Atlantic Richfield Company

Shannon Couch
Operations Project Manager

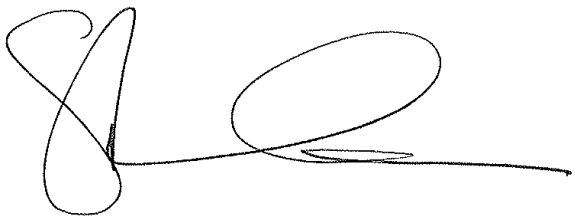
PO Box 1257
San Ramon, CA 94583
Phone: (925) 275-3804
Fax: (925) 275-3815
E-Mail: shannon.couch@bp.com

July 29, 2013

Re: Second Quarter 2013 Monitoring Report
Atlantic Richfield Company Station #2035
1001 San Pablo Avenue, Albany, California
ACEH Case #RO0000100

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

Submitted by,



Shannon Couch
Operations Project Manager

Attachment

BROADBENT
875 Cotting Ln., Suite G, Vacaville, CA 95688
[T] 707-455-7290 [F] 707-455-7295
broadbentinc.com

July 29, 2013

Project No. 06-88-610

Atlantic Richfield Company
P.O. Box 1257
San Ramon, California 94583
Submitted via ENFOS

Attn.: Ms. Shannon Couch

Re: Second Quarter 2013 Monitoring Report, Atlantic Richfield Company Station No. 2035, 1001 San Pablo Avenue, Albany, Alameda County, California; ACEH Case #RO0000100

Dear Ms. Couch:

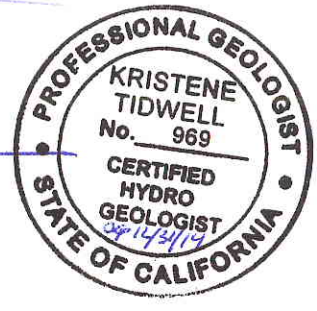
Provided herein is the *Second Quarter 2013 Monitoring Report* for Atlantic Richfield Company Station No. 2035 located at 1001 San Pablo Avenue in Albany, Alameda County, California. Should you have questions regarding the work performed or results obtained, please do not hesitate to contact me at (707) 455-7290.

Sincerely,

BROADBENT & ASSOCIATES, INC.

Alejandra Hernandez
Project Geologist

Kristene Tidwell, PG, CHG
Senior Geologist



Enclosures

cc: Ms. Dilan Roe, Alameda County Environmental Health (Submitted via ACEH ftp site)
Electronic copy uploaded to GeoTracker

SECOND QUARTER 2013
MONITORING REPORT
ARCO STATION No. 2035, ALBANY, CALIFORNIA

Broadbent & Associates, Inc. (Broadbent) is pleased to present this *Second Quarter 2013 Monitoring Report* on behalf of Atlantic Richfield Company (ARCO) – a BP affiliated company, for ARCO Station No. 2035 (herein referred to as Station No. 2035) located at 1001 San Pablo Avenue in Albany, Alameda County, California (Site). Monitoring activities at the Site were performed in accordance with an agency directive issued by the Alameda County Environmental Health (ACEH). Details of work performed, discussion of results, and recommendations are provided below.

Facility Name / Address:	ARCO Station No.2035 / 1001 San Pablo Avenue, Albany, CA
Client Project Manager / Title:	Ms. Shannon Couch / Operations Project Manager
Broadbent Contact:	Ms. Kristene Tidwell, PG, CHG / 707-455-7290
Broadbent Project No.:	06-88-610
Primary Regulatory Agency / ID No.:	ACEH / Case #RO00001000
Current phase of project:	Monitoring
List of Acronyms / Abbreviations:	See end of report text for list of acronyms/abbreviations used in report.

WORK PERFORMED THIS QUARTER (Second Quarter 2013):

1. Broadbent submitted a *First Quarter 2013 Status Report* on April 15, 2013.
2. Broadbent conducted groundwater monitoring/sampling on June 4, 2013 for Second Quarter 2013.

WORK SCHEDULED FOR NEXT QUARTER (Third Quarter 2013):

1. Submit *Second Quarter 2013 Monitoring Report* (contained herein).
2. No environmental work activities are scheduled to be conducted at the Site during the Third Quarter 2013.
3. Submit Conceptual Site Model and Case Closure Request.

QUARTERLY MONITORING PLAN SUMMARY:

Groundwater level gauging:	MW-1 through MW-9, RW-1, S-5	(Semi-Annually: 2Q & 4Q)
Groundwater sample collection:	MW-4, MW-7, MW-8, MW-9, RW-1, S-5	(Semi-Annually: 2Q & 4Q)
	MW-5, MW-6	(Annually: 1Q)
Biodegradation indicator parameter monitoring:	None	

QUARTERLY RESULTS SUMMARY:

LNAPL

LNAPL observed this quarter:	No	(yes\no)
LNAPL recovered this quarter:	None	(gal)
Cumulative LNAPL recovered:	None	(gal)

Groundwater Elevation and Gradient:

Depth to groundwater:	8.60 ft (MW-7) to 12.90 ft (MW-6)	(ft below TOC)
Gradient direction:	West	(compass direction)
Gradient magnitude:	0.022 ft/ft	(ft/ft)
Average change in elevation:	-2.77	(ft since last measurement)

Laboratory Analytical Data

Summary:

- GRO was detected in three wells at concentrations ranging between 99 µg/L in well MW-7 and 400 µg/L in well S-5
- Benzene was detected in two wells at concentrations of 14 µg/L in well S-5 and 70 µg/L in well MW-8
- Toluene was detected in two wells at concentrations of 1.1 µg/L in well MW-8 and 1.8 µg/L in well S-5
- Ethylbenzene was detected in two wells at concentrations of 3.1 µg/L in well S-5 and 34 µg/L in well MW-8
- Total Xylenes were detected in two wells at concentrations of 1.6 µg/L in well MW-8 and 2.3 µg/L in well S-5
- MTBE was detected in three wells at concentrations ranging between 0.54 µg/L in well MW-4 and 3.5 µg/L in well MW-9
- TBA was detected in well MW-8 at a concentration of 26 µg/L
- The remaining petroleum hydrocarbon constituents were below laboratory detection limits.

ACTIVITIES CONDUCTED & RESULTS:

On June 4, 2013, Broadbent conducted the Second Quarter 2013 groundwater monitoring and sampling event at Station No. 2035 in accordance with the quarterly monitoring plan summary detailed above. Conestoga-Rovers & Associates (CRA) conducted groundwater monitoring at the adjacent Shell Station on June 4, 2013. No irregularities were noted during water level gauging activities. Water levels were gauged in all wells associated with the Site. Light non-aqueous phase liquid (LNAPL) was not observed in any Site wells; LNAPL had been observed in well RW-1 dating back to 1995 monitoring/sampling event. Depth to water measurements at the Site ranged from 8.60 ft in well MW-7 to 12.90 ft in well MW-6. Resulting groundwater surface elevations at the Site ranged from 29.41 ft at well MW-6 to 34.58 ft at well MW-7. Water level elevations yielded a potentiometric groundwater gradient direction and magnitude to the west at 0.022 ft/ft. Field methods used during groundwater monitoring are provided in Appendix A. Field data sheets are included in Appendix B. Measured depths to groundwater and respective groundwater elevations are summarized in Table 1. Current and historic groundwater analytical data are summarized in Table 1 and Table 2. Current and historic groundwater gradient directions and magnitudes are provided within Table 3. A Site location map is provided as Drawing 1. A groundwater elevation contour and analytical summary map for June 4, 2013 is provided as Drawing 2.

Consistent with the current groundwater sampling schedule, all wells were gauged and water samples were collected from wells MW-4, MW-7 through MW-9, RW-1, and S-5. No irregularities were encountered during sampling at the Site. Collected groundwater samples were submitted to TestAmerica Environmental Laboratories, Inc. (TestAmerica) of Irvine, California for analysis of GRO by EPA Method 8015B; BTEX, MTBE, ETBE, TAME, DIPE, TBA,EDB, 1,2-DCA, and Ethanol by EPA Method 8260B. No significant irregularities were reported during analysis of the samples.

Laboratory analytical report and chain of custody record for are provided in Appendix C. Groundwater monitoring data (GEO_WELL) and laboratory analytical results (EDF) were uploaded to the GeoTracker AB2886 database. Upload confirmation receipts are provided in Appendix D.

DISCUSSION:

Groundwater levels and gradient data indicate that the gradient measured during Second Quarter 2013 monitoring is consistent with predominant measurements observed historic minimum and maximum elevations at the Site. During Second Quarter 2013, groundwater elevations decreased an average of 2.77 ft across the Site relative to measurements collected during Fourth Quarter 2012.

Results of the second quarter groundwater data indicate that the highest residual hydrocarbon concentrations are present in wells MW-8 and S-5. However, detected analytical concentrations were within historic minimum and maximum ranges recorded for each well. Groundwater samples in well S-5 had a historic low for GRO and benzene concentrations.

RECOMMENDATIONS:

No environmental work activities are scheduled to be conducted at the Site during the Third Quarter 2013. The next quarterly monitoring event is scheduled for the Fourth Quarter 2013. Unless directed by ACEH, no change to the monitoring program at Station No. 2035 is presently deemed warranted or recommended. The Site is currently being evaluated for Case Closure under the Low threat UST Policy. A Conceptual Site Model and Case Closure Request will be submitted during the third quarter 2013.

LIMITATIONS:

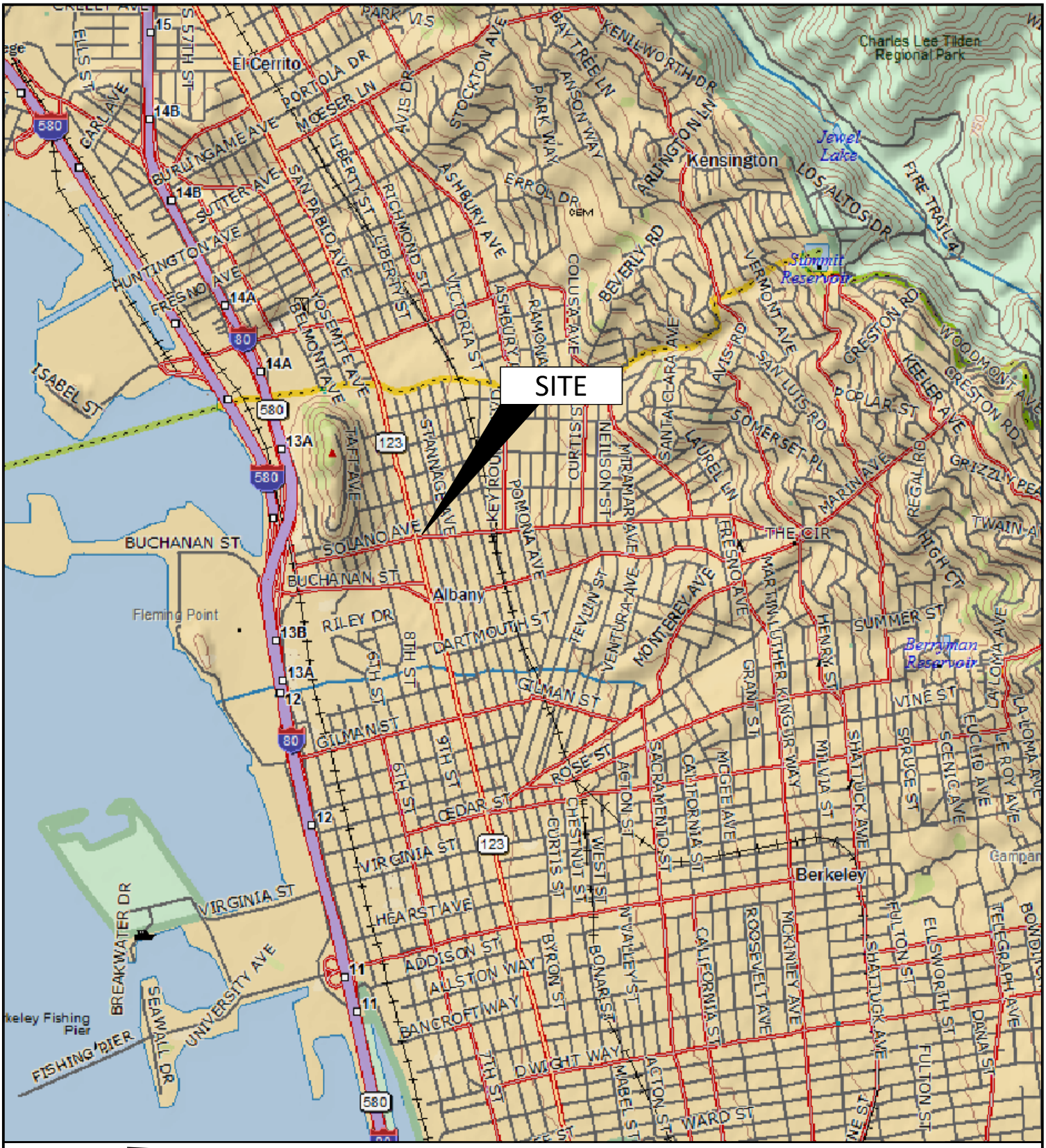
The findings presented in this report are based upon observations of field personnel, points investigated, results of laboratory tests performed by TestAmerica and our understanding of ACEH guidelines. Our services were performed in accordance with the generally accepted standard of practice at the time this report was written. No other warranty, expressed or implied was made. This report has been prepared for the exclusive use of ARC. It is possible that variations in soil or groundwater conditions could exist beyond points explored in this investigation. Also, changes in site conditions could occur in the future due to variations in rainfall, temperature, regional water usage, or other factors.

ATTACHMENTS:

Drawing 1:	Site Location Map
Drawing 2:	Groundwater Elevation Contour Map June 4, 2013
Table 1:	Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
Table 2:	Summary of Fuel Additive Analytical Data
Table 3:	Historic Groundwater Gradient Information
Appendix A:	Field Methods
Appendix B:	Field Data Sheet
Appendix C:	Laboratory Report and Chain-of-Custody Documentation
Appendix D:	GeoTracker Upload Confirmation Receipts

LIST OF COMMONLY USED ACCRONYMS/ABBREVIATIONS:

ACEH	Alameda County Environmental Health	ft/ft:	foot per foot
ARCO:	Atlantic Richfield Company	gal:	gallons
Broadbent:	Broadbent & Associates, Inc.	GRO:	gasoline range organics (C6-12)
BTEX:	benzene, toluene, ethylbenzene, total xylenes	LNAPL:	light non-aqueous phase liquid
1,2-DCA:	1,2-dichloroethane	MTBE:	methyl tertiary butyl ether
DIPE:	di-isopropyl ether	Q:	Quarter
DO:	dissolved oxygen	RWQCB:	California Regional Water Quality Control Board-San Francisco Bay Region
EDB:	1,2-dibromomethane		
ESLs:	RWQCB Environmental Screening Levels (revised May 2008)	TAME:	tert-amyl methyl ether
		TBA:	tert-butyl alcohol
ETBE:	Ethyl tert-butyl ether	TOC:	top of casing
ft:	foot	μg/L:	micrograms per liter

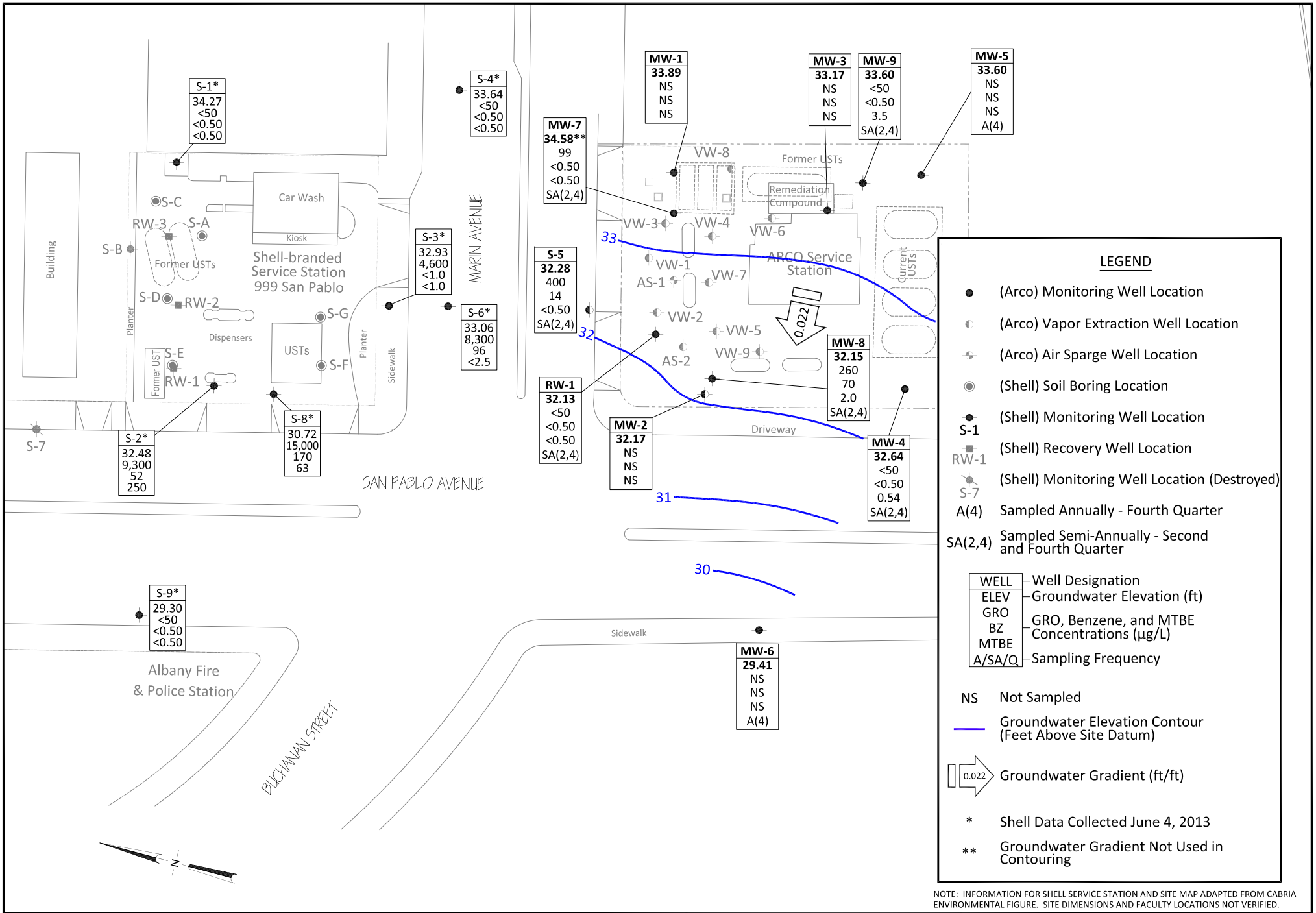


BROADBENT
1370 Ridgewood Dr., Suite 5
Chico, California 95973
Project No.: 06-88-610 Date: 4/9/2013

ARCO Service Station #2035
1001 San Pablo Avenue
Albany, California

Site Location Map

Drawing
1



NOTE: INFORMATION FOR SHELL SERVICE STATION AND SITE MAP ADAPTED FROM CABRIA ENVIRONMENTAL FIGURE. SITE DIMENSIONS AND FACULTY LOCATIONS NOT VERIFIED.

0 50 100
SCALE (ft)

BROADBENT
1370 Ridgewood Dr., Suite 5
Chico, California 95973
Project No.: 06-88-610 Date: 7/11/2013

ARCO Service Station #2035
1001 San Pablo Avenue
Albany, California

Groundwater Elevation Contour Map
June 4, 2013

Drawing
2

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2035, 1001 San Pablo Ave., Albany, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Product Thickness (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-1																
4/11/2002	P	41.41	15.00	30.00	10.73	0.00	30.68	800	360	<5.0	<5.0	<5.0	<50	--	--	
11/27/2002	P		15.00	30.00	10.22	0.00	31.19	<50	<0.50	<0.50	<0.50	<0.50	1.7	1.1	--	
6/3/2003	--		15.00	30.00	9.14	0.00	32.27	1,700	430	<5.0	24	11	8.6	1.7	--	
11/13/2003	P	43.55	15.00	30.00	10.17	0.00	33.38	<50	<0.50	<0.50	<0.50	<0.50	0.95	2.3	6.5	a
05/12/2004	P		15.00	30.00	9.28	0.00	34.27	120	7.2	<0.50	<0.50	<0.50	3.0	1.6	6.0	
12/01/2004	P		15.00	30.00	9.16	0.00	34.39	<50	0.94	<0.50	<0.50	1.1	2.4	5.2	6.6	
05/02/2005	P		15.00	30.00	8.58	0.00	34.97	1,300	390	<5.0	12	6.4	8.8	2.8	6.5	
11/16/2005	P		15.00	30.00	9.50	0.00	34.05	<50	<0.50	<0.50	<0.50	0.54	0.92	1.7	6.4	
5/31/2006	P		15.00	30.00	7.36	0.00	36.19	850	200	<2.5	5.4	<2.5	4.0	2.4	6.5	
12/6/2006	P		15.00	30.00	9.91	0.00	33.64	<50	0.52	<0.50	<0.50	<0.50	0.72	4.50	6.99	
5/15/2007	P		15.00	30.00	9.65	0.00	33.90	67	6.6	<0.50	<0.50	<0.50	1.8	2.43	6.96	
11/29/2007	P		15.00	30.00	9.11	0.00	34.44	<50	<0.50	<0.50	<0.50	<0.50	0.98	4.51	6.81	
5/6/2008	P		15.00	30.00	8.25	0.00	35.30	890	140	0.53	5.4	5.8	<0.50	1.89	6.61	
11/24/2008	P		15.00	30.00	10.55	0.00	33.00	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.83	6.67	
4/9/2009	--		15.00	30.00	9.02	0.00	34.53	--	--	--	--	--	--	--	--	d
11/24/2009	--		15.00	30.00	9.24	0.00	34.31	--	--	--	--	--	--	--	--	
5/26/2010	--		15.00	30.00	8.47	0.00	35.08	--	--	--	--	--	--	--	--	
11/30/2010	--		15.00	30.00	8.62	0.00	34.93	--	--	--	--	--	--	--	--	
2/16/2011	P		15.00	30.00	8.64	0.00	34.91	--	--	--	--	--	--	--	--	
5/11/2011	--		15.00	30.00	8.24	0.00	35.31	--	--	--	--	--	--	--	--	
11/28/2011	--		15.00	30.00	9.48	0.00	34.07	--	--	--	--	--	--	--	--	
6/5/2012	--		15.00	30.00	8.62	0.00	34.93	--	--	--	--	--	--	--	--	
12/6/2012	--		15.00	30.00	7.71	0.00	35.84	--	--	--	--	--	--	--	--	
6/4/2013	**--**		**15.00**	**30.00**	**9.66**	**0.00**	**33.89**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	
MW-2																
4/11/2002	P	40.38	20.00	29.00	11.05	0.00	29.33	<50	<0.50	<0.50	<0.50	<0.50	24	--	--	
11/27/2002	P		20.00	29.00	10.51	0.00	29.87	<50	<0.50	<0.50	<0.50	<0.50	5.4	2.6	--	
6/3/2003	--		20.00	29.00	9.78	0.00	30.60	<50	<0.50	<0.50	<0.50	<0.50	23	1.7	--	
11/13/2003	P	42.52	20.00	29.00	10.69	0.00	31.83	<50	<0.50	<0.50	<0.50	<0.50	9.5	2.3	6.5	a
05/12/2004	P		20.00	29.00	10.34	0.00	32.18	<250	<2.5	<2.5	<2.5	<2.5	27	2.2	6.6	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2035, 1001 San Pablo Ave., Albany, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Product Thickness (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
								GRO/ TPHg	Benzene	Toluene	Ethyl- Benzene	Total Xylenes	MTBE			
MW-2 Cont.																
12/01/2004	P	42.52	20.00	29.00	10.28	0.00	32.24	<50	<0.50	<0.50	<0.50	0.70	17	3.9	6.6	
05/02/2005	P		20.00	29.00	9.50	0.00	33.02	<50	<0.50	<0.50	<0.50	<0.50	25	3.1	6.6	
11/16/2005	P		20.00	29.00	10.50	0.00	32.02	<50	<0.50	<0.50	<0.50	0.50	7.6	2.8	6.4	
5/31/2006	P		20.00	29.00	10.03	0.00	32.49	<50	<0.50	<0.50	<0.50	<0.50	24	2.0	6.6	
12/6/2006	P		20.00	29.00	10.28	0.00	32.24	<50	<0.50	<0.50	<0.50	<0.50	1.6	3.72	6.91	
5/15/2007	P		20.00	29.00	10.00	0.00	32.52	<50	<0.50	<0.50	<0.50	<0.50	44	2.90	6.69	
11/29/2007	P		20.00	29.00	10.13	0.00	32.39	<50	<0.50	<0.50	<0.50	<0.50	1.9	4.83	6.89	
5/6/2008	P		20.00	29.00	9.55	0.00	32.97	<50	<0.50	<0.50	<0.50	<0.50	35	1.88	6.62	
11/24/2008	P		20.00	29.00	10.70	0.00	31.82	<50	<0.50	<0.50	<0.50	<0.50	4.3	1.83	6.74	
4/9/2009	--	42.57	20.00	29.00	9.68	0.00	32.89	--	--	--	--	--	--	--	--	d
11/24/2009	--		20.00	29.00	10.48	0.00	32.09	--	--	--	--	--	--	--	--	
5/26/2010	--		20.00	29.00	9.65	0.00	32.92	--	--	--	--	--	--	--	--	
11/30/2010	--		20.00	29.00	9.84	0.00	32.73	--	--	--	--	--	--	--	--	
2/16/2011	P		20.00	29.00	9.39	0.00	33.18	--	--	--	--	--	--	--	--	
5/11/2011	--		20.00	29.00	9.68	0.00	32.89	--	--	--	--	--	--	--	--	
11/28/2011	--		20.00	29.00	10.12	0.00	32.45	--	--	--	--	--	--	--	--	
6/5/2012	--		20.00	29.00	10.20	0.00	32.37	--	--	--	--	--	--	--	--	
12/6/2012	--		20.00	29.00	8.19	0.00	34.38	--	--	--	--	--	--	--	--	
6/4/2013	**--**		**20.00**	**29.00**	**10.40**	**0.00**	**32.17**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	
MW-3																
4/11/2002	P	41.44	13.00	33.00	11.05	0.00	30.39	250	9.4	<0.50	<0.50	<0.50	120	--	--	
11/27/2002	P		13.00	33.00	10.49	0.00	30.95	<100	<1.0	<1.0	<1.0	2.5	56	2.2	--	
6/3/2003	--		13.00	33.00	9.44	0.00	32.00	130	<0.50	<0.50	<0.50	<0.50	47	4.1	--	
11/13/2003	P	43.62	13.00	33.00	10.68	0.00	32.94	53	<0.50	<0.50	<0.50	<0.50	36	3.8	6.8	a
05/12/2004	P		13.00	33.00	9.95	0.00	33.67	65	<0.50	<0.50	<0.50	<0.50	39	4.2	6.9	
12/01/2004	P		13.00	33.00	10.32	0.00	33.30	140	<0.50	<0.50	<0.50	<0.50	37	4.3	6.9	
05/02/2005	P		13.00	33.00	9.12	0.00	34.50	140	<0.50	<0.50	<0.50	<0.50	23	3.1	6.7	
11/16/2005	P		13.00	33.00	10.58	0.00	33.04	<50	<0.50	<0.50	<0.50	<0.50	32	4.1	6.5	
5/31/2006	P		13.00	33.00	9.41	0.00	34.21	<50	<0.50	<0.50	<0.50	<0.50	20	4.3	6.8	
12/6/2006	P		13.00	33.00	10.25	0.00	33.37	<50	<0.50	<0.50	<0.50	<0.50	20	2.71	7.00	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2035, 1001 San Pablo Ave., Albany, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Product Thickness (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
								GRO/ TPHg	Benzene	Toluene	Ethyl- Benzene	Total Xylenes	MTBE			
MW-3 Cont.																
5/15/2007	P	43.62	13.00	33.00	9.70	0.00	33.92	<50	<0.50	<0.50	<0.50	<0.50	40	5.89	7.07	
11/29/2007	P		13.00	33.00	10.08	0.00	33.54	90	<0.50	<0.50	<0.50	<0.50	35	4.74	6.61	
5/6/2008	P		13.00	33.00	10.02	0.00	33.60	<50	<0.50	<0.50	<0.50	<0.50	14	2.05	6.61	
11/24/2008	P		13.00	33.00	10.80	0.00	32.82	<50	<1.0	<1.0	<1.0	<1.0	28	1.98	6.77	
4/9/2009	--	43.63	13.00	33.00	9.55	0.00	34.08	--	--	--	--	--	--	--	--	d
11/24/2009	--		13.00	33.00	10.29	0.00	33.34	--	--	--	--	--	--	--	--	
5/26/2010	--		13.00	33.00	9.76	0.00	33.87	--	--	--	--	--	--	--	--	
11/30/2010	--		13.00	33.00	10.15	0.00	33.48	--	--	--	--	--	--	--	--	
2/16/2011	P		13.00	33.00	9.22	0.00	34.41	--	--	--	--	--	--	--	--	
5/11/2011	--		13.00	33.00	9.55	0.00	34.08	--	--	--	--	--	--	--	--	
11/28/2011	--		13.00	33.00	10.06	0.00	33.57	--	--	--	--	--	--	--	--	
6/5/2012	--		13.00	33.00	9.92	0.00	33.71	--	--	--	--	--	--	--	--	
12/6/2012	--		13.00	33.00	8.10	0.00	35.53	--	--	--	--	--	--	--	--	
6/4/2013	**--**		**13.00**	**33.00**	**10.46**	**0.00**	**33.17**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	
MW-4																
4/11/2002	NP	40.33	9.00	26.00	10.81	0.00	29.52	<50	<0.50	<0.50	<0.50	<0.50	11	--	--	
11/27/2002	NP		9.00	26.00	10.09	0.00	30.24	<50	<0.50	<0.50	<0.50	<0.50	6.5	1.8	--	
6/3/2003	--		9.00	26.00	8.62	0.00	31.71	<250	<2.5	<2.5	<2.5	<2.5	120	1.1	--	
11/13/2003	NP	42.48	9.00	26.00	9.98	0.00	32.50	<50	<0.50	<0.50	<0.50	<0.50	20	1.3	6.2	a
05/12/2004	P		9.00	26.00	9.48	0.00	33.00	<250	<2.5	<2.5	<2.5	<2.5	79	2.9	6.6	
12/01/2004	NP		9.00	26.00	9.60	0.00	32.88	<50	<0.50	<0.50	<0.50	<0.50	1.8	1.9	6.7	
05/02/2005	NP		9.00	26.00	8.67	0.00	33.81	<50	<0.50	<0.50	<0.50	<0.50	11	2.8	6.6	
11/16/2005	NP		9.00	26.00	10.00	0.00	32.48	<50	<0.50	<0.50	<0.50	<0.50	0.93	1.7	6.3	
5/31/2006	NP		9.00	26.00	8.52	0.00	33.96	<50	<0.50	<0.50	<0.50	<0.50	2.4	1.0	7.0	
12/6/2006	NP		9.00	26.00	9.90	0.00	32.58	<50	<0.50	<0.50	<0.50	<0.50	7.8	0.85	7.10	
5/15/2007	NP		9.00	26.00	9.18	0.00	33.30	<50	<0.50	<0.50	<0.50	<0.50	2.2	1.37	6.85	
11/29/2007	NP		9.00	26.00	9.10	0.00	33.38	<50	<0.50	<0.50	<0.50	<0.50	9.1	1.81	7.14	
5/6/2008	P		9.00	26.00	9.40	0.00	33.08	<50	<0.50	<0.50	<0.50	<0.50	10	2.61	6.91	
11/24/2008	NP		9.00	26.00	10.20	0.00	32.28	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.67	6.88	
4/9/2009	P	42.51	9.00	26.00	9.00	0.00	33.51	<50	<0.50	<0.50	<0.50	<0.50	12	2.51	7.11	d

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2035, 1001 San Pablo Ave., Albany, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Product Thickness (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
								GRO/ TPHg	Benzene	Toluene	Ethyl- Benzene	Total Xylenes	MTBE			
MW-4 Cont.																
11/24/2009	P	42.51	9.00	26.00	9.89	0.00	32.62	<50	<0.50	<0.50	<0.50	<0.50	1.7	0.80	6.58	
5/26/2010	P		9.00	26.00	8.79	0.00	33.72	<50	<0.50	<0.50	<0.50	<0.50	1.4	0.98	6.0	
11/30/2010	P		9.00	26.00	9.31	0.00	33.20	--	--	--	--	--	--	1.40	6.4	f
2/16/2011	P		9.00	26.00	8.50	0.00	34.01	<50	<0.50	<0.50	<0.50	<0.50	2.1	0.91	7.1	
5/11/2011	P		9.00	26.00	8.80	0.00	33.71	<50	<0.50	<0.50	<0.50	<0.50	0.75	1.43	6.8	
11/28/2011	P		9.00	26.00	9.53	0.00	32.98	<50	<0.50	0.61	<0.50	0.69	0.67	0.75	6.8	
6/5/2012	P		9.00	26.00	9.40	0.00	33.11	<50	<0.50	<0.50	<0.50	<0.50	1.2	1.66	6.67	
12/6/2012	P		9.00	26.00	7.58	0.00	34.93	<50	<0.50	<0.50	<0.50	<1.0	2.5	4.27	7.50	
6/4/2013	**P**		**9.00**	**26.00**	**9.87**	**0.00**	**32.64**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**0.54**	**1.49**	**5.95**	
MW-5																
4/11/2002	NP	41.84	8.00	25.00	10.63	0.00	31.21	<50	<0.50	<0.50	<0.50	<0.50	<5.0	--	--	
11/27/2002	NP		8.00	25.00	10.65	0.00	31.19	--	--	--	--	--	--	--	--	
6/3/2003	--		8.00	25.00	8.92	0.00	32.92	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	--	
11/13/2003	NP	44.03	8.00	25.00	10.58	0.00	33.45	<50	<0.50	<0.50	<0.50	<0.50	0.79	1.4	5.7	a
05/12/2004	--		8.00	25.00	9.95	0.00	34.08	--	--	--	--	--	--	--	--	
12/01/2004	NP		8.00	25.00	10.05	0.00	33.98	<50	<0.50	<0.50	<0.50	<0.50	0.55	1.8	6.3	
05/02/2005	--		8.00	25.00	8.75	0.00	35.28	--	--	--	--	--	--	--	--	
11/16/2005	NP		8.00	25.00	10.37	0.00	33.66	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	6.2	
5/31/2006	--		8.00	25.00	9.07	0.00	34.96	--	--	--	--	--	--	--	--	
12/6/2006	NP		8.00	25.00	10.25	0.00	33.78	<50	<0.50	<0.50	<0.50	<0.50	0.99	1.24	6.88	
5/15/2007	--		8.00	25.00	9.51	0.00	34.52	--	--	--	--	--	--	--	--	
11/29/2007	NP		8.00	25.00	9.95	0.00	34.08	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.93	6.98	
5/6/2008	--		8.00	25.00	9.67	0.00	34.36	--	--	--	--	--	--	--	--	
11/24/2008	NP		8.00	25.00	10.62	0.00	33.41	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.43	6.52	
4/9/2009	--		8.00	25.00	12.00	0.00	32.03	--	--	--	--	--	--	--	--	d
11/24/2009	P		8.00	25.00	10.34	0.00	33.69	<50	<0.50	1.4	<0.50	<0.50	0.89	0.94	6.1	
5/26/2010	--		8.00	25.00	9.21	0.00	34.82	--	--	--	--	--	--	--	--	
11/30/2010	P		8.00	25.00	9.85	0.00	34.18	--	--	--	--	--	--	--	6.17	f
2/16/2011	P		8.00	25.00	9.01	0.00	35.02	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.23	6.9	
5/11/2011	--		8.00	25.00	9.44	0.00	34.59	--	--	--	--	--	--	--	--	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2035, 1001 San Pablo Ave., Albany, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Product Thickness (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
								GRO/ TPHg	Benzene	Toluene	Ethyl- Benzene	Total Xylenes	MTBE			
MW-5 Cont.																
11/28/2011	P	44.03	8.00	25.00	10.06	0.00	33.97	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.10	6.5	
6/5/2012	--		8.00	25.00	9.88	0.00	34.15	--	--	--	--	--	--	--	--	
12/6/2012	P		8.00	25.00	7.91	0.00	36.12	<50	<0.50	<0.50	<0.50	<1.0	<0.50	4.44	7.26	
6/4/2013	**--**		**8.00**	**25.00**	**10.43**	**0.00**	**33.60**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	
MW-6																
4/11/2002	NP	40.13	8.00	25.00	11.42	0.00	28.71	<50	<0.50	<0.50	<0.50	<0.50	<5.0	--	--	
11/27/2002	NP		8.00	25.00	13.11	0.00	27.02	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	--	
6/3/2003	--		8.00	25.00	12.48	0.00	27.65	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	--	
11/13/2003	NP	42.26	8.00	25.00	13.11	0.00	29.15	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	6.8	a
05/12/2004	--		8.00	25.00	12.68	0.00	29.58	--	--	--	--	--	--	--	--	
12/01/2004	NP		8.00	25.00	12.68	0.00	29.58	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.7	7.3	
05/02/2005	--		8.00	25.00	12.25	0.00	30.01	--	--	--	--	--	--	--	--	
11/16/2005	NP		8.00	25.00	12.98	0.00	29.28	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	6.7	
5/31/2006	--		8.00	25.00	12.35	0.00	29.91	--	--	--	--	--	--	--	--	
12/6/2006	NP		8.00	25.00	12.98	0.00	29.28	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.24	6.86	
5/15/2007	--		8.00	25.00	12.55	0.00	29.71	--	--	--	--	--	--	--	--	
11/29/2007	NP		8.00	25.00	12.75	0.00	29.51	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	6.93	
5/6/2008	--		8.00	25.00	12.91	0.00	29.35	--	--	--	--	--	--	--	--	
11/24/2008	NP		8.00	25.00	13.20	0.00	29.06	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.28	7.25	
4/9/2009	--	42.31	8.00	25.00	12.52	0.00	29.79	--	--	--	--	--	--	--	--	d
11/24/2009	P		8.00	25.00	12.90	0.00	29.41	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.83	6.59	
5/26/2010	--		8.00	25.00	12.17	0.00	30.14	--	--	--	--	--	--	--	--	
11/30/2010	P		8.00	25.00	12.45	0.00	29.86	--	--	--	--	--	--	1.20	7.2	f
2/16/2011	P		8.00	25.00	11.95	0.00	30.36	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.02	6.9	
5/11/2011	--		8.00	25.00	12.35	0.00	29.96	--	--	--	--	--	--	--	--	
11/28/2011	P		8.00	25.00	12.62	0.00	29.69	<50	<0.50	0.74	<0.50	0.64	<0.50	0.91	7.2	
6/5/2012	--		8.00	25.00	12.60	0.00	29.71	--	--	--	--	--	--	--	--	
12/6/2012	P		8.00	25.00	10.66	0.00	31.65	<50	<0.50	<0.50	<0.50	<1.0	<0.50	3.33	7.85	
6/4/2013	**--**		**8.00**	**25.00**	**12.90**	**0.00**	**29.41**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	

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ARCO Service Station #2035, 1001 San Pablo Ave., Albany, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Product Thickness (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
								GRO/ TPHg	Benzene	Toluene	Ethyl- Benzene	Total Xylenes	MTBE			
MW-7																
4/9/2009	P	43.18	6.00	16.00	6.73	0.00	36.45	4,100	5.2	1.7	21	21	<0.50	8.41	7.79	d
11/24/2009	P		6.00	16.00	8.31	0.00	34.87	2,700	4.1	1.1	3.3	3.0	<0.50	0.60	6.8	c
5/26/2010	P		6.00	16.00	6.62	0.00	36.56	1,800	1.2	0.53	2.2	0.84	<0.50	0.71	6.6	
11/30/2010	P		6.00	16.00	6.84	0.00	36.34	--	--	--	--	--	--	0.79	6.7	f
2/16/2011	P		6.00	16.00	5.44	0.00	37.74	2,000	1.4	0.84	8.0	1.4	<0.50	0.56	7.0	g
5/11/2011	P		6.00	16.00	6.98	0.00	36.20	84	<0.50	<0.50	<0.50	<0.50	<0.50	1.76	7.1	lw
11/28/2011	P		6.00	16.00	7.13	0.00	36.05	850	0.55	1.3	<0.50	2.5	<0.50	0.38	7.3	lw
6/5/2012	P		6.00	16.00	7.65	0.00	35.53	1,300	0.97	0.59	0.95	0.64	<0.50	1.95	7.04	
12/6/2012	P		6.00	16.00	3.30	0.00	39.88	880	1.4	0.57	1.4	<1.0	<0.50	4.90	7.78	
6/4/2013	**P**		**6.00**	**16.00**	**8.60**	**0.00**	**34.58**	**99**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**<0.50**	**1.31**	**6.51**	
MW-8																
4/9/2009	P	42.36	6.00	19.00	9.50	0.00	32.86	4,300	940	260	150	590	110	2.09	7.62	d
11/24/2009	P		6.00	19.00	10.25	0.00	32.11	28,000	9,900	670	1,300	2,200	<100	0.64	6.48	c
5/26/2010	P		6.00	19.00	9.25	0.00	33.11	1,400	420	<10	21	<10	<10	0.78	6.6	
11/30/2010	P		6.00	19.00	9.68	0.00	32.68	--	--	--	--	--	--	2.26	6.6	f
2/16/2011	P		6.00	19.00	8.95	0.00	33.41	960	270	<5.0	50	<5.0	<5.0	3.35	6.9	g
5/11/2011	P		6.00	19.00	9.43	0.00	32.93	1,200	290	<4.0	57	4.5	<4.0	0.94	7.2	lw
11/28/2011	P		6.00	19.00	9.85	0.00	32.51	<50	<0.50	0.59	<0.50	0.53	<0.50	3.64	7.2	
6/5/2012	P		6.00	19.00	9.72	0.00	32.64	890	170	1.9	92	16	2.1	1.31	6.99	
12/6/2012	P		6.00	19.00	7.19	0.00	35.17	80	18	<0.50	6.8	1.2	<0.50	6.59	8.01	
6/4/2013	**P**		**6.00**	**19.00**	**10.21**	**0.00**	**32.15**	**260**	**70**	**1.1**	**34**	**1.6**	**2.0**	**1.50**	**6.21**	
MW-9																
4/9/2009	P	43.77	6.00	16.00	8.95	0.00	34.82	<50	<0.50	<0.50	<0.50	<0.50	2.1	2.81	7.58	d
11/24/2009	P		6.00	16.00	10.11	0.00	33.66	<50	<0.50	<0.50	<0.50	<0.50	3.8	--	6.3	
5/26/2010	P		6.00	16.00	8.88	0.00	34.89	<50	<0.50	<0.50	<0.50	<0.50	1.9	0.66	5.7	
11/30/2010	P		6.00	16.00	9.56	0.00	34.21	--	--	--	--	--	--	0.64	6.3	f
2/16/2011	P		6.00	16.00	8.65	0.00	35.12	<50	<0.50	<0.50	<0.50	<0.50	3.8	0.55	6.6	
5/11/2011	P		6.00	16.00	9.06	0.00	34.71	<50	<0.50	<0.50	<0.50	<0.50	1.2	1.22	6.6	
11/28/2011	P		6.00	16.00	9.75	0.00	34.02	<50	<0.50	0.70	<0.50	0.72	9.1	0.50	6.8	

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Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Product Thickness (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
								GRO/ TPHg	Benzene	Toluene	Ethyl- Benzene	Total Xylenes	MTBE			
MW-9 Cont.																
6/5/2012	P	43.77	6.00	16.00	9.57	0.00	34.20	<50	<0.50	<0.50	<0.50	<0.50	4.8	1.45	6.32	
12/6/2012	P		6.00	16.00	6.95	0.00	36.82	<50	<0.50	<0.50	<0.50	<1.0	6.4	2.25	7.23	
6/4/2013	**P**		**6.00**	**16.00**	**10.17**	**0.00**	**33.60**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**3.5**	**1.58**	**5.40**	
RW-1																
4/11/2002	P	40.33	11.00	26.00	9.20	0.00	31.13	15,000	750	2,000	380	2,000	1,500	--	--	
11/27/2002	P		11.00	26.00	10.31	0.00	30.02	<2,500	720	<25	<25	<25	<25	1.8	--	
6/3/2003	--		11.00	26.00	9.54	0.00	30.79	470	78	0.97	4.3	9	48	1.4	--	
11/13/2003	P	42.35	11.00	26.00	10.35	0.00	32.00	130	29	<0.50	<0.50	<0.50	44	1.3	6.6	a
05/12/2004	P		11.00	26.00	9.80	0.00	32.55	<250	66	<2.5	<2.5	<2.5	<2.5	1.9	6.9	
09/02/2004	--		11.00	26.00	10.42	0.00	31.93	--	--	--	--	--	--	--	--	
10/07/2004	--		11.00	26.00	10.36	0.00	31.99	--	--	--	--	--	--	--	--	
11/04/2004	--		11.00	26.00	9.93	0.00	32.42	--	--	--	--	--	--	--	--	
12/01/2004	P		11.00	26.00	10.02	0.00	32.33	<250	96	<2.5	<2.5	<2.5	16	1.8	6.7	
05/02/2005	P		11.00	26.00	9.20	0.00	33.15	230	100	<1.0	<1.0	<1.0	50	2.5	6.6	
11/16/2005	P		11.00	26.00	10.96	0.00	31.39	<100	28	<1.0	<1.0	<1.0	32	1.0	6.5	
5/31/2006	P		11.00	26.00	9.34	0.00	33.01	320	32	<0.50	<0.50	<0.50	28	1.3	6.8	
12/6/2006	P		11.00	26.00	10.10	0.00	32.25	50	27	<0.50	<0.50	<0.50	19	1.49	7.54	
5/15/2007	P		11.00	26.00	9.42	0.00	32.93	280	32	<0.50	<0.50	<0.50	18	2.61	7.10	
11/29/2007	P		11.00	26.00	9.75	0.00	32.60	<50	14	<0.50	<0.50	<0.50	18	4.86	8.14	
5/6/2008	P		11.00	26.00	9.71	0.00	32.64	610	110	<2.5	<2.5	<2.5	2.6	2.48	6.95	
11/24/2008	P		11.00	26.00	10.48	0.00	31.87	73	31	<0.50	<0.50	<0.50	11	2.53	6.88	
4/9/2009	P	42.23	11.00	26.00	9.46	0.00	32.77	720	36	<0.50	1.0	1.2	4.0	2.58	7.73	d
11/24/2009	P		11.00	26.00	10.15	0.00	32.08	<50	2.0	<0.50	<0.50	<0.50	6.5	0.85	6.6	
5/26/2010	P		11.00	26.00	9.12	0.00	33.11	90	11	<0.50	<0.50	<0.50	0.94	1.46	6.4	
11/30/2010	P		11.00	26.00	9.38	0.00	32.85	--	--	--	--	--	--	2.10	7.2	f
2/16/2011	P		11.00	26.00	9.15	0.00	33.08	1,600	370	2.9	2.6	2.9	1.3	0.76	7.0	
5/11/2011	P		11.00	26.00	9.56	0.00	32.67	1,600	79	<2.0	<2.0	2.0	<2.0	0.91	7.4	lw
11/28/2011	P		11.00	26.00	9.69	0.00	32.54	<50	<0.50	0.54	<0.50	<0.50	<0.50	3.05	7.3	
6/5/2012	P		11.00	26.00	9.63	0.00	32.60	1,000	49	1.3	<0.50	0.86	<0.50	1.43	6.75	
12/6/2012	P		11.00	26.00	7.66	0.00	34.57	380	200	1.5	<1.0	<2.0	<1.0	1.52	7.34	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2035, 1001 San Pablo Ave., Albany, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Product Thickness (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
								GRO/ TPHg	Benzene	Toluene	Ethyl- Benzene	Total Xylenes	MTBE			
RW-1 Cont.																
6/4/2013	**P**	**42.23**	**11.00**	**26.00**	**10.10**	**0.00**	**32.13**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**<0.50**	**1.31**	**6.16**	
S-5																
4/11/2002	P	40.33	6.00	16.00	10.17	0.00	30.16	30,000	390	1,400	410	7,400	<500	--	--	
11/27/2002	P		6.00	16.00	9.77	0.00	30.56	55,000	1,300	450	1,400	13,000	<50	4.3	--	
6/3/2003	--		6.00	16.00	9.03	0.00	31.30	44,000	680	260	1,100	9,900	<25	1.9	--	
6/3/2003	--		6.00	16.00	9.12	0.00	31.21	44,000	680	260	1,100	9,900	<25	1.9	--	
6/3/2003	--		6.00	16.00	9.03	0.00	31.30	--	--	--	--	--	<25	1.4	--	
6/3/2003	--		6.00	16.00	9.12	0.00	31.21	--	--	--	--	--	<25	1.4	--	
11/13/2003	P	41.83	6.00	16.00	9.12	0.00	32.71	31,000	520	120	690	5,900	<50	1.4	6.5	a
05/12/2004	P		6.00	16.00	9.95	0.00	31.88	28,000	760	79	910	5,000	<50	1.9	6.6	
12/01/2004	P		6.00	16.00	9.61	0.00	32.22	26,000	1,500	64	1,400	4,000	<25	--	6.5	b
05/02/2005	P		6.00	16.00	8.80	0.00	33.03	13,000	700	18	260	1,300	<5.0	1.8	6.4	
11/16/2005	P		6.00	16.00	9.80	0.00	32.03	15,000	1,400	25	570	850	<5.0	1.1	6.3	
5/31/2006	P		6.00	16.00	8.89	0.00	32.94	9,800	170	<5.0	490	390	<5.0	1.4	6.6	
12/6/2006	P		6.00	16.00	9.65	0.00	32.18	16,000	1,100	<25	1,700	970	<25	1.23	6.95	
5/15/2007	P		6.00	16.00	8.89	0.00	32.94	10,000	140	<5.0	340	310	<5.0	3.63	7.10	
11/29/2007	P		6.00	16.00	9.48	0.00	32.35	13,000	770	8.6	500	360	<2.5	5.42	7.28	c (Benzene)
5/6/2008	P		6.00	16.00	9.30	0.00	32.53	7,400	320	2.8	580	130	<0.50	3.37	6.88	
11/24/2008	P		6.00	16.00	10.00	0.00	31.83	7,700	400	<10	390	14	<10	3.22	6.43	
4/9/2009	P		6.00	16.00	8.90	0.00	32.93	7,700	230	<10	370	35	<10	3.14	7.77	
11/24/2009	--		6.00	16.00	--	--	--	--	--	--	--	--	--	--	--	e
5/26/2010	--		6.00	16.00	--	--	--	--	--	--	--	--	--	--	--	e
11/30/2010	P		6.00	16.00	8.92	0.00	32.91	--	--	--	--	--	--	0.62	6.6	f
2/16/2011	P		6.00	16.00	8.57	0.00	33.26	2,700	26	<0.50	11	3.2	<0.50	1.34	7.5	
5/11/2011	P		6.00	16.00	8.85	0.00	32.98	1,500	19	0.58	9.7	2.2	<0.50	0.72	6.8	lw
11/28/2011	--		6.00	16.00	--	--	--	--	--	--	--	--	--	--	--	e
6/5/2012	P		6.00	16.00	9.00	0.00	32.83	1,700	29	0.99	2.1	0.60	<0.50	1.44	6.68	
12/6/2012	P		6.00	16.00	6.89	0.00	34.94	1,700	24	1.7	3.3	2.0	<0.50	2.95	7.51	
6/4/2013	**P**		**6.00**	**16.00**	**9.55**	**0.00**	**32.28**	**400**	**14**	**1.8**	**3.1**	**2.3**	**<0.50**	**1.41**	**5.98**	

Symbols & Abbreviations:
-- = Not analyzed/applicable/measured/available
< = Not detected at or above laboratory reporting limit
ft bgs = Feet below ground surface
BTEX = Benzene, toluene, ethylbenzene and xylenes
DO = Dissolved oxygen
DTW = Depth to water in ft bgs
GRO = Gasoline range organics, range C4-C12
GWE = Groundwater elevation measured in ft
mg/L = Milligrams per liter
MTBE = Methyl tert butyl ether
NP = Not purged before sampling
P = Purged before sampling
TOC = Top of casing measured in ft
TPH-g = Total petroleum hydrocarbons as gasoline, analyzed using EPA Method 8015, Modified
µg/L = Micrograms per liter
SEQ/SEQM = Sequoia Analytical/Sequoia Morgan Hill Laboratories

Footnotes:
a = Site resurveyed by URS on 10/15/03 to NAVD '88
b = Sheen in well
c = Sample taken from VOA vial with air bubble >6mm
d = Well surveyed on 4/20/09
e = Well not monitored or sampled due to traffic control safety concerns
f = Samples were collected on 11/30/2010 but not able to be analyzed (frozen). Subsequent re-sampling could not occur in 4Q 2010
g = Quantitation of unknown hydrocarbon(s) in sample based on gasoline
lw = Quantitated against gasoline

Notes:
No sampling occurs at this site during the first and third quarters of each calendar year

TPH-g analyzed using EPA Method 8015, Modified and BTEX and MTBE by EPA method 8260B

Beginning in the fourth quarter 2003, the laboratory modified the reported analyte list. TPH-g was changed to GRO. The resulting data may be impacted by the potential of non-TPH-g analytes within the requested fuel range resulting in a higher concentration being reported

Beginning in the second quarter 2004, the carbon range for GRO was changed from C6-C10 to C4-C12

Values for DO and pH were obtained through field measurements

GRO analysis was completed by EPA method 8260B (C4-C12) for samples collected from the time period April 2006 through February 4, 2008. The analysis for GRO was changed to EPA method 8015B (C6-C12) for samples collected from the time period February 5, 2008 through the present

The data within this table collected prior to April 2006 was provided to Broadbent & Associates, Inc. by Atlantic Richfield Company and their previous consultants. Broadbent & Associates, Inc. has not verified the accuracy of this information

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #2035, 1001 San Pablo Ave., Albany, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-1									
4/11/2002	--	--	<50	--	--	--	--	--	
11/27/2002	--	--	1.7	--	--	--	--	--	
6/3/2003	<1000	<200	8.6	<5.0	<5.0	<5.0	<5.0	<5.0	
11/13/2003	<100	<20	0.95	<0.50	<0.50	<0.50	--	--	
05/12/2004	<100	<20	3.0	<0.50	<0.50	<0.50	<0.50	<0.50	
12/01/2004	<100	<20	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	
05/02/2005	<1,000	220	8.8	<5.0	<5.0	<5.0	<5.0	<5.0	
11/16/2005	<100	<20	0.92	<0.50	<0.50	<0.50	<0.50	<0.50	a
5/31/2006	<1,500	<100	4.0	<2.5	<2.5	<2.5	<2.5	<2.5	a
12/6/2006	<300	<20	0.72	<0.50	<0.50	<0.50	<0.50	<0.50	
5/15/2007	<300	<20	1.8	<0.50	<0.50	<0.50	<0.50	<0.50	
11/29/2007	<300	<20	0.98	<0.50	<0.50	<0.50	<0.50	<0.50	
5/6/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/24/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-2									
4/11/2002	--	--	24	--	--	--	--	--	
11/27/2002	--	--	5.4	--	--	--	--	--	
6/3/2003	<100	<20	23	<0.50	<0.50	<0.50	0.94	<0.50	
11/13/2003	<100	<20	9.5	<0.50	<0.50	<0.50	--	--	
05/12/2004	<500	<100	27	<2.5	<2.5	<2.5	<2.5	<2.5	
12/01/2004	<100	<20	17	<0.50	<0.50	<0.50	0.74	<0.50	
05/02/2005	<100	75	25	<0.50	<0.50	<0.50	<0.50	<0.50	
11/16/2005	<100	<20	7.6	<0.50	<0.50	<0.50	0.79	<0.50	a
5/31/2006	<300	<20	24	<0.50	<0.50	<0.50	0.66	<0.50	a
12/6/2006	<300	<20	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	a
5/15/2007	<300	<20	44	<0.50	<0.50	<0.50	1.2	<0.50	
11/29/2007	<300	<20	1.9	<0.50	<0.50	<0.50	<0.50	<0.50	
5/6/2008	<300	<10	35	<0.50	<0.50	<0.50	0.93	<0.50	
11/24/2008	<300	<10	4.3	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-3									

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #2035, 1001 San Pablo Ave., Albany, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-3 Cont.									
4/11/2002	--	--	120	--	--	--	--	--	
11/27/2002	--	--	56	--	--	--	--	--	
6/3/2003	<100	<20	47	<0.50	<0.50	<0.50	<0.50	<0.50	
11/13/2003	<100	<20	36	<0.50	<0.50	<0.50	--	--	
05/12/2004	<100	<20	39	<0.50	<0.50	<0.50	<0.50	<0.50	
12/01/2004	<100	<20	37	<0.50	<0.50	<0.50	<0.50	<0.50	
05/02/2005	<100	<20	23	<0.50	<0.50	<0.50	<0.50	<0.50	
11/16/2005	<100	<20	32	<0.50	<0.50	<0.50	<0.50	<0.50	a
5/31/2006	<300	<20	20	<0.50	<0.50	<0.50	<0.50	<0.50	a
12/6/2006	<300	<20	20	<0.50	<0.50	<0.50	<0.50	<0.50	a
5/15/2007	<300	<20	40	<0.50	<0.50	<0.50	<0.50	<0.50	
11/29/2007	<300	<20	35	<0.50	<0.50	<0.50	<0.50	<0.50	
5/6/2008	<300	<10	14	<0.50	<0.50	<0.50	<0.50	<0.50	
11/24/2008	<600	<20	28	<1.0	<1.0	<1.0	<1.0	<1.0	
MW-4									
4/11/2002	--	--	11	--	--	--	--	--	
11/27/2002	--	--	6.5	--	--	--	--	--	
6/3/2003	<500	<100	120	<2.5	<2.5	<2.5	<2.5	<2.5	
11/13/2003	<100	<20	20	<0.50	<0.50	<0.50	--	--	
05/12/2004	<500	<100	79	<2.5	<2.5	<2.5	<2.5	<2.5	
12/01/2004	<100	<20	1.8	<0.50	<0.50	<0.50	<0.50	<0.50	
05/02/2005	<100	75	11	<0.50	<0.50	<0.50	<0.50	<0.50	
11/16/2005	<100	<20	0.93	<0.50	<0.50	<0.50	<0.50	<0.50	a
5/31/2006	<300	<20	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	a
12/6/2006	<300	<20	7.8	<0.50	<0.50	<0.50	<0.50	<0.50	a
5/15/2007	<300	<20	2.2	<0.50	<0.50	<0.50	<0.50	<0.50	
11/29/2007	<300	<20	9.1	<0.50	<0.50	<0.50	<0.50	<0.50	
5/6/2008	<300	<10	10	<0.50	<0.50	<0.50	<0.50	<0.50	
11/24/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
4/9/2009	<300	<10	12	<0.50	<0.50	<0.50	<0.50	<0.50	
11/24/2009	<300	<10	1.7	<0.50	<0.50	<0.50	<0.50	<0.50	

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #2035, 1001 San Pablo Ave., Albany, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-4 Cont.									
5/26/2010	<300	<10	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	
2/16/2011	<300	<10	2.1	<0.50	<0.50	<0.50	<0.50	<0.50	
5/11/2011	<300	<10	0.75	<0.50	<0.50	<0.50	<0.50	<0.50	
11/28/2011	<300	<10	0.67	<0.50	<0.50	<0.50	<0.50	<0.50	
6/5/2012	<300	<10	1.2	<0.50	<0.50	<0.50	<0.50	<0.50	
12/6/2012	<150	<10	2.5	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2013	**<150**	**<10**	**0.54**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-5									
4/11/2002	--	--	<5.0	--	--	--	--	--	
6/3/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/13/2003	<100	<20	0.79	<0.50	<0.50	<0.50	--	--	
12/01/2004	<100	<20	0.55	<0.50	<0.50	<0.50	<0.50	<0.50	
11/16/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	a
12/6/2006	<300	<20	0.99	<0.50	<0.50	<0.50	<0.50	<0.50	a
11/29/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/24/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/24/2009	<300	<10	0.89	<0.50	<0.50	<0.50	<0.50	<0.50	
2/16/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/28/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/6/2012	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-6									
4/11/2002	--	--	<5.0	--	--	--	--	--	
11/27/2002	--	--	<0.50	--	--	--	--	--	
6/3/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/13/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	--	--	
12/01/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/16/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	a
12/6/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	a
11/29/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/24/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #2035, 1001 San Pablo Ave., Albany, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-6 Cont.									
11/24/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/16/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/28/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/6/2012	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-7									
4/9/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/24/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b
5/26/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/16/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/11/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/28/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/5/2012	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/6/2012	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2013	**<150**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-8									
4/9/2009	<300	330	110	5.5	<0.50	<0.50	34	<0.50	
11/24/2009	<60,000	<2,000	<100	<100	<100	<100	<100	<100	b
5/26/2010	<6,000	<200	<10	<10	<10	<10	<10	<10	
2/16/2011	<3,000	<100	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
5/11/2011	<2,400	<80	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	
11/28/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/5/2012	<300	38	2.1	<0.50	<0.50	<0.50	<0.50	<0.50	
12/6/2012	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2013	**<150**	**26**	**2.0**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-9									
4/9/2009	<300	<10	2.1	<0.50	<0.50	<0.50	<0.50	<0.50	
11/24/2009	<300	<10	3.8	<0.50	<0.50	<0.50	<0.50	<0.50	
5/26/2010	<300	<10	1.9	<0.50	<0.50	<0.50	<0.50	<0.50	
2/16/2011	<300	<10	3.8	<0.50	<0.50	<0.50	<0.50	<0.50	
5/11/2011	<300	<10	1.2	<0.50	<0.50	<0.50	<0.50	<0.50	

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #2035, 1001 San Pablo Ave., Albany, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-9 Cont.									
11/28/2011	<300	<10	9.1	<0.50	<0.50	<0.50	<0.50	<0.50	
6/5/2012	<300	<10	4.8	<0.50	<0.50	<0.50	<0.50	<0.50	
12/6/2012	<150	<10	6.4	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2013	**<150**	**<10**	**3.5**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
RW-1									
4/11/2002	--	--	1,500	--	--	--	--	--	
11/27/2002	--	--	<25	--	--	--	--	--	
6/3/2003	<100	22	48	<0.50	<0.50	<0.50	<0.50	<0.50	
11/13/2003	<100	<20	44	<0.50	<0.50	<0.50	--	--	
05/12/2004	<500	<100	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	
12/01/2004	<500	<100	16	<2.5	<2.5	<2.5	<2.5	<2.5	
05/02/2005	<200	<40	50	<1.0	<1.0	<1.0	<1.0	<1.0	
11/16/2005	<200	<40	32	<1.0	<1.0	<1.0	<1.0	<1.0	a
5/31/2006	<300	<20	28	<0.50	<0.50	<0.50	<0.50	<0.50	a
12/6/2006	<300	<20	19	<0.50	<0.50	<0.50	<0.50	<0.50	a
5/15/2007	<300	<20	18	<0.50	<0.50	<0.50	<0.50	<0.50	
11/29/2007	<300	<20	18	<0.50	<0.50	<0.50	<0.50	<0.50	
5/6/2008	<1,500	<50	2.6	<2.5	<2.5	<2.5	<2.5	<2.5	
11/24/2008	<300	<10	11	<0.50	<0.50	<0.50	<0.50	<0.50	
4/9/2009	<300	<10	4.0	<0.50	<0.50	<0.50	<0.50	<0.50	
11/24/2009	<300	<10	6.5	<0.50	<0.50	<0.50	<0.50	<0.50	
5/26/2010	<300	<10	0.94	<0.50	<0.50	<0.50	<0.50	<0.50	
2/16/2011	<300	<10	1.3	<0.50	<0.50	<0.50	<0.50	<0.50	
5/11/2011	<1,200	<40	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
11/28/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/5/2012	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/6/2012	<300	<20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
6/4/2013	**<150**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
S-5									
4/11/2002	--	--	<500	--	--	--	--	--	

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #2035, 1001 San Pablo Ave., Albany, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
S-5 Cont.									
11/27/2002	--	--	<50	--	--	--	--	--	
6/3/2003	<5,000	<1,000	<25	<25	<25	<25	<25	<25	
6/3/2003	<5,000	<1,000	<25	<25	<25	<25	<25	<25	
6/3/2003	<5,000	<1,000	<25	<25	<25	<25	<25	<25	
6/3/2003	<5,000	<1,000	<25	<25	<25	<25	<25	<25	
11/13/2003	<10,000	<2,000	<50	<50	<50	<50	--	--	
05/12/2004	<10,000	<2,000	<50	<50	<50	<50	<50	<50	
12/01/2004	<5,000	<1,000	<25	<25	<25	<25	<25	<25	
05/02/2005	<1,000	<200	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
11/16/2005	<1,000	<200	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	a
5/31/2006	<3,000	<200	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	a
12/6/2006	<15,000	<1,000	<25	<25	<25	<25	<25	<25	a
5/15/2007	<3,000	<200	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
11/29/2007	<1,500	<100	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	
5/6/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/24/2008	<6,000	<200	<10	<10	<10	<10	<10	<10	
4/9/2009	<6,000	<200	<10	<10	<10	<10	<10	<10	
2/16/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/11/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/5/2012	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/6/2012	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2013	**<150**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	

Symbols & Abbreviations:
-- = Not analyzed/applicable/measured/available
< = Not detected at or above the laboratory reporting limit
1,2-DCA = 1,2-Dichloroethane
DIPE = Di-isopropyl ether
EDB = 1,2-Dibromoethane
ETBE = Ethyl tert-butyl ether
MTBE = Methyl tert-butyl ether
TAME = tert-Amyl methyl ether
TBA = tert-Butyl alcohol
µg/L = Micrograms per Liter

Footnote:
a = Calibration verification for ethanol was within method limits but outside contract limits
b = Sample taken from VOA vial with air bubble > 6mm diameter
c = LW Quantitated against gasoline

Notes:
All volatile organic compounds analyzed using EPA Method 8260B

The data within this table collected prior to April 2006 was provided to Broadbent & Associates, Inc. by Atlantic Richfield Company and their previous consultants. Broadbent & Associates, Inc. has not verified the accuracy of this information

Table 3. Historical Groundwater Gradient - Direction and Magnitude

ARCO Service Station #2035, 1001 San Pablo Ave., Albany, CA

Date Measured	Approximate Gradient Direction	Approximate Gradient Magnitude (ft/ft)
4/11/2002	Southwest	0.012
11/27/2002	West	0.021
6/3/2003	West	0.024
11/13/2003	West (offsite Northwest)	0.015
5/12/2004	West	0.020
12/1/2004	West	0.030
5/2/2005	West	0.02
11/16/2005	West	0.03
5/31/2006	West	0.04
12/6/2006	West	0.01
5/15/2007	West	0.02
11/29/2007	West	0.02
5/6/2008	West	0.007
11/24/2008	West	0.02
4/9/2009	West	0.02
11/24/2009	West	0.03
5/26/2010	West	0.02
11/30/2010	West-Southwest	0.02
2/16/2011	West	0.03
5/11/2011	West-Southwest	0.03
11/28/2011	West-Southwest	0.02
6/5/2012	West	0.02
12/6/2012	West	0.022
6/4/2013	**West**	**0.022**

Notes:
Site resurveyed by URS on 10/15/03 by datum NAVD '88

The data within this table collected prior to April 2006 was provided to Broadbent & Associates, Inc. by Atlantic Richfield Company and their previous consultants. Broadbent & Associates, Inc. has not verified the accuracy of this information

APPENDIX A

FIELD METHODS

QUALITY ASSURANCE/QUALITY CONTROL
FIELD METHODS

Field methods discussed herein were implemented to provide for accuracy and reliability of field activities, data collection, sample collection, and handling. Discussion of these methods is provided below.

1.0 Equipment Calibration

Equipment calibration was performed per equipment manufacturer specifications before use.

2.0 Depth to Groundwater and Light Non-Aqueous Phase Liquid Measurement

Depth to groundwater was measured in wells identified for gauging in the scope of work using a decontaminated water level indicator. The depth to water measurement was taken from a cut notch or permanent mark at the top of the well casing to which the well head elevation was originally surveyed.

Once depth to water was measured, an oil/water interface meter or a new disposable bailer was utilized to evaluate the presence and, if present, to measure the "apparent" thickness of light non-aqueous phase liquid (LNAPL) in the well. If LNAPL was present in the well, groundwater purging and sampling were not performed, unless sampling procedures in the scope of work specified collection of samples in the presence of LNAPL. Otherwise, time allowing, LNAPL was bailed from the well using either a new disposable bailer, or the disposal bailer previously used for initial LNAPL assessment. Bailing of LNAPL continued until the thickness of LNAPL (or volume) stabilized in each bailer pulled from the well, or LNAPL was no longer present. After LNAPL thickness either stabilized or was eliminated, periodic depth to water and depth to LNAPL measurements were collected as product came back into the well to evaluate product recovery rate and to aid in further assessment of LNAPL in the subsurface. LNAPL thickness measurements were recorded as "apparent." If a bailer was used for LNAPL thickness measurement, the field sampler noted the bailer entry diameter and chamber diameter to enable correction of thickness measurements. Recovered LNAPL was stored on-site in a labeled steel drum(s) or other appropriate container(s) prior to disposal.

3.0 Well Purging and Groundwater Sample Collection

Well purging and groundwater sampling were performed in wells specified in the scope of work after measuring depth to groundwater and evaluating the presence of LNAPL. Purging and sampling were performed using one of the methods detailed below. The method used was noted in the field records. Purge water was stored on-site in labeled steel drum(s) or other appropriate container(s) prior to disposal or on-site treatment (in cases where treatment using an on-site system is authorized).

3.1 Purging a Predetermined Well Volume

Purging a predetermined well volume is performed per ASTM International (ASTM) D4448-01. This purging method has the objective of removing a predetermined volume of stagnant water from the well prior to sampling. The volume of stagnant water is defined as either the volume of water contained within the well casing, or the volume within the well casing and sand/gravel in the annulus if natural flow through these is deemed insufficient to keep them flushed out.

This purging method involves removal of a minimum of three stagnant water volumes from the well using a decontaminated pump with new disposable plastic discharge or suction tubing, dedicated well tubing, or using a new disposable or decontaminated reusable bailer. If a new disposable bailer was used for assessment of LNAPL, that bailer may be used for purging. The withdrawal rate used is one that minimizes drawdown while satisfying time constraints.

To evaluate when purging is complete, one or more groundwater stabilization parameters are monitored and recorded during purging activities until stabilization is achieved. Most commonly, stabilization parameters include temperature, conductivity, and pH, but field procedures detailed in the scope of work may also include monitoring of dissolved oxygen concentrations, oxidation reduction potential, and/or turbidity[1]. Parameters are considered stable when two (2) consecutive readings recorded three (3) minutes apart fall within ranges provided below in Table 1. In the event that the parameters have not stabilized and five (5) well casing volumes have been removed, purging activities will cease and be considered complete. Once the well is purged, a groundwater sample(s) is collected from the well using a new disposable bailer. If a new disposable bailer was used for purging, that bailer may be used to collect the sample(s). A sample is not collected if the well is inadvertently purged dry.

Table 1. Criteria for Defining Stabilization of Water-Quality Indicator Parameters

Parameter	Stabilization Criterion
Temperature	± 0.2ºC (± 0.36ºF)
pH	± 0.1 standard units
Conductivity	± 3%
Dissolved oxygen	± 10%
Oxidation reduction potential	± 10 mV
Turbidity[1]	± 10% or 1.0 NTU (whichever is greater)

3.2 Low-Flow Purging and Sampling

“Low-Flow”, “Minimal Drawdown”, or "Low-Stress” purging is performed per ASTM D6771-02. It is a method of groundwater removal from within a well’s screened interval that is intended to

[1] As stated in ASTM D6771-02, turbidity is not a chemical parameter and not indicative of when formation-quality water is being purged; however, turbidity may be helpful in evaluating stress on the formation during purging. Turbidity measurements are taken at the same time that stabilization parameter measurements are made, or, at a minimum, once when purging is initiated and again just prior to sample collection, after stabilization parameters have stabilized. To avoid artifacts in sample analysis, turbidity should be as low as possible when samples are collected. If turbidity values are persistently high, the withdrawal rate is lowered until turbidity decreases. If high turbidity persists even after lowering the withdrawal rate, the purging is stopped for a period of time until turbidity settles, and the purging process is then restarted. If this fails to solve the problem, the purging/sampling process for the well is ceased, and well maintenance or redevelopment is considered.

minimize drawdown and mixing of the water column in the well casing. This is accomplished by pumping the well using a decontaminated pump with new disposable plastic discharge or suction tubing or dedicated well tubing at a low flow rate while evaluating the groundwater elevation during pumping.

The low flow pumping rate is well specific and is generally established at a volume that is less than or equal to the natural recovery rate of the well. A pump with adjustable flow rate control is positioned with the intake at or near the mid-point of the submerged well screen. The pumping rate used during low-flow purging is low enough to minimize mobilization of particulate matter and drawdown (stress) of the water column. Low-flow purging rates will vary based on the individual well characteristics; however, the purge rate should not exceed 1.0 Liter per minute (L/min) or 0.25 gallon per minute (gal/min). Low-flow purging should begin at a rate of approximately 0.1 L/min (0.03 gal/min)[2], or the lowest rate possible, and be adjusted based on an evaluation of drawdown. Water level measurements should be recorded at approximate one (1) to two (2) minute intervals until the low-flow rate has been established, and drawdown is minimized. As a general rule, drawdown should not exceed 25% of the distance between the top of the water column and the pump in-take.

To evaluate when purging is complete, one or more groundwater stabilization parameters are monitored and recorded during purging activities until stabilization is achieved. Most commonly, stabilization parameters include temperature, conductivity, and pH, but field procedures detailed in the scope of work may also include monitoring of dissolved oxygen concentrations, oxidation reduction potential, and/or turbidity[1]. The frequency between measurements will be at an interval of one (1) to three (3) minutes; however, if a flow cell is used, the frequency will be determined based on the time required to evacuate one cell volume. Stabilization is defined as three (3) consecutive readings recorded several minutes apart falling within ranges provided in Table 1. Samples will be collected by filling appropriate containers from the pump discharge tubing at a rate not to exceed the established pumping rate.

3.3 Minimal Purge, Discrete Depth, and Passive Sampling

Per ASTM D4448-01, sampling techniques that do not rely on purging, or require only minimal purging, may be used if a particular zone within a screened interval is to be sampled or if a well is not capable of yielding sufficient groundwater for purging. To properly use these sampling techniques, a water sample is collected within the screened interval with little or no mixing of the water column within the casing. These techniques include minimal purge sampling which uses a dedicated sampling pump capable of pumping rates of less than 0.1 L/min (0.03 gal/min)[2], discrete depth sampling using a bailer that allows groundwater entry at a controlled depth (e.g. differential pressure bailer), or passive (diffusion) sampling. These techniques are based on certain studies referenced in ASTM D4448-01 that indicate that under certain conditions, natural groundwater flow is laminar and horizontal with little or no mixing within the well screen.

---

[2] According to ASTM D4448-01, studies have indicated that at flow rates of 0.1 L/min, low-density polyethylene (LDPE) and plasticized polypropylene tubing materials are prone to sorption. Therefore, TFE-fluorocarbon or other appropriate tubing material is used, particularly when tubing lengths of 50 feet or longer are used.

4.0 Decontamination

Reusable groundwater sampling equipment were cleaned using a solution of Alconox or other acceptable detergent, rinsed with tap water, and finally rinsed with distilled water prior to use in each well. Decontamination water was stored on-site in labeled steel drum(s) or other appropriate container(s) prior to disposal.

5.0 Sample Containers, Labeling, and Storage

Samples were collected in laboratory prepared containers with appropriate preservative (if preservative was required). Samples were properly labeled (site name, sample I.D., sampler initials, date, and time of collection) and stored chilled (refrigerator or ice chest with ice) until delivery to a certified laboratory, under chain of custody procedures.

6.0 Chain of Custody Record and Procedure

The field sampler was personally responsible for care and custody of the samples collected until they were properly transferred to another party. To document custody and transfer of samples, a Chain of Custody Record was prepared. The Chain of Custody Record provided identification of the samples corresponding to sample labels and specified analyses to be performed by the laboratory. The original Chain of Custody Record accompanied the shipment, and a copy of the record was stored in the project file. When the samples were transferred, the individuals relinquishing and receiving them signed, dated, and noted the time of transfer on the record.

7.0 Field Records

Daily Report and data forms were completed by staff personnel to provide daily record of significant events, observations, and measurements. Field records were signed, dated, and stored in the project file.

APPENDIX B

FIELD DATA SHEETS

BROADBENT

DAILY REPORT

Page 1 of 1

Project: BP 2035 Project No.: 06-88-610

Field Representative(s): A. Martinez / J. Ramos Day: Tuesday Date: 6/4/13

Time Onsite: From: 0715 To: ____; From: ____ To: ____; From: ____ To: ____

x Signed HASP x Safety Glasses x Hard Hat x Steel Toe Boots x Safety Vest

x UST Emergency System Shut-off Switches Located x Proper Gloves

x Proper Level of Barricading ___ Other PPE (describe) ____

Weather: Overcast

Equipment In Use: Peristaltic pump, water quality meter, interface probe.

Visitors: K. Tidwell

TIME:	WORK DESCRIPTION:
0715	Arrived onsite, conducted tailgate
0810	Set up @ MW-9
0845	K. Tidwell & Statewide arrive onsite.
	Re calibrated U53 due to unusually low pH readings.
0915	Set up @ road well S-5
0945	Set up @ MW-4
1020	Set up @ MW-2 & MW-8
1040	Set up @ RW-1
1200	Set up @ MW-7
1245	Cleaned up, completed fieldwork & off site.

Signature: James Ramos

Revision: 1/24/2012

BROADBENT

GROUNDWATER MONITORING SITE SHEET

Page ____ of ____

Project: BP 2035 Project No.: 06-88-60 Date: 6-9-2013

Field Representative: JR/AM Elevation: ____

Formation recharge rate is historically: High Low *(circle one)*

W. L. Indicator ID #: ____ Oil/Water Interface ID #: ____ *(List #s of all equip used.)*

WELL ID RECORD					WELL GAUGING RECORD					NOTES
Well ID	Well Sampling Order	As-Built Well Diameter (inches)	As-Built Well Screen Interval (ft)	Previous Depth to Water (ft)	Time (24:00)	Depth to LNAPL (ft)	Apparent LNAPL Thickness (ft)*	Depth to Water (ft)	Well Total Depth (ft)	
MW-1					1118			9.66	29.66	
MW-2					1025			10.40	28.72	
MW-3					0909			10.46	32.87	
MW-4					0957			9.87	25.02	
MW-5					0905			10.43	24.34	
MW-7					1205			8.60	24.23	
RW-1					1044			10.10	22.56	
S-5					0923			9.55	15.67	
MW-6					1210			12.90	16.00	
MW-8					1022			10.21	14.00	
MW-9					0821			10.17	16.00	

* Device used to measure LNAPL thickness: Bailer Oil/Water Interface Meter *(circle one)*

If bailer used, note bailer dimensions (inches): Entry Diameter ____ Chamber Diameter ____

Signature: ____

Revision: 8/19/11

BROADBENT

GROUNDWATER SAMPLING DATA SHEET

Page ____ of ____

Project: BP 2035 Project No.: 06-88-010 Date: 6/4/2013

Field Representative: JR/AM

Well ID: MW-4 Start Time: _____ End Time: _____ Total Time (minutes): _____

PURGE EQUIPMENT

X Disp. Tubing ___ Disp. Bailer ___ 12V Pump ___ 120V Pump X Peristaltic Pump ___ Flow Cell Other/ID#:

WELL HEAD INTEGRITY (cap, lock, vault, etc.) Comments:

(Good) Improvement Needed *(circle one)*

PURGING/SAMPLING METHOD Predetermined Well Volume Low-Flow Other: *(circle one)*

PREDETERMINED WELL VOLUME

Casing Diameter | Unit Volume (gal/ft) *(circle one)*

1" | (0.04) 1.25" | (0.08) 2" | (0.17) 3" | (0.38) Other: ____" | (____)

4" | (0.66) 6" | (1.50) 8" | (2.60) 12" | (5.81)

Total Well Depth (a): _____ (ft)

Initial Depth to Water (b): _____ (ft)

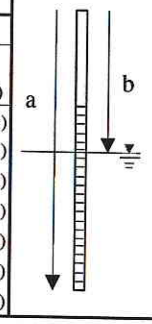
Water Column Height (WCH) = (a - b): _____ (ft)

Water Column Volume (WCV) = WCH x Unit Volume: _____ (gal)

Three Casing Volumes = WCV x 3: _____ (gal)

Five Casing Volumes = WCV x 5: _____ (gal)

Pump Depth (if pump used): _____ (ft)



LOW-FLOW

Previous Low-Flow Purge Rate: _____ (lpm)

Total Well Depth (a): 25.02 (ft)

Initial Depth to Water (b): 9.57 (ft)

Pump In-take Depth = b + (a-b)/2: 17.45 (ft)

Maximum Allowable Drawdown = (a-b)/8: 1.89 (ft)

Low-Flow Purge Rate: 0.25 (Lpm)*

Comments:

**Low-flow purge rate should be within range of instruments used but should not exceed 0.25 gpm. Drawdown should not exceed Maximum Allowable Drawdown.*

GROUNDWATER STABILIZATION PARAMETER RECORD

Time (24:00)	Cumulative Vol. gal or L	Temperature °C	pH	Conductivity µS or mS	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
1002	0	19.34	6.37	0.258	2.14	42	80.0	
1004	0.5	19.50	6.05	0.257	1.74	52	78.3	
1006	1.0	19.56	5.97	0.256	1.58	54	77.4	
1008	1.5	19.64	5.95	0.257	1.49	56	77.4	
Previous Stabilized Parameters								

PURGE COMPLETION RECORD X Low Flow & Parameters Stable ___ 3 Casing Volumes & Parameters Stable ___ 5 Casing Volumes

___ Other:

SAMPLE COLLECTION RECORD

Depth to Water at Sampling: 10.13 (ft)

Sample Collected Via: ___ Disp. Bailer ___ Dedicated Pump Tubing

X Disp. Pump Tubing Other:

Sample ID: MW-4 Sample Collection Time: 1012 (24:00)

Containers (#): 6 VOA (X preserved or ___ unpreserved) ___ Liter Amber

___ Other: ___ Other:

___ Other: ___ Other:

GEOCHEMICAL PARAMETERS

Parameter	Time	Measurement
DO (mg/L)		
Ferrous Iron (mg/L)		
Redox Potential (mV)		
Alkalinity (mg/L)		
Other:		
Other:		

Signature: _____

Revision: 3/15/2013

BROADBENT

GROUNDWATER SAMPLING DATA SHEET

Page ____ of ____

Project: BP 2035 Project No.: 06-[illegible]-610 Date: 6/4/2013

Field Representative: JB/AM

Well ID: MW-7 Start Time: _____ End Time: _____ Total Time (minutes): _____

PURGE EQUIPMENT ___ Disp. Bailer ___ 120V Pump X Flow Cell
X Disp. Tubing ___ 12V Pump X Peristaltic Pump Other/ID#:

WELL HEAD INTEGRITY (cap, lock, vault, etc.) Comments:
(Good) Improvement Needed *(circle one)*

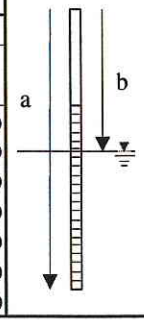
PURGING/SAMPLING METHOD Predetermined Well Volume (Low-Flow) Other: *(circle one)*

PREDETERMINED WELL VOLUME

Casing Diameter | Unit Volume (gal/ft) *(circle one)*

1" | (0.04) 1.25" | (0.08) 2" | (0.17) 3" | (0.38) Other:
4" | (0.66) 6" | (1.50) 8" | (2.60) 12" | (5.81) ____" | (____)

Total Well Depth (a): _____ (ft)
Initial Depth to Water (b): _____ (ft)
Water Column Height (WCH) = (a - b): _____ (ft)
Water Column Volume (WCV) = WCH x Unit Volume: _____ (gal)
Three Casing Volumes = WCV x 3: _____ (gal)
Five Casing Volumes = WCV x 5: _____ (gal)
Pump Depth (if pump used): _____ (ft)



LOW-FLOW

Previous Low-Flow Purge Rate: _____ (lpm)
Total Well Depth (a): 24.23 (ft)
Initial Depth to Water (b): 8.60 (ft)
Pump In-take Depth = b + (a-b)/2: 16.42 (ft)
Maximum Allowable Drawdown = (a-b)/8: 1.95 (ft)
Low-Flow Purge Rate: 0.25 (Lpm)*
Comments: _____

**Low-flow purge rate should be within range of instruments used but should not exceed 0.25 gpm. Drawdown should not exceed Maximum Allowable Drawdown.*

GROUNDWATER STABILIZATION PARAMETER RECORD

Time (24:00)	Cumulative Vol. gal or (L)	Temperature °C	pH	Conductivity µS or (mS)	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
1209	0	20.99	6.99	0.479	2.64	45	77.8	
1211	0.5	20.68	6.56	0.482	1.71	-7	79.3	
1213	1.0	20.59	6.51	0.482	1.47	-29	79.1	
1215	1.5	20.60	6.51	0.482	1.36	-38	78.9	
1217	2.0	20.66	6.51	0.483	1.31	-43	78.6	
Previous Stabilized Parameters								

PURGE COMPLETION RECORD X Low Flow & Parameters Stable ___ 3 Casing Volumes & Parameters Stable ___ 5 Casing Volumes
___ Other:

SAMPLE COLLECTION RECORD

Depth to Water at Sampling: 9.07 (ft)
Sample Collected Via: ___ Disp. Bailer ___ Dedicated Pump Tubing
X Disp. Pump Tubing Other:
Sample ID: MW-7 Sample Collection Time: 1220 (24:00)
Containers (#): 6 VOA (X preserved or ___ unpreserved) ___ Liter Amber
___ Other: ___ Other:
___ Other: ___ Other:

GEOCHEMICAL PARAMETERS

Parameter	Time	Measurement
DO (mg/L)		
Ferrous Iron (mg/L)		
Redox Potential (mV)		
Alkalinity (mg/L)		
Other:		
Other:		

Signature: _____

Revision: 3/15/2013

BROADBENT

GROUNDWATER SAMPLING DATA SHEET

Page ____ of ____

Project: BP 2035 Project No.: 06-88-610 Date: 6/4/2013

Field Representative: JR/AM

Well ID: MW-8 Start Time: ____ End Time: ____ Total Time (minutes): ____

PURGE EQUIPMENT ____ Disp. Bailer ____ 120V Pump X Flow Cell
X Disp. Tubing ____ 12V Pump X Peristaltic Pump Other/ID#:

WELL HEAD INTEGRITY (cap, lock, vault, etc.) Comments:
(Good) Improvement Needed *(circle one)*

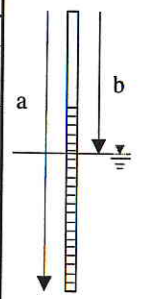
PURGING/SAMPLING METHOD Predetermined Well Volume (Low-Flow) Other: *(circle one)*

PREDETERMINED WELL VOLUME

Casing Diameter | Unit Volume (gal/ft) *(circle one)*

1" | (0.04) 1.25" | (0.08) 2" | (0.17) 3" | (0.38) Other:
4" | (0.66) 6" | (1.50) 8" | (2.60) 12" | (5.81) ____" | (____)

Total Well Depth (a): ____ (ft)
Initial Depth to Water (b): ____ (ft)
Water Column Height (WCH) = (a - b): ____ (ft)
Water Column Volume (WCV) = WCH x Unit Volume: ____ (gal)
Three Casing Volumes = WCV x 3: ____ (gal)
Five Casing Volumes = WCV x 5: ____ (gal)
Pump Depth (if pump used): ____ (ft)



LOW-FLOW

Previous Low-Flow Purge Rate: ____ (lpm)
Total Well Depth (a): 19.00 (ft)
Initial Depth to Water (b): 10.21 (ft)
Pump In-take Depth = b + (a-b)/2: 14.61 (ft)
Maximum Allowable Drawdown = (a-b)/8: 1.10 (ft)
Low-Flow Purge Rate: 0.25 (Lpm)*
Comments:

**Low-flow purge rate should be within range of instruments used but should not exceed 0.25 gpm. Drawdown should not exceed Maximum Allowable Drawdown.*

GROUNDWATER STABILIZATION PARAMETER RECORD

Time (24:00)	Cumulative Vol. gal or (L)	Temperature °C	pH	Conductivity µS or (mS)	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
1027	0	19.31	6.29	0.431	1.90	67	75.0	
1029	0.5	19.32	6.21	0.432	1.76	46	—	
1031	1.0	19.31	6.24	0.432	1.57	36	—	
1033	1.5	19.33	6.21	0.432	1.50	33	45.7	
Previous Stabilized Parameters								

PURGE COMPLETION RECORD X Low Flow & Parameters Stable ____ 3 Casing Volumes & Parameters Stable ____ 5 Casing Volumes
____ Other:

SAMPLE COLLECTION RECORD

Depth to Water at Sampling: 10.57 (ft)
Sample Collected Via: ____ Disp. Bailer ____ Dedicated Pump Tubing
X Disp. Pump Tubing Other:
Sample ID: MW-8 Sample Collection Time: 1035 (24:00)
Containers (#): 6 VOA (X preserved or ____ unpreserved) ____ Liter Amber
____ Other: ____ ____ Other: ____
____ Other: ____ ____ Other: ____

GEOCHEMICAL PARAMETERS

Parameter	Time	Measurement
DO (mg/L)		
Ferrous Iron (mg/L)		
Redox Potential (mV)		
Alkalinity (mg/L)		
Other:		
Other:		

Signature: ____

Revision: 3/15/2013

BROADBENT

GROUNDWATER SAMPLING DATA SHEET

Page ____ of ____

Project: ~~[illegible]~~ BP 2035 Project No.: 06-88-610 Date: 6-4-2013

Field Representative: JR/AM

Well ID: MW-9 Start Time: ____ End Time: ____ Total Time (minutes): ____

PURGE EQUIPMENT
X Disp. Tubing ___ Disp. Bailer ___ 12V Pump ___ 120V Pump X Peristaltic Pump X Flow Cell Other/ID#:

WELL HEAD INTEGRITY (cap, lock, vault, etc.) Comments:
Good / Improvement Needed *(circle one)*

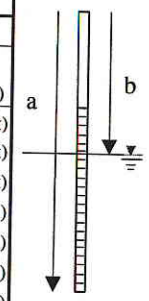
PURGING/SAMPLING METHOD Predetermined Well Volume / Low-Flow / Other: *(circle one)*

PREDETERMINED WELL VOLUME

Casing Diameter | Unit Volume (gal/ft) *(circle one)*

1" | (0.04) 1.25" | (0.08) 2" | (0.17) 3" | (0.38) Other: ___" | (___)
4" | (0.66) 6" | (1.50) 8" | (2.60) 12" | (5.81)

Total Well Depth (a): ____ (ft)
Initial Depth to Water (b): ____ (ft)
Water Column Height (WCH) = (a - b): ____ (ft)
Water Column Volume (WCV) = WCH x Unit Volume: ____ (gal)
Three Casing Volumes = WCV x 3: ____ (gal)
Five Casing Volumes = WCV x 5: ____ (gal)
Pump Depth (if pump used): ____ (ft)



LOW-FLOW

Previous Low-Flow Purge Rate: ____ (lpm)
Total Well Depth (a): 16.00 (ft)
Initial Depth to Water (b): 10.17 (ft)
Pump In-take Depth = b + (a-b)/2: 13.09 (ft)
Maximum Allowable Drawdown = (a-b)/8: 0.173 (ft)
Low-Flow Purge Rate: 0.25 (Lpm)*
Comments:

**Low-flow purge rate should be within range of instruments used but should not exceed 0.25 gpm. Drawdown should not exceed Maximum Allowable Drawdown.*

GROUNDWATER STABILIZATION PARAMETER RECORD

Time (24:00)	Cumulative Vol. gal or L	Temperature °C	pH	Conductivity µS or mS	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
0827	0	19.25	6.36	0.521	2.53	24	82.9	
0829	0.5	19.40	5.48	0.519	1.98	17	—	
0831	1.0	19.47	5.39	0.519	1.72	10	—	
0833	1.5	19.49	5.39	0.519	1.65	6	—	
0835	2.0	19.51	5.40	0.518	1.58	4	81.3	
Previous Stabilized Parameters								

PURGE COMPLETION RECORD X Low Flow & Parameters Stable ___ 3 Casing Volumes & Parameters Stable ___ 5 Casing Volumes ___ Other:

SAMPLE COLLECTION RECORD

Depth to Water at Sampling: 10.58 (ft)
Sample Collected Via: ___ Disp. Bailer ___ Dedicated Pump Tubing X Disp. Pump Tubing Other:
Sample ID: MW-9 Sample Collection Time: 0835 (24:00)
Containers (#): 6 VOA (X preserved or ___ unpreserved) ___ Liter Amber
___ Other: ___ Other:
___ Other: ___ Other:

GEOCHEMICAL PARAMETERS

Parameter	Time	Measurement
DO (mg/L)		
Ferrous Iron (mg/L)		
Redox Potential (mV)		
Alkalinity (mg/L)		
Other:		
Other:		

Signature: ____

Revision: 3/15/2013

BROADBENT

GROUNDWATER SAMPLING DATA SHEET

Page ____ of ____

Project: BP 2035 Project No.: 06-88-610 Date: 6/4/2013

Field Representative: JR/AM

Well ID: RW-1 Start Time: ____ End Time: ____ Total Time (minutes): ____

PURGE EQUIPMENT
___ Disp. Bailer ___ 120V Pump X Flow Cell
X Disp. Tubing ___ 12V Pump X Peristaltic Pump Other/ID#:

WELL HEAD INTEGRITY (cap, lock, vault, etc.) Comments:
(Good) Improvement Needed *(circle one)*

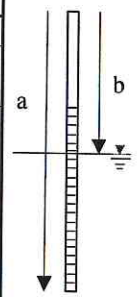
PURGING/SAMPLING METHOD Predetermined Well Volume (Low-Flow) Other: *(circle one)*

PREDETERMINED WELL VOLUME

Casing Diameter | Unit Volume (gal/ft) *(circle one)*

1" | (0.04)	1.25" | (0.08)	2" | (0.17)	3" | (0.38)	Other:
4" | (0.66)	6" | (1.50)	8" | (2.60)	12" | (5.81)	____" | (____)

Total Well Depth (a): ____ (ft)
Initial Depth to Water (b): ____ (ft)
Water Column Height (WCH) = (a - b): ____ (ft)
Water Column Volume (WCV) = WCH x Unit Volume: ____ (gal)
Three Casing Volumes = WCV x 3: ____ (gal)
Five Casing Volumes = WCV x 5: ____ (gal)
Pump Depth (if pump used): ____ (ft)



LOW-FLOW

Previous Low-Flow Purge Rate: ____ (lpm)
Total Well Depth (a): 22.56 (ft)
Initial Depth to Water (b): 10.10 (ft)
Pump In-take Depth = b + (a-b)/2: 16.33 (ft)
Maximum Allowable Drawdown = (a-b)/8: 1.56 (ft)
Low-Flow Purge Rate: 0.25 (Lpm)*
Comments:

**Low-flow purge rate should be within range of instruments used but should not exceed 0.25 gpm. Drawdown should not exceed Maximum Allowable Drawdown.*

GROUNDWATER STABILIZATION PARAMETER RECORD

Time (24:00)	Cumulative Vol. gal or L	Temperature °C	pH	Conductivity µS or mS	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
1049	0	19.59	6.65	0.417	2.19	63	91.5	
1051	0.5	19.91	6.28	0.416	1.67	75	2	
1053	1.0	19.92	6.24	0.417	1.45	70	—	
1055	1.5	19.97	6.17	0.416	1.37	61	—	
1057	2.0	19.99	6.16	0.414	1.31	57	90.6	
Previous Stabilized Parameters								

PURGE COMPLETION RECORD X Low Flow & Parameters Stable ___ 3 Casing Volumes & Parameters Stable ___ 5 Casing Volumes
___ Other:

SAMPLE COLLECTION RECORD

Depth to Water at Sampling: 10.30 (ft)
Sample Collected Via: ___ Disp. Bailer ___ Dedicated Pump Tubing
X Disp. Pump Tubing Other:
Sample ID: RW-1 Sample Collection Time: 1100 (24:00)
Containers (#): 6 VOA (X preserved or ___ unpreserved) ___ Liter Amber
___ Other: ___ Other:
___ Other: ___ Other:

GEOCHEMICAL PARAMETERS

Parameter	Time	Measurement
DO (mg/L)		
Ferrous Iron (mg/L)		
Redox Potential (mV)		
Alkalinity (mg/L)		
Other:		
Other:		

Signature: ____

Revision: 3/15/2013

BROADBENT

GROUNDWATER SAMPLING DATA SHEET

Page ____ of ____

Project: BP 2035 Project No.: 06-88-610 Date: 6/4/2013

Field Representative: JR/AM

Well ID: S-5 Start Time: _____ End Time: _____ Total Time (minutes): _____

PURGE EQUIPMENT ___ Disp. Bailer ___ 120V Pump X Flow Cell
X Disp. Tubing ___ 12V Pump X Peristaltic Pump Other/ID#:

WELL HEAD INTEGRITY (cap, lock, vault, etc.) Comments:
Good Improvement Needed *(circle one)*

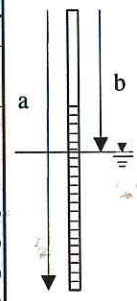
PURGING/SAMPLING METHOD Predetermined Well Volume Low-Flow Other: *(circle one)*

PREDETERMINED WELL VOLUME

Casing Diameter | Unit Volume (gal/ft) *(circle one)*

1" | (0.04)	1.25" | (0.08)	2" | (0.17)	3" | (0.38)	Other:
4" | (0.66)	6" | (1.50)	8" | (2.60)	12" | (5.81)	____" | (____)

Total Well Depth (a): _____ (ft)
Initial Depth to Water (b): _____ (ft)
Water Column Height (WCH) = (a - b): _____ (ft)
Water Column Volume (WCV) = WCH x Unit Volume: _____ (gal)
Three Casing Volumes = WCV x 3: _____ (gal)
Five Casing Volumes = WCV x 5: _____ (gal)
Pump Depth (if pump used): _____ (ft)



LOW-FLOW

Previous Low-Flow Purge Rate: _____ (lpm)
Total Well Depth (a): 15.67 (ft)
Initial Depth to Water (b): 9.55 (ft)
Pump In-take Depth = b + (a-b)/2: 12.61 (ft)
Maximum Allowable Drawdown = (a-b)/8: 0.77 (ft)
Low-Flow Purge Rate: 0.25 (Lpm)*
Comments: _____

**Low-flow purge rate should be within range of instruments used but should not exceed 0.25 gpm. Drawdown should not exceed Maximum Allowable Drawdown.*

GROUNDWATER STABILIZATION PARAMETER RECORD

Time (24:00)	Cumulative Vol. gal or L	Temperature °C	pH	Conductivity µS or mS	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
0928	0	19.13	6.31	0.250	2.05	31	219	
0930	0.5	19.54	6.05	0.247	1.73	6	—	
0932	1.0	19.61	6.01	0.240	1.55	2	—	
0934	1.5	19.74	5.99	0.236	1.46	-10	—	
0936	2.0	19.86	5.98	0.231	1.41	-12	128	
Previous Stabilized Parameters								

PURGE COMPLETION RECORD X Low Flow & Parameters Stable ___ 3 Casing Volumes & Parameters Stable ___ 5 Casing Volumes
___ Other:

SAMPLE COLLECTION RECORD

Depth to Water at Sampling: [redacted] (ft) 10.56
Sample Collected Via: ___ Disp. Bailer ___ Dedicated Pump Tubing
X Disp. Pump Tubing ___ Other:
Sample ID: S-5 Sample Collection Time: 0940 (24:00)
Containers (#): 6 VOA (X preserved or ___ unpreserved) ___ Liter Amber
___ Other: _____ ___ Other: _____
___ Other: _____ ___ Other: _____

GEOCHEMICAL PARAMETERS

Parameter	Time	Measurement
DO (mg/L)		
Ferrous Iron (mg/L)		
Redox Potential (mV)		
Alkalinity (mg/L)		
Other:		
Other:		

Signature: _____

Revision: 3/15/2013

APPENDIX C

LABORATORY REPORT
AND CHAIN-OF-CUSTODY DOCUMENTATION

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

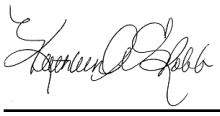
ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Irvine
17461 Derian Ave
Suite 100
Irvine, CA 92614-5817
Tel: (949)261-1022

TestAmerica Job ID: 440-48384-1
Client Project/Site: ARCO 2035, Albany

For:
Broadbent & Associates, Inc.
875 Cotting Lane
Suite G
Vacaville, California 95688

Attn: Kristene Tidwell



Authorized for release by:
6/18/2013 12:50:51 PM

Kathleen Robb, Project Manager II
kathleen.robb@testamericainc.com

Table of Contents

Sample Summary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2035, Albany

TestAmerica Job ID: 440-48384-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-48384-1	MW-4	Water	06/04/13 10:12	06/05/13 09:30
440-48384-2	RW-1	Water	06/04/13 11:00	06/05/13 09:30
440-48384-3	S-5	Water	06/04/13 09:40	06/05/13 09:30
440-48384-4	MW-7	Water	06/04/13 12:20	06/05/13 09:30
440-48384-5	MW-8	Water	06/04/13 10:35	06/05/13 09:30
440-48384-6	MW-9	Water	06/04/13 08:35	06/05/13 09:30

Job ID: 440-48384-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-48384-1

Comments
No additional comments.

Receipt
The samples were received on 6/5/2013 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 2.2º C.

GC/MS VOA
No analytical or quality issues were noted.

GC VOA
Method(s) 8015B: Surrogate recovery was outside control limits for the following sample: (CCV 440-110236/14), (CCV 440-110236/24).
BFB surrogate coeluted with TPH standard. Data not impacted.

No other analytical or quality issues were noted.

VOA Prep
No analytical or quality issues were noted.

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2035, Albany

TestAmerica Job ID: 440-48384-1

Client Sample ID: MW-4
Date Collected: 06/04/13 10:12
Date Received: 06/05/13 09:30

Lab Sample ID: 440-48384-1
Matrix: Water

Method: 8260B/5030B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.50		ug/L			06/13/13 11:22	1
1,2-Dichloroethane	ND		0.50		ug/L			06/13/13 11:22	1
Benzene	ND		0.50		ug/L			06/13/13 11:22	1
Ethanol	ND		150		ug/L			06/13/13 11:22	1
Ethylbenzene	ND		0.50		ug/L			06/13/13 11:22	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			06/13/13 11:22	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			06/13/13 11:22	1
m,p-Xylene	ND		1.0		ug/L			06/13/13 11:22	1
Methyl-t-Butyl Ether (MTBE)	**0.54**		0.50		ug/L			06/13/13 11:22	1
o-Xylene	ND		0.50		ug/L			06/13/13 11:22	1
Tert-amyl-methyl ether (TAME)	ND		0.50		ug/L			06/13/13 11:22	1
tert-Butyl alcohol (TBA)	ND		10		ug/L			06/13/13 11:22	1
Toluene	ND		0.50		ug/L			06/13/13 11:22	1
Xylenes, Total	ND		1.0		ug/L			06/13/13 11:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*110*		*80 - 120*		*06/13/13 11:22*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*06/13/13 11:22*	*1*
Toluene-d8 (Surr)	*112*		*80 - 120*		*06/13/13 11:22*	*1*

Method: 8015B/5030B - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	ND		50		ug/L			06/10/13 19:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*65 - 140*		*06/10/13 19:38*	*1*

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2035, Albany

TestAmerica Job ID: 440-48384-1

Client Sample ID: RW-1
Date Collected: 06/04/13 11:00
Date Received: 06/05/13 09:30

Lab Sample ID: 440-48384-2
Matrix: Water

Method: 8260B/5030B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.50		ug/L			06/13/13 12:52	1
1,2-Dichloroethane	ND		0.50		ug/L			06/13/13 12:52	1
Benzene	ND		0.50		ug/L			06/13/13 12:52	1
Ethanol	ND		150		ug/L			06/13/13 12:52	1
Ethylbenzene	ND		0.50		ug/L			06/13/13 12:52	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			06/13/13 12:52	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			06/13/13 12:52	1
m,p-Xylene	ND		1.0		ug/L			06/13/13 12:52	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50		ug/L			06/13/13 12:52	1
o-Xylene	ND		0.50		ug/L			06/13/13 12:52	1
Tert-amyl-methyl ether (TAME)	ND		0.50		ug/L			06/13/13 12:52	1
tert-Butyl alcohol (TBA)	ND		10		ug/L			06/13/13 12:52	1
Toluene	ND		0.50		ug/L			06/13/13 12:52	1
Xylenes, Total	ND		1.0		ug/L			06/13/13 12:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*110*		*80 - 120*		*06/13/13 12:52*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 120*		*06/13/13 12:52*	*1*
Toluene-d8 (Surr)	*114*		*80 - 120*		*06/13/13 12:52*	*1*

Method: 8015B/5030B - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	ND		50		ug/L			06/10/13 20:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*65 - 140*		*06/10/13 20:05*	*1*

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2035, Albany

TestAmerica Job ID: 440-48384-1

Client Sample ID: S-5
Date Collected: 06/04/13 09:40
Date Received: 06/05/13 09:30

Lab Sample ID: 440-48384-3
Matrix: Water

Method: 8260B/5030B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.50		ug/L			06/13/13 13:22	1
1,2-Dichloroethane	ND		0.50		ug/L			06/13/13 13:22	1
Benzene	**14**		0.50		ug/L			06/13/13 13:22	1
Ethanol	ND		150		ug/L			06/13/13 13:22	1
Ethylbenzene	**3.1**		0.50		ug/L			06/13/13 13:22	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			06/13/13 13:22	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			06/13/13 13:22	1
m,p-Xylene	**1.7**		1.0		ug/L			06/13/13 13:22	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50		ug/L			06/13/13 13:22	1
o-Xylene	**0.64**		0.50		ug/L			06/13/13 13:22	1
Tert-amyl-methyl ether (TAME)	ND		0.50		ug/L			06/13/13 13:22	1
tert-Butyl alcohol (TBA)	ND		10		ug/L			06/13/13 13:22	1
Toluene	**1.8**		0.50		ug/L			06/13/13 13:22	1
Xylenes, Total	**2.3**		1.0		ug/L			06/13/13 13:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*80 - 120*		*06/13/13 13:22*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 120*		*06/13/13 13:22*	*1*
Toluene-d8 (Surr)	*113*		*80 - 120*		*06/13/13 13:22*	*1*

Method: 8015B/5030B - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	**400**		50		ug/L			06/10/13 20:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*65 - 140*		*06/10/13 20:33*	*1*

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2035, Albany

TestAmerica Job ID: 440-48384-1

Client Sample ID: MW-7
Date Collected: 06/04/13 12:20
Date Received: 06/05/13 09:30

Lab Sample ID: 440-48384-4
Matrix: Water

Method: 8260B/5030B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.50		ug/L			06/13/13 13:51	1
1,2-Dichloroethane	ND		0.50		ug/L			06/13/13 13:51	1
Benzene	ND		0.50		ug/L			06/13/13 13:51	1
Ethanol	ND		150		ug/L			06/13/13 13:51	1
Ethylbenzene	ND		0.50		ug/L			06/13/13 13:51	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			06/13/13 13:51	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			06/13/13 13:51	1
m,p-Xylene	ND		1.0		ug/L			06/13/13 13:51	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50		ug/L			06/13/13 13:51	1
o-Xylene	ND		0.50		ug/L			06/13/13 13:51	1
Tert-amyl-methyl ether (TAME)	ND		0.50		ug/L			06/13/13 13:51	1
tert-Butyl alcohol (TBA)	ND		10		ug/L			06/13/13 13:51	1
Toluene	ND		0.50		ug/L			06/13/13 13:51	1
Xylenes, Total	ND		1.0		ug/L			06/13/13 13:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*80 - 120*		*06/13/13 13:51*	*1*
Dibromofluoromethane (Surr)	*108*		*80 - 120*		*06/13/13 13:51*	*1*
Toluene-d8 (Surr)	*114*		*80 - 120*		*06/13/13 13:51*	*1*

Method: 8015B/5030B - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	**99**		50		ug/L			06/10/13 21:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*121*		*65 - 140*		*06/10/13 21:01*	*1*

Client Sample ID: MW-8
Date Collected: 06/04/13 10:35
Date Received: 06/05/13 09:30

Lab Sample ID: 440-48384-5
Matrix: Water

Method: 8260B/5030B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.50		ug/L			06/13/13 14:21	1
1,2-Dichloroethane	ND		0.50		ug/L			06/13/13 14:21	1
Benzene	**70**		0.50		ug/L			06/13/13 14:21	1
Ethanol	ND		150		ug/L			06/13/13 14:21	1
Ethylbenzene	**34**		0.50		ug/L			06/13/13 14:21	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			06/13/13 14:21	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			06/13/13 14:21	1
m,p-Xylene	**1.6**		1.0		ug/L			06/13/13 14:21	1
Methyl-t-Butyl Ether (MTBE)	**2.0**		0.50		ug/L			06/13/13 14:21	1
o-Xylene	ND		0.50		ug/L			06/13/13 14:21	1
Tert-amyl-methyl ether (TAME)	ND		0.50		ug/L			06/13/13 14:21	1
tert-Butyl alcohol (TBA)	**26**		10		ug/L			06/13/13 14:21	1
Toluene	**1.1**		0.50		ug/L			06/13/13 14:21	1
Xylenes, Total	**1.6**		1.0		ug/L			06/13/13 14:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*80 - 120*		*06/13/13 14:21*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 120*		*06/13/13 14:21*	*1*
Toluene-d8 (Surr)	*114*		*80 - 120*		*06/13/13 14:21*	*1*

Method: 8015B/5030B - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	**260**		50		ug/L			06/10/13 21:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*65 - 140*		*06/10/13 21:28*	*1*

Client Sample ID: MW-9
Lab Sample ID: 440-48384-6
Date Collected: 06/04/13 08:35
Matrix: Water
Date Received: 06/05/13 09:30

Method: 8260B/5030B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.50		ug/L			06/13/13 14:51	1
1,2-Dichloroethane	ND		0.50		ug/L			06/13/13 14:51	1
Benzene	ND		0.50		ug/L			06/13/13 14:51	1
Ethanol	ND		150		ug/L			06/13/13 14:51	1
Ethylbenzene	ND		0.50		ug/L			06/13/13 14:51	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			06/13/13 14:51	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			06/13/13 14:51	1
m,p-Xylene	ND		1.0		ug/L			06/13/13 14:51	1
Methyl-t-Butyl Ether (MTBE)	**3.5**		0.50		ug/L			06/13/13 14:51	1
o-Xylene	ND		0.50		ug/L			06/13/13 14:51	1
Tert-amyl-methyl ether (TAME)	ND		0.50		ug/L			06/13/13 14:51	1
tert-Butyl alcohol (TBA)	ND		10		ug/L			06/13/13 14:51	1
Toluene	ND		0.50		ug/L			06/13/13 14:51	1
Xylenes, Total	ND		1.0		ug/L			06/13/13 14:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*80 - 120*		*06/13/13 14:51*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 120*		*06/13/13 14:51*	*1*
Toluene-d8 (Surr)	*111*		*80 - 120*		*06/13/13 14:51*	*1*

Method: 8015B/5030B - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	ND		50		ug/L			06/10/13 21:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*65 - 140*		*06/10/13 21:56*	*1*

Method Summary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2035, Albany

TestAmerica Job ID: 440-48384-1

Method	Method Description	Protocol	Laboratory
8260B/5030B	Volatile Organic Compounds (GC/MS)	SW846	TAL IRV
8015B/5030B	Gasoline Range Organics (GC)	SW846	TAL IRV

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Client Sample ID: MW-4 — **Lab Sample ID: 440-48384-1**
Date Collected: 06/04/13 10:12 — **Matrix: Water**
Date Received: 06/05/13 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B/5030B		1	10 mL	10 mL	111069	06/13/13 11:22	SS	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	110236	06/10/13 19:38	IM	TAL IRV

Client Sample ID: RW-1 — **Lab Sample ID: 440-48384-2**
Date Collected: 06/04/13 11:00 — **Matrix: Water**
Date Received: 06/05/13 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B/5030B		1	10 mL	10 mL	111069	06/13/13 12:52	SS	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	110236	06/10/13 20:05	IM	TAL IRV

Client Sample ID: S-5 — **Lab Sample ID: 440-48384-3**
Date Collected: 06/04/13 09:40 — **Matrix: Water**
Date Received: 06/05/13 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B/5030B		1	10 mL	10 mL	111069	06/13/13 13:22	SS	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	110236	06/10/13 20:33	IM	TAL IRV

Client Sample ID: MW-7 — **Lab Sample ID: 440-48384-4**
Date Collected: 06/04/13 12:20 — **Matrix: Water**
Date Received: 06/05/13 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B/5030B		1	10 mL	10 mL	111069	06/13/13 13:51	SS	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	110236	06/10/13 21:01	IM	TAL IRV

Client Sample ID: MW-8 — **Lab Sample ID: 440-48384-5**
Date Collected: 06/04/13 10:35 — **Matrix: Water**
Date Received: 06/05/13 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B/5030B		1	10 mL	10 mL	111069	06/13/13 14:21	SS	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	110236	06/10/13 21:28	IM	TAL IRV

Client Sample ID: MW-9 — **Lab Sample ID: 440-48384-6**
Date Collected: 06/04/13 08:35 — **Matrix: Water**
Date Received: 06/05/13 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B/5030B		1	10 mL	10 mL	111069	06/13/13 14:51	SS	TAL IRV

Lab Chronicle

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2035, Albany

TestAmerica Job ID: 440-48384-1

Client Sample ID: MW-9
Date Collected: 06/04/13 08:35
Date Received: 06/05/13 09:30

Lab Sample ID: 440-48384-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	110236	06/10/13 21:56	IM	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Method: 8260B/5030B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-111069/4
Matrix: Water
Analysis Batch: 111069

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.50		ug/L			06/13/13 09:53	1
1,2-Dichloroethane	ND		0.50		ug/L			06/13/13 09:53	1
Benzene	ND		0.50		ug/L			06/13/13 09:53	1
Ethanol	ND		150		ug/L			06/13/13 09:53	1
Ethylbenzene	ND		0.50		ug/L			06/13/13 09:53	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			06/13/13 09:53	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			06/13/13 09:53	1
m,p-Xylene	ND		1.0		ug/L			06/13/13 09:53	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50		ug/L			06/13/13 09:53	1
o-Xylene	ND		0.50		ug/L			06/13/13 09:53	1
Tert-amyl-methyl ether (TAME)	ND		0.50		ug/L			06/13/13 09:53	1
tert-Butyl alcohol (TBA)	ND		10		ug/L			06/13/13 09:53	1
Toluene	ND		0.50		ug/L			06/13/13 09:53	1
Xylenes, Total	ND		1.0		ug/L			06/13/13 09:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*80 - 120*		*06/13/13 09:53*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 120*		*06/13/13 09:53*	*1*
Toluene-d8 (Surr)	*113*		*80 - 120*		*06/13/13 09:53*	*1*

Lab Sample ID: LCS 440-111069/5
Matrix: Water
Analysis Batch: 111069

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,2-Dibromoethane (EDB)			25.0	25.5		ug/L		102	75 - 125		
1,2-Dichloroethane			25.0	25.1		ug/L		100	60 - 140		
Benzene			25.0	25.0		ug/L		100	70 - 120		
Ethanol			250	278		ug/L		111	40 - 155		
Ethylbenzene			25.0	25.3		ug/L		101	75 - 125		
Ethyl-t-butyl ether (ETBE)			25.0	26.9		ug/L		108	65 - 135		
Isopropyl Ether (DIPE)			25.0	27.3		ug/L		109	60 - 135		
m,p-Xylene			50.0	53.8		ug/L		108	75 - 125		
Methyl-t-Butyl Ether (MTBE)			25.0	26.5		ug/L		106	60 - 135		
o-Xylene			25.0	25.7		ug/L		103	75 - 125		
Tert-amyl-methyl ether (TAME)			25.0	28.1		ug/L		112	60 - 135		
tert-Butyl alcohol (TBA)			125	134		ug/L		107	70 - 135		
Toluene			25.0	26.2		ug/L		105	70 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*107*		*80 - 120*
Dibromofluoromethane (Surr)	*102*		*80 - 120*
Toluene-d8 (Surr)	*113*		*80 - 120*

Method: 8260B/5030B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-48384-1 MS
Matrix: Water
Analysis Batch: 111069

Client Sample ID: MW-4
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dibromoethane (EDB)	ND		25.0	26.6		ug/L		107	70 - 130
1,2-Dichloroethane	ND		25.0	26.2		ug/L		105	60 - 140
Benzene	ND		25.0	25.4		ug/L		102	65 - 125
Ethanol	ND		250	250		ug/L		100	40 - 155
Ethylbenzene	ND		25.0	24.9		ug/L		100	65 - 130
Ethyl-t-butyl ether (ETBE)	ND		25.0	27.5		ug/L		110	60 - 135
Isopropyl Ether (DIPE)	ND		25.0	27.8		ug/L		111	60 - 140
m,p-Xylene	ND		50.0	50.9		ug/L		102	65 - 130
Methyl-t-Butyl Ether (MTBE)	0.54		25.0	29.2		ug/L		115	55 - 145
o-Xylene	ND		25.0	24.8		ug/L		99	65 - 125
Tert-amyl-methyl ether (TAME)	ND		25.0	29.2		ug/L		117	60 - 140
tert-Butyl alcohol (TBA)	ND		125	122		ug/L		98	65 - 140
Toluene	ND		25.0	26.8		ug/L		107	70 - 125

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*108*		*80 - 120*
Dibromofluoromethane (Surr)	*104*		*80 - 120*
Toluene-d8 (Surr)	*114*		*80 - 120*

Lab Sample ID: 440-48384-1 MSD
Matrix: Water
Analysis Batch: 111069

Client Sample ID: MW-4
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2-Dibromoethane (EDB)	ND		25.0	27.3		ug/L		109	70 - 130	2	25
1,2-Dichloroethane	ND		25.0	25.8		ug/L		103	60 - 140	1	20
Benzene	ND		25.0	25.3		ug/L		101	65 - 125	0	20
Ethanol	ND		250	266		ug/L		107	40 - 155	6	30
Ethylbenzene	ND		25.0	25.8		ug/L		103	65 - 130	3	20
Ethyl-t-butyl ether (ETBE)	ND		25.0	27.8		ug/L		111	60 - 135	1	25
Isopropyl Ether (DIPE)	ND		25.0	28.0		ug/L		112	60 - 140	0	25
m,p-Xylene	ND		50.0	52.4		ug/L		105	65 - 130	3	25
Methyl-t-Butyl Ether (MTBE)	0.54		25.0	29.1		ug/L		114	55 - 145	0	25
o-Xylene	ND		25.0	25.8		ug/L		103	65 - 125	4	20
Tert-amyl-methyl ether (TAME)	ND		25.0	29.3		ug/L		117	60 - 140	0	30
tert-Butyl alcohol (TBA)	ND		125	128		ug/L		103	65 - 140	5	25
Toluene	ND		25.0	26.7		ug/L		107	70 - 125	0	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*106*		*80 - 120*
Dibromofluoromethane (Surr)	*101*		*80 - 120*
Toluene-d8 (Surr)	*111*		*80 - 120*

Method: 8015B/5030B - Gasoline Range Organics (GC)

Lab Sample ID: MB 440-110236/3
Matrix: Water
Analysis Batch: 110236

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	ND		50		ug/L			06/10/13 12:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*65 - 140*		*06/10/13 12:57*	*1*

Lab Sample ID: LCS 440-110236/2
Matrix: Water
Analysis Batch: 110236

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
GRO (C4-C12)			800	703		ug/L		88	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*106*		*65 - 140*

Lab Sample ID: 440-48395-A-2 MS
Matrix: Water
Analysis Batch: 110236

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
GRO (C4-C12)	340		800	985		ug/L		81	65 - 140		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*87*		*65 - 140*

Lab Sample ID: 440-48395-A-2 MSD
Matrix: Water
Analysis Batch: 110236

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
GRO (C4-C12)	340		800	955		ug/L		77	65 - 140	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*81*		*65 - 140*

GC/MS VOA

Analysis Batch: 111069

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-48384-1	MW-4	Total/NA	Water	8260B/5030B	
440-48384-1 MS	MW-4	Total/NA	Water	8260B/5030B	
440-48384-1 MSD	MW-4	Total/NA	Water	8260B/5030B	
440-48384-2	RW-1	Total/NA	Water	8260B/5030B	
440-48384-3	S-5	Total/NA	Water	8260B/5030B	
440-48384-4	MW-7	Total/NA	Water	8260B/5030B	
440-48384-5	MW-8	Total/NA	Water	8260B/5030B	
440-48384-6	MW-9	Total/NA	Water	8260B/5030B	
LCS 440-111069/5	Lab Control Sample	Total/NA	Water	8260B/5030B	
MB 440-111069/4	Method Blank	Total/NA	Water	8260B/5030B	

GC VOA

Analysis Batch: 110236

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-48384-1	MW-4	Total/NA	Water	8015B/5030B	
440-48384-2	RW-1	Total/NA	Water	8015B/5030B	
440-48384-3	S-5	Total/NA	Water	8015B/5030B	
440-48384-4	MW-7	Total/NA	Water	8015B/5030B	
440-48384-5	MW-8	Total/NA	Water	8015B/5030B	
440-48384-6	MW-9	Total/NA	Water	8015B/5030B	
440-48395-A-2 MS	Matrix Spike	Total/NA	Water	8015B/5030B	
440-48395-A-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8015B/5030B	
LCS 440-110236/2	Lab Control Sample	Total/NA	Water	8015B/5030B	
MB 440-110236/3	Method Blank	Total/NA	Water	8015B/5030B	

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2035, Albany

TestAmerica Job ID: 440-48384-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-13
Arizona	State Program	9	AZ0671	10-13-13
California	LA Cty Sanitation Districts	9	10256	01-31-14
California	NELAP	9	1108CA	01-31-14
California	State Program	9	2706	06-30-14
Guam	State Program	9	Cert. No. 12.002r	01-28-14 *
Hawaii	State Program	9	N/A	01-31-14
Nevada	State Program	9	CA015312007A	07-31-13
New Mexico	State Program	6	N/A	01-31-14
Northern Mariana Islands	State Program	9	MP0002	01-31-14
Oregon	NELAP	10	4005	09-12-13
USDA	Federal		P330-09-00080	06-06-14
USEPA UCMR	Federal	1	CA01531	01-31-15

* Expired certification is currently pending renewal and is considered valid.

440-48384 Chain of Custody

bp rm Laboratory Management Program LaMP Chain of Custody Record

Page ____ of ____

BP Site Node Path: 06-88-610 | Req Due Date (mm/dd/yy): ____ | Rush TAT: Yes ____ No ____

BP Facility No: 2035 | Lab Work Order Number: 440 - 48384

Lab Name: Test America	Facility Address: 1001 San Pablo Ave	Consultant/Contractor: Broadbent and Associates, Inc.
Lab Address: 17461 Derian Suite #100, Irvine, CA 92641	City, State, ZIP Code: Albany, CA 95926	Consultant/Contractor Project No: 06-88-610
Lab PM: Kathleen Robb	Lead Regulatory Agency: ACEH	Address: 875 Cotting Lane, Suite G, Vacaville, CA 95688
Lab Phone: 949-261-1022	California Global ID No.: T0600100081	Consultant/Contractor PM: Kristene Tidwell
Lab Shipping Accnt: 1103-6633-7	Enfos Proposal No: 005TK-0004 / WR245699	Phone: 707-455-7290 Fax: 707-455-7295
Lab Bottle Order No:	Accounting Mode: Provision x OOC-BU ____ OOC-RM ____	Email EDD To: ktidwell@broadbentinc.com and to lab.enfosdoc@bp.com
Other Info:	Stage: Execute (40) Activity: Project Spend (80)	Invoice To: BP x Contractor ____
BP Project Manager (PM): Shannon Couch		
BP PM Phone: 925-275-3804		
BP PM Email: shannon.couch@bp.com		

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	Matrix: Is this location a well?	No. Containers / Preservative: Total Number of Container	Unpreserved	H2SO4	HNO3	HCl	Methanol		Requested Analyses: GRO by 8015M	BTEX/5 FO + EDB by 8260B	1,2-DCA & Ethanol by 8260B							
	MW-4	6/4/2013	1012		x		y	6				x			x	x	x							
	RW-1	6/4/2013	1100		x		y	6				x			x	x	x							
	S-5	6/4/2013	0940		x		y	6				x			x	x	x							
	MW-7	6/4/2013	1220		x		y	6				x			x	x	x							
	MW-8	6/4/2013	1035		x		y	6				x			x	x	x							
	MW-9	6/4/2013	0835		x		y	6				x			x	x	x							
	TB-2035-06042013	6/4/13	1230		x		n	2				x												

Report Type & QC Level: Standard x / Full Data Package ____

Comments: Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.

On Hold

Sampler's Name: Alex Martinez & James Ramos	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: Broadbent and Associates		6/4/13	1300			
Shipment Method: Fed Ex Ship Date: 6/4/2013		6/4/13	1500			
Shipment Tracking No: 8025 2539 5205					6/5/13	9:30

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 2.5/2.2 F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

Login Sample Receipt Checklist

Client: Broadbent & Associates, Inc.

Job Number: 440-48384-1

Login Number: 48384

List Source: TestAmerica Irvine

List Number: 1

Creator: Escalante, Maria

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	ALEX MARTINEZ & JAMES RAMOS
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

APPENDIX D

GEOTRACKER UPLOAD CONFIRMATION RECEIPTS

STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER ESI

UPLOADING A EDF FILE

SUCCESS

Processing is complete. No errors were found!
Your file has been successfully submitted!

Submittal Type:	**EDF**
Report Title:	**2Q13 GW Monitoring**
Report Type:	**Monitoring Report - Semi-Annually**
Facility Global ID:	**T0600100081**
Facility Name:	**ARCO #02035**
File Name:	**440-48384-1_18 Jun 13 1337_EDF.zip**
Organization Name:	**Broadbent & Associates, Inc.**
Username:	**BROADBENT-C**
IP Address:	**216.241.56.58**
Submittal Date/Time:	**7/11/2013 4:25:25 PM**
Confirmation Number:	**2977448940**

VIEW QC REPORT

VIEW DETECTIONS REPORT