

Atlantic Richfield Company

Shannon Couch
Operations Project Manager

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RECEIVED

By Alameda County Environmental Health at 9:32 am, Apr 29, 2013

April 26, 2013

Re: First Quarter 2013 Monitoring Report
Atlantic Richfield Company Station #374
6407 Telegraph Avenue, Oakland, California
ACEH Case #RO0000078

"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

April 26, 2013

Project No. 06-88-602

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

Attn.: Ms. Shannon Couch


Re: First Quarter 2013 Monitoring Report, Atlantic Richfield Company Station #374,
6407 Telegraph Avenue, Oakland, Alameda County, California
ACEH Case #RO0000078

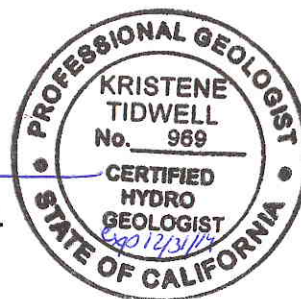
Dear Ms. Couch

Attached is the First Quarter 2013 Monitoring Report for Atlantic Richfield Company (a BP affiliated company) for Station #374 located at 6407 Telegraph Avenue, Oakland, California (Site). Should you have questions regarding the work performed or results obtained, please do not hesitate to contact us at (707) 455-7290.

Sincerely,
BROADBENT & ASSOCIATES, INC.


James Ramos
Senior Staff Engineer


Kristene Tidwell, P.G., C.H.G.
Senior Geologist



enclosures

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

**FIRST QUARTER 2013
MONITORING REPORT
ATLANTIC RICHFIELD COMPANY STATION #374
OAKLAND, CALIFORNIA**

Broadbent & Associates, Inc. (Broadbent) is pleased to present this *First Quarter 2013 Monitoring Report* on behalf of Atlantic Richfield Company (ARC, a BP affiliated company) for Station #374 located at 6407 Telegraph Avenue, Oakland, Alameda County, California (the 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:	Station #374 / 6407 Telegraph Avenue, Oakland, California
Client Project Manager / Title:	Ms. Shannon Couch / Operations Project Manager
Broadbent Contact:	Ms. Kristene Tidwell, P.G., C.HG.
Broadbent Project No.:	06-88-602
Primary Regulatory Agency / ID No.:	ACEH / Case #RO0000078
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 (First Quarter 2013):

1. Submitted *Fourth Quarter 2012 Status Report* on January 21, 2013.
2. Broadbent conducted First Quarter 2013 groundwater monitoring and sampling event on February 14, 2013.

WORK SCHEDULED FOR NEXT QUARTER (Second Quarter 2013):

1. Submit *First Quarter 2013 Monitoring Report* (contained herein).
2. No sampling or environmental activities are scheduled at the Site during Second Quarter 2013.

QUARTERLY MONITORING PLAN SUMMARY:

Groundwater level gauging:	MW-1 through MW-9	(Semi-Annually, 1Q & 3Q)
Groundwater sample collection:	MW-1, MW-2, MW-4, MW-7, MW8, and MW-9	(Semi-Annually, 1Q & 3Q)
	MW-3, MW-5, and MW-6	(Annually, 3Q)

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:	4.38 (MW-7) to 7.54 (MW-5)	(ft below TOC)
Gradient direction:	Southwest	(compass direction)
Gradient magnitude:	0.04	(ft/ft)
Average change in elevation:	0.47	(ft since last measurement)

Laboratory Analytical Data

Summary:

Analytical results are as follows:

- GRO was detected in four wells with a maximum concentration of 7,200 µg/L in well MW-4
- Benzene was detected in four wells with a maximum

- concentration of 1,400 µg/L in well MW-4
 - MTBE was detected in five wells with a maximum concentration of 240 µg/L in well MW-8
 - TAME was detected in two wells with a maximum concentration of 5.2 µg/L in well MW-8
 - Ethylbenzene was detected in two wells with a maximum concentration of 390 µg/L in well MW-4
 - Total Xylenes were detected in three wells with a maximum concentration of 700 µg/L in well MW-4
 - Toluene was detected in one well with a concentration of 150 µg/L
-

ACTIVITIES CONDUCTED & RESULTS:

First Quarter 2013 groundwater monitoring was conducted on February 14, 2013 in accordance with the monitoring plan summary presented above. No irregularities were noted during water level gauging with the exception of well MW-6 was not able to be gauged due to a car being parked over it. Collected depth to water measurements ranged from 4.38 ft at MW-7 to 7.54 ft at MW-5. Resulting groundwater surface elevations ranged from 149.36 ft at MW-5 to 160.42 ft at MW-7. Groundwater elevations are summarized in Table 1. Water level elevations yielded a potentiometric groundwater gradient to the southwest at approximately 0.04 ft/ft. Historical groundwater gradient direction and magnitude data are summarized in Table 3. Field methods used during groundwater monitoring are provided in Appendix A. Field data sheets are included in Appendix B.

Groundwater samples collected from MW-1, MW-2, MW-4, and MW-7 through MW-9 were submitted to Test America Laboratories, Inc. (Test America) 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 encountered during analysis of the samples. Laboratory analytical report and chain of custody record are provided in Appendix C.

Results of this sampling event are included in the laboratory analytical data summary presented above. These results indicate that the highest overall petroleum concentrations are present in well MW-4. The well concentrations of benzene and GRO have increased compared to the last two sampling events. Other petroleum hydrocarbons have indicated a slight increase since the last sampling event. The remaining analytes detected this quarter appear to be consistent with previous data. Further discussion of these results is presented below.

DISCUSSION:

Review of historical groundwater gradient data indicates that the gradient measured during First Quarter 2013 monitoring is consistent with predominant measurements observed historically at the Site. During First Quarter 2013, groundwater elevations increased an average of 0.47 feet across the Site relative to measurements collected during Third Quarter 2012.

Review of historical groundwater results indicate that well MW-4 contains the highest residual concentrations of petroleum compounds due its location near the former Underground Storage Tank (UST). The petroleum concentrations in MW-4 have increased from the Third Quarter 2012 sampling event, possibly due to the fact that groundwater levels in this well were measured higher than since 2008. There are five wells up gradient from MW-4 for which the detected concentrations appear to remain consistent with previous sampling events except for Well MW-8 up gradient to well MW-4. This well reached historical maximum concentrations in GRO, Benzene, and MTBE with concentrations of

720 µg/L, 350µg/L, and 240µg/L, respectively, also possibly due to the rise in groundwater levels as noted above for well MW-4.

Groundwater levels in many Site wells are currently above the top of their respective screen intervals. Ideally, groundwater samples would not be collected from wells where screens are flooded. In general, wells with flooded screens are older wells, where water levels over time may have risen. Additionally, these wells only periodically have flooded screens. For example, well MW-4 is one of the oldest Site wells, and has elevated residual petroleum concentrations.

The screen in this well is periodically flooded, with the concentrations noted during events when the screen is not flooded are comparable to those where the screen is flooded. Additionally, data from wells with lower hydrocarbon concentrations is comparable to site wells without flooded screens. For these reasons, the data reported herein appears valid despite the occurrence of flooded screens at the Site.

RECOMMENDATIONS:

Due to the elevated petroleum hydrocarbon concentrations in well MW-4, which is located near a potential offsite receptor of the adjacent apartment building, *Soil Vapor Investigation Work Plan* dated November 20, 2012 which recommended collected soil vapor samples near the property line in order to assess potential vapor intrusion impacts to the offsite building. This Work Plan was rejected by the ACEH. Currently, a Work Plan Addendum is in progress to install soil vapor points near the apartment complex and onsite, evaluate the building foundation type, and conduct a utility survey. Due to the potential risk to the offsite building, we recommend performing this work as soon as possible. No other changes to the monitoring schedule are recommended at this time.

LIMITATIONS:

The findings presented in this report are based upon observations of field personnel, points investigated, results of laboratory tests performed by Test America 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 Atlantic Richfield Company (a BP affiliated company). 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 and Analytical Summary Map

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

Table 2: Summary of Fuel Additives Analytical Data

Table 3: Historical Groundwater Gradient - Direction and Magnitude

Appendix A: Field Methods

Appendix B: Field Data Sheets and Non-Hazardous Waste Data Form

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	gal:	gallons
ARC:	Atlantic Richfield Company	GRO:	Gasoline Range Organics (C6-12)
BAI:	Broadbent & Associates, Inc.	LNAPL:	Light Non-Aqueous Phase Liquid
BTEX:	Benzene, Toluene, Ethylbenzene, Total Xylenes	MTBE:	Methyl Tertiary Butyl Ether
1,2-DCA:	1,2-Dichloroethane	TAME:	Tert-Amyl Methyl Ether
DIPE:	Di-Isopropyl Ether	TBA:	Tert-Butyl Alcohol
EDB:	1,2-Dibromomethane	TOC:	top of casing
ft/ft:	feet per foot	µg/L:	micrograms per liter
UST:	Underground Storage Tank		

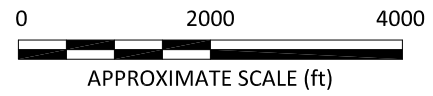
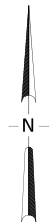
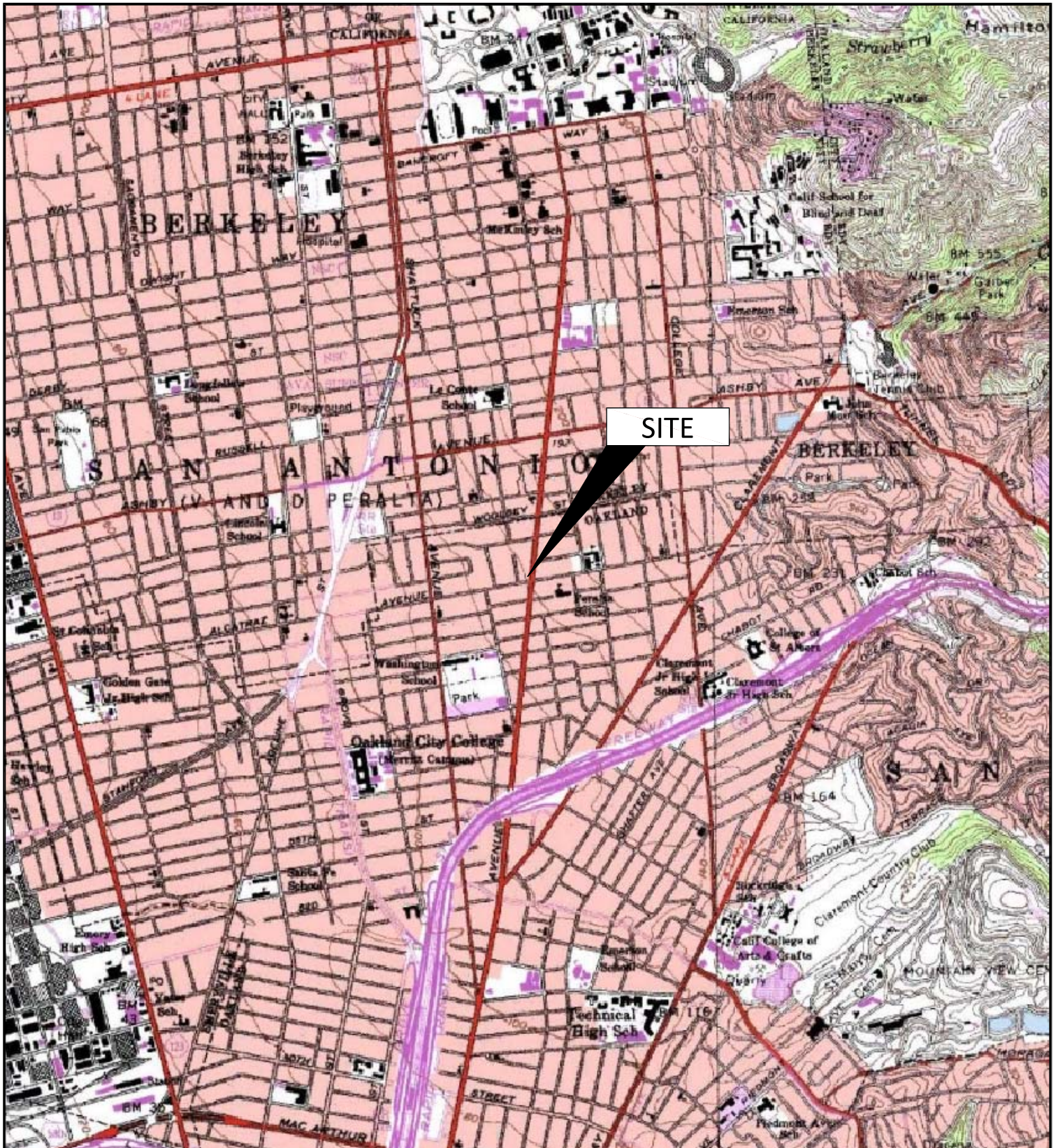


IMAGE SOURCE: USGS

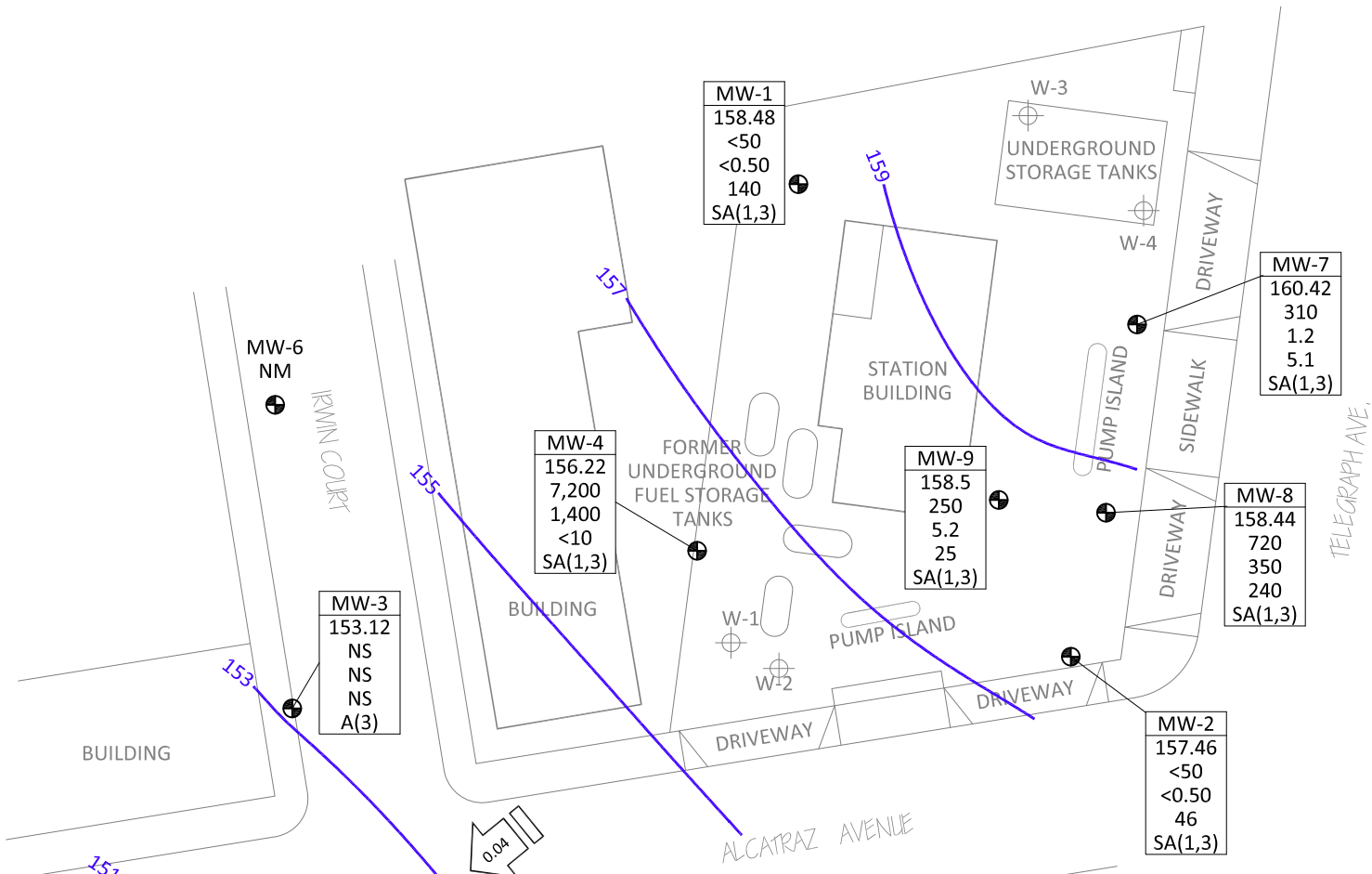
BROADBENT
 875 Cotting Lane, Suite G
 Vacaville, California 95688
 Project No.: 06-88-602 Date: 3/8/2013

Station #374
 6407 Telegraph Ave.
 Oakland, California

Site Location Map

Drawing

1



MW-5
149.36
NS
NS
NS
A(3)

MW-6
NM

MW-3
153.12
NS
NS
NS
A(3)

MW-4
156.22
7,200
1,400
<10
SA(1,3)

MW-1
158.48
<50
<0.50
140
SA(1,3)

MW-9
158.5
250
5.2
25
SA(1,3)

MW-2
157.46
<50
<0.50
46
SA(1,3)

MW-8
158.44
720
350
240
SA(1,3)

MW-7
160.42
310
1.2
5.1
SA(1,3)

LEGEND

- Monitor Well Location
- Tank Pit Monitor Well Location
- Groundwater Elevation Contour (Feet Above Site Datum)
- Groundwater Gradient (ft/ft)
- A(3) Sampled Annually - Third Quarter
- SA(1,3) Sampled Semi-Annually - First and Third Quarter

WELL	Well Designation
ELEV	Groundwater Elevation (ft)
GRO	GRO, Benzene, and MTBE
BZ	Concentrations (µg/L)
MTBE	
A/SA/Q	Sampling Frequency

- NM Not Monitored
- NS Not Sampled

NOTE: SITE MAP ADAPTED FROM IT CORPORATION FIGURES. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-1															
6/20/2000	--	158.91	7.00	27.00	6.86	152.05	--	--	--	--	--	--	--	--	
9/28/2000	--		7.00	27.00	7.50	151.41	--	--	--	--	--	--	--	--	
12/17/2000	--		7.00	27.00	7.49	151.42	--	--	--	--	--	--	--	--	
3/23/2001	--		7.00	27.00	5.90	153.01	<50	<0.5	<0.5	<0.5	<0.5	2,710	--	--	
6/21/2001	--		7.00	27.00	7.45	151.46	--	--	--	--	--	--	--	--	
9/23/2001	--		7.00	27.00	8.46	150.45	--	--	--	--	--	--	--	--	
12/31/2001	--		7.00	27.00	5.50	153.41	--	--	--	--	--	--	--	--	
3/21/2002	--		7.00	27.00	4.71	154.20	<5,000	<50	<50	<50	<50	2,000	--	--	
4/17/2002	--		7.00	27.00	5.54	153.37	--	--	--	--	--	--	--	--	
8/12/2002	--		7.00	27.00	7.77	151.14	--	--	--	--	--	--	--	--	
12/6/2002	--		7.00	27.00	7.65	151.26	--	--	--	--	--	--	--	--	
1/29/2003	--		7.00	27.00	5.88	153.03	--	--	--	--	--	--	--	--	b
5/23/2003	--		7.00	27.00	5.62	153.29	<10,000	<100	<100	<100	<100	1,600	1.3	7.1	
9/4/2003	--		7.00	27.00	7.85	151.06	--	--	--	--	--	--	--	--	
11/20/2003	P		7.00	27.00	8.17	150.74	1,600	<10	<10	<10	<10	1,500	1.7	6.7	
02/02/2004	P	164.57	7.00	27.00	6.71	157.86	--	--	--	--	--	--	1.0	--	f
05/14/2004	P		7.00	27.00	7.08	157.49	<2,500	<25	<25	<25	<25	1,200	1.4	6.6	
09/02/2004	P		7.00	27.00	8.12	156.45	580	<5.0	<5.0	<5.0	<5.0	660	3.8	6.7	
11/04/2004	P		7.00	27.00	7.38	157.19	1,700	<10	<10	<10	<10	580	6.0	6.5	
02/08/2005	P		7.00	27.00	6.60	157.97	<1,000	<10	<10	<10	<10	610	0.71	6.5	
05/09/2005	P		7.00	27.00	6.84	157.73	540	<5.0	<5.0	<5.0	5.5	620	3.12	6.6	e
08/11/2005	P		7.00	27.00	7.36	157.21	540	<2.5	<2.5	<2.5	4.0	390	0.8	6.6	
11/18/2005	P		7.00	27.00	8.02	156.55	350	<2.5	<2.5	<2.5	<2.5	340	2.6	6.7	e
02/16/2006	P		7.00	27.00	6.44	158.13	350	<2.5	<2.5	<2.5	<2.5	340	1.6	6.7	e
5/30/2006	P		7.00	27.00	6.87	157.70	270	<2.5	<2.5	<2.5	<2.5	420	4.73	6.4	
8/24/2006	P		7.00	27.00	7.75	156.82	95	<5.0	<5.0	<5.0	<5.0	180	0.65	6.9	
11/1/2006	P		7.00	27.00	8.28	156.29	120	<5.0	<5.0	<5.0	<5.0	220	1.65	7.07	
2/7/2007	NP		7.00	27.00	7.40	157.17	120	<5.0	<5.0	<5.0	<5.0	190	1.88	7.45	e

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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)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-1 Cont.															
5/8/2007	P	164.57	7.00	27.00	6.50	158.07	<500	<5.0	<5.0	<5.0	<5.0	420	1.21	6.94	
8/8/2007	NP		7.00	27.00	8.17	156.40	82	<0.50	<0.50	<0.50	<0.50	110	1.16	7.00	e
11/14/2007	NP		7.00	27.00	8.01	156.56	170	<2.5	<2.5	<2.5	<2.5	210	1.92	6.49	
2/22/2008	P		7.00	27.00	6.00	158.57	<50	<0.50	<0.50	<0.50	<0.50	250	2.57	6.65	
5/24/2008	NP		7.00	27.00	7.58	156.99	<50	<5.0	<5.0	<5.0	<5.0	380	2.28	6.81	
8/21/2008	NP		7.00	27.00	8.60	155.97	<50	<2.5	<2.5	<2.5	<2.5	170	2.16	6.98	
11/19/2008	NP		7.00	27.00	8.88	155.69	<50	<0.50	<0.50	<0.50	<0.50	30	2.12	7.27	
2/23/2009	P		7.00	27.00	6.40	158.17	78	<2.5	<2.5	<2.5	<2.5	240	2.19	6.03	
5/14/2009	P		7.00	27.00	6.67	157.90	53	<0.50	<0.50	<0.50	<0.50	200	1.75	6.69	
8/20/2009	NP		7.00	27.00	8.25	156.32	150	<2.0	<2.0	<2.0	<2.0	170	2.14	6.25	i (GRO)
2/19/2010	P		7.00	27.00	6.07	158.50	<50	<0.50	<0.50	<0.50	<0.50	170	0.92	6.66	
8/10/2010	NP		7.00	27.00	7.58	156.99	<50	<2.5	<2.5	<2.5	<2.5	230	3.86	7.1	
12/16/2010	P	164.45	7.00	27.00	6.64	157.81	<50	<2.0	<2.0	<2.0	<2.0	140	1.20	6.86	j
2/14/2011	NP		7.00	27.00	7.10	157.35	<50	<2.5	<2.5	<2.5	<2.5	170	1.18	6.7	
5/20/2011	--		7.00	27.00	6.38	158.07	--	--	--	--	--	--	--	--	
8/15/2011	NP		7.00	27.00	7.24	157.21	<50	<2.5	<2.5	<2.5	<2.5	130	2.54	6.9	
2/2/2012	P		7.00	27.00	7.32	157.13	<50	<1.0	<1.0	<1.0	<1.0	66	1.01	7.1	
8/9/2012	P		7.00	27.00	6.69	157.76	<50	<0.50	<0.50	<0.50	<1.0	170	1.65	6.99	
2/14/2013	P		7.00	27.00	5.97	158.48	<50	<0.50	<0.50	<0.50	<1.0	140	1.74	7.20	
MW-2															
6/20/2000	--	157.92	7.00	27.00	7.67	150.25	--	--	--	--	--	--	--	--	
9/28/2000	--		7.00	27.00	8.51	149.41	--	--	--	--	--	--	--	--	
12/17/2000	--		7.00	27.00	8.14	149.78	--	--	--	--	--	--	--	--	
3/23/2001	--		7.00	27.00	7.21	150.71	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
6/21/2001	--		7.00	27.00	7.99	149.93	--	--	--	--	--	--	--	--	
9/23/2001	--		7.00	27.00	8.52	149.40	--	--	--	--	--	--	--	--	
12/31/2001	--		7.00	27.00	6.01	151.91	--	--	--	--	--	--	--	--	
3/21/2002	--		7.00	27.00	5.95	151.97	<50	<0.5	<0.5	<0.5	<0.5	45	--	--	

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

ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-2 Cont.															
4/17/2002	--	157.92	7.00	27.00	6.45	151.47	--	--	--	--	--	--	--	--	
8/12/2002	--		7.00	27.00	8.08	149.84	--	--	--	--	--	--	--	--	
12/6/2002	--		7.00	27.00	8.29	149.63	--	--	--	--	--	--	--	--	
1/29/2003	--		7.00	27.00	7.22	150.70	--	--	--	--	--	--	--	--	b
5/23/2003	--		7.00	27.00	6.85	151.07	<50	<0.50	<0.50	<0.50	<0.50	55	1.4	7.2	
9/4/2003	--		7.00	27.00	7.94	149.98	--	--	--	--	--	--	--	--	
11/20/2003	--		7.00	27.00	8.05	149.87	--	--	--	--	--	--	--	--	
02/02/2004	P	163.46	7.00	27.00	7.00	156.46	74	<0.50	<0.50	<0.50	<0.50	37	1.1	8.9	f
05/14/2004	--		7.00	27.00	7.97	155.49	--	--	--	--	--	--	--	--	
09/02/2004	P		7.00	27.00	8.19	155.27	<250	<2.5	<2.5	<2.5	<2.5	67	2.7	6.9	
11/04/2004	--		7.00	27.00	7.54	155.92	--	--	--	--	--	--	--	--	
02/08/2005	P		7.00	27.00	6.72	156.74	<50	<0.50	<0.50	<0.50	<0.50	30	0.86	6.7	
05/09/2005	--		7.00	27.00	7.16	156.30	--	--	--	--	--	--	--	--	
08/11/2005	P		7.00	27.00	7.85	155.61	<50	<0.50	<0.50	<0.50	<0.50	35	1.0	6.6	
11/18/2005	--		7.00	27.00	8.23	155.23	--	--	--	--	--	--	--	--	
02/16/2006	P		7.00	27.00	6.82	156.64	<50	<0.50	<0.50	<0.50	<0.50	39	1.3	7.0	
5/30/2006	--		7.00	27.00	7.23	156.23	--	--	--	--	--	--	--	--	
8/24/2006	P		7.00	27.00	8.00	155.46	60	<0.50	<0.50	<0.50	<0.50	25	0.90	6.8	
11/1/2006	--		7.00	27.00	8.38	155.08	--	--	--	--	--	--	--	--	
2/7/2007	NP		7.00	27.00	7.88	155.58	<50	0.50	<0.50	<0.50	<0.50	7.2	0.94	7.39	
5/8/2007	--		7.00	27.00	7.28	156.18	--	--	--	--	--	--	--	--	
8/8/2007	NP		7.00	27.00	8.38	155.08	88	3.2	<0.50	<0.50	<0.50	7.2	0.94	7.75	
11/14/2007	--		7.00	27.00	8.10	155.36	--	--	--	--	--	--	--	--	
2/22/2008	P		7.00	27.00	6.75	156.71	<50	<0.50	<0.50	<0.50	<0.50	24	2.18	7.02	
5/24/2008	--		7.00	27.00	7.98	155.48	--	--	--	--	--	--	--	--	
8/21/2008	NP		7.00	27.00	8.58	154.88	<50	2.6	<0.50	<0.50	<0.50	4.9	2.20	7.11	
11/19/2008	--		7.00	27.00	8.66	154.80	--	--	--	--	--	--	--	--	
2/23/2009	P		7.00	27.00	6.67	156.79	74	1.0	<0.50	<0.50	<0.50	24	2.25	6.16	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-2 Cont.															
5/14/2009	--	163.46	7.00	27.00	7.02	156.44	--	--	--	--	--	--	--	--	
8/20/2009	NP		7.00	27.00	8.41	155.05	82	2.4	<0.50	<0.50	<0.50	8.4	2.19	6.37	
2/19/2010	NP		7.00	27.00	7.36	156.10	<50	<0.50	<0.50	<0.50	<0.50	22	0.81	6.90	
8/10/2010	NP		7.00	27.00	7.69	155.77	<50	<0.50	<0.50	<0.50	<0.50	23	2.40	7.67	
12/16/2010	P	163.49	7.00	27.00	7.12	156.37	<50	<0.50	<0.50	<0.50	<0.50	17	0.69	7.06	j
2/14/2011	NP		7.00	27.00	7.35	156.14	<50	<0.50	<0.50	<0.50	<0.50	11	0.87	7.0	
5/20/2011	--		7.00	27.00	7.02	156.47	--	--	--	--	--	--	--	--	
8/15/2011	NP		7.00	27.00	7.62	155.87	<50	<0.50	<0.50	<0.50	<0.50	1.7	1.45	7.1	
2/2/2012	P		7.00	27.00	7.56	155.93	<50	<0.50	<0.50	<0.50	<0.50	1.8	0.85	7.3	
8/9/2012	P		7.00	27.00	6.31	157.18	<50	<0.50	<0.50	<0.50	<1.0	73	1.28	7.15	
2/14/2013	P		7.00	27.00	6.03	157.46	<50	<0.50	<0.50	<0.50	<1.0	46	1.71	7.48	
MW-3															
6/20/2000	--	153.64	7.00	27.00	6.42	147.22	<50	<0.5	<0.5	<0.5	<1.0	<10	--	--	
9/28/2000	--		7.00	27.00	7.31	146.33	--	--	--	--	--	--	--	--	
12/17/2000	--		7.00	27.00	6.45	147.19	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
3/23/2001	--		7.00	27.00	6.01	147.63	--	--	--	--	--	--	--	--	
6/21/2001	--		7.00	27.00	6.80	146.84	110	5.5	<0.5	5.4	4.1	2.5	--	--	
9/23/2001	--		7.00	27.00	7.32	146.32	--	--	--	--	--	--	--	--	
12/31/2001	--		7.00	27.00	4.48	149.16	<50	<0.5	<0.5	<0.5	<0.5	4.9	--	--	
3/21/2002	--		7.00	27.00	4.36	149.28	--	--	--	--	--	--	--	--	
4/17/2002	--		7.00	27.00	5.31	148.33	<50	<0.5	<0.5	<0.5	<0.5	8.7	--	--	
8/12/2002	--		7.00	27.00	7.00	146.64	--	--	--	--	--	--	--	--	
12/6/2002	--		7.00	27.00	7.32	146.32	<50	<0.5	<0.5	<0.5	<0.5	6.2	1.4	6.7	
1/29/2003	--		7.00	27.00	6.07	147.57	--	--	--	--	--	--	--	--	b
5/23/2003	--		7.00	27.00	6.45	147.19	<50	<0.50	<0.50	<0.50	<0.50	1.6	0.9	7.7	
9/4/2003	--		7.00	27.00	6.93	146.71	--	--	--	--	--	--	--	--	c
11/20/2003	--		7.00	27.00	7.04	146.60	--	--	--	--	--	--	--	--	c
02/02/2004	--	159.21	7.00	27.00	5.92	153.29	--	--	--	--	--	--	--	--	f

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

ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-3 Cont.															
05/14/2004	--	159.21	7.00	27.00	7.52	151.69	--	--	--	--	--	--	--	--	
09/02/2004	P		7.00	27.00	7.19	152.02	<50	<0.50	<0.50	<0.50	<0.50	6.5	9.3	8.9	
11/04/2004	--		7.00	27.00	6.40	152.81	--	--	--	--	--	--	--	--	
02/08/2005	--		7.00	27.00	6.01	153.20	--	--	--	--	--	--	--	--	
05/09/2005	--		7.00	27.00	6.74	152.47	--	--	--	--	--	--	--	--	
08/11/2005	P		7.00	27.00	6.77	152.44	<50	<0.50	<0.50	<0.50	<0.50	11	1.9	6.5	
11/18/2005	--		7.00	27.00	7.83	151.38	--	--	--	--	--	--	--	--	
02/16/2006	--		7.00	27.00	7.26	151.95	--	--	--	--	--	--	--	--	
5/30/2006	--		7.00	27.00	5.82	153.39	--	--	--	--	--	--	--	--	
8/24/2006	P		7.00	27.00	7.00	152.21	<50	<0.50	<0.50	<0.50	<0.50	7.6	1.15	6.4	
11/1/2006	--		7.00	27.00	7.50	151.71	--	--	--	--	--	--	--	--	
2/7/2007	--		7.00	27.00	6.90	152.31	--	--	--	--	--	--	--	--	
5/8/2007	--		7.00	27.00	5.95	153.26	--	--	--	--	--	--	--	--	
8/8/2007	NP		7.00	27.00	7.47	151.74	<50	<0.50	<0.50	<0.50	<0.50	1.2	1.21	6.93	
11/14/2007	--		7.00	27.00	7.05	152.16	--	--	--	--	--	--	--	--	
2/22/2008	--		7.00	27.00	5.50	153.71	--	--	--	--	--	--	--	--	
5/24/2008	--		7.00	27.00	7.03	152.18	--	--	--	--	--	--	--	--	
8/21/2008	NP		7.00	27.00	7.80	151.41	<50	<0.50	<0.50	<0.50	<0.50	3.1	2.11	6.84	
11/19/2008	--		7.00	27.00	7.69	151.52	--	--	--	--	--	--	--	--	
2/23/2009	--		7.00	27.00	7.28	151.93	--	--	--	--	--	--	--	--	
5/14/2009	--		7.00	27.00	6.17	153.04	--	--	--	--	--	--	--	--	
8/20/2009	NP		7.00	27.00	7.38	151.83	<50	<0.50	<0.50	<0.50	<0.50	2.2	2.05	7.01	
2/19/2010	--		7.00	27.00	5.31	153.90	--	--	--	--	--	--	--	--	
8/10/2010	NP		7.00	27.00	7.12	152.09	<50	<0.50	<0.50	<0.50	<0.50	1.6	1.27	7.33	
12/16/2010	--		7.00	27.00	5.65	153.56	--	--	--	--	--	--	--	--	j
2/14/2011	--		7.00	27.00	6.20	153.01	--	--	--	--	--	--	--	--	
5/20/2011	--		7.00	27.00	5.77	153.44	--	--	--	--	--	--	--	--	
8/15/2011	P		7.00	27.00	6.41	152.80	<50	<0.50	<0.50	<0.50	<0.50	1.2	1.04	7.0	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-3 Cont.															
2/2/2012	--	159.21	7.00	27.00	6.34	152.87	--	--	--	--	--	--	--	--	
8/9/2012	P		7.00	27.00	6.62	152.59	<50	<0.50	<0.50	<0.50	<1.0	2.0	1.16	6.71	
2/14/2013	--		7.00	27.00	6.09	153.12	--	--	--	--	--	--	--	--	
MW-4															
6/20/2000	--	156.53	7.00	27.00	7.50	149.03	20,000	5,100	440	1,000	1,700	<250	--	--	c
9/28/2000	--		7.00	27.00	8.20	148.33	--	--	--	--	--	--	--	--	
12/17/2000	--		7.00	27.00	8.11	148.42	4,320	1,240	<20	27.2	249	<100	--	--	
3/23/2001	--		7.00	27.00	6.69	149.84	--	--	--	--	--	--	--	--	
6/21/2001	--		7.00	27.00	8.01	148.52	2,800	470	16	19	160	130	--	--	
9/23/2001	--		7.00	27.00	8.91	147.62	--	--	--	--	--	--	--	--	
12/31/2001	--		7.00	27.00	4.42	152.11	4,600	1,500	100	160	210	160	--	--	
3/21/2002	--		7.00	27.00	4.98	151.55	--	--	--	--	--	--	--	--	
4/17/2002	--		7.00	27.00	6.23	150.30	7,100	2,200	110	290	450	<250	--	--	
8/12/2002	--		7.00	27.00	8.24	148.29	--	--	--	--	--	--	--	--	
12/6/2002	--		7.00	27.00	8.42	148.11	1,500	410	6.8	20	29	43	1.1	6.7	a
1/29/2003	--		7.00	27.00	7.20	149.33	--	--	--	--	--	--	--	--	b
5/23/2003	--		7.00	27.00	7.18	149.35	<5,000	1,300	89	210	260	<50	1.4	6.9	
9/4/2003	--		7.00	27.00	8.15	148.38	--	--	--	--	--	--	--	--	c
11/20/2003	--		7.00	27.00	8.73	147.80	--	--	--	--	--	--	--	--	c
02/02/2004	P	163.25	7.00	27.00	6.25	157.00	980	280	21	29	38	29	1.4	10.6	c, f, g
05/14/2004	--		7.00	27.00	8.38	154.87	--	--	--	--	--	--	--	--	g
09/02/2004	P		7.00	27.00	8.36	154.89	260	11	<1.0	5.5	14	28	2.4	7.4	g
11/04/2004	--		7.00	27.00	7.71	155.54	--	--	--	--	--	--	--	--	c, g
02/08/2005	P		7.00	27.00	6.27	156.98	7,500	1,700	320	480	920	45	0.65	6.5	g
05/09/2005	--		7.00	27.00	5.90	157.35	--	--	--	--	--	--	--	--	g
08/11/2005	P		7.00	27.00	7.96	155.29	3,100	1,100	41	160	110	32	0.6	6.5	g
11/18/2005	--		7.00	27.00	8.57	154.68	--	--	--	--	--	--	--	--	g
02/16/2006	P		7.00	27.00	6.28	156.97	9,400	1,800	130	600	420	35	0.5	6.8	g

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ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-4 Cont.															
5/30/2006	--	162.47	7.00	27.00	7.02	155.45	--	--	--	--	--	--	--	--	g
8/24/2006	P		7.00	27.00	8.26	154.21	3,600	1,400	21	110	70	39	1.00	6.8	
11/1/2006	--		7.00	27.00	8.67	153.80	--	--	--	--	--	--	--	--	
2/7/2007	NP		7.00	27.00	8.02	154.45	3,100	570	17	170	110	67	0.95	7.07	
5/8/2007	--		7.00	27.00	7.03	155.44	--	--	--	--	--	--	--	--	
8/8/2007	NP		7.00	27.00	8.60	153.87	2,900	630	22	67	57	72	0.93	6.79	
11/14/2007	--		7.00	27.00	8.53	153.94	--	--	--	--	--	--	--	--	
2/22/2008	P		7.00	27.00	6.25	156.22	3,900	880	39	180	92	70	2.31	6.87	
5/24/2008	--		7.00	27.00	--	--	--	--	--	--	--	--	--	--	d
8/21/2008	NP		7.00	27.00	8.96	153.51	3,700	1,100	26	85	130	53	2.26	6.80	
11/19/2008	--		7.00	27.00	9.20	153.27	--	--	--	--	--	--	--	--	
2/23/2009	P		7.00	27.00	6.35	156.12	3,000	220	9.1	23	19	39	2.21	6.51	
5/14/2009	--		7.00	27.00	7.00	155.47	--	--	--	--	--	--	--	--	
8/20/2009	NP		7.00	27.00	8.05	154.42	5,700	1,100	35	110	100	23	2.17	6.81	
2/19/2010	P		7.00	27.00	5.71	156.76	12,000	1,200	120	230	390	<5.0	0.81	6.70	i
8/10/2010	NP		7.00	27.00	7.59	154.88	9,700	1,500	120	400	400	<20	3.81	6.8	
12/16/2010	P	162.48	7.00	27.00	6.83	155.65	15,000	1,800	82	270	210	<25	0.49	6.81	j
2/14/2011	NP		7.00	27.00	7.33	155.15	260	<0.50	<0.50	2.7	11	13	0.80	7.10	
5/20/2011	--		7.00	27.00	6.89	155.59	--	--	--	--	--	--	--	--	
8/15/2011	P		7.00	27.00	7.59	154.89	8,600	2,100	86	250	210	<12	1.02	7.0	l
2/2/2012	P		7.00	27.00	7.71	154.77	4,600	1,000	34	23	33	<12	0.60	7.2	
8/9/2012	P		7.00	27.00	6.57	155.91	3,200	660	44	53	57	<5.0	1.09	7.05	
2/14/2013	P		7.00	27.00	6.26	156.22	7,200	1,400	150	390	700	<10	1.20	7.51	
MW-5															
6/20/2000	--	151.33	10.00	23.00	7.84	143.49	<50	<0.5	<0.5	<0.5	<1.0	<10	--	--	
9/28/2000	--		10.00	23.00	8.37	142.96	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
12/17/2000	--		10.00	23.00	8.36	142.97	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
3/23/2001	--		10.00	23.00	7.55	143.78	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	

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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)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-5 Cont.															
6/21/2001	--	151.33	10.00	23.00	8.20	143.13	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
9/23/2001	--		10.00	23.00	8.68	142.65	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
12/31/2001	--		10.00	23.00	7.57	143.76	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
3/21/2002	--		10.00	23.00	6.12	145.21	<50	<0.5	<0.5	<0.5	<0.5	3.2	--	--	
4/17/2002	--		10.00	23.00	6.61	144.72	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
8/12/2002	--		10.00	23.00	8.14	143.19	<50	<0.5	<0.5	<0.5	<0.5	<2.5	4.1	7.6	
12/6/2002	--		10.00	23.00	8.65	142.68	<50	<0.5	<0.5	<0.5	<0.5	<2.5	1.1	6.8	
1/29/2003	--		10.00	23.00	7.22	144.11	<50	<0.5	<0.5	<0.5	<0.5	<0.50	1	6.6	b
5/23/2003	--		10.00	23.00	7.31	144.02	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	6.6	
9/4/2003	--		10.00	23.00	9.50	141.83	<50	<0.50	<0.50	<0.50	<0.50	<0.50	3.2	6.7	
11/20/2003	--		10.00	23.00	8.31	143.02	--	--	--	--	--	--	--	--	
02/02/2004	--		10.00	23.00	6.92	144.41	--	--	--	--	--	--	--	--	c, f, h
05/14/2004	--		10.00	23.00	8.56	142.77	--	--	--	--	--	--	--	--	h
09/02/2004	P		10.00	23.00	8.79	142.54	<50	<0.50	<0.50	<0.50	<0.50	<0.50	3.5	6.8	h
11/04/2004	--		10.00	23.00	8.33	143.00	--	--	--	--	--	--	--	--	c, h
02/08/2005	--		10.00	23.00	7.28	144.05	--	--	--	--	--	--	--	--	h
05/09/2005	--		10.00	23.00	8.19	143.14	--	--	--	--	--	--	--	--	h
08/11/2005	P		10.00	23.00	8.39	142.94	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	6.6	h
11/18/2005	--		10.00	23.00	11.25	140.08	--	--	--	--	--	--	--	--	h
02/16/2006	--		10.00	23.00	9.22	142.11	--	--	--	--	--	--	--	--	h
5/30/2006	--		10.00	23.00	7.52	143.81	--	--	--	--	--	--	--	--	h
8/24/2006	P		10.00	23.00	7.95	143.38	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.60	6.6	
11/1/2006	--		10.00	23.00	8.32	143.01	--	--	--	--	--	--	--	--	
2/7/2007	--		10.00	23.00	8.25	143.08	--	--	--	--	--	--	--	--	
5/8/2007	--		10.00	23.00	7.60	143.73	--	--	--	--	--	--	--	--	
8/8/2007	P		10.00	23.00	8.12	143.21	<50	<0.50	<0.50	<0.50	<0.50	<0.50	3.26	7.31	
11/14/2007	--		10.00	23.00	9.10	142.23	--	--	--	--	--	--	--	--	
2/22/2008	--		10.00	23.00	7.48	143.85	--	--	--	--	--	--	--	--	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-5 Cont.															
5/24/2008	--	151.33	10.00	23.00	8.12	143.21	--	--	--	--	--	--	--	--	
8/21/2008	P		10.00	23.00	8.65	142.68	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.14	6.54	
11/19/2008	--		10.00	23.00	11.86	139.47	--	--	--	--	--	--	--	--	
2/23/2009	--		10.00	23.00	10.20	141.13	--	--	--	--	--	--	--	--	
5/14/2009	--		10.00	23.00	9.63	141.70	--	--	--	--	--	--	--	--	
8/20/2009	P		10.00	23.00	8.52	142.81	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.01	6.47	
2/19/2010	--		10.00	23.00	--	--	--	--	--	--	--	--	--	--	d
8/10/2010	P		10.00	23.00	8.05	143.28	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.15	7.1	
12/16/2010	--	156.90	10.00	23.00	8.10	148.80	--	--	--	--	--	--	--	--	j
2/14/2011	--		10.00	23.00	--	--	--	--	--	--	--	--	--	--	d
5/20/2011	--		10.00	23.00	--	--	--	--	--	--	--	--	--	--	d
8/15/2011	P		10.00	23.00	7.91	148.99	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.46	7.4	
2/2/2012	--		10.00	23.00	8.08	148.82	--	--	--	--	--	--	--	--	
8/9/2012	P		10.00	23.00	8.02	148.88	<50	<0.50	<0.50	<0.50	<1.0	<0.50	1.25	6.99	
2/14/2013	--		10.00	23.00	7.54	149.36	--	--	--	--	--	--	--	--	
MW-6															
6/20/2000	--	153.84	5.00	15.00	4.79	149.05	--	--	--	--	--	--	--	--	
9/28/2000	--		5.00	15.00	5.39	148.45	--	--	--	--	--	--	--	--	
12/17/2000	--		5.00	15.00	4.71	149.13	--	--	--	--	--	--	--	--	
3/23/2001	--		5.00	15.00	4.69	149.15	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
6/21/2001	--		5.00	15.00	5.22	148.62	--	--	--	--	--	--	--	--	
9/23/2001	--		5.00	15.00	5.40	148.44	--	--	--	--	--	--	--	--	
12/31/2001	--		5.00	15.00	3.95	149.89	--	--	--	--	--	--	--	--	
3/21/2002	--		5.00	15.00	2.94	150.90	<50	<0.5	<0.5	<0.5	<0.5	5.2	--	--	
4/17/2002	--		5.00	15.00	5.11	148.73	--	--	--	--	--	--	--	--	
8/12/2002	--		5.00	15.00	5.23	148.61	--	--	--	--	--	--	--	--	
12/6/2002	--		5.00	15.00	5.29	148.55	--	--	--	--	--	--	--	--	
1/29/2003	--		5.00	15.00	4.79	149.05	--	--	--	--	--	--	--	--	b

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-6 Cont.															
5/23/2003	--	153.84	5.00	15.00	4.31	149.53	<50	<0.50	<0.50	<0.50	<0.50	9.4	1	6.7	
09/04/03	--		5.00	15.00	--	--	--	--	--	--	--	--	--	--	d
11/20/2003	--		5.00	15.00	6.31	147.53	--	--	--	--	--	--	--	--	
02/02/2004	--	159.41	5.00	15.00	4.78	154.63	--	--	--	--	--	--	--	--	f
05/14/2004	--		5.00	15.00	6.29	153.12	--	--	--	--	--	--	--	--	
09/02/2004	--		5.00	15.00	5.79	153.62	--	--	--	--	--	--	--	--	d
11/04/2004	--		5.00	15.00	--	--	--	--	--	--	--	--	--	--	d
02/08/2005	--		5.00	15.00	5.13	154.28	--	--	--	--	--	--	--	--	
05/09/2005	--		5.00	15.00	4.52	154.89	--	--	--	--	--	--	--	--	
08/11/2005	P		5.00	15.00	5.02	154.39	<50	<0.50	<0.50	<0.50	<0.50	7.9	2.1	6.6	
11/18/2005	--		5.00	15.00	6.31	153.10	--	--	--	--	--	--	--	--	
02/16/2006	--		5.00	15.00	4.24	155.17	--	--	--	--	--	--	--	--	
5/30/2006	--		5.00	15.00	4.45	154.96	--	--	--	--	--	--	--	--	
8/24/2006	P		5.00	15.00	5.18	154.23	<50	<0.50	<0.50	<0.50	<0.50	12	3.4	6.8	
11/1/2006	--		5.00	15.00	6.05	153.36	--	--	--	--	--	--	--	--	
2/7/2007	--		5.00	15.00	5.00	154.41	--	--	--	--	--	--	--	--	
5/8/2007	--		5.00	15.00	4.30	155.11	--	--	--	--	--	--	--	--	
8/8/2007	NP		5.00	15.00	5.51	153.90	<50	<0.50	<0.50	<0.50	<0.50	0.57	2.94	6.87	
11/14/2007	--		5.00	15.00	5.38	154.03	--	--	--	--	--	--	--	--	
2/22/2008	--		5.00	15.00	4.70	154.71	--	--	--	--	--	--	--	--	
5/24/2008	--		5.00	15.00	5.25	154.16	--	--	--	--	--	--	--	--	
8/21/2008	NP		5.00	15.00	6.14	153.27	<50	<0.50	<0.50	<0.50	<0.50	1.9	1.99	7.13	
11/19/2008	--		5.00	15.00	5.94	153.47	--	--	--	--	--	--	--	--	
2/23/2009	--		5.00	15.00	5.00	154.41	--	--	--	--	--	--	--	--	
5/14/2009	--		5.00	15.00	4.60	154.81	--	--	--	--	--	--	--	--	
8/20/2009	NP		5.00	15.00	5.65	153.76	<50	<0.50	<0.50	<0.50	<0.50	2.0	1.98	6.81	
2/19/2010	--		5.00	15.00	7.28	152.13	--	--	--	--	--	--	--	--	
8/10/2010	NP		5.00	15.00	5.02	154.39	<50	<0.50	<0.50	<0.50	<0.50	4.3	1.99	6.93	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-6 Cont.															
12/16/2010	--	159.41	5.00	15.00	4.50	154.91	--	--	--	--	--	--	--	--	j
2/14/2011	--		5.00	15.00	4.80	154.61	--	--	--	--	--	--	--	--	
5/20/2011	--		5.00	15.00	4.29	155.12	--	--	--	--	--	--	--	--	
8/15/2011	P		5.00	15.00	4.52	154.89	<50	<0.50	<0.50	<0.50	<0.50	2.2	1.55	7.1	
2/2/2012	--		5.00	15.00	--	--	--	--	--	--	--	--	--	--	d
8/9/2012	P		5.00	15.00	4.65	154.76	<50	<0.50	<0.50	<0.50	<1.0	3.6	1.14	6.89	
2/14/2013	--		5.00	15.00	--	--	--	--	--	--	--	--	--	--	d
MW-7															
12/16/2010	P	164.80	5.00	20.00	6.52	158.28	700	<0.50	<0.50	15	32	62	--	7.08	j
2/14/2011	NP		5.00	20.00	6.77	158.03	7,100	1,700	98	260	210	<20	1.02	6.8	
5/20/2011	NP		5.00	20.00	5.84	158.96	570	<0.50	<0.50	37	25	4.6	1.66	6.7	1 (GRO)
8/15/2011	P		5.00	20.00	6.96	157.84	420	<1.0	<1.0	49	6.7	14	0.58	6.9	
2/2/2012	P		5.00	20.00	7.15	157.65	<50	<0.50	<0.50	<0.50	<0.50	6.2	0.45	7.5	
8/9/2012	P		5.00	20.00	5.05	159.75	85	<0.50	<0.50	5.8	1.1	7.0	1.04	7.25	
2/14/2013	P		5.00	20.00	4.38	160.42	310	1.2	<0.50	1.6	6.3	5.1	1.31	7.64	
MW-8															
12/16/2010	P	164.14	5.00	20.00	6.85	157.29	520	43	<0.50	4.1	21	150	0.46	7.12	j
2/14/2011	NP		5.00	20.00	7.30	156.84	<50	<2.0	<2.0	<2.0	<2.0	110	1.07	6.7	
5/20/2011	NP		5.00	20.00	6.88	157.26	<50	<2.0	<2.0	<2.0	<2.0	88	1.35	6.5	
8/15/2011	P		5.00	20.00	6.00	158.14	<50	5.2	<1.0	9.7	<1.0	57	0.51	6.7	
2/2/2012	P		5.00	20.00	7.57	156.57	<50	<0.50	<0.50	<0.50	<0.50	3.9	0.68	7.1	
8/9/2012	P		5.00	20.00	6.08	158.06	110	67	<0.50	<0.50	<1.0	150	1.16	6.98	
2/14/2013	P		5.00	20.00	5.70	158.44	720	350	<2.0	<2.0	<4.0	240	1.23	7.40	
MW-9															
12/16/2010	P	163.77	5.00	20.00	6.63	157.14	330	18	<0.50	11	38	390	0.57	6.97	j
2/14/2011	NP		5.00	20.00	6.85	156.92	<50	<4.0	<4.0	<4.0	<4.0	270	0.98	6.9	

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

ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ESL - DW							100	1.0	40	30	20	5.0			
ESL - NDW							210	46	130	43	100	1,800			
MW-9 Cont.															
5/20/2011	NP	163.77	5.00	20.00	6.39	157.38	66	<4.0	<4.0	<4.0	<4.0	280	1.64	6.7	1 (GRO)
8/15/2011	NP		5.00	20.00	7.09	156.68	<50	<2.0	<2.0	<2.0	<2.0	120	0.88	7.1	
2/2/2012	P		5.00	20.00	7.18	156.59	<50	<0.50	<0.50	<0.50	<0.50	34	0.65	7.2	
8/9/2012	P		5.00	20.00	5.68	158.09	82	1.9	<0.50	<0.50	<1.0	19	1.61	7.13	
2/14/2013	P		5.00	20.00	5.27	158.50	250	5.2	<0.50	<0.50	1.4	25	1.23	7.51	

Symbols & Abbreviations:

-- = Not analyzed/applicable/measured/available
< = Not detected at or above laboratory reporting limit
DO = Dissolved oxygen
DTW = Depth to water in ft below TOC
ft bgs = Feet below ground surface
GRO = Gasoline range organics
GWE = Groundwater elevation measured in ft
mg/L = Milligrams per liter
MTBE = Methyl tert-butyl ether
NP = Well was not purged prior to sampling
P = Well was purged prior to sampling
TOC = Top of casing measured in ft
TPH-g = Total petroleum hydrocarbons as gasoline
µg/L = Micrograms per liter
BTEX = Benzene, toluene, ethylbenzene and xylenes

ESL - DW = Environmental Screening Levels (ESLs), shallow soils (<3 meters bgs), groundwater is a current or potential source of drinking water, for residential land use. Ref. California Regional Water Quality Control Board, San Francisco Bay Region (CRWQCB-SFBR), Screening for Environmental Concerns at Sites with Contaminated Soil & Groundwater, Interim Final-November 2007 (Revised May 2008).

ESL - NDW = Environmental Screening Levels (ESLs), shallow soils (<3 meters bgs), groundwater is NOT a current or potential source of drinking water, for residential land use. Ref. California Regional Water Quality Control Board, San Francisco Bay Region (CRWQCB-SFBR), Screening for Environmental Concerns at Sites with Contaminated Soil & Groundwater, Interim Final-November 2007 (Revised May 2008).

NE = ESL not established

Footnotes:

a = Chromatogram pattern: Gasoline C6-C10 for GRO/TPH-g
b = Beginning this quarter, groundwater samples were analyzed by EPA method 8260B for TPH-g, BTEX, and fuel oxygenates
c = Wells gauged with ORC sock in well
d = Well inaccessible
e = The hydrocarbon result for GRO was partly due to individual peaks in the quantitative range
f = Well resurveyed on 1/27/2004 to NAVD88
g = Upon review of survey data (1/27/2004), TOC elevation for MW-4 is actually 162.47 ft.
h = Upon review of survey data (1/27/2004), MW-5 was not surveyed from the TOC. MW-5 was surveyed from the pavement due to inaccessibility to the TOC. Therefore, survey data for MW-5 from the TOC is unavailable. Historic data prior to 5/30/2006 (change in consultant) not modified
i = Quantitation of unknown hydrocarbon(s) in sample based on gasoline
j = Surveyed 12/9/2010
k = Grab groundwater sample
l = Quantitated against gasoline

Notes:

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

The DTW's and TOC's for wells MW-5 and MW-6 were taken from Delta Environmental sampling sheets because the well logs were not available

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 #0374, 6407 Telegraph Ave., Oakland, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
ESL - DW	NE	12	5.0	NE	NE	NE	0.5	0.05	
ESL - NDW	NE	18,000	1,800	NE	NE	NE	200	150	
MW-1									
3/23/2001	--	--	2,710	--	--	--	--	--	
3/21/2002	--	--	2,000	--	--	--	--	--	
5/23/2003	<20,000	<4,000	1,600	<100	<100	<100	--	--	
11/20/2003	<2,000	<400	1,500	<10	<10	<10	--	--	a
05/14/2004	<5,000	<1,000	1,200	<25	<25	<25	<25	<25	
09/02/2004	<1,000	<200	660	<5.0	<5.0	<5.0	<5.0	<5.0	
11/04/2004	<2,000	<400	580	<10	<10	<10	<10	<10	
02/08/2005	<2,000	<400	610	<10	<10	<10	<10	<10	
05/09/2005	<1,000	<200	620	<5.0	<5.0	<5.0	<5.0	<5.0	a
08/11/2005	<500	250	390	<2.5	<2.5	2.6	<2.5	<2.5	a
11/18/2005	<500	<100	340	<2.5	<2.5	<2.5	<2.5	<2.5	a
02/16/2006	<1,500	<100	340	<2.5	<2.5	<2.5	<2.5	<2.5	
5/30/2006	<1,500	<100	420	<2.5	<2.5	<2.5	<2.5	<2.5	a
8/24/2006	<3,000	<200	180	<5.0	<5.0	<5.0	<5.0	<5.0	
11/1/2006	<3,000	<200	220	<5.0	<5.0	<5.0	<5.0	<5.0	a
2/7/2007	<3,000	<200	190	<5.0	<5.0	<5.0	<5.0	<5.0	
5/8/2007	<3,000	<200	420	<5.0	<5.0	<5.0	<5.0	<5.0	
8/8/2007	<300	<20	110	<0.50	<0.50	<0.50	<0.50	<0.50	
11/14/2007	<1,500	<100	210	<2.5	<2.5	<2.5	<2.5	<2.5	
2/22/2008	<300	<10	250	<0.50	<0.50	1.5	<0.50	<0.50	
5/24/2008	<3,000	<100	380	<5.0	<5.0	<5.0	<5.0	<5.0	
8/21/2008	<1,500	<50	170	<2.5	<2.5	<2.5	<2.5	<2.5	
11/19/2008	<300	<10	30	<0.50	<0.50	<0.50	<0.50	<0.50	
2/23/2009	<1,500	<50	240	<2.5	<2.5	<2.5	<2.5	<2.5	
5/14/2009	<300	<10	200	<0.50	<0.50	1.3	<0.50	<0.50	
8/20/2009	<1,200	<40	170	<2.0	<2.0	<2.0	<2.0	<2.0	
2/19/2010	<300	<10	170	<0.50	<0.50	1.2	<0.50	<0.50	
8/10/2010	<1,500	<50	230	<2.5	<2.5	<2.5	<2.5	<2.5	
12/16/2010	<1,200	<40	140	<2.0	<2.0	<2.0	<2.0	<2.0	

Table 2. Summary of Fuel Additives Analytical Data
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
ESL - DW	NE	12	5.0	NE	NE	NE	0.5	0.05	
ESL - NDW	NE	18,000	1,800	NE	NE	NE	200	150	
MW-1 Cont.									
2/14/2011	<1,500	<50	170	<2.5	<2.5	<2.5	<2.5	<2.5	
8/15/2011	<1,500	<50	130	<2.5	<2.5	<2.5	<2.5	<2.5	
2/2/2012	<600	<20	66	<1.0	<1.0	<1.0	<1.0	<1.0	
8/9/2012	<150	<10	170	<0.50	<0.50	0.78	<0.50	<0.50	
2/14/2013	<150	<10	140	<0.50	<0.50	0.58	<0.50	<0.50	
MW-2									
3/23/2001	--	--	<2.5	--	--	--	--	--	
3/21/2002	--	--	45	--	--	--	--	--	
5/23/2003	<100	<20	55	<0.50	<0.50	0.53	--	--	
02/02/2004	<100	<20	37	<0.50	<0.50	<0.50	<0.50	<0.50	
09/02/2004	<500	<100	67	<2.5	<2.5	<2.5	<2.5	<2.5	
02/08/2005	<100	<20	30	<0.50	<0.50	<0.50	<0.50	<0.50	
08/11/2005	<100	<20	35	<0.50	<0.50	<0.50	<0.50	<0.50	a
02/16/2006	<300	<20	39	<0.50	<0.50	<0.50	<0.50	<0.50	
8/24/2006	<300	<20	25	<0.50	<0.50	<0.50	<0.50	<0.50	
2/7/2007	<300	<20	7.2	<0.50	<0.50	<0.50	<0.50	<0.50	
8/8/2007	<300	<20	7.2	<0.50	<0.50	<0.50	<0.50	<0.50	
2/22/2008	<300	<10	24	<0.50	<0.50	<0.50	<0.50	<0.50	
8/21/2008	<300	<10	4.9	<0.50	<0.50	<0.50	<0.50	<0.50	
2/23/2009	<300	<10	24	<0.50	<0.50	<0.50	<0.50	<0.50	
8/20/2009	<300	<10	8.4	<0.50	<0.50	<0.50	<0.50	<0.50	
2/19/2010	<300	<10	22	<0.50	<0.50	<0.50	<0.50	<0.50	
8/10/2010	<300	<10	23	<0.50	<0.50	<0.50	<0.50	<0.50	
12/16/2010	<300	<10	17	<0.50	<0.50	<0.50	<0.50	<0.50	
2/14/2011	<300	<10	11	<0.50	<0.50	<0.50	<0.50	<0.50	
8/15/2011	<300	<10	1.7	<0.50	<0.50	<0.50	<0.50	<0.50	
2/2/2012	<300	<10	1.8	<0.50	<0.50	<0.50	<0.50	<0.50	
8/9/2012	<150	<10	73	<0.50	<0.50	0.61	<0.50	<0.50	
2/14/2013	<150	<10	46	<0.50	<0.50	<0.50	<0.50	<0.50	

Table 2. Summary of Fuel Additives Analytical Data
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
ESL - DW	NE	12	5.0	NE	NE	NE	0.5	0.05	
ESL - NDW	NE	18,000	1,800	NE	NE	NE	200	150	
MW-3									
6/20/2000	--	--	<10	--	--	--	--	--	
12/17/2000	--	--	<2.5	--	--	--	--	--	
6/21/2001	--	--	2.5	--	--	--	--	--	
12/31/2001	--	--	4.9	--	--	--	--	--	
4/17/2002	--	--	8.7	--	--	--	--	--	
12/6/2002	--	--	6.2	--	--	--	--	--	
5/23/2003	<100	<20	1.6	<0.50	<0.50	<0.50	--	--	
09/02/2004	<100	<20	6.5	<0.50	<0.50	<0.50	<0.50	<0.50	
08/11/2005	<100	<20	11	<0.50	<0.50	<0.50	<0.50	<0.50	a
8/24/2006	<300	<20	7.6	<0.50	<0.50	<0.50	<0.50	<0.50	
8/8/2007	<300	<20	1.2	<0.50	<0.50	<0.50	<0.50	<0.50	
8/21/2008	<300	<10	3.1	<0.50	<0.50	<0.50	<0.50	<0.50	
8/20/2009	<300	<10	2.2	<0.50	<0.50	<0.50	<0.50	<0.50	
8/10/2010	<300	<10	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	
8/15/2011	<300	<10	1.2	<0.50	<0.50	<0.50	<0.50	<0.50	
8/9/2012	<150	<10	2.0	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-4									
6/20/2000	--	--	<250	--	--	--	--	--	
12/17/2000	--	--	<100	--	--	--	--	--	
6/21/2001	--	--	130	--	--	--	--	--	
12/31/2001	--	--	160	--	--	--	--	--	
4/17/2002	--	--	<250	--	--	--	--	--	
12/6/2002	--	--	43	--	--	--	--	--	
5/23/2003	<10,000	<2,000	<50	<50	<50	<50	--	--	
02/02/2004	<500	<100	29	<2.5	<2.5	2.6	<2.5	<2.5	
09/02/2004	<200	<40	28	<1.0	<1.0	<1.0	<1.0	<1.0	
02/08/2005	<5,000	<1,000	45	<25	<25	<25	<25	<25	
08/11/2005	<2,000	<400	32	<10	<10	<10	<10	<10	
02/16/2006	<6,000	<400	35	<10	<10	<10	<10	<10	

Table 2. Summary of Fuel Additives Analytical Data
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
ESL - DW	NE	12	5.0	NE	NE	NE	0.5	0.05	
ESL - NDW	NE	18,000	1,800	NE	NE	NE	200	150	
MW-4 Cont.									
8/24/2006	<1,500	<100	39	<2.5	<2.5	<2.5	<2.5	<2.5	
2/7/2007	<6,000	<400	67	<10	<10	<10	<10	<10	
8/8/2007	<6,000	<400	72	<10	<10	<10	<10	<10	
2/22/2008	<6,000	<200	70	<10	<10	<10	<10	<10	
8/21/2008	<12,000	<400	53	<20	<20	<20	<20	<20	
2/23/2009	<3,000	<100	39	<5.0	<5.0	<5.0	<5.0	<5.0	
8/20/2009	<12,000	<400	23	<20	<20	<20	<20	<20	
2/19/2010	<3,000	<100	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
8/10/2010	<12,000	<400	<20	<20	<20	<20	<20	<20	
12/16/2010	<15,000	<500	<25	<25	<25	<25	<25	<25	
2/14/2011	<300	<10	13	<0.50	<0.50	<0.50	<0.50	<0.50	
8/15/2011	<7,500	<250	<12	<12	<12	<12	<12	<12	
2/2/2012	<7,500	<250	<12	<12	<12	<12	<12	<12	
8/9/2012	<1,500	<100	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
2/14/2013	<3,000	<200	<10	<10	<10	<10	<10	<10	
MW-5									
6/20/2000	--	--	<10	--	--	--	--	--	
9/28/2000	--	--	<2.5	--	--	--	--	--	
12/17/2000	--	--	<2.5	--	--	--	--	--	
3/23/2001	--	--	<2.5	--	--	--	--	--	
6/21/2001	--	--	<2.5	--	--	--	--	--	
9/23/2001	--	--	<2.5	--	--	--	--	--	
12/31/2001	--	--	<2.5	--	--	--	--	--	
3/21/2002	--	--	3.2	--	--	--	--	--	
4/17/2002	--	--	<2.5	--	--	--	--	--	
8/12/2002	--	--	<2.5	--	--	--	--	--	
12/6/2002	--	--	<2.5	--	--	--	--	--	
1/29/2003	<40	<20	<0.50	<0.50	<0.50	<0.50	--	--	
5/23/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	--	--	

Table 2. Summary of Fuel Additives Analytical Data
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
ESL - DW	NE	12	5.0	NE	NE	NE	0.5	0.05	
ESL - NDW	NE	18,000	1,800	NE	NE	NE	200	150	
MW-5 Cont.									
9/4/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
09/02/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
08/11/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/24/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/8/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/21/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/20/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/10/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/15/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/9/2012	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-6									
3/23/2001	--	--	<2.5	--	--	--	--	--	
3/21/2002	--	--	5.2	--	--	--	--	--	
5/23/2003	<100	<20	9.4	<0.50	<0.50	<0.50	--	--	
08/11/2005	<100	<20	7.9	<0.50	<0.50	<0.50	<0.50	<0.50	a
8/24/2006	<300	<20	12	<0.50	<0.50	<0.50	<0.50	<0.50	
8/8/2007	<300	<20	0.57	<0.50	<0.50	<0.50	<0.50	<0.50	
8/21/2008	<300	<10	1.9	<0.50	<0.50	<0.50	<0.50	<0.50	
8/20/2009	<300	<10	2.0	<0.50	<0.50	<0.50	<0.50	<0.50	
8/10/2010	<300	<10	4.3	<0.50	<0.50	<0.50	<0.50	<0.50	
8/15/2011	<300	<10	2.2	<0.50	<0.50	<0.50	<0.50	<0.50	
8/9/2012	<150	<10	3.6	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-7									
12/16/2010	<300	<10	62	<0.50	<0.50	<0.50	<0.50	<0.50	
2/14/2011	<1,2000	<400	<20	<20	<20	<20	<20	<20	
5/20/2011	<300	<10	4.6	<0.50	<0.50	<0.50	<0.50	<0.50	
8/15/2011	<600	<20	14	<1.0	<1.0	<1.0	<1.0	<1.0	
2/2/2012	<300	<10	6.2	<0.50	<0.50	<0.50	<0.50	<0.50	

Table 2. Summary of Fuel Additives Analytical Data
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
ESL - DW	NE	12	5.0	NE	NE	NE	0.5	0.05	
ESL - NDW	NE	18,000	1,800	NE	NE	NE	200	150	
MW-7 Cont.									
8/9/2012	<150	<10	7.0	<0.50	<0.50	<0.50	<0.50	<0.50	
2/14/2013	<150	<10	5.1	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-8									
12/16/2010	<300	<10	150	<0.50	<0.50	1.7	<0.50	<0.50	
2/14/2011	<1,200	<40	110	<2.0	<2.0	<2.0	<2.0	<2.0	
5/20/2011	<1,200	<40	88	<2.0	<2.0	<2.0	<2.0	<2.0	
8/15/2011	<600	<20	57	<1.0	<1.0	<1.0	<1.0	<1.0	
2/2/2012	<300	<10	3.9	<0.50	<0.50	<0.50	<0.50	<0.50	
8/9/2012	<150	31	150	<0.50	<0.50	2.0	<0.50	<0.50	
2/14/2013	<600	150	240	<2.0	<2.0	5.2	<2.0	<2.0	
MW-9									
12/16/2010	<300	40	390	<0.50	<0.50	4.1	<0.50	<0.50	
2/14/2011	<2,400	<80	270	<4.0	<4.0	<4.0	<4.0	<4.0	
5/20/2011	<2,400	<80	280	<4.0	<4.0	<4.0	<4.0	<4.0	
8/15/2011	<1,200	<40	120	<2.0	<2.0	<2.0	<2.0	<2.0	
2/2/2012	<300	<10	34	<0.50	<0.50	<0.50	<0.50	<0.50	
8/9/2012	<150	<10	19	<0.50	<0.50	<0.50	<0.50	<0.50	
2/14/2013	<150	<10	25	<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

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

ESL - DW = Environmental Screening Levels (ESLs), shallow soils (<3 meters bgs), groundwater is a current or potential source of drinking water, for residential land use. Ref. California Regional Water Quality Control Board, San Francisco Bay Region (CRWQCB-SFBR), Screening for Environmental Concerns at Sites with Contaminated Soil & Groundwater, Interim Final-November 2007 (Revised May 2008).

ESL - NDW = Environmental Screening Levels (ESLs), shallow soils (<3 meters bgs), groundwater is NOT a current or potential source of drinking water, for residential land use. Ref. California Regional Water Quality Control Board, San Francisco Bay Region (CRWQCB-SFBR), Screening for Environmental Concerns at Sites with Contaminated Soil & Groundwater, Interim Final-November 2007 (Revised May 2008).

NE = ESL not established

Footnotes:

a = The continuing calibration verification for ethanol was outside of client contractual limits, however, it was within method acceptance limits. The data should still be useful for its intended purpose

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 #0374, 6407 Telegraph Ave., Oakland, CA

Date Measured	Approximate Gradient Direction	Approximate Gradient Magnitude (ft/ft)
1/31/1996	Southwest	0.04
4/10/1996	Southwest	0.04
7/16/1996	Southwest	0.03
10/14/1996	Southwest	0.03
3/27/1997	Southwest	0.04
5/27/1997	Southwest	0.03
8/12/1997	Southwest	0.04
11/17/1997	Southwest	0.03
3/16/1998	Southwest	0.03
5/12/1998	Southwest	0.04
7/27/1998	Southwest	0.04
10/15/1998	Southwest	0.02
2/18/1999	Southwest	0.05
5/24/1999	Southwest	0.03
8/27/1999	Southwest	0.03
10/26/1999	Southwest	0.03
2/3/2000	Southwest	0.047
6/20/2000	Southwest	0.035
9/28/2000	Southwest	0.034
12/17/2000	Southwest	0.032
3/23/2001	Southwest	0.034
6/21/2001	Southwest	0.032
9/23/2001	Southwest	0.029
12/31/2001	Southwest	0.043
3/21/2002	Southwest	0.038
4/17/2002	Southwest	0.031
8/12/2002	Southwest	0.032
12/6/2002	Southwest	0.020
1/29/2003	Southwest	0.027
5/23/2003	Southwest	0.039
9/4/2003	Southwest	0.033
11/20/2003	Southwest	0.029
2/2/2004	Southwest	0.043 (a)
5/14/2004	Southwest	0.037 (a)
9/2/2004	Southwest	0.027 (a)
11/4/2004	Southwest	0.034 (a)
2/8/2005	Southwest	0.061 (a)
5/9/2005	Southwest	0.08 (a)
8/11/2005	Southwest	0.06 (a)
11/18/2005	Southwest	0.07 (a)
2/16/2006	Southwest	0.09 (a)
5/30/2006	Southwest	0.06 (a)
8/24/2006	Southwest	0.03
11/1/2006	Southwest	0.02
2/7/2007	Southwest	0.03

Table 3. Historical Groundwater Gradient - Direction and Magnitude
ARCO Service Station #0374, 6407 Telegraph Ave., Oakland, CA

Date Measured	Approximate Gradient Direction	Approximate Gradient Magnitude (ft/ft)
5/8/2007	Southwest	0.03
8/8/2007	Southwest	0.03
11/14/2007	Southwest	0.03
2/22/2008	Southwest	0.03
5/24/2008	Southwest	0.03
8/21/2008	Southwest	0.03
11/19/2008	Southwest	0.03
2/23/2009	Southwest	0.04
5/14/2009	Southwest	0.03
8/20/2009	Southwest	0.03
2/19/2010	West-Southwest	0.05
8/10/2010	Southwest	0.03
12/16/2010	Southwest	0.03
2/14/2011	Southwest	0.03
5/20/2011	Southwest	0.03
8/15/2011	Southwest	0.03
2/2/2012	Southwest	0.03
8/9/2012	Southwest	0.03
2/14/2013	Southwest	0.04

Footnotes:

a = Gradients potentially suspect due to error in MW-4 and MW-5 TOC measuring point elevations discovered third quarter 2006

Notes:

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 turbidity¹. 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	± 0.2°C (± 0.36°F)
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 turbidity¹. 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
AND
NON-HAZARDOUS WASTE DATA FORM



GROUNDWATER MONITORING SITE SHEET

Project: BP 374 Project No.: 06-88-602 Date: 2/17/13
 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				6.69	0648			5.97	26.77	
MW-2				6.31	0723			6.03	26.35	
MW-3				6.62	1025			6.09	26.80	
MW-4				6.57	0915			6.26	26.97	
MW-5				8.02	1029			7.54	23.16	
MW-6				4.65	-			-	14.65	Car parked over
MW-7				5.05	0845			4.38	19.80	
MW-8				6.08	0821			5.70	19.40	
MW-9				5.68	0751			5.27	19.35	

* 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: [Handwritten Signature]



GROUNDWATER SAMPLING DATA SHEET

Project: BP 374 Project No.: 06-88-602 Date: 2/14/13
 Field Representative: AM/JR
 Well ID: MW-1 Start Time: - End Time: - Total Time (minutes): -

PURGE EQUIPMENT
 Disp. Bailer 120V Pump Flow Cell
 Disp. Tubing 12V Pump 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						LOW-FLOW		
Casing Diameter	Unit Volume (gal/ft)	(circle one)				Previous Low-Flow Purge Rate:	(lpm)	
1" (0.04)	1.25" (0.08)	2" (0.17)	3" (0.38)	Other:	Total Well Depth (a):	<u>26.77</u> (ft)		
4" (0.66)	6" (1.50)	8" (2.60)	12" (5.81)	" ()	Initial Depth to Water (b):	<u>5.97</u> (ft)		
Total Well Depth (a): _____ (ft)						Pump In-take Depth = b + (a-b)/2:		<u>16.37</u> (ft)
Initial Depth to Water (b): _____ (ft)						Maximum Allowable Drawdown = (a-b)/8:		<u>7.60</u> (ft)
Water Column Height (WCH) = (a - b): _____ (ft)						Low-Flow Purge Rate:		<u>0.25</u> (Lpm)*
Water Column Volume (WCV) = WCH x Unit Volume: _____ (gal)						Comments: _____		
Three Casing Volumes = WCV x 3: _____ (gal)						*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.		
Five Casing Volumes = WCV x 5: _____ (gal)								
Pump Depth (if pump used): _____ (ft)								

GROUNDWATER STABILIZATION PARAMETER RECORD

Time (24:00)	Cumulative Volume (L)	Temperature °C	pH	Conductivity μS or mS	DO mg/L	ORP mV	Turbidity NTU	NOTES
0705	0	13.78	7.65	0.818	2.69	132	343	
0707	0.5	14.72	7.25	0.803	2.11	133	-	light HC odor
0709	1.0	15.17	7.20	0.796	1.84	130	-	
0711	1.5	15.47	7.20	0.793	1.74	128	-	
Previous Stabilized Parameters								

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

SAMPLE COLLECTION RECORD		GEOCHEMICAL PARAMETERS		
Parameter	Time	Measurement		
Depth to Water at Sampling: <u>6.25</u> (ft)				
Sample Collected Via: <input checked="" type="checkbox"/> Disp. Pump Tubing <input type="checkbox"/> Disp. Bailer <input type="checkbox"/> Dedicated Pump Tubing		DO (mg/L)		
Sample ID: <u>MW-1</u> Sample Collection Time: <u>0715</u> (24:00)		Ferrous Iron (mg/L)		
Containers (#): <u>6</u> VOA (<input checked="" type="checkbox"/> preserved or <input type="checkbox"/> unpreserved) <input type="checkbox"/> Liter Amber		Redox Potential (mV)		
Other: _____		Alkalinity (mg/L)		
Other: _____		Other:		
Other: _____		Other:		

Signature:



GROUNDWATER SAMPLING DATA SHEET

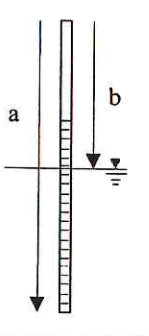
Project: BP 374 Project No.: P 06-88-602 Date: 2/14/13
Field Representative: JR/AM
Well ID: MW-2 Start Time: End Time: Total Time (minutes):

PURGE EQUIPMENT: Disp. Bailer, 120V Pump, Flow Cell, Disp. Tubing, 12V Pump, 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, Total Well Depth (a), Initial Depth to Water (b), Water Column Height (WCH) = (a - b), Water Column Volume (WCV) = WCH x Unit Volume, Three Casing Volumes = WCV x 3, Five Casing Volumes = WCV x 5, Pump Depth (if pump used):



LOW-FLOW: Previous Low-Flow Purge Rate: (lpm), Total Well Depth (a): 26.55 (ft), Initial Depth to Water (b): 6.03 (ft), Pump In-take Depth = b + (a-b)/2: 16.29 (ft), Maximum Allowable Drawdown = (a-b)/8: 2.56 (ft), Low-Flow Purge Rate: 0.25 (Lpm)*

GROUNDWATER STABILIZATION PARAMETER RECORD

Table with columns: Time (24:00), Cumulative Volume (L), Temperature (°C), pH, Conductivity (µS or mS), DO (mg/L), ORP (mV), Turbidity (NTU), NOTES (Odor, color, sheen or other). Includes handwritten data points.

Previous Stabilized Parameters

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

SAMPLE COLLECTION RECORD

SAMPLE COLLECTION RECORD: Depth to Water at Sampling: 6.42 (ft), Sample Collected Via: Disp. Bailer, Dedicated Pump Tubing, Disp. Pump Tubing, Sample ID: MW-2, Sample Collection Time: 0740 (24:00), Containers (#): 6 VOA (X preserved or unpreserved) Liter Amber

GEOCHEMICAL PARAMETERS table with columns: Parameter, Time, Measurement. Includes rows for DO (mg/L), Ferrous Iron (mg/L), Redox Potential (mV), Alkalinity (mg/L), Other.

Signature: [Handwritten Signature]



GROUNDWATER SAMPLING DATA SHEET

Page 4 of 7

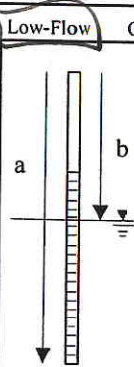
Project: BP 374 Project No.: 06-18-602 Date: 2/14/13
 Field Representative: JB/AM
 Well ID: MW-4 Start Time: - End Time: - Total Time (minutes): -

PURGE EQUIPMENT Disp. Bailer 120V Pump Flow Cell
 Disp. Tubing 12V Pump 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					LOW-FLOW		
Casing Diameter	Unit Volume (gal/ft)	(circle one)			Previous Low-Flow Purge Rate:	(lpm)	
1" (0.04)	1.25" (0.08)	2" (0.17)	3" (0.38)	Other:	Total Well Depth (a):	<u>26.97</u> (ft)	
4" (0.66)	6" (1.50)	8" (2.60)	12" (5.81)	" ()	Initial Depth to Water (b):	<u>6.26</u> (ft)	
Total Well Depth (a): _____ (ft)					Pump In-take Depth = b + (a-b)/2:		<u>16.61</u> (ft)
Initial Depth to Water (b): _____ (ft)					Maximum Allowable Drawdown = (a-b)/8:		<u>2.58</u> (ft)
Water Column Height (WCH) = (a - b): _____ (ft)					Low-Flow Purge Rate:		<u>0.25</u> (Lpm)*
Water Column Volume (WCV) = WCH x Unit Volume: _____ (gal)					Comments:		
Three Casing Volumes = WCV x 3: _____ (gal)					*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.		
Five Casing Volumes = WCV x 5: _____ (gal)							
Pump Depth (if pump used): _____ (ft)							



GROUNDWATER STABILIZATION PARAMETER RECORD

Time (24:00)	Cumulative Volume (L)	Temperature °C	pH	Conductivity μS or mS	DO mg/L	ORP mV	Turbidity NTU	NOTES
1001	0	18.58	7.76	0.791	2.39	-126	120	Strong H ₂ S odor
1003	0.5	18.95	7.51	0.788	1.59	-131	-	
1005	1.0	19.07	7.51	0.787	1.37	-135	-	
1007	1.5	19.11	7.51	0.787	1.25	-139	-	
1009	2.0	19.10	7.51	0.787	1.20	-140	120	

Previous Stabilized Parameters Low Flow & Parameters Stable 3 Casing Volumes & Parameters Stable 5 Casing Volumes

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

SAMPLE COLLECTION RECORD

Depth to Water at Sampling: <u>6.53</u> (ft)	GEOCHEMICAL PARAMETERS	
Sample Collected Via: <input type="checkbox"/> Disp. Bailer <input type="checkbox"/> Dedicated Pump Tubing	Parameter	Time
<input checked="" type="checkbox"/> Disp. Pump Tubing Other:	DO (mg/L)	
Sample ID: <u>MW-4</u> Sample Collection Time: <u>1010</u> (24:00)	Ferrous Iron (mg/L)	
Containers (#): <u>6</u> VOA (<input checked="" type="checkbox"/> preserved or <input type="checkbox"/> unpreserved) <u>6</u> Liter Amber	Redox Potential (mV)	
Other: _____ Other: _____	Alkalinity (mg/L)	
Other: _____ Other: _____	Other:	
Other: _____ Other: _____	Other:	

Signature:



GROUNDWATER SAMPLING DATA SHEET

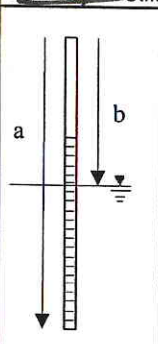
Project: BP 374 Project No.: 06-88-602 Date: 2/14/13
 Field Representative: JR/AM
 Well ID: MW-7 Start Time: - End Time: - Total Time (minutes): -

PURGE EQUIPMENT Disp. Bailer 120V Pump Flow Cell
 Disp. Tubing 12V Pump 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					LOW-FLOW	
Casing Diameter Unit Volume (gal/ft) (circle one)					Previous Low-Flow Purge Rate: _____ (lpm)	
1" (0.04)	1.25" (0.08)	2" (0.17)	3" (0.38)	Other: _____	Total Well Depth (a): <u>19.80</u> (ft)	
4" (0.66)	6" (1.50)	8" (2.60)	12" (5.81)	_____ (____)	Initial Depth to Water (b): <u>4.38</u> (ft)	
Total Well Depth (a): _____ (ft)					Pump In-take Depth = b + (a-b)/2: <u>12.09</u> (ft)	
Initial Depth to Water (b): _____ (ft)					Maximum Allowable Drawdown = (a-b)/8: <u>1.92</u> (ft)	
Water Column Height (WCH) = (a - b): _____ (ft)					Low-Flow Purge Rate: <u>0.25</u> (Lpm)*	
Water Column Volume (WCV) = WCH x Unit Volume: _____ (gal)					Comments: _____	
Three Casing Volumes = WCV x 3: _____ (gal)					*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.	
Five Casing Volumes = WCV x 5: _____ (gal)						
Pump Depth (if pump used): _____ (ft)						



GROUNDWATER STABILIZATION PARAMETER RECORD

Time (24:00)	Cumulative Volume (L)	Temperature °C	pH	Conductivity μS or Ω	DO mg/L	ORP mV	Turbidity NTU	NOTES
<u>0853</u>	<u>0</u>	<u>16.98</u>	<u>7.74</u>	<u>0.928</u>	<u>2.43</u>	<u>-49</u>	<u>119</u>	
<u>0855</u>	<u>0.5</u>	<u>17.21</u>	<u>7.63</u>	<u>0.929</u>	<u>1.76</u>	<u>-69</u>	<u>119</u>	
<u>0857</u>	<u>1.0</u>	<u>17.28</u>	<u>7.63</u>	<u>0.926</u>	<u>1.51</u>	<u>-72</u>	<u>119</u>	<u>moderate H₂S odor</u>
<u>0859</u>	<u>1.5</u>	<u>17.31</u>	<u>7.63</u>	<u>0.926</u>	<u>1.35</u>	<u>-85</u>	<u>115</u>	
<u>0901</u>	<u>2.0</u>	<u>17.38</u>	<u>7.64</u>	<u>0.925</u>	<u>1.31</u>	<u>-88</u>	<u>115</u>	

Previous Stabilized Parameters

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

SAMPLE COLLECTION RECORD

SAMPLE COLLECTION RECORD		GEOCHEMICAL PARAMETERS	
Depth to Water at Sampling: <u>4.51</u> (ft)		Parameter	Time
Sample Collected Via: <input type="checkbox"/> Disp. Bailer <input type="checkbox"/> Dedicated Pump Tubing		DO (mg/L)	
<input checked="" type="checkbox"/> Disp. Pump Tubing Other:		Ferrous Iron (mg/L)	
Sample ID: <u>MW-7</u> Sample Collection Time: <u>0905</u> (24:00)		Redox Potential (mV)	
Containers (#): <u>6</u> VOA (<input checked="" type="checkbox"/> preserved or <input type="checkbox"/> unpreserved) <u>1</u> Liter Amber		Alkalinity (mg/L)	
Other: _____ Other: _____		Other:	
Other: _____ Other: _____		Other:	

Signature: [Handwritten Signature]



GROUNDWATER SAMPLING DATA SHEET

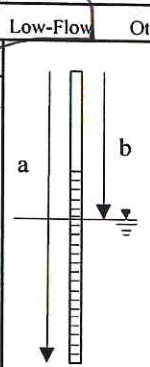
Project: BP 374 Project No.: 06-88-602 Date: 2/14/13
 Field Representative: JR/AM
 Well ID: MW-8 Start Time: - End Time: - Total Time (minutes): -

PURGE EQUIPMENT Disp. Bailer 120V Pump Flow Cell
 Disp. Tubing 12V Pump 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					LOW-FLOW	
Casing Diameter Unit Volume (gal/ft) (circle one)					Previous Low-Flow Purge Rate: _____ (lpm)	
1" (0.04)	1.25" (0.08)	2" (0.17)	3" (0.38)	Other: _____	Total Well Depth (a): <u>19.40</u> (ft)	
4" (0.66)	6" (1.50)	8" (2.60)	12" (5.81)	_____ (____)	Initial Depth to Water (b): <u>5.70</u> (ft)	
Total Well Depth (a): _____ (ft)					Pump In-take Depth = b + (a-b)/2: <u>12.55</u> (ft)	
Initial Depth to Water (b): _____ (ft)					Maximum Allowable Drawdown = (a-b)/8: <u>1.71</u> (ft)	
Water Column Height (WCH) = (a - b): _____ (ft)					Low-Flow Purge Rate: <u>0.25</u> (Lpm)*	
Water Column Volume (WCV) = WCH x Unit Volume: _____ (gal)					Comments: _____	
Three Casing Volumes = WCV x 3: _____ (gal)					*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.	
Five Casing Volumes = WCV x 5: _____ (gal)						
Pump Depth (if pump used): _____ (ft)						



GROUNDWATER STABILIZATION PARAMETER RECORD

Time (24:00)	Cumulative Volume (L)	Temperature °C	pH	Conductivity μS or mS	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
<u>0827</u>	<u>0</u>	<u>16.90</u>	<u>7.68</u>	<u>0.938</u>	<u>2.65</u>	<u>-30</u>	<u>229</u>	
<u>0829</u>	<u>0.5</u>	<u>17.40</u>	<u>7.43</u>	<u>0.926</u>	<u>1.75</u>	<u>-47</u>	<u>-</u>	
<u>0831</u>	<u>1.0</u>	<u>18.02</u>	<u>7.40</u>	<u>0.919</u>	<u>1.39</u>	<u>-58</u>	<u>-</u>	<u>- light/mod HC odor</u>
<u>0833</u>	<u>1.5</u>	<u>18.17</u>	<u>7.35</u>	<u>0.917</u>	<u>1.29</u>	<u>-62</u>	<u>-</u>	<u>- yellow particulates in water</u>
<u>0835</u>	<u>2.0</u>	<u>18.29</u>	<u>7.40</u>	<u>0.914</u>	<u>1.23</u>	<u>-64</u>	<u>245</u>	

Previous Stabilized Parameters

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

SAMPLE COLLECTION RECORD		GEOCHEMICAL PARAMETERS		
Depth to Water at Sampling: <u>5.91</u> (ft)		Parameter	Time	Measurement
Sample Collected Via: <input type="checkbox"/> Disp. Bailer <input type="checkbox"/> Dedicated Pump Tubing		DO (mg/L)		
<input checked="" type="checkbox"/> Disp. Pump Tubing Other: _____		Ferrous Iron (mg/L)		
Sample ID: <u>MW-8</u> Sample Collection Time: <u>0840</u> (24:00)		Redox Potential (mV)		
Containers (#): <u>6</u> VOA (<input checked="" type="checkbox"/> preserved or <input type="checkbox"/> unpreserved) <input type="checkbox"/> Liter Amber		Alkalinity (mg/L)		
Other: _____ Other: _____		Other:		
Other: _____ Other: _____		Other:		

Signature:



GROUNDWATER SAMPLING DATA SHEET

Project: BP 374 Project No.: 06-08-602 Date: 2/14/13
 Field Representative: JR/AM
 Well ID: MW-9 Start Time: - End Time: - Total Time (minutes): -

PURGE EQUIPMENT Disp. Bailer 120V Pump Flow Cell
 Disp. Tubing 12V Pump 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					LOW-FLOW	
Casing Diameter	Unit Volume (gal/ft)	(circle one)			Previous Low-Flow Purge Rate:	(lpm)
1" (0.04)	1.25" (0.08)	2" (0.17)	3" (0.38)	Other:	Total Well Depth (a):	<u>19.35</u> (ft)
4" (0.66)	6" (1.50)	8" (2.60)	12" (5.81)	" ()	Initial Depth to Water (b):	<u>5.27</u> (ft)
Total Well Depth (a): _____ (ft)					Pump In-take Depth = b + (a-b)/2:	<u>12.31</u> (ft)
Initial Depth to Water (b): _____ (ft)					Maximum Allowable Drawdown = (a-b)/8:	<u>1.76</u> (ft)
Water Column Height (WCH) = (a - b): _____ (ft)					Low-Flow Purge Rate:	<u>0.25</u> (Lpm)*
Water Column Volume (WCV) = WCH x Unit Volume: _____ (gal)					Comments:	
Three Casing Volumes = WCV x 3: _____ (gal)					*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.	
Five Casing Volumes = WCV x 5: _____ (gal)						
Pump Depth (if pump used): _____ (ft)						

GROUNDWATER STABILIZATION PARAMETER RECORD								
Time (24:00)	Cumulative Volume (L)	Temperature °C	pH	Conductivity µS or mS	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
<u>0758</u>	<u>0</u>	<u>15.09</u>	<u>7.76</u>	<u>0.850</u>	<u>2.03</u>	<u>40</u>	<u>199</u>	
<u>0800</u>	<u>0.5</u>	<u>16.99</u>	<u>7.53</u>	<u>0.845</u>	<u>1.51</u>	<u>-18</u>	<u>-</u>	<u>- light/mod. odor</u>
<u>0802</u>	<u>1.0</u>	<u>17.97</u>	<u>7.52</u>	<u>0.841</u>	<u>1.36</u>	<u>-37</u>	<u>-</u>	<u>- yellow</u>
<u>0804</u>	<u>1.5</u>	<u>17.74</u>	<u>7.52</u>	<u>0.839</u>	<u>1.29</u>	<u>-47</u>	<u>-</u>	<u>particulates</u>
<u>0806</u>	<u>2.0</u>	<u>17.86</u>	<u>7.51</u>	<u>0.838</u>	<u>1.23</u>	<u>-51</u>	<u>237</u>	<u>in water</u>
Previous Stabilized Parameters								

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

SAMPLE COLLECTION RECORD		GEOCHEMICAL PARAMETERS	
Parameter	Time	Measurement	
Depth to Water at Sampling: <u>5.51</u> (ft)			
Sample Collected Via: <input type="checkbox"/> Disp. Bailer <input type="checkbox"/> Dedicated Pump Tubing			
<input checked="" type="checkbox"/> Disp. Pump Tubing Other:			
Sample ID: <u>MW-9</u> Sample Collection Time: <u>0810</u> (24:00)			
Containers (#): <u>6</u> VOA (<input checked="" type="checkbox"/> preserved or <input type="checkbox"/> unpreserved) <input type="checkbox"/> Liter Amber			
Other:			
Other:			
Other:			
Other:			

Signature:

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: 440-38365-1
Client Project/Site: ARCO 0374, Oakland

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

Attn: Kristene Tidwell



*Authorized for release by:
3/1/2013 12:27:42 PM*

Kathleen Robb
Project Manager II
kathleen.robbs@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Sample Summary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0374, Oakland

TestAmerica Job ID: 440-38365-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-38365-1	MW-1	Water	02/14/13 07:15	02/15/13 09:50
440-38365-2	MW-2	Water	02/14/13 07:40	02/15/13 09:50
440-38365-3	MW-4	Water	02/14/13 10:10	02/15/13 09:50
440-38365-4	MW-7	Water	02/14/13 09:05	02/15/13 09:50
440-38365-5	MW-8	Water	02/14/13 08:40	02/15/13 09:50
440-38365-6	MW-9	Water	02/14/13 08:10	02/15/13 09:50

Case Narrative

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0374, Oakland

TestAmerica Job ID: 440-38365-1

Job ID: 440-38365-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-38365-1

Comments

No additional comments.

Receipt

The samples were received on 2/15/2013 9:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.6° C.

GC/MS VOA

Method(s) 8260B: The continuing calibration verification (CCV) for analytical batch 87459 exceeded BP-GCLN Technical Requirements for Ethanol however the calibration verification meets the requirements as stated in the analytical method. The data have been qualified and reported.

No other analytical or quality issues were noted.

GC VOA

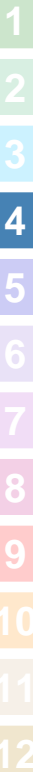
Method(s) 8015B: The Gasoline Range Organics (GRO) concentration reported for the following sample(s) is due to the presence of discrete peaks: MW-1(440-38365-1), MW-8 (440-38365-5), MW-9 (440-38365-6).

Method(s) 8015B: Surrogate recovery for the following sample(s) was outside control limits: MW-9 (440-38365-6). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

No other analytical or quality issues were noted.

VOA Prep

No analytical or quality issues were noted.



Client Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0374, Oakland

TestAmerica Job ID: 440-38365-1

Client Sample ID: MW-1
Date Collected: 02/14/13 07:15
Date Received: 02/15/13 09:50

Lab Sample ID: 440-38365-1
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			02/25/13 15:04	1
1,2-Dichloroethane	ND		0.50	ug/L			02/25/13 15:04	1
Benzene	ND		0.50	ug/L			02/25/13 15:04	1
Ethanol	ND		150	ug/L			02/25/13 15:04	1
Ethylbenzene	ND		0.50	ug/L			02/25/13 15:04	1
Ethyl-t-butyl ether (ETBE)	ND		0.50	ug/L			02/25/13 15:04	1
Isopropyl Ether (DIPE)	ND		0.50	ug/L			02/25/13 15:04	1
m,p-Xylene	ND		1.0	ug/L			02/25/13 15:04	1
Methyl-t-Butyl Ether (MTBE)	140		0.50	ug/L			02/25/13 15:04	1
o-Xylene	ND		0.50	ug/L			02/25/13 15:04	1
Tert-amyl-methyl ether (TAME)	0.58		0.50	ug/L			02/25/13 15:04	1
tert-Butyl alcohol (TBA)	ND		10	ug/L			02/25/13 15:04	1
Toluene	ND		0.50	ug/L			02/25/13 15:04	1
Xylenes, Total	ND		1.0	ug/L			02/25/13 15:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	93		80 - 120		02/25/13 15:04	1
Dibromofluoromethane (Surr)	90		80 - 120		02/25/13 15:04	1
Toluene-d8 (Surr)	102		80 - 120		02/25/13 15:04	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			02/22/13 05:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		65 - 140		02/22/13 05:18	1

Client Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0374, Oakland

TestAmerica Job ID: 440-38365-1

Client Sample ID: MW-2

Lab Sample ID: 440-38365-2

Date Collected: 02/14/13 07:40

Matrix: Water

Date Received: 02/15/13 09:50

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			02/25/13 15:32	1
1,2-Dichloroethane	ND		0.50	ug/L			02/25/13 15:32	1
Benzene	ND		0.50	ug/L			02/25/13 15:32	1
Ethanol	ND		150	ug/L			02/25/13 15:32	1
Ethylbenzene	ND		0.50	ug/L			02/25/13 15:32	1
Ethyl-t-butyl ether (ETBE)	ND		0.50	ug/L			02/25/13 15:32	1
Isopropyl Ether (DIPE)	ND		0.50	ug/L			02/25/13 15:32	1
m,p-Xylene	ND		1.0	ug/L			02/25/13 15:32	1
Methyl-t-Butyl Ether (MTBE)	46		0.50	ug/L			02/25/13 15:32	1
o-Xylene	ND		0.50	ug/L			02/25/13 15:32	1
Tert-amyl-methyl ether (TAME)	ND		0.50	ug/L			02/25/13 15:32	1
tert-Butyl alcohol (TBA)	ND		10	ug/L			02/25/13 15:32	1
Toluene	ND		0.50	ug/L			02/25/13 15:32	1
Xylenes, Total	ND		1.0	ug/L			02/25/13 15:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	93		80 - 120		02/25/13 15:32	1
Dibromofluoromethane (Surr)	98		80 - 120		02/25/13 15:32	1
Toluene-d8 (Surr)	103		80 - 120		02/25/13 15:32	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			02/22/13 05:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		65 - 140		02/22/13 05:46	1

Client Sample Results

Client: Broadbent & Associates, Inc.
 Project/Site: ARCO 0374, Oakland

TestAmerica Job ID: 440-38365-1

Client Sample ID: MW-4
Date Collected: 02/14/13 10:10
Date Received: 02/15/13 09:50

Lab Sample ID: 440-38365-3
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		10	ug/L			02/24/13 21:45	20
1,2-Dichloroethane	ND		10	ug/L			02/24/13 21:45	20
Benzene	1400		10	ug/L			02/24/13 21:45	20
Ethanol	ND		3000	ug/L			02/24/13 21:45	20
Ethylbenzene	390		10	ug/L			02/24/13 21:45	20
Ethyl-t-butyl ether (ETBE)	ND		10	ug/L			02/24/13 21:45	20
Isopropyl Ether (DIPE)	ND		10	ug/L			02/24/13 21:45	20
m,p-Xylene	670		20	ug/L			02/24/13 21:45	20
Methyl-t-Butyl Ether (MTBE)	ND		10	ug/L			02/24/13 21:45	20
o-Xylene	29		10	ug/L			02/24/13 21:45	20
Tert-amyl-methyl ether (TAME)	ND		10	ug/L			02/24/13 21:45	20
tert-Butyl alcohol (TBA)	ND		200	ug/L			02/24/13 21:45	20
Toluene	150		10	ug/L			02/24/13 21:45	20
Xylenes, Total	700		20	ug/L			02/24/13 21:45	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	93		80 - 120		02/24/13 21:45	20
Dibromofluoromethane (Surr)	95		80 - 120		02/24/13 21:45	20
Toluene-d8 (Surr)	99		80 - 120		02/24/13 21:45	20

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	7200		500	ug/L			02/22/13 06:14	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	91		65 - 140		02/22/13 06:14	10

Client Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0374, Oakland

TestAmerica Job ID: 440-38365-1

Client Sample ID: MW-7

Lab Sample ID: 440-38365-4

Date Collected: 02/14/13 09:05

Matrix: Water

Date Received: 02/15/13 09:50

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			02/24/13 20:17	1
1,2-Dichloroethane	ND		0.50	ug/L			02/24/13 20:17	1
Benzene	1.2		0.50	ug/L			02/24/13 20:17	1
Ethanol	ND		150	ug/L			02/24/13 20:17	1
Ethylbenzene	1.6		0.50	ug/L			02/24/13 20:17	1
Ethyl-t-butyl ether (ETBE)	ND		0.50	ug/L			02/24/13 20:17	1
Isopropyl Ether (DIPE)	ND		0.50	ug/L			02/24/13 20:17	1
m,p-Xylene	6.3		1.0	ug/L			02/24/13 20:17	1
Methyl-t-Butyl Ether (MTBE)	5.1		0.50	ug/L			02/24/13 20:17	1
o-Xylene	ND		0.50	ug/L			02/24/13 20:17	1
Tert-amyl-methyl ether (TAME)	ND		0.50	ug/L			02/24/13 20:17	1
tert-Butyl alcohol (TBA)	ND		10	ug/L			02/24/13 20:17	1
Toluene	ND		0.50	ug/L			02/24/13 20:17	1
Xylenes, Total	6.3		1.0	ug/L			02/24/13 20:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	91		80 - 120		02/24/13 20:17	1
Dibromofluoromethane (Surr)	94		80 - 120		02/24/13 20:17	1
Toluene-d8 (Surr)	99		80 - 120		02/24/13 20:17	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	310		50	ug/L			02/22/13 06:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	114		65 - 140		02/22/13 06:42	1

Client Sample Results

Client: Broadbent & Associates, Inc.
 Project/Site: ARCO 0374, Oakland

TestAmerica Job ID: 440-38365-1

Client Sample ID: MW-8
Date Collected: 02/14/13 08:40
Date Received: 02/15/13 09:50

Lab Sample ID: 440-38365-5
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		2.0	ug/L			02/24/13 21:16	4
1,2-Dichloroethane	ND		2.0	ug/L			02/24/13 21:16	4
Benzene	350		2.0	ug/L			02/24/13 21:16	4
Ethanol	ND		600	ug/L			02/24/13 21:16	4
Ethylbenzene	ND		2.0	ug/L			02/24/13 21:16	4
Ethyl-t-butyl ether (ETBE)	ND		2.0	ug/L			02/24/13 21:16	4
Isopropyl Ether (DIPE)	ND		2.0	ug/L			02/24/13 21:16	4
m,p-Xylene	ND		4.0	ug/L			02/24/13 21:16	4
Methyl-t-Butyl Ether (MTBE)	240		2.0	ug/L			02/24/13 21:16	4
o-Xylene	ND		2.0	ug/L			02/24/13 21:16	4
Tert-amyl-methyl ether (TAME)	5.2		2.0	ug/L			02/24/13 21:16	4
tert-Butyl alcohol (TBA)	150		40	ug/L			02/24/13 21:16	4
Toluene	ND		2.0	ug/L			02/24/13 21:16	4
Xylenes, Total	ND		4.0	ug/L			02/24/13 21:16	4
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		80 - 120				02/24/13 21:16	4
Dibromofluoromethane (Surr)	91		80 - 120				02/24/13 21:16	4
Toluene-d8 (Surr)	98		80 - 120				02/24/13 21:16	4

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	720		250	ug/L			02/24/13 19:46	5
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105		65 - 140				02/24/13 19:46	5

Client Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0374, Oakland

TestAmerica Job ID: 440-38365-1

Client Sample ID: MW-9

Lab Sample ID: 440-38365-6

Date Collected: 02/14/13 08:10

Matrix: Water

Date Received: 02/15/13 09:50

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			02/24/13 20:47	1
1,2-Dichloroethane	ND		0.50	ug/L			02/24/13 20:47	1
Benzene	5.2		0.50	ug/L			02/24/13 20:47	1
Ethanol	ND		150	ug/L			02/24/13 20:47	1
Ethylbenzene	ND		0.50	ug/L			02/24/13 20:47	1
Ethyl-t-butyl ether (ETBE)	ND		0.50	ug/L			02/24/13 20:47	1
Isopropyl Ether (DIPE)	ND		0.50	ug/L			02/24/13 20:47	1
m,p-Xylene	1.4		1.0	ug/L			02/24/13 20:47	1
Methyl-t-Butyl Ether (MTBE)	25		0.50	ug/L			02/24/13 20:47	1
o-Xylene	ND		0.50	ug/L			02/24/13 20:47	1
Tert-amyl-methyl ether (TAME)	ND		0.50	ug/L			02/24/13 20:47	1
tert-Butyl alcohol (TBA)	ND		10	ug/L			02/24/13 20:47	1
Toluene	ND		0.50	ug/L			02/24/13 20:47	1
Xylenes, Total	1.4		1.0	ug/L			02/24/13 20:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	92		80 - 120		02/24/13 20:47	1
Dibromofluoromethane (Surr)	90		80 - 120		02/24/13 20:47	1
Toluene-d8 (Surr)	99		80 - 120		02/24/13 20:47	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	250		50	ug/L			02/22/13 09:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	157	LH	65 - 140		02/22/13 09:49	1

Lab Chronicle

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0374, Oakland

TestAmerica Job ID: 440-38365-1

Client Sample ID: MW-1

Date Collected: 02/14/13 07:15

Date Received: 02/15/13 09:50

Lab Sample ID: 440-38365-1

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	8260B/5030B		1	10 mL	10 mL	87519	02/25/13 15:04	SS	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	86848	02/22/13 05:18	KS	TAL IRV

Client Sample ID: MW-2

Date Collected: 02/14/13 07:40

Date Received: 02/15/13 09:50

Lab Sample ID: 440-38365-2

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	8260B/5030B		1	10 mL	10 mL	87519	02/25/13 15:32	SS	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	86848	02/22/13 05:46	KS	TAL IRV

Client Sample ID: MW-4

Date Collected: 02/14/13 10:10

Date Received: 02/15/13 09:50

Lab Sample ID: 440-38365-3

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	8260B/5030B		20	10 mL	10 mL	87459	02/24/13 21:45	AT	TAL IRV
Total/NA	Analysis	8015B/5030B		10	10 mL	10 mL	86848	02/22/13 06:14	KS	TAL IRV

Client Sample ID: MW-7

Date Collected: 02/14/13 09:05

Date Received: 02/15/13 09:50

Lab Sample ID: 440-38365-4

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	8260B/5030B		1	10 mL	10 mL	87459	02/24/13 20:17	AT	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	86848	02/22/13 06:42	KS	TAL IRV

Client Sample ID: MW-8

Date Collected: 02/14/13 08:40

Date Received: 02/15/13 09:50

Lab Sample ID: 440-38365-5

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	8260B/5030B		4	10 mL	10 mL	87459	02/24/13 21:16	AT	TAL IRV
Total/NA	Analysis	8015B/5030B		5	10 mL	10 mL	87464	02/24/13 19:46	TL	TAL IRV

Client Sample ID: MW-9

Date Collected: 02/14/13 08:10

Date Received: 02/15/13 09:50

Lab Sample ID: 440-38365-6

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	8260B/5030B		1	10 mL	10 mL	87459	02/24/13 20:47	AT	TAL IRV

TestAmerica Irvine

Lab Chronicle

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0374, Oakland

TestAmerica Job ID: 440-38365-1

Client Sample ID: MW-9

Lab Sample ID: 440-38365-6

Date Collected: 02/14/13 08:10

Matrix: Water

Date Received: 02/15/13 09:50

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	86848	02/22/13 09:49	KS	TAL IRV

Laboratory References:

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



QC Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0374, Oakland

TestAmerica Job ID: 440-38365-1

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

Lab Sample ID: MB 440-87459/4

Matrix: Water

Analysis Batch: 87459

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			02/24/13 11:26	1
1,2-Dichloroethane	ND		0.50	ug/L			02/24/13 11:26	1
Benzene	ND		0.50	ug/L			02/24/13 11:26	1
Ethanol	ND		150	ug/L			02/24/13 11:26	1
Ethylbenzene	ND		0.50	ug/L			02/24/13 11:26	1
Ethyl-t-butyl ether (ETBE)	ND		0.50	ug/L			02/24/13 11:26	1
Isopropyl Ether (DIPE)	ND		0.50	ug/L			02/24/13 11:26	1
m,p-Xylene	ND		1.0	ug/L			02/24/13 11:26	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50	ug/L			02/24/13 11:26	1
o-Xylene	ND		0.50	ug/L			02/24/13 11:26	1
Tert-amyl-methyl ether (TAME)	ND		0.50	ug/L			02/24/13 11:26	1
tert-Butyl alcohol (TBA)	ND		10	ug/L			02/24/13 11:26	1
Toluene	ND		0.50	ug/L			02/24/13 11:26	1
Xylenes, Total	ND		1.0	ug/L			02/24/13 11:26	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	88		80 - 120		02/24/13 11:26	1
Dibromofluoromethane (Surr)	99		80 - 120		02/24/13 11:26	1
Toluene-d8 (Surr)	97		80 - 120		02/24/13 11:26	1

Lab Sample ID: LCS 440-87459/5

Matrix: Water

Analysis Batch: 87459

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	22.3		ug/L		89	75 - 125
1,2-Dichloroethane	25.0	20.5		ug/L		82	60 - 140
Benzene	25.0	22.4		ug/L		90	70 - 120
Ethanol	250	316		ug/L		126	40 - 155
Ethylbenzene	25.0	24.5		ug/L		98	75 - 125
Ethyl-t-butyl ether (ETBE)	25.0	22.8		ug/L		91	65 - 135
Isopropyl Ether (DIPE)	25.0	29.2		ug/L		117	60 - 135
m,p-Xylene	50.0	50.4		ug/L		101	75 - 125
Methyl-t-Butyl Ether (MTBE)	25.0	20.7		ug/L		83	60 - 135
o-Xylene	25.0	25.1		ug/L		100	75 - 125
Tert-amyl-methyl ether (TAME)	25.0	21.7		ug/L		87	60 - 135
tert-Butyl alcohol (TBA)	125	123		ug/L		98	70 - 135
Toluene	25.0	23.8		ug/L		95	70 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	93		80 - 120
Dibromofluoromethane (Surr)	97		80 - 120
Toluene-d8 (Surr)	99		80 - 120

TestAmerica Irvine

QC Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0374, Oakland

TestAmerica Job ID: 440-38365-1

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

Lab Sample ID: 440-38719-B-1 MS

Matrix: Water

Analysis Batch: 87459

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
1,2-Dibromoethane (EDB)	ND		25.0	22.6		ug/L		91	70 - 130
1,2-Dichloroethane	ND		25.0	20.5		ug/L		82	60 - 140
Benzene	ND		25.0	22.1		ug/L		88	65 - 125
Ethanol	ND		250	298		ug/L		119	40 - 155
Ethylbenzene	ND		25.0	24.0		ug/L		96	65 - 130
Ethyl-t-butyl ether (ETBE)	ND		25.0	23.3		ug/L		93	60 - 135
Isopropyl Ether (DIPE)	ND		25.0	29.7		ug/L		119	60 - 140
m,p-Xylene	ND		50.0	49.2		ug/L		98	65 - 130
Methyl-t-Butyl Ether (MTBE)	ND		25.0	21.6		ug/L		86	55 - 145
o-Xylene	ND		25.0	24.4		ug/L		98	65 - 125
Tert-amyl-methyl ether (TAME)	ND		25.0	23.2		ug/L		93	60 - 140
tert-Butyl alcohol (TBA)	ND		125	113		ug/L		90	65 - 140
Toluene	ND		25.0	23.3		ug/L		93	70 - 125

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	93		80 - 120
Dibromofluoromethane (Surr)	96		80 - 120
Toluene-d8 (Surr)	98		80 - 120

Lab Sample ID: 440-38719-B-1 MSD

Matrix: Water

Analysis Batch: 87459

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
1,2-Dibromoethane (EDB)	ND		25.0	23.0		ug/L		92	70 - 130	2	25
1,2-Dichloroethane	ND		25.0	20.9		ug/L		84	60 - 140	2	20
Benzene	ND		25.0	22.7		ug/L		91	65 - 125	3	20
Ethanol	ND		250	325		ug/L		130	40 - 155	9	30
Ethylbenzene	ND		25.0	24.7		ug/L		99	65 - 130	3	20
Ethyl-t-butyl ether (ETBE)	ND		25.0	23.5		ug/L		94	60 - 135	1	25
Isopropyl Ether (DIPE)	ND		25.0	29.9		ug/L		120	60 - 140	1	25
m,p-Xylene	ND		50.0	50.5		ug/L		101	65 - 130	2	25
Methyl-t-Butyl Ether (MTBE)	ND		25.0	21.7		ug/L		87	55 - 145	1	25
o-Xylene	ND		25.0	25.0		ug/L		100	65 - 125	2	20
Tert-amyl-methyl ether (TAME)	ND		25.0	23.4		ug/L		94	60 - 140	1	30
tert-Butyl alcohol (TBA)	ND		125	131		ug/L		105	65 - 140	15	25
Toluene	ND		25.0	23.9		ug/L		95	70 - 125	3	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	92		80 - 120
Dibromofluoromethane (Surr)	94		80 - 120
Toluene-d8 (Surr)	98		80 - 120

TestAmerica Irvine

QC Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0374, Oakland

TestAmerica Job ID: 440-38365-1

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

Lab Sample ID: MB 440-87519/4

Matrix: Water

Analysis Batch: 87519

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			02/25/13 09:10	1
1,2-Dichloroethane	ND		0.50	ug/L			02/25/13 09:10	1
Benzene	ND		0.50	ug/L			02/25/13 09:10	1
Ethanol	ND		150	ug/L			02/25/13 09:10	1
Ethylbenzene	ND		0.50	ug/L			02/25/13 09:10	1
Ethyl-t-butyl ether (ETBE)	ND		0.50	ug/L			02/25/13 09:10	1
Isopropyl Ether (DIPE)	ND		0.50	ug/L			02/25/13 09:10	1
m,p-Xylene	ND		1.0	ug/L			02/25/13 09:10	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50	ug/L			02/25/13 09:10	1
o-Xylene	ND		0.50	ug/L			02/25/13 09:10	1
Tert-amyl-methyl ether (TAME)	ND		0.50	ug/L			02/25/13 09:10	1
tert-Butyl alcohol (TBA)	ND		10	ug/L			02/25/13 09:10	1
Toluene	ND		0.50	ug/L			02/25/13 09:10	1
Xylenes, Total	ND		1.0	ug/L			02/25/13 09:10	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		80 - 120		02/25/13 09:10	1
Dibromofluoromethane (Surr)	98		80 - 120		02/25/13 09:10	1
Toluene-d8 (Surr)	103		80 - 120		02/25/13 09:10	1

Lab Sample ID: LCS 440-87519/5

Matrix: Water

Analysis Batch: 87519

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	26.8		ug/L		107	75 - 125
1,2-Dichloroethane	25.0	25.8		ug/L		103	60 - 140
Benzene	25.0	23.6		ug/L		94	70 - 120
Ethanol	250	304		ug/L		122	40 - 155
Ethylbenzene	25.0	26.3		ug/L		105	75 - 125
Ethyl-t-butyl ether (ETBE)	25.0	28.9		ug/L		116	65 - 135
Isopropyl Ether (DIPE)	25.0	33.0		ug/L		132	60 - 135
m,p-Xylene	50.0	55.7		ug/L		111	75 - 125
Methyl-t-Butyl Ether (MTBE)	25.0	27.2		ug/L		109	60 - 135
o-Xylene	25.0	28.5		ug/L		114	75 - 125
Tert-amyl-methyl ether (TAME)	25.0	27.9		ug/L		112	60 - 135
tert-Butyl alcohol (TBA)	125	145		ug/L		116	70 - 135
Toluene	25.0	26.6		ug/L		106	70 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	102		80 - 120
Toluene-d8 (Surr)	104		80 - 120

TestAmerica Irvine

QC Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0374, Oakland

TestAmerica Job ID: 440-38365-1

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

Lab Sample ID: 440-38837-B-2 MS

Matrix: Water

Analysis Batch: 87519

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
1,2-Dibromoethane (EDB)	ND		25.0	23.4		ug/L		93	70 - 130
1,2-Dichloroethane	ND		25.0	22.2		ug/L		89	60 - 140
Benzene	ND		25.0	20.3		ug/L		81	65 - 125
Ethanol	ND		250	280		ug/L		112	40 - 155
Ethylbenzene	ND		25.0	24.0		ug/L		96	65 - 130
Ethyl-t-butyl ether (ETBE)	ND		25.0	23.6		ug/L		94	60 - 135
Isopropyl Ether (DIPE)	ND		25.0	26.5		ug/L		106	60 - 140
m,p-Xylene	ND		50.0	51.7		ug/L		103	65 - 130
Methyl-t-Butyl Ether (MTBE)	ND		25.0	22.6		ug/L		90	55 - 145
o-Xylene	ND		25.0	25.6		ug/L		102	65 - 125
Tert-amyl-methyl ether (TAME)	ND		25.0	22.6		ug/L		90	60 - 140
tert-Butyl alcohol (TBA)	ND		125	122		ug/L		97	65 - 140
Toluene	ND		25.0	23.0		ug/L		92	70 - 125

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	104		80 - 120
Dibromofluoromethane (Surr)	94		80 - 120
Toluene-d8 (Surr)	103		80 - 120

Lab Sample ID: 440-38837-B-2 MSD

Matrix: Water

Analysis Batch: 87519

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
1,2-Dibromoethane (EDB)	ND		25.0	21.0		ug/L		84	70 - 130	11	25
1,2-Dichloroethane	ND		25.0	19.7		ug/L		79	60 - 140	12	20
Benzene	ND		25.0	17.9		ug/L		72	65 - 125	12	20
Ethanol	ND		250	253		ug/L		101	40 - 155	10	30
Ethylbenzene	ND		25.0	20.9		ug/L		84	65 - 130	13	20
Ethyl-t-butyl ether (ETBE)	ND		25.0	20.6		ug/L		83	60 - 135	13	25
Isopropyl Ether (DIPE)	ND		25.0	23.6		ug/L		95	60 - 140	11	25
m,p-Xylene	ND		50.0	44.7		ug/L		89	65 - 130	14	25
Methyl-t-Butyl Ether (MTBE)	ND		25.0	19.9		ug/L		80	55 - 145	13	25
o-Xylene	ND		25.0	22.7		ug/L		91	65 - 125	12	20
Tert-amyl-methyl ether (TAME)	ND		25.0	19.8		ug/L		79	60 - 140	13	30
tert-Butyl alcohol (TBA)	ND		125	109		ug/L		87	65 - 140	11	25
Toluene	ND		25.0	20.7		ug/L		83	70 - 125	10	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	95		80 - 120
Toluene-d8 (Surr)	103		80 - 120

TestAmerica Irvine

QC Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0374, Oakland

TestAmerica Job ID: 440-38365-1

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

Lab Sample ID: MB 440-86848/33

Matrix: Water

Analysis Batch: 86848

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			02/22/13 02:30	1
Surrogate	MB %Recovery	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		65 - 140				02/22/13 02:30	1

Lab Sample ID: LCS 440-86848/32

Matrix: Water

Analysis Batch: 86848

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	776		ug/L		97	80 - 120
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
4-Bromofluorobenzene (Surr)	92		65 - 140				

Lab Sample ID: 440-38613-A-1 MS

Matrix: Water

Analysis Batch: 86848

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)	920		800	1620		ug/L		87	65 - 140
Surrogate	MS %Recovery	MS Qualifier	Limits						
4-Bromofluorobenzene (Surr)	100		65 - 140						

Lab Sample ID: 440-38613-A-1 MSD

Matrix: Water

Analysis Batch: 86848

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)	920		800	1580		ug/L		82	65 - 140	3	20
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
4-Bromofluorobenzene (Surr)	107		65 - 140								

Lab Sample ID: MB 440-87464/4

Matrix: Water

Analysis Batch: 87464

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			02/24/13 11:26	1
Surrogate	MB %Recovery	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	92		65 - 140				02/24/13 11:26	1

TestAmerica Irvine

QC Sample Results

Client: Broadbent & Associates, Inc.
 Project/Site: ARCO 0374, Oakland

TestAmerica Job ID: 440-38365-1

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

Lab Sample ID: LCS 440-87464/3

Matrix: Water

Analysis Batch: 87464

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	781		ug/L		98	80 - 120
Surrogate		LCS %Recovery	LCS Qualifier				Limits
4-Bromofluorobenzene (Surr)		108					65 - 140

Lab Sample ID: 440-37936-C-5 MS

Matrix: Water

Analysis Batch: 87464

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)	7000		40000	48000		ug/L		103	65 - 140
Surrogate		MS %Recovery		MS Qualifier					Limits
4-Bromofluorobenzene (Surr)		144		LH					65 - 140

Lab Sample ID: 440-37936-C-5 MSD

Matrix: Water

Analysis Batch: 87464

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)	7000		40000	50800		ug/L		109	65 - 140	6	20
Surrogate		MSD %Recovery		MSD Qualifier					Limits		
4-Bromofluorobenzene (Surr)		136							65 - 140		

QC Association Summary

Client: Broadbent & Associates, Inc.
 Project/Site: ARCO 0374, Oakland

TestAmerica Job ID: 440-38365-1

GC/MS VOA

Analysis Batch: 87459

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-38365-3	MW-4	Total/NA	Water	8260B/5030B	
440-38365-4	MW-7	Total/NA	Water	8260B/5030B	
440-38365-5	MW-8	Total/NA	Water	8260B/5030B	
440-38365-6	MW-9	Total/NA	Water	8260B/5030B	
440-38719-B-1 MS	Matrix Spike	Total/NA	Water	8260B/5030B	
440-38719-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B/5030B	
LCS 440-87459/5	Lab Control Sample	Total/NA	Water	8260B/5030B	
MB 440-87459/4	Method Blank	Total/NA	Water	8260B/5030B	

Analysis Batch: 87519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-38365-1	MW-1	Total/NA	Water	8260B/5030B	
440-38365-2	MW-2	Total/NA	Water	8260B/5030B	
440-38837-B-2 MS	Matrix Spike	Total/NA	Water	8260B/5030B	
440-38837-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B/5030B	
LCS 440-87519/5	Lab Control Sample	Total/NA	Water	8260B/5030B	
MB 440-87519/4	Method Blank	Total/NA	Water	8260B/5030B	

GC VOA

Analysis Batch: 86848

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-38365-1	MW-1	Total/NA	Water	8015B/5030B	
440-38365-2	MW-2	Total/NA	Water	8015B/5030B	
440-38365-3	MW-4	Total/NA	Water	8015B/5030B	
440-38365-4	MW-7	Total/NA	Water	8015B/5030B	
440-38365-6	MW-9	Total/NA	Water	8015B/5030B	
440-38613-A-1 MS	Matrix Spike	Total/NA	Water	8015B/5030B	
440-38613-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8015B/5030B	
LCS 440-86848/32	Lab Control Sample	Total/NA	Water	8015B/5030B	
MB 440-86848/33	Method Blank	Total/NA	Water	8015B/5030B	

Analysis Batch: 87464

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-37936-C-5 MS	Matrix Spike	Total/NA	Water	8015B/5030B	
440-37936-C-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8015B/5030B	
440-38365-5	MW-8	Total/NA	Water	8015B/5030B	
LCS 440-87464/3	Lab Control Sample	Total/NA	Water	8015B/5030B	
MB 440-87464/4	Method Blank	Total/NA	Water	8015B/5030B	

Definitions/Glossary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0374, Oakland

TestAmerica Job ID: 440-38365-1

Qualifiers

GC VOA

Qualifier	Qualifier Description
LH	Surrogate Recoveries were higher than QC limits

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)
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 0374, Oakland

TestAmerica Job ID: 440-38365-1

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	02-28-13
Nevada	State Program	9	CA015312007A	07-31-13
Oregon	NELAP	10	4005	09-12-13
USDA	Federal		P330-09-00080	06-06-14
USEPA UCMR	Federal	1	CA01531	01-31-15

Login Sample Receipt Checklist

Client: Broadbent & Associates, Inc.

Job Number: 440-38365-1

Login Number: 38365

List Number: 1

Creator: King, Ronald

List Source: TestAmerica Irvine

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.	True	
Sample custody seals, if present, are intact.	True	
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!**

<u>Submittal Type:</u>	EDF
<u>Report Title:</u>	1Q13 GW Monitoring
<u>Report Type:</u>	Monitoring Report - Semi-Annually
<u>Facility Global ID:</u>	T0600100106
<u>Facility Name:</u>	ARCO #0374
<u>File Name:</u>	440-38365-1_01 Mar 13 1328_EDF.zip
<u>Organization Name:</u>	Broadbent & Associates, Inc.
<u>Username:</u>	BROADBENT-C
<u>IP Address:</u>	67.118.40.90
<u>Submittal Date/Time:</u>	4/25/2013 2:27:44 PM
<u>Confirmation Number:</u>	8840595304

[VIEW QC REPORT](#)

[VIEW DETECTIONS REPORT](#)

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STATE WATER RESOURCES CONTROL BOARD
GEOTRACKER ESI

UPLOADING A GEO_WELL FILE

SUCCESS

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<u>Submittal Type:</u>	GEO_WELL
<u>Report Title:</u>	1Q13 GEO_WELL 374
<u>Facility Global ID:</u>	T0600100106
<u>Facility Name:</u>	ARCO #0374
<u>File Name:</u>	GEO_WELL.zip
<u>Organization Name:</u>	Broadbent & Associates, Inc.
<u>Username:</u>	BROADBENT-C
<u>IP Address:</u>	67.118.40.90
<u>Submittal Date/Time:</u>	4/25/2013 2:30:28 PM
<u>Confirmation Number:</u>	2578931689

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