CAMBRIA

RO-452

February 15, 2002

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

Re: **Quarterly Groundwater Monitoring Report**
Fourth Quarter 2001
ARCO Service Station No. 6041
7249 Village Parkway
Dublin, California
Cambria Project # 438-1643

MAR 19 2002

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 2001 groundwater monitoring program at ARCO Service Station No. 6041, located at 7249 Village Parkway, Dublin, California. 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, RG
Senior Project Manager

Attachment: Quarterly Groundwater Monitoring Report, Fourth Quarter 2001

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

Oakland, CA
San Ramon, CA
Sonoma, CA

Cambria Environmental Technology, Inc.

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
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Quarterly Groundwater Monitoring Report

Fourth Quarter 2001

ARCO Service Station No. 6041
7249 Village Parkway
Dublin, California
Cambria Project # 438-1643

Prepared For:

Mr. Paul Supple
ARCO

February 15, 2002

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

REGISTERED GEOLOGIST • RONALD A. SCHEELE • No. 6842 • STATE OF CALIFORNIA

Written by:

Sara Dwight
Staff Environmental Scientist

Ron Scheele, RG
Senior Project Manager

CAMBRIA

Date: February 15, 2002
Quarter: 4th Quarter, 2001

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.:	438-1643
Primary Agency/Regulatory ID No.:	ACHCSA

WORK PERFORMED THIS QUARTER (FOURTH - 2001):

1. Submitted quarterly groundwater monitoring report for third quarter, 2001.
2. Performed quarterly groundwater monitoring and sampling on December 21, 2001.
3. Installed underground remediation piping and two new tank backfill wells (MW-7 and MW-8) during station remodel and underground storage tank (UST) upgrade activities.
4. Submitted *Underground Storage Tank, Piping Removal, and Well Abandonment Report* dated October 31, 2001

WORK PROPOSED FOR NEXT QUARTER (FIRST – 2002):

1. Prepare and submit quarterly groundwater monitoring report for fourth quarter 2001.
2. Perform quarterly groundwater monitoring and sampling for first quarter 2002.

MONITORING:

Current Phase of Project:	Monitoring
Frequency of Groundwater Sampling	Quarterly: MW-2, MW-3, MW-4, Shell MW-6, Shell MW-7 Annual: MW-5, MW-6
Frequency of Groundwater Monitoring	Quarterly
Is Free Product (FP) Present On-site:	No
Bulk Soil Removed to Date :	3,208 cubic yards of TPH impacted soil
Water Wells or Surface Waters, within 2000 ft., impacted by site:	None
Current Remediation Techniques:	Removed approximately 3,192 cubic yards of hydrocarbon impacted soil and approximately 25,600 gallons of hydrocarbon impacted groundwater during station remodel and UST upgrade activities performed during the third quarter 2001.
Average Depth to Groundwater:	8.81 feet
Groundwater Flow Direction and Gradient	0.002 ft/ft toward east

DISCUSSION:

Based on field measurements collected on December 21, 2001, groundwater beneath the site flows towards the east at a gradient of 0.002 ft/ft. **This is inconsistent with the historic groundwater flow direction and gradient, which has typically been to the southwest.**

Hydrocarbon and MTBE concentrations detected this quarter decreased significantly as compared to the previous sampling event. The maximum TPHg concentration was detected in well MW-2 at 65 micrograms per liter (µg/L). The maximum MTBE concentration was detected in well MW-3 at 3,800 µg/L. Benzene was not reported in the analyzed water samples.

TANK BACKFILL WELL INSTALLATION:

In the fourth quarter 2001, two tank backfill wells (MW-7 and MW-8) were installed to a depth ranging from 8.0 to 12.7 feet below ground surface (bgs). The wells were installed by CPI Development of Hesperia, California.

Tank backfill well MW-7 was installed to a depth of 8.0 feet bgs in the new UST tank pit located along the western edge of the site. The well was constructed of 4-inch diameter schedule 40 PVC casing, screened with 0.010-inch slotted casing, and surrounded by pea gravel. Tank backfill well MW-8 was installed to a depth of 12.7 feet bgs in the former UST tank pit located in the center of the site. The well was constructed of 4-inch diameter schedule 40 PVC casing, screened with 0.010-inch slotted casing, and surrounded by pea gravel.

ATTACHMENTS:

- Figure 1 - Groundwater Elevation Contour and Analytical Summary Map
- Figure 2 - Soil Over-Excavation, Tank Backfill Wells, and Remediation Piping Site Plan
- Table 1 - Historical Groundwater Elevation and Analytical 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

02/21/02

Groundwater Elevation Contour and Analytical Summary Map

December 21, 2001

EXPLANATION

- MW-1 — Groundwater monitoring well
- VW-1 — Vapor extraction well
- MW-6 — Shell monitoring well
- AS-1 — Air Sparge well
- TP-1 — Tank Pit Observation well
- Abandoned well
- 325.80 — Groundwater elevation contour line

Well ID / ELEV / TPHg / Benzene / MTBE — Well Designation; Groundwater Elevation; Concentration of total petroleum hydrocarbons as gasoline, benzene, and MTBE in groundwater in micrograms per liter (µg/l). Samples collected on 12/21/01

Approximate goundwater flow direction and gradient

NA — Data Not Available

AMADOR VALLEY BOULEVARD

VILLAGE PARKWAY

BP STATION BUILDING

FORMER USTs

MW-7 <50 <0.5 <2.5

planter

MW-4 325.91 <50 <0.5 4.1

MW-5 NA

326.00 dispenser islands 326.00

MW-2 326.15 60 <0.5 11

former station building

Station Building

TP-1

AS-2 VW-4

MW-3 326.13 <5,000 <50 4,300

MW-8

former USTs

former dispenser islands

VW-3

MW-9 — <5,000 67 2,400

AS-1

MW-1 VW-5 TP-2

326.25 326.25

VW-2

USTs

MW-7

MW-6 326.37 <50 <0.5 <2.5

VW-1

MW-6 <50 <0.5 <2.5

OIL CHANGERS (FORMER SHELL SITE)

FORMER MARKET

UNOCAL SITE

CHIROPRACTOR'S OFFICE

N

0 20 40 80

Scale (ft)

FIGURE 1

ARCO Service Station 6041

7249 Village Parkway

Dublin, California

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PVC remediation piping stub-ups
Sewer stub-up
Electrical stub-up
MW-6
Proposed Remediation System Enclosure
MW-5
New Station Building
former waste oil tank (removed 09/90)
Former Station Building
former waste oil piping
former hydraulic hoists (approx.)
former dispenser islands
VW-1
New UST Cavity
MW-1
AS-1
VW-5
MW-7
TP-2
Former UST Cavity
TP-1
VW-2
VW-3
MW-8
AS-2
VW-4
MW-3
MW-2
MW-4
planter
VILLAGE PARKWAY
AMADOR VALLEY BOULEVARD

EXPLANATION

- MW-6 — Monitoring well location
- MW-1 — Abandoned well location
- MW-8 — Tank Backfill well location
- New Dispenser Island Area Over excavated to 5.0 feet below grade (fbg).
- Waste Oil and Hydraulic Oil Area Over excavated to 5.5 fbg.
- Former UST Area Over excavated to 16.0 fbg.
- New UST Area Over excavated to 17.0 fbg.
- Junction Box
- Remediation Piping Trench (with two 4-inch dia. PVC conduits and two 2-inch dia. PVC conduits)

Note: All non-shaded areas where over excavated to 2.5 fbg. over the entire site.

0 10 20 40
Scale (ft)

Soil Over Excavation Tank Backfill Wells and Remediation Piping Site Plan

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ARCO Service Station 6041
7249 Village Parkway
Dublin, California

FIGURE
2

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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 Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	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)
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	--		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-1	02-09-01	336.56	10.65	0.00	325.91	02-09-01	2,820	368	<25.0	116	176	23,300	--	0.58	P
DUP	02-09-01	NR	NR	NR	NR	02-09-01	3,490	432	9.56	146	235	31,800	--		
MW-1	04-17-01	336.56	11.09	0.00	325.47	04-17-01	2,900	66.0	<10.0	33.2	25.1	46,500	--	0.63	P
DUP	04-17-01	NR	NR	NR	NR	04-17-01	2,600	70.1	<20.0	32.7	30.6	45,400	--		
MW-1	07-17-01	336.56	11.07	0.00	325.49	07-17-01	<10,000	<100	<100	130	520	42,000	--	0.69	P
MW-1	**12-21-01**	**Well abandoned during station upgrade activities**													
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	--		
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	--		

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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 Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	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)
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	--		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									
MW-2	02-09-01	334.80	8.50	0.00	326.30	02-09-01	<50.0	<0.500	<0.500	<0.500	<0.500	9.11	--	0.53	P
MW-2	04-17-01	334.80	9.12	0.00	325.68	Not Sampled: Well sampled during first and third quarters									
MW-2	07-17-01	334.80	8.99	0.00	325.81	07-17-01	1,200	<10	<10	<10	<10	4,200	--	0.69	P
DUP	07-17-01	NR	NR	NR	NR	07-17-01	3,500	<10	<10	<10	<10	3,500	--		
MW-2	**12-21-01**	**334.80**	**8.65**	**0.00**	**326.15**	**12-21-01**	**65**	**<0.50**	**1.2**	**0.61**	**6.7**	**11**	**6.5**	**0.48**	**NP**
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

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

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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 Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	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)
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	--		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		
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
MW-3	02-09-01	335.53	9.61	0.00	325.92	02-09-01	29,300	2,590	3,530	440	7,080	85,500	--	0.51	P
MW-3	04-17-01	335.53	9.94	0.00	325.59	04-17-01	16,400	1,680	<25.0	310	2,290	48,700	--	0.41	P
MW-3	07-17-01	335.53	9.93	0.00	325.60	07-17-01	21,000	1,500	<100	1,100	690	82,000	--	0.51	P
MW-3	**12-21-01**	**335.53**	**9.40**	**0.00**	**326.13**	**12-21-01**	**<5,000**	**<50**	**<50**	**<50**	**<50**	**4,300**	**3,800**	**0.40**	**P**
DUP	**12-21-01**	**NR**	**NR**	**NR**	**NR**	**12-21-01**	**<5,000**	**<50**	**<50**	**<50**	**<50**	**4,500**	**3,500**		
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-4	02-09-01	334.22	7.97	0.00	326.25	Not sampled: well not part of sampling program									
MW-4	04-17-01	334.22	8.90	0.00	325.32	Not sampled: well not part of sampling program									
MW-4	07-17-01	334.22	8.59	0.00	325.63	Not sampled: well not part of sampling program									
MW-4	**12-21-01**	**334.22**	**8.31**	**0.00**	**325.91**	**12-21-01**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**4.1**	**2.0**	**0.68**	**NP**

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 Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	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)
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									
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-5	02-09-01	335.87	9.65	0.00	326.22	Not sampled: well not part of sampling program									
MW-5	04-17-01	335.87	9.92	0.00	325.95	Not sampled: well not part of sampling program									
MW-5	07-17-01	335.87	9.95	0.00	325.92	Not sampled: well not part of sampling program									
MW-5	**12-21-01**	**335.87**	**Well inaccessible**												
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									

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 Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	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)
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									
MW-6	02-09-01	335.84	9.62	0.00	326.22	Not sampled: well not part of sampling program									
MW-6	04-17-01	335.84	10.03	0.00	325.81	Not sampled: well not part of sampling program									
MW-6	07-17-01	335.84	9.95	0.00	325.89	Not sampled: well not part of sampling program									
MW-6	**12-21-01**	**335.84**	**9.47**	**0.00**	**326.37**	**12/21/01**	**<50**	**<0.50**	**<0.50**	**<0.50**	**0.57**	**<2.5**	**- -**	**0.55**	**NP**
MW-7	**12-21-01**	**NR**	**NR**	**NR**	**NR**	**Not sampled: well dry**									
MW-8	**12-21-01**	**NR**	**8.70**	**0.00**	**NR**	**12/21/01**	**<5,000**	**67**	**<50**	**<50**	**<50**	**2,400**	**1,300**	**0.60**	**NP**
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									
VW-2	02-09-01	NR	8.87	0.00	NR	Not sampled: Well Dry									
VW-2	04-17-01	NR	9.00	0.00	NR	Not sampled: Well Dry									
VW-2	07-17-01	NR	8.97	0.00	NR	Not sampled: Well Dry									
VW-2	**12-21-01**	**Well abandoned during station upgrade activities**													

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 Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	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)
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	- -		
Shell MW-6	02-09-01	NR	9.05	0.00	NR	02-09-01	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	- -	1.29	P
Shell MW-6	04-17-01	NR	10.17	0.00	NR	04-17-01	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	- -	0.95	P
Shell MW-6	07-17-01	NR	9.50	0.00	NR	07-17-01	<50	<0.50	<0.50	<0.50	<0.50	4.2	- -	1.03	P
Shell MW-6	**12-21-01**	**NR**	**9.98**	**0.00**	**NR**	**12-21-01**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<2.5**	**- -**	**0.97**	**P**
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
Shell MW-7	02-09-01	NR	6.39	0.00	NR	02-09-01	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	- -	1.13	P
Shell MW-7	04-17-01	NR	7.22	0.00	NR	04-17-01	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	- -	1.12	P
Shell MW-7	07-17-01	NR	6.93	0.00	NR	07-17-01	<50	<0.50	<0.50	<0.50	<0.50	<2.5	- -	1.05	P
Shell MW-7	**12-21-01**	**NR**	**7.15**	**0.00**	**NR**	**12-21-01**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<2.5**	**- -**		**P**

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
µg/L: micrograms per liter
mg/L: milligrams per liter
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).*
DUP: duplicate

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
02-09-01	West-Southwest	0.003
04-17-01	South-Southwest	0.015
07-17-01	South-Southwest	0.003
12-21-01	**East**	**0.002**

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

819 Striker Avenue, Suite 8
Sacramento, CA 95834
(916) 921-9600
FAX (916) 921-0100
www.sequoialabs.com

8 January, 2002

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

RE: ARCO 6041, Dublin, CA
Sequoia Report: S112370

Enclosed are the results of analyses for samples received by the laboratory on 12/26/01 10:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ron Chew
Client Services Representative

Lito Diaz
Laboratory Director

CA ELAP Certificate #1624

Sequoia Analytical

819 Striker Avenue, Suite 8
Sacramento, CA 95834
(916) 921-9600
FAX (916) 921-0100
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Cambria - Emeryville	Project: ARCO 6041, Dublin, CA	
6262 Hollis Street	Project Number: 6041, Dublin, CA	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	01/08/02 14:04

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-2	S112370-01	Water	12/21/01 11:05	12/26/01 10:40
MW-3	S112370-02	Water	12/21/01 07:40	12/26/01 10:40
MW-4	S112370-03	Water	12/21/01 11:00	12/26/01 10:40
MW-6	S112370-04	Water	12/21/01 10:55	12/26/01 10:40
MW-8	S112370-05	Water	12/21/01 11:45	12/26/01 10:40
Shell MW-6	S112370-06	Water	12/21/01 06:30	12/26/01 10:40
Shell MW-7	S112370-07	Water	12/21/01 05:40	12/26/01 10:40
Dup	S112370-08	Water	12/21/01 00:00	12/26/01 10:40

Sequoia Analytical - Sacramento

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.

Ron Chew, Client Services Representative

Sequoia Analytical

819 Striker Avenue, Suite 8
Sacramento, CA 95834
(916) 921-9600
FAX (916) 921-0100
www.sequoialabs.com

Cambria - Emeryville	Project: ARCO 6041, Dublin, CA	
6262 Hollis Street	Project Number: 6041, Dublin, CA	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	01/08/02 14:04

Total Purgeable Hydrocarbon, BTEX and MTBE by DHS LUFT

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-2 (S112370-01) Water Sampled: 12/21/01 11:05 Received: 12/26/01 10:40									
Purgeable Hydrocarbons	**65**	50	ug/l	1	2010032	01/02/02	01/02/02	DHS LUFT	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	**1.2**	0.50	"	"	"	"	"	"	
Ethylbenzene	**0.61**	0.50	"	"	"	"	"	"	
Xylenes (total)	**6.7**	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	**11**	2.5	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*93.9 %*		*60-140*		"	"	"	
MW-3 (S112370-02) Water Sampled: 12/21/01 07:40 Received: 12/26/01 10:40									
Purgeable Hydrocarbons	ND	5000	ug/l	100	2010066	01/04/02	01/04/02	DHS LUFT	
Benzene	ND	50	"	"	"	"	"	"	
Toluene	ND	50	"	"	"	"	"	"	
Ethylbenzene	ND	50	"	"	"	"	"	"	
Xylenes (total)	ND	50	"	"	"	"	"	"	
Methyl tert-butyl ether	**4300**	250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*108 %*		*60-140*		"	"	"	
MW-4 (S112370-03) Water Sampled: 12/21/01 11:00 Received: 12/26/01 10:40									
Purgeable Hydrocarbons	ND	50	ug/l	1	2010032	01/02/02	01/02/02	DHS LUFT	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	**4.1**	2.5	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*106 %*		*60-140*		"	"	"	

Sequoia Analytical

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Cambria - Emeryville	Project: ARCO 6041, Dublin, CA	
6262 Hollis Street	Project Number: 6041, Dublin, CA	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	01/08/02 14:04

Total Purgeable Hydrocarbon, BTEX and MTBE by DHS LUFT

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-6 (S112370-04) Water Sampled: 12/21/01 10:55 Received: 12/26/01 10:40									
Purgeable Hydrocarbons	ND	50	ug/l	1	2010032	01/02/02	01/02/02	DHS LUFT	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	**0.57**	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.5	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*99.0 %*		*60-140*		"	"	"	
MW-8 (S112370-05) Water Sampled: 12/21/01 11:45 Received: 12/26/01 10:40									
Purgeable Hydrocarbons	ND	5000	ug/l	100	2010066	01/04/02	01/04/02	DHS LUFT	
Benzene	**67**	50	"	"	"	"	"	"	
Toluene	ND	50	"	"	"	"	"	"	
Ethylbenzene	ND	50	"	"	"	"	"	"	
Xylenes (total)	ND	50	"	"	"	"	"	"	
Methyl tert-butyl ether	**2400**	250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*105 %*		*60-140*		"	"	"	
Shell MW-6 (S112370-06) Water Sampled: 12/21/01 06:30 Received: 12/26/01 10:40									
Purgeable Hydrocarbons	ND	50	ug/l	1	2010032	01/02/02	01/02/02	DHS LUFT	
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		*104 %*		*60-140*		"	"	"	

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Cambria - Emeryville	Project: ARCO 6041, Dublin, CA	
6262 Hollis Street	Project Number: 6041, Dublin, CA	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	01/08/02 14:04

Total Purgeable Hydrocarbon, BTEX and MTBE by DHS LUFT

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Shell MW-7 (S112370-07) Water Sampled: 12/21/01 05:40 Received: 12/26/01 10:40									
Purgeable Hydrocarbons	ND	50	ug/l	1	2010049	01/03/02	01/03/02	DHS LUFT	
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		*95.6 %*	*60-140*		"	"	"	"	
Dup (S112370-08) Water Sampled: 12/21/01 00:00 Received: 12/26/01 10:40									
Purgeable Hydrocarbons	ND	5000	ug/l	100	2010072	01/07/02	01/07/02	DHS LUFT	A-01
Benzene	ND	50	"	"	"	"	"	"	A-01
Toluene	ND	50	"	"	"	"	"	"	A-01
Ethylbenzene	ND	50	"	"	"	"	"	"	A-01
Xylenes (total)	ND	50	"	"	"	"	"	"	A-01
Methyl tert-butyl ether	**4500**	250	"	"	"	"	"	"	A-01
Surrogate: a,a,a-Trifluorotoluene		*93.7 %*	*60-140*		"	"	"	"	*A-01*

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Cambria - Emeryville	Project: ARCO 6041, Dublin, CA	
6262 Hollis Street	Project Number: 6041, Dublin, CA	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	01/08/02 14:04

MTBE Confirmation by EPA Method 8260B

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-2 (S112370-01) Water Sampled: 12/21/01 11:05 Received: 12/26/01 10:40									
Methyl tert-butyl ether	**6.5**	0.50	ug/l	1	2010028	01/03/02	01/03/02	EPA 8260B	
Surrogate: 1,2-DCA-d4		*121 %*	*60-140*		"	"	"	"	
MW-3 (S112370-02) Water Sampled: 12/21/01 07:40 Received: 12/26/01 10:40									
Methyl tert-butyl ether	**3800**	50	ug/l	100	2010028	01/03/02	01/03/02	EPA 8260B	
Surrogate: 1,2-DCA-d4		*124 %*	*60-140*		"	"	"	"	
MW-4 (S112370-03) Water Sampled: 12/21/01 11:00 Received: 12/26/01 10:40									
Methyl tert-butyl ether	**2.0**	0.50	ug/l	1	2010028	01/03/02	01/04/02	EPA 8260B	
Surrogate: 1,2-DCA-d4		*132 %*	*60-140*		"	"	"	"	
MW-8 (S112370-05) Water Sampled: 12/21/01 11:45 Received: 12/26/01 10:40									
Methyl tert-butyl ether	**1300**	50	ug/l	100	2010028	01/03/02	01/04/02	EPA 8260B	
Surrogate: 1,2-DCA-d4		*116 %*	*60-140*		"	"	"	"	
Dup (S112370-08) Water Sampled: 12/21/01 00:00 Received: 12/26/01 10:40									
Methyl tert-butyl ether	**3500**	50	ug/l	100	2010035	01/04/02	01/04/02	EPA 8260B	
Surrogate: 1,2-DCA-d4		*118 %*	*60-140*		"	"	"	"	

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Cambria - Emeryville	Project: ARCO 6041, Dublin, CA	
6262 Hollis Street	Project Number: 6041, Dublin, CA	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	01/08/02 14:04

Total Purgeable Hydrocarbon, BTEX and MTBE by DHS LUFT - Quality Control

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2010032 - EPA 5030B (P/T)										
Blank (2010032-BLK1)				Prepared & Analyzed: 01/02/02						
Purgeable Hydrocarbons	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	*10.3*		"	*10.0*		*103*	*60-140*			
LCS (2010032-BS1)				Prepared & Analyzed: 01/02/02						
Benzene	10.0	0.50	ug/l	10.0		100	70-130			
Toluene	9.91	0.50	"	10.0		99.1	70-130			
Ethylbenzene	9.69	0.50	"	10.0		96.9	70-130			
Xylenes (total)	29.7	0.50	"	30.0		99.0	70-130			
Methyl tert-butyl ether	11.0	2.5	"	10.0		110	70-130			
Surrogate: a,a,a-Trifluorotoluene	*10.8*		"	*10.0*		*108*	*60-140*			
Matrix Spike (2010032-MS1)	**Source: S112370-06**			Prepared & Analyzed: 01/02/02						
Benzene	9.88	0.50	ug/l	10.0	ND	98.8	60-140			
Toluene	9.98	0.50	"	10.0	ND	99.8	60-140			
Ethylbenzene	9.60	0.50	"	10.0	ND	96.0	60-140			
Xylenes (total)	29.6	0.50	"	30.0	ND	98.7	60-140			
Methyl tert-butyl ether	11.1	2.5	"	10.0	ND	111	60-140			
Surrogate: a,a,a-Trifluorotoluene	*10.5*		"	*10.0*		*105*	*60-140*			
Matrix Spike Dup (2010032-MSD1)	**Source: S112370-06**			Prepared & Analyzed: 01/02/02						
Benzene	10.2	0.50	ug/l	10.0	ND	102	60-140	3.19	25	
Toluene	10.0	0.50	"	10.0	ND	100	60-140	0.200	25	
Ethylbenzene	9.77	0.50	"	10.0	ND	97.7	60-140	1.76	25	
Xylenes (total)	30.1	0.50	"	30.0	ND	100	60-140	1.68	25	
Methyl tert-butyl ether	11.3	2.5	"	10.0	ND	113	60-140	1.79	25	
Surrogate: a,a,a-Trifluorotoluene	*10.0*		"	*10.0*		*100*	*60-140*			

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Cambria - Emeryville	Project: ARCO 6041, Dublin, CA	
6262 Hollis Street	Project Number: 6041, Dublin, CA	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	01/08/02 14:04

Total Purgeable Hydrocarbon, BTEX and MTBE by DHS LUFT - Quality Control

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2010049 - EPA 5030B (P/T)										
Blank (2010049-BLK1)				Prepared & Analyzed: 01/03/02						
Purgeable Hydrocarbons	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	*8.86*		"	*10.0*		*88.6*	*60-140*			
LCS (2010049-BS1)				Prepared & Analyzed: 01/03/02						
Benzene	10.3	0.50	ug/l	10.0		103	70-130			
Toluene	10.2	0.50	"	10.0		102	70-130			
Ethylbenzene	9.95	0.50	"	10.0		99.5	70-130			
Xylenes (total)	30.5	0.50	"	30.0		102	70-130			
Methyl tert-butyl ether	10.3	2.5	"	10.0		103	70-130			
Surrogate: a,a,a-Trifluorotoluene	*10.8*		"	*10.0*		*108*	*60-140*			
Matrix Spike (2010049-MS1)		**Source: S112388-01**		Prepared: 01/03/02 Analyzed: 01/04/02						
Benzene	9.12	0.50	ug/l	10.0	ND	91.2	60-140			
Toluene	9.06	0.50	"	10.0	ND	90.6	60-140			
Ethylbenzene	8.76	0.50	"	10.0	ND	87.6	60-140			
Xylenes (total)	27.3	0.50	"	30.0	ND	91.0	60-140			
Methyl tert-butyl ether	9.14	2.5	"	10.0	ND	91.4	60-140			
Surrogate: a,a,a-Trifluorotoluene	*9.34*		"	*10.0*		*93.4*	*60-140*			
Matrix Spike Dup (2010049-MSD1)		**Source: S112388-01**		Prepared: 01/03/02 Analyzed: 01/04/02						
Benzene	9.38	0.50	ug/l	10.0	ND	93.8	60-140	2.81	25	
Toluene	9.32	0.50	"	10.0	ND	93.2	60-140	2.83	25	
Ethylbenzene	9.02	0.50	"	10.0	ND	90.2	60-140	2.92	25	
Xylenes (total)	28.0	0.50	"	30.0	ND	93.3	60-140	2.53	25	
Methyl tert-butyl ether	9.54	2.5	"	10.0	ND	95.4	60-140	4.28	25	
Surrogate: a,a,a-Trifluorotoluene	*8.99*		"	*10.0*		*89.9*	*60-140*			

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Cambria - Emeryville	Project: ARCO 6041, Dublin, CA	
6262 Hollis Street	Project Number: 6041, Dublin, CA	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	01/08/02 14:04

Total Purgeable Hydrocarbon, BTEX and MTBE by DHS LUFT - Quality Control

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2010066 - EPA 5030B (P/T)										
Blank (2010066-BLK1)				Prepared & Analyzed: 01/04/02						
Purgeable Hydrocarbons	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	*10.1*		"	*10.0*		*101*	*60-140*			
LCS (2010066-BS1)				Prepared & Analyzed: 01/04/02						
Benzene	10.2	0.50	ug/l	10.0		102	70-130			
Toluene	10.1	0.50	"	10.0		101	70-130			
Ethylbenzene	9.88	0.50	"	10.0		98.8	70-130			
Xylenes (total)	30.4	0.50	"	30.0		101	70-130			
Methyl tert-butyl ether	9.56	2.5	"	10.0		95.6	70-130			
Surrogate: a,a,a-Trifluorotoluene	*11.0*		"	*10.0*		*110*	*60-140*			
Batch 2010072 - EPA 5030B (P/T)										
Blank (2010072-BLK1)				Prepared & Analyzed: 01/07/02						
Purgeable Hydrocarbons	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	*9.66*		"	*10.0*		*96.6*	*60-140*			

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Cambria - Emeryville	Project: ARCO 6041, Dublin, CA	
6262 Hollis Street	Project Number: 6041, Dublin, CA	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	01/08/02 14:04

Total Purgeable Hydrocarbon, BTEX and MTBE by DHS LUFT - Quality Control

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2010072 - EPA 5030B (P/T)										
LCS (2010072-BS1)				Prepared & Analyzed: 01/07/02						
Benzene	9.40	0.50	ug/l	10.0		94.0	70-130			
Toluene	9.27	0.50	"	10.0		92.7	70-130			
Ethylbenzene	9.03	0.50	"	10.0		90.3	70-130			
Xylenes (total)	27.8	0.50	"	30.0		92.7	70-130			
Methyl tert-butyl ether	9.50	2.5	"	10.0		95.0	70-130			
Surrogate: a,a,a-Trifluorotoluene	*10.1*		*"*	*10.0*		*101*	*60-140*			

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Cambria - Emeryville	Project: ARCO 6041, Dublin, CA	
6262 Hollis Street	Project Number: 6041, Dublin, CA	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	01/08/02 14:04

MTBE Confirmation by EPA Method 8260B - Quality Control

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2010028 - EPA 5030B [P/T]										
Blank (2010028-BLK1)				Prepared & Analyzed: 01/03/02						
Methyl tert-butyl ether	ND	0.50	ug/l							
Surrogate: 1,2-DCA-d4	*28.7*		"	*25.0*		*115*	*60-140*			
LCS (2010028-BS1)				Prepared & Analyzed: 01/03/02						
Methyl tert-butyl ether	23.4	0.50	ug/l	25.0		93.6	70-130			
Surrogate: 1,2-DCA-d4	*29.7*		"	*25.0*		*119*	*60-140*			
LCS Dup (2010028-BSD1)				Prepared & Analyzed: 01/03/02						
Methyl tert-butyl ether	22.3	0.50	ug/l	25.0		89.2	70-130	4.81	25	
Surrogate: 1,2-DCA-d4	*30.0*		"	*25.0*		*120*	*60-140*			
Batch 2010035 - EPA 5030B [P/T]										
Blank (2010035-BLK1)				Prepared & Analyzed: 01/04/02						
Methyl tert-butyl ether	ND	0.50	ug/l							
Surrogate: 1,2-DCA-d4	*27.2*		"	*25.0*		*109*	*60-140*			
LCS (2010035-BS1)				Prepared & Analyzed: 01/04/02						
Methyl tert-butyl ether	22.5	0.50	ug/l	25.0		90.0	70-130			
Surrogate: 1,2-DCA-d4	*27.6*		"	*25.0*		*110*	*60-140*			
Matrix Spike (2010035-MS1)		**Source: S112387-05**		Prepared & Analyzed: 01/04/02						
Methyl tert-butyl ether	20.9	0.50	ug/l	25.0	ND	83.6	60-140			
Surrogate: 1,2-DCA-d4	*27.7*		"	*25.0*		*111*	*60-140*			
Matrix Spike Dup (2010035-MSD1)		**Source: S112387-05**		Prepared & Analyzed: 01/04/02						
Methyl tert-butyl ether	26.1	0.50	ug/l	25.0	ND	104	60-140	22.1	25	
Surrogate: 1,2-DCA-d4	*27.9*		"	*25.0*		*112*	*60-140*			

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Cambria - Emeryville	Project: ARCO 6041, Dublin, CA	
6262 Hollis Street	Project Number: 6041, Dublin, CA	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	01/08/02 14:04

Notes and Definitions

A-01	Sample was reanalyzed past 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
RPD	Relative Percent Difference

APPENDIX C

FIELD DATA SHEETS

CAMLARIA

WELL DEPTH MEASUREMENTS

Well ID	Time	Product Depth	Water Depth	Product Thickness	Well Depth	Comments
MW-1		does not exist				
MW-2	4:25		8.65			
MW-3			9.40			
MW-4	4:30		8.31			
MW-5			buried under pavement			
MW-6	4:20		9.47			
MW-7	7:00		no water		8.00	no water
MW-8	11:40		8.70		12.70	
VW-2		does not exist				
Shell-MW-6	4:35		9.98			
Shell-MW-7	4:40		7.15			

Project Name: Arco 6041

Project Number: 438-1643

Measured By: J. Hill

Date: 12-21-01

F:\TEMPLATE\FORMS\FIELD\GW-DEPTH.WPD

CAMBRIA

WELL SAMPLING FORM

Project Name: **ARCO 6041**	Cambria Mgr: **Darryk Ataide**	Well ID: MW-1
Project Number: **436 - 1610**	Date: 12-21-01	Well Yield:
Site Address: **7249 Village Pkwy, Dublin**	Sampling Method: **Disposable bailer**	Well Diameter: **" pvc**
		Technician(s):
Initial Depth to Water:	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
		does not exist			

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
	12-21-01		**4 VOA**	**HCL**	**TPHg, BTEX, MTBE**	**8020**

CAMBRIA

WELL SAMPLING FORM

Project Name: **ARCO 6041**	Cambria Mgr: **Darryk Ataide**	Well ID: MW-2
Project Number: **436 - 1610**	Date: 12-21-01	Well Yield:
Site Address: **7249 Village Pkwy, Dublin**	Sampling Method: **Disposable bailer**	Well Diameter: **" pvc**
		Technician(s):
Initial Depth to Water: 8.65	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= 0.48mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-2	12-21-01	11:05	4 VOA	HCL	TPHg, BTEX, MTBE	8020

CAMBRIA

WELL SAMPLING FORM

Project Name: **ARCO 6041**	Cambria Mgr: **Darryk Ataide**	Well ID: MW-3
Project Number: **436 - 1610**	Date: 12-21-01	Well Yield:
Site Address: **7249 Village Pkwy, Dublin**	Sampling Method: **Disposable bailer**	Well Diameter: 4" pvc
		Technician(s): SG
Initial Depth to Water: 9.40	Total Well Depth: 14.70	Water Column Height: 5.30
Volume/ft: 0.65	1 Casing Volume: 3.44	3 Casing Volumes: 10.33
Purge/No Purge: purge		
Purging Device: **Submersible Pump**	Did Well Dewater?: no	Total Gallons Purged: 10
Start Purge Time: 7:20	Stop Purge Time: 8:34	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
7:25	3	15.4	7.14	2017	
7:30	7	15.9	7.29	2792	
7:35	10	15.7	7.25	2715	
					DO = 0.40 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-3	12-21-01	7:40	4 VOA	HCL	TPHg, BTEX, MTBE	8020
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WELL SAMPLING FORM

Project Name: **ARCO 6041**	Cambria Mgr: **Darryk Ataide**	Well ID: MW-4
Project Number: **436 - 1610**	Date: 12-21-01	Well Yield:
Site Address: **7249 Village Pkwy, Dublin**	Sampling Method: **Disposable bailer**	Well Diameter: 4" pvc
		Technician(s):
Initial Depth to Water: 8.31	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 = 0.68 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-4	12-21-01	11:00	4 VOA	HCL	TPHg, BTEX, MTBE	8020

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WELL SAMPLING FORM

Project Name: **ARCO 6041**	Cambria Mgr: **Darryk Ataide**	Well ID: MW-6
Project Number: **436 - 1610**	Date: 12-21-01	Well Yield:
Site Address: **7249 Village Pkwy, Dublin**	Sampling Method: **Disposable bailer**	Well Diameter: 4" pvc
		Technician(s): SG
Initial Depth to Water: 9.47	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				0.55 ms/ft

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-6	12-21-01	10:55	4 VOA	HCL	TPHg, BTEX, MTBE	8020

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WELL SAMPLING FORM

Project Name: **ARCO 6041**	Cambria Mgr: **Darryk Ataide**	Well ID: MW-8
Project Number: **436 - 1610**	Date: 12-21-01	Well Yield:
Site Address: **7249 Village Pkwy, Dublin**	Sampling Method: **Disposable bailer**	Well Diameter: 4" pvc
		Technician(s): SG
Initial Depth to Water: 8.70	Total Well Depth: 12.70	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 = 0.60 mg/l

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-8	12-21-01	11:45	4 VOA	HCL	TPHg, BTEX, MTBE	8020

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WELL SAMPLING FORM

Project Name: **ARCO 6041**	Cambria Mgr: **Darryk Ataide**	Well ID: Shell-MW-6
Project Number: **436 - 1610**	Date: 12-21-01	Well Yield:
Site Address: **7249 Village Pkwy, Dublin**	Sampling Method: **Disposable bailer**	Well Diameter: 4" pvc
		Technician(s): SG
Initial Depth to Water: 9.98	Total Well Depth: 22.70	Water Column Height: 12.72
Volume/ft: 0.65	1 Casing Volume: 8.26	3 Casing Volumes: 24.80
Purge/No Purge: purge		
Purging Device: **Submersible Pump**	Did Well Dewater?: NO	Total Gallons Purged: 25
Start Purge Time: 5:50	Stop Purge Time: 6:19	Total Time: 29 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
6:00	9	15.7	7.20	3170	
6:10	18	15.5	7.23	3999	
6:20	25	15.7	7.25	3999	DO = 0.97 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
Shell MW-6	12-21-01	6:30	4 VOA	HCL	TPHg, BTEX, MTBE	8020

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WELL SAMPLING FORM

Project Name: **ARCO 6041**	Cambria Mgr: **Darryk Ataide**	Well ID: Shell-MW-7
Project Number: **436 - 1610**	Date: 12-21-01	Well Yield:
Site Address: **7249 Village Pkwy, Dublin**	Sampling Method: **Disposable bailer**	Well Diameter: 4" pvc
		Technician(s): SG
Initial Depth to Water: 7.15	Total Well Depth: 16.30	Water Column Height: 9.15
Volume/ft: 0.65	1 Casing Volume: 5.94	3 Casing Volumes: 17.84
Purge/No Purge: purge		
Purging Device: **Submersible Pump**	Did Well Dewater?: no	Total Gallons Purged: 18
Start Purge Time: 5:00	Stop Purge Time: 5:29	Total Time: 29 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
5:10	6	15.9	7.10	1210	
5:20	12	15.9	7.15	1284	
5:30	18	15.9	7.18	1292	

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
Shell-MW-7	12-21-01	5:40	4 VOA	HCL	TPHg, BTEX, MTBE	8020