109			
Surrogate: 4-Bromofluorobenzene	"	300		288	"	65-135	96.0			

Matrix Spike

0120033-MS1

P012038-03

Gasoline	12/5/00	2750	ND	2950	ug/l	65-135	107			
Benzene	"	32.0	ND	41.2	"	65-135	129			
Toluene	"	193	ND	217	"	65-135	112			
Ethylbenzene	"	46.0	ND	45.5	"	65-135	98.9			
Xylenes (total)	"	231	ND	231	"	65-135	100			
Methyl tert-butyl ether	"	52.0	52.9	120	"	65-135	129			
Surrogate: a,a,a-Trifluorotoluene	"	300		343	"	65-135	114			
Surrogate: 4-Bromofluorobenzene	"	300		312	"	65-135	104			

Matrix Spike Dup

0120033-MSD1

P012038-03

Gasoline	12/5/00	2750	ND	2950	ug/l	65-135	107	20	0	
Benzene	"	32.0	ND	40.3	"	65-135	126	20	2.21	
Toluene	"	193	ND	215	"	65-135	111	20	0.926	
Ethylbenzene	"	46.0	ND	44.8	"	65-135	97.4	20	1.55	
Xylenes (total)	"	231	ND	229	"	65-135	99.1	20	0.870	
Methyl tert-butyl ether	"	52.0	52.9	119	"	65-135	127	20	0.837	
Surrogate: a,a,a-Trifluorotoluene	"	300		339	"	65-135	113			
Surrogate: 4-Bromofluorobenzene	"	300		313	"	65-135	104			





Cambria Environmental
1144 65th St., Suite C.
Oakland, CA 94608

Project: ARCO (1)
Project Number: ARCO#6041
Project Manager: Darryk Ataide

Sampled: 12/13/00
Received: 12/14/00
Reported: 12/18/00

Notes and Definitions

#	Note
---	------

- 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
- Recov. Recovery
- RPD Relative Percent Difference





L012106-01

**EPA 8020 (same as 602)
AROMATIC VOLATILE ORGANICS**

Analyte	Detection Limit	AW	DL(ppmv)	Result ug/l	Result(ppmV)
	$\mu\text{g/L}$				
Gasoline.....	10.0	86.2	2.838	10.500	2.979
Benzene.....	0.10	78	0.031	ND	ND
Toluene.....	0.10	92	0.027	0.290	0.077102
Ethyl Benzene.....	0.10	106	0.023	0.260	0.059996
Total Xylenes.....	0.10	106	0.023	0.681	0.157144
MTBE.....	0.40	88.15	0.111	ND	ND





L012106-02

**EPA 8020 (same as 602)
AROMATIC VOLATILE ORGANICS**

Analyte	Detection Limit	AW	DL(ppmv)	Result ug/l	Result(ppmV)
	$\mu\text{g/L}$				
Gasoline.....	10.0	86.2	2.838	ND	ND
Benzene.....	0.10	78	0.031	ND	ND
Toluene.....	0.10	92	0.027	ND	ND
Ethyl Benzene.....	0.10	106	0.023	ND	ND
Total Xylenes.....	0.10	106	0.023	0.179	0.041305
MTBE.....	0.40	88.15	0.111	ND	ND





L012106-03

EPA 8020 (same as 602)
AROMATIC VOLATILE ORGANICS

Analyte	Detection Limit	AW	DL(ppmv)	Result ug/l	Result(ppmV)
	µg/L				
Gasoline.....	10.0	86.2	2.838	ND	ND
Benzene.....	0.10	78	0.031	ND	ND
Toluene.....	0.10	92	0.027	ND	ND
Ethyl Benzene.....	0.10	106	0.023	ND	ND
Total Xylenes.....	0.10	106	0.023	0.137	0.031613
MTBE.....	0.40	88.15	0.111	ND	ND



Rout

Task Order No.

WAR # 2604602

Chain of Custody

ARCO Facility no. *6041*

City (Facility) *Dublin*

Project manager (Consultant) *Darryk Attide*

ARCO engineer *Paul Supple*

Telephone no. (ARCO) *925-249-2891*

Telephone no. (Consultant) *510-426-0700*

Fax no. (Consultant) *510-420-9170*

Consultant name *Cambria Env. Tech*

Address (Consultant) *1144 65th St. Oakland Ca*

Laboratory name *Seyonic*
Contract number

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX EPA 802/EPA 8020	BTEX/TPH EPA 1631/200/8015	TPH Modified 8015 Gas <input type="checkbox"/> Diesel <input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/>	TPH EPA 418.1/SMS03E	EPA 501/8010	EPA 624/8240	EPA 625/8270	TCLP Metals <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/>	Semi Metals <input type="checkbox"/> VOA <input type="checkbox"/>	CAM METALS EPA 8010/7000 TTL <input type="checkbox"/> STLC <input type="checkbox"/>	Lead/Cu/DHS Lead EPA 7420/7421 <input type="checkbox"/>	Method of shipment		
			Soil	Water	Other	Ice	Acid																	
<i>MW-1</i>		<i>2</i>			<i>air</i>			<i>12-13-00</i>	<i>1410</i>		<i>X</i>												Special detection Limit/reporting <i>Lowest possible</i>	
<i>MW-3</i>		<i>2</i>			<i>air</i>			<i>12-13-00</i>	<i>1125</i>		<i>X</i>													
<i>VW-1</i>		<i>2</i>			<i>air</i>			<i>12-13-00</i>	<i>935</i>		<i>X</i>													
																								Special QA/QC
																								Remarks <i>Report results in PPMV</i>
																								Lab number <i>LO12106</i>
																								Turnaround time <i>48 hr</i>

Condition of sample:

Relinquished by sampler <i>J. Bell</i>	Date <i>12/14/00</i>	Time <i>1214</i>
Relinquished by <i>Alto Renzo</i>	Date <i>12/14/00</i>	Time <i>1313</i>
Relinquished by <i>ARCO</i>	Date	Time

Temperature received:

Received by <i>Alto Renzo</i>	Date <i>12/14/00</i>	Time <i>1313</i>
Received by <i>Kevin Cox</i>	Date	Time

Priority Rush
1 Business Day

Rush
2 Business Days

Expedited
5 Business Days

Standard
10 Business Days



Sequoia Analytical

1551 Industrial Road
San Carlos, CA 94070-4111
(650) 232-9600
FAX (650) 232-9612
www.sequoialabs.com

November 28, 2000

Darryk Ataide
Cambria Environmental
1144 65th St., Suite C.
Oakland, CA 94608

RE: ARCO (1)/L011227

Dear Darryk Ataide

Enclosed are the results of analyses for sample(s) received by the laboratory on November 28, 2000. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Latonya Pelt
Project Manager

CA ELAP Certificate Number 12360





Cambria Environmental 1144 65th St., Suite C. Oakland, CA 94608	Project: ARCO (1) Project Number: ARCO 6041/DUBLIN Project Manager: Darryk Ataide	Sampled: 11/22/00 Received: 11/28/00 Reported: 11/28/00
---	---	---

ANALYTICAL REPORT FOR L011227

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
MW-1	L011227-01	Air	11/22/00
VW-1	L011227-02	Air	11/22/00
MW-3	L011227-03	Air	11/22/00





Cambria Environmental 1144 65th St., Suite C. Oakland, CA 94608	Project: ARCO (1) Project Number: ARCO 6041/DUBLIN Project Manager: Darryk Ataide	Sampled: 11/22/00 Received: 11/28/00 Reported: 11/28/00
---	---	---

**Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT
Sequoia Analytical - San Carlos**

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-1				L011227-01			Air	3
Purgeable Hydrocarbons as Gasoline	0110127	11/28/00	11/28/00		1000	12900	ug/l	1
Benzene	"	"	"		10.0	515	"	
Toluene	"	"	"		10.0	29.7	"	
Ethylbenzene	"	"	"		10.0	59.0	"	
Xylenes (total)	"	"	"		10.0	30.7	"	
Methyl tert-butyl ether	"	"	"		100	912	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	70.0-130		171	%	2
VW-1				L011227-02			Air	3
Purgeable Hydrocarbons as Gasoline	0110127	11/28/00	11/28/00		500	2300	ug/l	1
Benzene	"	"	"		5.00	62.2	"	
Toluene	"	"	"		5.00	ND	"	
Ethylbenzene	"	"	"		5.00	5.07	"	
Xylenes (total)	"	"	"		5.00	6.34	"	
Methyl tert-butyl ether	"	"	"		50.0	78.6	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	70.0-130		127	%	
MW-3				L011227-03			Air	3
Purgeable Hydrocarbons as Gasoline	0110127	11/28/00	11/28/00		2000	12200	ug/l	1
Benzene	"	"	"		20.0	380	"	
Toluene	"	"	"		20.0	216	"	
Ethylbenzene	"	"	"		20.0	31.2	"	
Xylenes (total)	"	"	"		20.0	88.2	"	
Methyl tert-butyl ether	"	"	"		200	1200	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	70.0-130		102	%	





Cambria Environmental 1144 65th St., Suite C. Oakland, CA 94608	Project: ARCO (1) Project Number: ARCO 6041/DUBLIN Project Manager: Darryk Ataide	Sampled: 11/22/00 Received: 11/28/00 Reported: 11/28/00
---	---	---

**Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT/Quality Control
Sequoia Analytical - San Carlos**

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Reporting Limit Units	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0110127		Date Prepared: 11/28/00			Extraction Method: EPA 5030B [P/T]				
Blank		0110127-BLK1							
Purgeable Hydrocarbons as Gasoline	11/28/00			ND	ug/l	50.0			
Benzene	"			ND	"	0.500			
Toluene	"			ND	"	0.500			
Ethylbenzene	"			ND	"	0.500			
Xylenes (total)	"			ND	"	0.500			
Methyl tert-butyl ether	"			ND	"	5.00			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		8.68	"	70.0-130	86.8		
LCS		0110127-BS1							
Benzene	11/28/00	10.0		9.90	ug/l	70.0-130	99.0		
Toluene	"	10.0		9.95	"	70.0-130	99.5		
Ethylbenzene	"	10.0		10.1	"	70.0-130	101		
Xylenes (total)	"	30.0		30.7	"	70.0-130	102		
Surrogate: a,a,a-Trifluorotoluene	"	10.0		9.60	"	70.0-130	96.0		
LCS		0110127-BS2							
Purgeable Hydrocarbons as Gasoline	11/28/00	250		226	ug/l	70.0-130	90.4		
Surrogate: a,a,a-Trifluorotoluene	"	10.0		9.42	"	70.0-130	94.2		





Cambria Environmental 1144 65th St., Suite C. Oakland, CA 94608	Project: ARCO (1) Project Number: ARCO 6041/DUBLIN Project Manager: Darryk Ataide	Sampled: 11/22/00 Received: 11/28/00 Reported: 11/28/00
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Notes and Definitions

#	Note
1	Chromatogram Pattern: Gasoline C6-C12
2	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
3	Sample was received and analyzed by the laboratory outside of EPA recommended holding time.
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
Recov.	Recovery
	Relative Percent Difference





L011227-01

**EPA 8020 (same as 602)
AROMATIC VOLATILE ORGANICS**

Analyte	Detection Limit	AW	DL(ppmv)	Result ug/l	Result(ppmV)
	µg/L				
Gasoline.....	1000.0	86.2	283.759	12900.000	3,660.487
Benzene.....	10.00	78	3.136	515.000	161.498718
Toluene.....	10.00	92	2.659	29.700	7.896326
Ethyl Benzene.....	10.00	106	2.308	59.000	13.614528
Total Xylenes.....	10.00	106	2.308	30.700	7.08417
MTBE.....	100.00	88.15	27.748	912.000	253.063188





L011227-02

EPA 8020 (same as 602)
AROMATIC VOLATILE ORGANICS

Analyte	Detection Limit	AW	DL(ppmv)	Result ug/l	Result(ppmV)
	µg/L				
Gasoline.....	500.0	86.2	141.879	2300.000	652.645
Benzene.....	5.00	78	1.568	62.200	19.505282
Toluene.....	5.00	92	1.329	ND	ND
Ethyl Benzene.....	5.00	106	1.154	5.070	1.169926
Total Xylenes.....	5.00	106	1.154	6.340	1.462985
MTBE.....	50.00	88.15	13.874	78.600	21.810051





L011227-03

**EPA 8020 (same as 602)
AROMATIC VOLATILE ORGANICS**

Analyte	Detection Limit	AW	DL(ppmv)	Result ug/l	Result(ppmV)
	$\mu\text{g/L}$				
Gasoline.....	2000.0	86.2	567.517	12200.000	3,461.856
Benzene.....	20.00	78	6.272	380.000	119.164103
Toluene.....	20.00	92	5.317	216.000	57.427826
Ethyl Benzene.....	20.00	106	4.615	31.200	7.199547
Total Xylenes.....	20.00	106	4.615	88.200	20.352566
MTBE.....	200.00	88.15	55.496	1200.000	332.977879



ARCO Facility no. 6041	City (Facility) Dublin	Project manager (Consultant) Garrett DARRYK Ahern	Laboratory name SEQ.
ARCO engineer Paul Supple	Telephone no. (ARCO) 715-291-8821	Telephone no. (Consultant) 510-420-3337	Contract number
Consultant name CAMBRIN		Address (Consultant) 1144 65th St, STE C, Oakland CA 94608	

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH/MTBE EPA M602/8020/8015	TPH Modified 8015 Gas <input type="checkbox"/> Diesel <input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/>	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCMP Metals, VOA, VOA <input type="checkbox"/>	CAM METALS EPA 601/700 TLC <input type="checkbox"/> STC <input type="checkbox"/>	Lead Org./DHS Lead EPA 7420/7421 <input type="checkbox"/>	Method of shipment		
			Soil	Water	Other	Ice	Acid																
MW-1		2			AIR			11/22/00	10:00		X											Special detection Limit/reporting Lowest possible Report in PPM/v Special QA/QC	
VW-1		2						↓	12:40		↓												
MW-3		2						↓	2:40		↓												
																						Remarks	
																						TPH, BTEX, MTBE	
																						Lab number	
																						L011227	
																						Turnaround time	
																						Priority Rush 1 Business Day <input type="checkbox"/>	
																						Rush 2 Business Days <input type="checkbox"/>	
																						Expedited 5 Business Days <input checked="checked" type="checkbox"/>	
																						Standard 10 Business Days <input type="checkbox"/>	

Condition of sample:										Temperature received:									
Relinquished by [Signature]					Date 11/27 Time 12:15					Received by [Signature]					Date 11/28/00 Time 09:30				
Relinquished by Darryl Danks					Date 11/27 Time 4:15					Received by [Signature]					Date 11/28/00 Time 09:30				
Relinquished by					Date					Received by					Date				

APPENDIX C
FIELD DATA SHEETS

WELL DEPTH MEASUREMENTS

Well ID	Time	Top of Screen	DTB	DTP	DTW	DOP	Casing Dia	Comments
MW-1	9:41	12'	17.5'		10.81		4"	
MW-2	9:33	10'	14.1'		8.85		4"	
MW-3	9:45	11'	14.7'		9.75		4"	
MW-4	9:28				8.10		4"	
MW-5	9:20				9.80		4"	
MW-6	9:23				9.83		4"	
VW-2	9:38	4'	9.0'		8.95		4"	
SHELL MW-6	9:07		22.70		9.13		4"	Wells Located at neighboring shell station
SHELL MW-7	9:12		16.30		6.45		4"	

Project Name: ARCO 6041 _____

Project Number: 436-1610 _____

WELL SAMPLING FORM

Project Name: ARCO 6041	Cambria Mgr: Darryk Ataide	Well ID: MW-1
Project Number: 436 - 1610	Date: 12-27-00	Well Yield:
Site Address: 7249 Village Pkwy, Dublin	Sampling Method: Disposable bailer	Well Diameter: 4" pvc
		Technician(s): SG
Initial Depth to Water: 10.81	Total Well Depth: 17.50	Water Column Height: 6.69
Volume/ft: 0.65	1 Casing Volume: 4.34	3 Casing Volumes: 13.0
Purge/No Purge:		
Purging Device: 4" PVC bailer Submersible Pump	Did Well Dewater?: no	Total Gallons Purged: 13
Start Purge Time: 11:20	Stop Purge Time: 11:26	Total Time: 6 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
11:22	5	17.1	7.55	1351	
11:24	10	17.1	7.89	1629	
11:27	13	17.3	7.72	1675	
					DO = 0.51 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-2	12-27-00	11:32	4 VOA	HCL	TPHg, BTEX, MTBE	8020

WELL SAMPLING FORM

Project Name: ARCO 6041	Cambria Mgr: Darryk Ataide	Well ID: MW-3
Project Number: 436 - 1610	Date: 12-27-00	Well Yield:
Site Address: 7249 Village Pkwy, Dublin	Sampling Method:	Well Diameter: 4" pvc
	Disposable bailer	Technician(s): SG
Initial Depth to Water: 9.75	Total Well Depth: 14.70	Water Column Height: 4.95
Volume/ft: 0.65	1 Casing Volume: 3.21	3 Casing Volumes: 9.65
Purge/No Purge: 0.65		
Purging Device: ^{4" PVC} Submersible Pump	Did Well Dewater?: NO	Total Gallons Purged: 9
Start Purge Time: 10:55	Stop Purge Time: 10:59	Total Time: 4mins

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
10:57	3	16.1	7.37	1459	Strong odor
10:58	6	17.9	7.83	1261	
11:00	9	17.5	7.83	1219	
					DO = 0.51 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-3	12-27-00	11:05	4 VOA	HCL	TPHg, BTEX, MTBE	8020

WELL SAMPLING FORM

Project Name: ARCO 6041	Cambria Mgr: Darryk Ataide	Well ID: VW-2
Project Number: 436 - 1610	Date: 12-27-00	Well Yield:
Site Address: 7249 Village Pkwy, Dublin	Sampling Method:	Well Diameter: 4" pvc
	Disposable bailer	Technician(s): SG
Initial Depth to Water: 2.95	Total Well Depth:	Water Column Height:
Volume/ft: 0.65	1 Casing Volume:	3 Casing Volumes:
Purge/No 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
Insufficient water
no sample taken

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
VW-2	12-27-00		4 VOA	HCL	TPHg, BTEX, MTBE	8020

WELL SAMPLING FORM

Project Name: ARCO 6041	Cambria Mgr: Darryk Ataide	Well ID: Shell MW-6
Project Number: 436 - 1610	Date: 12-27-00	Well Yield:
Site Address: 7249 Village Pkwy, Dublin	Sampling Method:	Well Diameter: 4" pvc
	Disposable bailer	Technician(s): SG
Initial Depth to Water: 9.13	Total Well Depth: 22.70	Water Column Height: 13.57
Volume/ft: 0.65	1 Casing Volume: 8.82	3 Casing Volumes: 26.46
Purge/No Purge: Submersible Pump		
Purging Device: 4" PVC bailer	Did Well Dewater?: NO	Total Gallons Purged: 27
Start Purge Time: 10:10	Stop Purge Time: 10:16 mins	Total Time: 6 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
10:12	89	16.3	7.42	2497	
10:14	18	18.1	7.13	2150	
10:17	27	17.9	7.04	2159	
					DD = 1.30 ug/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
Shell MW-6	12-27-00	10:22	4 VOA	HCL	TPHg, BTEX, MTBE	8020
DUP						

WELL SAMPLING FORM

Project Name: ARCO 6041	Cambria Mgr: Darryk Ataide	Well ID: Shell MW-7
Project Number: 436 - 1610	Date: 12-27-00	Well Yield:
Site Address: 7249 Village Pkwy, Dublin	Sampling Method:	Well Diameter: 4" pvc
	Disposable bailer	Technician(s): SG
Initial Depth to Water: 6.45	Total Well Depth: 16.30	Water Column Height: 9.85
Volume/ft: 0.65	1 Casing Volume: 6.40	3 Casing Volumes: 19.20
Purge/No Purge: 0.65		
Purging Device: Submersible Pump	Did Well Dewater?: no	Total Gallons Purged: 19
Start Purge Time: 10:35	Stop Purge Time: 10:38	Total Time: 3 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
10:36	6	16.1	7.76	1305	
10:37	12	17.5	7.35	1831	
10:39	19	16.8	7.45	1859 1859	
					DO = 1.33 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
Shell MW-7	12-27-00	10:44	4 VOA	HCL	TPHg, BTEX, MTBE	8020

APPENDIX D

CERTIFIED ANALYTICAL REPORT DATED SEPTEMBER 21, 2000



Sequoia
Analytical

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

September 21 , 2000

Darryk Ataide
Cambria Environmental - Oakland
1144 65th St., Suite C
Oakland, CA 94608
RE: ARCO

Enclosed are the results of analyses for samples received by the laboratory on 08/21/00 15:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Richard Stover
Project Manager

CA ELAP Certificate Number 2374





Cambria Environmental - Oakland
1144 65th St., Suite C
Oakland CA, 94608

Project: ARCO
Project Number: 6041-Dublin
Project Manager: Darryk Ataide

Reported:
09/21/00 11:15

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	P008472-01	Water	08/20/00 00:00	08/21/00 15:30
MW-2	P008472-02	Water	08/20/00 00:00	08/21/00 15:30
MW-3	P008472-03	Water	08/20/00 00:00	08/21/00 15:30
VW-2	P008472-04	Water	08/20/00 00:00	08/21/00 15:30
DUP	P008472-05	Water	08/20/00 00:00	08/21/00 15:30





Cambria Environmental - Oakland 1144 65th St., Suite C Oakland CA, 94608	Project: ARCO Project Number: 6041-Dublin Project Manager: Darryk Ataide	Reported: 09/21/00 11:15
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**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-1 (P008472-01) Water Sampled: 08/20/00 00:00 Received: 08/21/00 15:30									
Gasoline	ND	10000	ug/l	200	0080556	08/24/00	08/24/00	EPA 8015M/8020M	
Benzene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	
Xylenes (total)	ND	100	"	"	"	"	"	"	
Methyl tert-butyl ether	48400	500	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		109 %		65-135	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		93.7 %		65-135	"	"	"	"	
MW-2 (P008472-02) Water Sampled: 08/20/00 00:00 Received: 08/21/00 15:30									
Gasoline	ND	500	ug/l	10	0080556	08/24/00	08/24/00	EPA 8015M/8020M	
Benzene	ND	5.00	"	"	"	"	"	"	
Toluene	ND	5.00	"	"	"	"	"	"	
Ethylbenzene	ND	5.00	"	"	"	"	"	"	
Xylenes (total)	ND	5.00	"	"	"	"	"	"	
Methyl tert-butyl ether	1610	25.0	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		109 %		65-135	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		90.0 %		65-135	"	"	"	"	
MW-3 (P008472-03) Water Sampled: 08/20/00 00:00 Received: 08/21/00 15:30									
Gasoline	ND	10000	ug/l	200	0080556	08/24/00	08/24/00	EPA 8015M/8020M	
Benzene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	
Xylenes (total)	ND	100	"	"	"	"	"	"	
Methyl tert-butyl ether	46200	500	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		108 %		65-135	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		87.7 %		65-135	"	"	"	"	





Cambria Environmental - Oakland 1144 65th St., Suite C Oakland CA, 94608	Project: ARCO Project Number: 6041-Dublin Project Manager: Darryk Ataide	Reported: 09/21/00 11:15
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**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
VW-2 (P008472-04) Water Sampled: 08/20/00 00:00 Received: 08/21/00 15:30									
Gasoline	ND	250	ug/l	5	0080556	08/24/00	08/24/00	EPA 8015M/8020M	
Benzene	ND	2.50	"	"	"	"	"	"	
Toluene	ND	2.50	"	"	"	"	"	"	
Ethylbenzene	ND	2.50	"	"	"	"	"	"	
Xylenes (total)	ND	2.50	"	"	"	"	"	"	
Methyl tert-butyl ether	537	12.5	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		104 %		65-135	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		89.7 %		65-135	"	"	"	"	
DUP (P008472-05) Water Sampled: 08/20/00 00:00 Received: 08/21/00 15:30									
Gasoline	ND	10000	ug/l	200	0080556	08/24/00	08/24/00	EPA 8015M/8020M	
Benzene	ND	100	"	"	"	"	"	"	
Toluene	ND	100	"	"	"	"	"	"	
Ethylbenzene	ND	100	"	"	"	"	"	"	
Xylenes (total)	ND	100	"	"	"	"	"	"	
Methyl tert-butyl ether	45500	500	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		110 %		65-135	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		89.3 %		65-135	"	"	"	"	





Cambria Environmental - Oakland 1144 65th St., Suite C Oakland CA, 94608	Project: ARCO Project Number: 6041-Dublin Project Manager: Darryk Ataide	Reported: 09/21/00 11:15
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**Volatile Organic Compounds by EPA Method 8260B
Sequoia Analytical - Petaluma**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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MW-1 (P008472-01) Water **Sampled: 08/20/00 00:00** **Received: 08/21/00 15:30**

Tert-amyl methyl ether	ND	2000	ug/l	2000	0080701	08/30/00	08/31/00	EPA 8260B	
Benzene	ND	1000	"	"	"	"	"	"	
Tert-butyl alcohol	ND	40000	"	"	"	"	"	"	
Di-isopropyl ether	ND	2000	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	1000	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1000	"	"	"	"	"	"	
Ethanol	ND	200000	"	"	"	"	"	"	
Ethylbenzene	ND	1000	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	2000	"	"	"	"	"	"	
Methyl tert-butyl ether	63700	1000	"	"	"	"	"	"	
Toluene	ND	1000	"	"	"	"	"	"	
Xylenes (total)	ND	1000	"	"	"	"	"	"	

<i>Surrogate: Dibromofluoromethane</i>		108 %		88-118	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		110 %		81-130	"	"	"	"	
<i>Surrogate: Toluene-d8</i>		109 %		84-115	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		101 %		78-124	"	"	"	"	

MW-2 (P008472-02) Water **Sampled: 08/20/00 00:00** **Received: 08/21/00 15:30**

Tert-amyl methyl ether	ND	50.0	ug/l	50	0080573	08/24/00	08/24/00	EPA 8260B	
Benzene	ND	25.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	1000	"	"	"	"	"	"	
Di-isopropyl ether	ND	50.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	25.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	25.0	"	"	"	"	"	"	
Ethanol	ND	5000	"	"	"	"	"	"	
Ethylbenzene	ND	25.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	50.0	"	"	"	"	"	"	
Methyl tert-butyl ether	1980	25.0	"	"	"	"	"	"	
Toluene	ND	25.0	"	"	"	"	"	"	
Xylenes (total)	ND	25.0	"	"	"	"	"	"	

<i>Surrogate: Dibromofluoromethane</i>		101 %		86-118	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		102 %		80-120	"	"	"	"	
<i>Surrogate: Toluene-d8</i>		107 %		88-110	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		105 %		86-115	"	"	"	"	



Cambria Environmental - Oakland 1144 65th St., Suite C Oakland CA, 94608	Project: ARCO Project Number: 6041-Dublin Project Manager: Darryk Ataide	Reported: 09/21/00 11:15
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**Volatile Organic Compounds by EPA Method 8260B
Sequoia Analytical - Petaluma**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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MW-3 (P008472-03) Water **Sampled: 08/20/00 00:00** **Received: 08/21/00 15:30**

Tert-amyl methyl ether	ND	2000	ug/l	2000	0080701	08/30/00	08/31/00	EPA 8260B	
Benzene	ND	1000	"	"	"	"	"	"	
Tert-butyl alcohol	ND	40000	"	"	"	"	"	"	
Di-isopropyl ether	ND	2000	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	1000	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1000	"	"	"	"	"	"	
Ethanol	ND	200000	"	"	"	"	"	"	
Ethylbenzene	ND	1000	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	2000	"	"	"	"	"	"	
Methyl tert-butyl ether	55600	1000	"	"	"	"	"	"	
Toluene	ND	1000	"	"	"	"	"	"	
Xylenes (total)	ND	1000	"	"	"	"	"	"	
<i>Surrogate: Dibromofluoromethane</i>		106 %		88-118	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		108 %		81-130	"	"	"	"	
<i>Surrogate: Toluene-d8</i>		108 %		84-115	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		106 %		78-124	"	"	"	"	

VW-2 (P008472-04) Water **Sampled: 08/20/00 00:00** **Received: 08/21/00 15:30**

PH

Tert-amyl methyl ether	ND	25.0	ug/l	25	0080701	08/30/00	08/30/00	EPA 8260B	
Benzene	ND	12.5	"	"	"	"	"	"	
Tert-butyl alcohol	685	500	"	"	"	"	"	"	
Di-isopropyl ether	ND	25.0	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	12.5	"	"	"	"	"	"	
1,2-Dichloroethane	ND	12.5	"	"	"	"	"	"	
Ethanol	ND	2500	"	"	"	"	"	"	
Ethylbenzene	ND	12.5	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	25.0	"	"	"	"	"	"	
Methyl tert-butyl ether	554	12.5	"	"	"	"	"	"	
Toluene	ND	12.5	"	"	"	"	"	"	
Xylenes (total)	ND	12.5	"	"	"	"	"	"	
<i>Surrogate: Dibromofluoromethane</i>		105 %		88-118	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		106 %		81-130	"	"	"	"	
<i>Surrogate: Toluene-d8</i>		110 %		84-115	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		103 %		78-124	"	"	"	"	





Cambria Environmental - Oakland 1144 65th St., Suite C Oakland CA, 94608	Project: ARCO Project Number: 6041-Dublin Project Manager: Darryk Ataide	Reported: 09/21/00 11:15
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**Volatile Organic Compounds by EPA Method 8260B
Sequoia Analytical - Petaluma**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
DUP (P008472-05) Water Sampled: 08/20/00 00:00 Received: 08/21/00 15:30									
Tert-amyl methyl ether	ND	1000	ug/l	1000	0080701	08/31/00	08/31/00	EPA 8260B	
Benzene	ND	1000	"	2000	"	"	08/31/00	"	
Tert-butyl alcohol	ND	20000	"	1000	"	"	08/31/00	"	
Di-isopropyl ether	ND	1000	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	500	"	"	"	"	"	"	
1,2-Dichloroethane	ND	500	"	"	"	"	"	"	
Ethanol	ND	200000	"	2000	"	"	08/31/00	"	
Ethylbenzene	ND	1000	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	1000	"	1000	"	"	08/31/00	"	
Methyl tert-butyl ether	51700	1000	"	2000	"	"	08/31/00	"	
Toluene	ND	1000	"	"	"	"	"	"	
Xylenes (total)	ND	1000	"	"	"	"	"	"	
<i>Surrogate: Dibromofluoromethane</i>		<i>103 %</i>		<i>88-118</i>					
<i>Surrogate: 1,2-Dichloroethane-d4</i>		<i>96.8 %</i>		<i>81-130</i>					
<i>Surrogate: Toluene-d8</i>		<i>107 %</i>		<i>84-115</i>					
<i>Surrogate: 4-Bromofluorobenzene</i>		<i>100 %</i>		<i>78-124</i>					





Cambria Environmental - Oakland 1144 65th St., Suite C Oakland CA, 94608	Project: ARCO Project Number: 6041-Dublin Project Manager: Darryk Ataide	Reported: 09/21/00 11:15
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**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 0080556 - EPA 5030 waters										
Blank (0080556-BLK1)										
Prepared & Analyzed: 08/24/00										
Gasoline	ND	50.0	ug/l							
Benzene	ND	0.500	"							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes (total)	ND	0.500	"							
Methyl tert-butyl ether	ND	2.50	"							
Surrogate: a, a, a-Trifluorotoluene	335		"	300		112	65-135			
Surrogate: 4-Bromofluorobenzene	276		"	300		92.0	65-135			
LCS (0080556-BS1)										
Prepared & Analyzed: 08/24/00										
Gasoline	972	50.0	ug/l	1000		97.2	65-135			
Surrogate: 4-Bromofluorobenzene	281		"	300		93.7	65-135			
Matrix Spike (0080556-MS1)										
Source: P008502-02 Prepared & Analyzed: 08/24/00										
Gasoline	846	50.0	ug/l	1000	ND	84.6	65-135			
Surrogate: 4-Bromofluorobenzene	272		"	300		90.7	65-135			
Matrix Spike Dup (0080556-MSD1)										
Source: P008502-02 Prepared & Analyzed: 08/24/00										
Gasoline	911	50.0	ug/l	1000	ND	91.1	65-135	7.40	20	
Surrogate: 4-Bromofluorobenzene	283		"	300		94.3	65-135			





Cambria Environmental - Oakland
1144 65th St., Suite C
Oakland CA, 94608

Project: ARCO
Project Number: 6041-Dublin
Project Manager: Darryk Ataide

Reported:
09/21/00 11:15

**Volatile Organic Compounds by EPA Method 8260B - Quality Control
Sequoia Analytical - Petaluma**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 0080573 - EPA 5030 waters

Blank (0080573-BLK1)

Prepared & Analyzed: 08/24/00

Tert-amyl methyl ether	ND	1.00	ug/l							
Benzene	ND	0.500	"							
Tert-butyl alcohol	ND	20.0	"							
Di-isopropyl ether	ND	1.00	"							
1,2-Dibromoethane (EDB)	ND	0.500	"							
1,2-Dichloroethane	ND	0.500	"							
Ethanol	ND	100	"							
Ethylbenzene	ND	0.500	"							
Ethyl tert-butyl ether	ND	1.00	"							
Methyl tert-butyl ether	ND	0.500	"							
Toluene	ND	0.500	"							
Xylenes (total)	ND	0.500	"							
<i>Surrogate: Dibromofluoromethane</i>	5.08		"	5.00		102	86-118			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.97		"	5.00		99.4	80-120			
<i>Surrogate: Toluene-d8</i>	5.28		"	5.00		106	88-110			
<i>Surrogate: 4-Bromofluorobenzene</i>	5.39		"	5.00		108	86-115			

Blank (0080573-BLK2)

Prepared & Analyzed: 08/25/00

Tert-amyl methyl ether	ND	1.00	ug/l							
Benzene	ND	0.500	"							
Tert-butyl alcohol	ND	20.0	"							
Di-isopropyl ether	ND	1.00	"							
1,2-Dibromoethane (EDB)	ND	0.500	"							
1,2-Dichloroethane	ND	0.500	"							
Ethanol	ND	100	"							
Ethylbenzene	ND	0.500	"							
Ethyl tert-butyl ether	ND	1.00	"							
Methyl tert-butyl ether	ND	0.500	"							
Toluene	ND	0.500	"							
Xylenes (total)	ND	0.500	"							
<i>Surrogate: Dibromofluoromethane</i>	5.13		"	5.00		103	86-118			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.90		"	5.00		98.0	80-120			
<i>Surrogate: Toluene-d8</i>	5.28		"	5.00		106	88-110			
<i>Surrogate: 4-Bromofluorobenzene</i>	5.07		"	5.00		101	86-115			





Cambria Environmental - Oakland 1144 65th St., Suite C Oakland CA, 94608	Project: ARCO Project Number: 6041-Dublin Project Manager: Darryk Ataide	Reported: 09/21/00 11:15
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**Volatile Organic Compounds by EPA Method 8260B - Quality Control
Sequoia Analytical - Petaluma**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0080573 - EPA 5030 waters										
LCS (0080573-BS1)				Prepared & Analyzed: 08/24/00						
Benzene	4.59	0.500	ug/l	5.00		91.8	79.7-114			
Methyl tert-butyl ether	5.03	0.500	"	5.00		101	72.7-119			
Toluene	4.49	0.500	"	5.00		89.8	79.8-113			
<i>Surrogate: Dibromofluoromethane</i>	<i>5.11</i>		<i>"</i>	<i>5.00</i>		<i>102</i>	<i>86-118</i>			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>5.18</i>		<i>"</i>	<i>5.00</i>		<i>104</i>	<i>80-120</i>			
<i>Surrogate: Toluene-d8</i>	<i>5.24</i>		<i>"</i>	<i>5.00</i>		<i>105</i>	<i>88-110</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>4.99</i>		<i>"</i>	<i>5.00</i>		<i>99.8</i>	<i>86-115</i>			
LCS (0080573-BS2)				Prepared & Analyzed: 08/25/00						
Benzene	5.13	0.500	ug/l	5.00		103	79.7-114			
Methyl tert-butyl ether	4.94	0.500	"	5.00		98.8	72.7-119			
Toluene	5.04	0.500	"	5.00		101	79.8-113			
<i>Surrogate: Dibromofluoromethane</i>	<i>5.02</i>		<i>"</i>	<i>5.00</i>		<i>100</i>	<i>86-118</i>			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>4.87</i>		<i>"</i>	<i>5.00</i>		<i>97.4</i>	<i>80-120</i>			
<i>Surrogate: Toluene-d8</i>	<i>5.26</i>		<i>"</i>	<i>5.00</i>		<i>105</i>	<i>88-110</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>4.80</i>		<i>"</i>	<i>5.00</i>		<i>96.0</i>	<i>86-115</i>			
Matrix Spike (0080573-MS1)				Source: P008472-02		Prepared & Analyzed: 08/25/00				
Benzene	260	25.0	ug/l	250	ND	103	79.7-114			
Methyl tert-butyl ether	2060	25.0	"	250	1980	32.0	72.7-119			QM-4X
Toluene	256	25.0	"	250	ND	102	79.8-113			
<i>Surrogate: Dibromofluoromethane</i>	<i>5.07</i>		<i>"</i>	<i>5.00</i>		<i>101</i>	<i>86-118</i>			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>4.81</i>		<i>"</i>	<i>5.00</i>		<i>96.2</i>	<i>80-120</i>			
<i>Surrogate: Toluene-d8</i>	<i>5.22</i>		<i>"</i>	<i>5.00</i>		<i>104</i>	<i>88-110</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>4.77</i>		<i>"</i>	<i>5.00</i>		<i>95.4</i>	<i>86-115</i>			
Matrix Spike Dup (0080573-MSD1)				Source: P008472-02		Prepared & Analyzed: 08/25/00				
Benzene	253	25.0	ug/l	250	ND	99.8	79.7-114	2.73	20	
Methyl tert-butyl ether	2060	25.0	"	250	1980	32.0	72.7-119	0	20	QM-4X
Toluene	248	25.0	"	250	ND	99.2	79.8-113	3.17	20	
<i>Surrogate: Dibromofluoromethane</i>	<i>5.10</i>		<i>"</i>	<i>5.00</i>		<i>102</i>	<i>86-118</i>			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>4.88</i>		<i>"</i>	<i>5.00</i>		<i>97.6</i>	<i>80-120</i>			
<i>Surrogate: Toluene-d8</i>	<i>5.28</i>		<i>"</i>	<i>5.00</i>		<i>106</i>	<i>88-110</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>4.79</i>		<i>"</i>	<i>5.00</i>		<i>95.8</i>	<i>86-115</i>			



Cambria Environmental - Oakland
1144 65th St., Suite C
Oakland CA, 94608

Project: ARCO
Project Number: 6041-Dublin
Project Manager: Darryk Ataide

Reported:
09/21/00 11:15

**Volatile Organic Compounds by EPA Method 8260B - Quality Control
Sequoia Analytical - Petaluma**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 0080701 - EPA 5030 waters

Blank (0080701-BLK1)

Prepared & Analyzed: 08/30/00

Tert-amyl methyl ether	ND	1.00	ug/l							
Benzene	ND	0.500	"							
Tert-butyl alcohol	ND	20.0	"							
Di-isopropyl ether	ND	1.00	"							
1,2-Dibromoethane (EDB)	ND	0.500	"							
1,2-Dichloroethane	ND	0.500	"							
Ethanol	ND	100	"							
Ethylbenzene	ND	0.500	"							
Ethyl tert-butyl ether	ND	1.00	"							
Methyl tert-butyl ether	ND	0.500	"							
Toluene	ND	0.500	"							
Xylenes (total)	ND	0.500	"							
<i>Surrogate: Dibromofluoromethane</i>	5.15		"	5.00		103	88-118			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.12		"	5.00		102	81-130			
<i>Surrogate: Toluene-d8</i>	5.29		"	5.00		106	84-115			
<i>Surrogate: 4-Bromofluorobenzene</i>	5.15		"	5.00		103	78-124			

Blank (0080701-BLK2)

Prepared & Analyzed: 08/31/00

Tert-amyl methyl ether	ND	1.00	ug/l							
Benzene	ND	0.500	"							
Tert-butyl alcohol	ND	20.0	"							
Di-isopropyl ether	ND	1.00	"							
1,2-Dibromoethane (EDB)	ND	0.500	"							
1,2-Dichloroethane	ND	0.500	"							
Ethanol	ND	100	"							
Ethylbenzene	ND	0.500	"							
Ethyl tert-butyl ether	ND	1.00	"							
Methyl tert-butyl ether	ND	0.500	"							
Toluene	ND	0.500	"							
Xylenes (total)	ND	0.500	"							
<i>Surrogate: Dibromofluoromethane</i>	5.19		"	5.00		104	88-118			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.84		"	5.00		96.8	81-130			
<i>Surrogate: Toluene-d8</i>	5.43		"	5.00		109	84-115			
<i>Surrogate: 4-Bromofluorobenzene</i>	5.05		"	5.00		101	78-124			



Cambria Environmental - Oakland
1144 65th St., Suite C
Oakland CA, 94608

Project: ARCO
Project Number: 6041-Dublin
Project Manager: Darryk Ataide

Reported:
09/21/00 11:15

**Volatile Organic Compounds by EPA Method 8260B - Quality Control
Sequoia Analytical - Petaluma**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 0080701 - EPA 5030 waters

LCS (0080701-BS1)

Prepared & Analyzed: 08/30/00

Benzene	5.53	0.500	ug/l	5.00		111	79.7-114			
Methyl tert-butyl ether	5.37	0.500	"	5.00		107	72.7-119			
Toluene	5.46	0.500	"	5.00		109	79.8-113			
Surrogate: Dibromofluoromethane	5.15		"	5.00		103	88-118			
Surrogate: 1,2-Dichloroethane-d4	5.32		"	5.00		106	81-130			
Surrogate: Toluene-d8	5.38		"	5.00		108	84-115			
Surrogate: 4-Bromofluorobenzene	4.99		"	5.00		99.8	78-124			

LCS (0080701-BS2)

Prepared & Analyzed: 08/31/00

Benzene	5.15	0.500	ug/l	5.00		103	79.7-114			
Methyl tert-butyl ether	5.23	0.500	"	5.00		105	72.7-119			
Toluene	5.16	0.500	"	5.00		103	79.8-113			
Surrogate: Dibromofluoromethane	5.26		"	5.00		105	88-118			
Surrogate: 1,2-Dichloroethane-d4	5.01		"	5.00		100	81-130			
Surrogate: Toluene-d8	5.37		"	5.00		107	84-115			
Surrogate: 4-Bromofluorobenzene	4.82		"	5.00		96.4	78-124			

Matrix Spike (0080701-MS1)

Source: P008472-04

Prepared & Analyzed: 08/30/00

Benzene	121	12.5	ug/l	125	ND	96.8	79.7-114			
Methyl tert-butyl ether	803	12.5	"	125	554	199	72.7-119			QM-4X
Toluene	120	12.5	"	125	ND	96.0	79.8-113			
Surrogate: Dibromofluoromethane	5.26		"	5.00		105	88-118			
Surrogate: 1,2-Dichloroethane-d4	5.50		"	5.00		110	81-130			
Surrogate: Toluene-d8	5.40		"	5.00		108	84-115			
Surrogate: 4-Bromofluorobenzene	4.85		"	5.00		97.0	78-124			

Matrix Spike Dup (0080701-MSD1)

Source: P008472-04

Prepared & Analyzed: 08/30/00

Benzene	112	12.5	ug/l	125	ND	89.6	79.7-114	7.73	20	
Methyl tert-butyl ether	789	12.5	"	125	554	188	72.7-119	1.76	20	QM-4X
Toluene	112	12.5	"	125	ND	89.6	79.8-113	6.90	20	
Surrogate: Dibromofluoromethane	5.37		"	5.00		107	88-118			
Surrogate: 1,2-Dichloroethane-d4	5.55		"	5.00		111	81-130			
Surrogate: Toluene-d8	5.35		"	5.00		107	84-115			
Surrogate: 4-Bromofluorobenzene	4.87		"	5.00		97.4	78-124			



Cambria Environmental - Oakland
1144 65th St., Suite C
Oakland CA, 94608

Project: ARCO
Project Number: 6041-Dublin
Project Manager: Darryk Ataide

Reported:
09/21/00 11:15

Notes and Definitions

- PH Insufficient preservative to reduce the sample pH to less than 2. Sample was analyzed within 14 days of sampling, but beyond the 7 days recommended for Benzene, Toluene, and Ethylbenzene.
- QM-4X The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
- 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

Division of Atlantic-Richfield Company

Rate # 8 Task Order No. 26046

Chain of Custody

ARCO Facility no. **6041** City (Facility) **Dublin** Project manager (Consultant) **Dussyk Ataide**
 ARCO engineer **Paul Supple** Telephone no. (ARCO) **925-299-8891** Telephone no. (Consultant) **510-420-3339** Fax no. (Consultant) **510-420-9170**
 Consultant name **Cambric** Address (Consultant) **1144 65th St #3 Oakland, Ca 94608**

Laboratory name **Seg**
 Contract number

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH/MTC/E EPA M602/8020/8015	TPH Modified 8015 Gas Diesel	Oil and Grease 413.1 413.2	TPH EPA 418.1/SM4503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals Semi VOA VOA	CAN/MEALS EPA 6010/7000 ITLC STLC	Lead Org./DHS Lead EPA 7420/7421	BTEX/TPH MTC/E P1-3260	
			Soil	Water	Other	Ice	Acid															
MW-1		6		W			hcl	08-20-00	8:47		X											
MW-2		4		↓			↓	↓	8:18		X											
MW-3		6		↓			↓	↓	9:12		X											
VW-2		6		↓			↓	↓	9:35		X											
DUP		6		↓			↓	↓			X											

Method of shipment

Special detection Limit/reporting **Lowest Possible**

Special QA/QC

Remarks

Lab number

Turnaround time

Priority Rush 1 Business Day

Rush 2 Business Days

Expedited 5 Business Days

Standard 10 Business Days

COOLER CUSTODY SEALS INTACT

NOT INTACT

COOLER TEMPERATURE **3** °C

Condition of sample:	Temperature received:
Acquired by sample J. Hill	Date _____ Time _____ Received by _____
Acquired by _____	Date _____ Time _____ Received by _____ 8-21-00 15:30
Acquired by _____	Date _____ Time _____ Received by _____