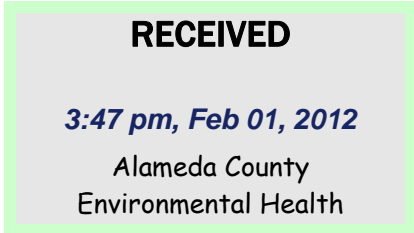


# Atlantic Richfield Company

**Shannon Couch**  
Project Manager

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



January 27, 2012

Re: Fourth Quarter 2011 Semi-Annual Groundwater Monitoring Report  
Atlantic Richfield Company Station #6113  
785 East Stanley Boulevard, Livermore, California  
ACEH Case #RO0000393

"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,

A handwritten signature in black ink, consisting of a large, stylized initial 'S' followed by a long horizontal line that ends in a small loop.

Shannon Couch  
Project Manager

Attachment

**FOURTH QUARTER 2011 SEMI-ANNUAL  
GROUNDWATER MONITORING REPORT**

Atlantic Richfield Company Station #6113  
785 East Stanley Blvd, Livermore, California  
ACEH Case #RO0000393

Prepared for

Ms. Shannon Couch  
Project Manager  
Atlantic Richfield Company  
P.O. Box 1257  
San Ramon, California 94583

Prepared by



1324 Mangrove Avenue, Suite 212  
Chico, California 95926  
(530) 566-1400  
*www.broadbentinc.com*

January 27, 2012

Project No. 06-82-637



**BROADBENT**

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**CREATING SOLUTIONS. BUILDING TRUST.**

January 27, 2012

Project No. 06-82-637

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

Attn.: Ms. Shannon Couch

Re: Fourth Quarter 2011 Semi-Annual Groundwater Monitoring Report, Atlantic Richfield Company Station #6113, 785 East Stanley Blvd, Livermore, California;  
ACEH Case #RO0000393.

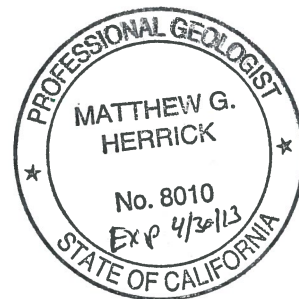
Dear Ms. Couch:

Attached is the *Fourth Quarter 2011 Semi-Annual Groundwater Monitoring Report* for Atlantic Richfield Company (a BP affiliated company) Station #6113 located at 785 East Stanley Blvd., Livermore, Alameda County, California (Site). This report presents a summary of current developments regarding the Site through the Fourth Quarter 2011. Should you have questions regarding the work performed or results obtained, please do not hesitate to contact us at (530) 566-1400.

Sincerely,  
BROADBENT & ASSOCIATES, INC.

Jason Duda  
Project Scientist

Matthew G. Herrick, P.G., C.HG  
Senior Hydrogeologist



Enclosure

cc: Mr. Paresh Khatri, ACEH (Submitted via ACEH ftp Site)  
Mr. Paul M. Smith/Ms. Danielle Stefani, Livermore-Pleasanton Fire Department  
(submitted via GeoTracker)  
Electronic copy uploaded to GeoTracker

**FOURTH QUARTER 2011 SEMI-ANNUAL  
GROUNDWATER MONITORING REPORT  
STATION #6113, LIVERMORE, CALIFORNIA**

Broadbent & Associates, Inc. (Broadbent) is pleased to present this *Fourth Quarter 2011 Monitoring Report* on behalf of Atlantic Richfield Company (a BP affiliated company) for Station #6113 located in Livermore, Alameda County, California. Reporting is being submitted to the Alameda County Environmental Health Services Agency (ACEH) consistent with the requirements under the legal authority of the California Regional Water Quality Control Board as codified by California Code of Regulations Title 23, Section 2652(d). A summary description of current developments regarding the site is provided below.

Facility Name / Address:	<u>Station #6113 / 785 East Stanley Blvd., Livermore, CA</u>
Client Project Manager / Title:	<u>Ms. Shannon Couch / Project Manager</u>
Broadbent Contact:	<u>Jason Duda, (530) 566-1400</u>
Broadbent Project No.:	<u>06-82-637</u>
Primary Regulatory Agency / ID No.:	<u>ACEH Case #RO0000393</u>
Current phase of project:	<u>Monitoring</u>
List of Acronyms / Abbreviations:	<u>See end of report text for list of acronyms/abbreviations used in report.</u>

**WORK PERFORMED THIS QUARTER (Fourth Quarter 2011):**

1. Prepared and submitted the *Third Quarter 2011 Status Report* (Broadbent, 10/17/2011).
2. Conducted groundwater monitoring/sampling for Fourth Quarter 2011 on October 20, 2011.

**WORK SCHEDULED FOR NEXT QUARTER (First Quarter 2012):**

1. Prepare and submit *Fourth Quarter 2011 Semi-Annual Groundwater Monitoring Report* (contained herein).
2. No environmental field work is presently scheduled during the First Quarter of 2012.

**GROUNDWATER MONITORING PLAN SUMMARY:**

Groundwater level gauging:	<u>MW-2, MW-4, MW-7, MW-9, (2Q and 4Q) MW-11, MW-12, RMW-13, VW-1, VW-2, and VW-4</u>
Groundwater sample collection:	<u>MW-4, MW-7, MW-11, MW-12, (2Q and 4Q) RMW-13, and VW-1 MW-9 (4Q)</u>
Biodegradation indicator parameter monitoring:	<u>NA</u>

**QUARTERLY RESULTS SUMMARY:**

**LNAPL**

LNAPL observed this quarter:	<u>No</u>	(yes/no)
LNAPL recovered this quarter:	<u>None</u>	(gal)
Cumulative LNAPL recovered:	<u>Unknown</u>	(gal)

**Groundwater Elevation and Gradient:**

Depth to groundwater:	<u>17.30 (MW-9) to 20.25 (MW-12)</u>	(ft below TOC)
Gradient direction:	<u>North-Northeast</u>	(compass direction)
Gradient magnitude:	<u>0.01</u>	(ft/ft)
Average change in elevation:	<u>-1.29</u>	(ft since last measurement)

**Laboratory Analytical Data**

Summary:	<u>GRO were detected in two of the seven wells sampled at a maximum concentration of 560 µg/L in RMW-13. Benzene was detected in RMW-13 at a concentration of 1,100 µg/L. MTBE was detected in three of the seven wells sampled at a maximum concentration of 55 µg/L in RMW-13.</u>
----------	--

## ACTIVITIES CONDUCTED & RESULTS:

Fourth Quarter 2011 semi-annual groundwater monitoring was conducted on October 20, 2011 by Broadbent personnel in accordance with the monitoring plan summary detailed above. No irregularities were noted during water level gauging. Light, Non-Aqueous Phase Liquid (LNAPL, or free product) was not noted to be present in the wells monitored during this event. Depth to water measurements ranged from 17.30 ft at MW-9 to 20.25 ft at MW-12. Resulting groundwater surface elevations ranged from 437.12 ft at MW-12 to 441.81 ft at MW-2. Groundwater elevations are summarized in Table 1. Water level elevations yielded a horizontal groundwater gradient to the north-northeast at approximately 0.01 ft/ft. Field methods used during groundwater monitoring are provided in Appendix A. Field data sheets are included in Appendix B. A Site Location Map is presented as Drawing 1. Potentiometric groundwater elevation contours are presented in Drawing 2.

Groundwater samples were collected on October 20, 2011, from wells MW-4, MW-7, MW-9, MW-11, MW-12, RMW-13, and VW-1 at Station #6113, consistent with the current monitoring schedule. No irregularities were reported during sampling. Samples were submitted under chain-of-custody protocol to Calscience Environmental Laboratories, Inc. (Garden Grove, California) for analysis of Gasoline-Range Organics (GRO, C6-C12) by EPA Method 8015M; for Benzene, Toluene, Ethylbenzene, Total Xylenes (BTEX), Methyl Tertiary Butyl Ether (MTBE), Ethyl Tertiary Butyl Ether (ETBE), Tert-Amyl Methyl Ether (TAME), Di-Isopropyl Ether (DIPE), 1,2-Dibromomethane (EDB), 1,2-Dichloroethane (1,2-DCA), Tert-Butyl Alcohol (TBA) and Ethanol by EPA Method 8260B. The GRO concentration observed in the sample collected from well MW-4 was "quantitated against gasoline." No other significant irregularities were encountered during analysis of the samples. The laboratory analytical report, including chain-of-custody documentation, is provided in Appendix C.

Hydrocarbons in the GRO range were detected above the laboratory reporting limit in two of the seven wells sampled at concentrations up to 560 micrograms per liter ( $\mu\text{g/L}$ ) in well RMW-13. Benzene, Ethylbenzene, and Total Xylenes were detected above the laboratory reporting limits in well RMW-13 at concentrations of 1,100  $\mu\text{g/L}$ , 550  $\mu\text{g/L}$ , and 620  $\mu\text{g/L}$ , respectively. MTBE was detected above the laboratory reporting limit in three of the seven wells sampled at concentrations up to 55  $\mu\text{g/L}$  in well RMW-13. The remaining analytes were not detected above their laboratory reporting limits in the wells sampled this monitoring event. Groundwater monitoring laboratory analytical results are summarized in Table 1 and Table 2. The most recent GRO, Benzene, and MTBE concentrations are also presented in Drawing 2. Groundwater monitoring data (GEO\_WELL) and laboratory analytical results (EDF) were uploaded to the GeoTracker AB2886 database. Upload confirmation receipts are provided in Appendix D.

## DISCUSSION:

Groundwater levels were between historic minimum and maximum elevations for each well gauged this quarter. It should be noted that this is only the fourth time groundwater levels have been gauged in RMW-13. Groundwater elevations yielded a horizontal groundwater gradient to the north-northeast at approximately 0.01 ft/ft, generally consistent with the historic gradient measurements presented in Table 3.

This event's detected analytical concentrations were within the historic minimum and maximum ranges recorded for each well with the following exceptions: GRO, Benzene, Ethylbenzene, Total Xylenes, and MTBE reached historic minimum concentrations in well RMW-13. As stated above, it is important to recognize that this is only the fourth sampling event conducted on RMW-13. The next semi-annual groundwater monitoring and sampling event is scheduled to be conducted during the Second Quarter 2012.

## RECOMMENDATIONS:

The *Work Plan to Conduct a Mobile Dual-Phase Extraction Event* was submitted to ACEH on March 7, 2011. Upon receipt of approval from ACEH regarding this Work Plan, preparation and conduct of a mobile dual-phase extraction event will commence.

## LIMITATIONS:

The findings presented in this document are based upon: observations of Broadbent field personnel (see Appendices A and B), the points investigated, and results of laboratory tests performed by CalScience Environmental Laboratories, Inc. (Garden Grove, California). Our services were performed in accordance with the generally accepted standard of practice at the time this document was written. No other warranty, expressed or implied was made. This report has been prepared for the exclusive use of Atlantic Richfield Company. It is possible that variations in soil or ground-water 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 Contours and Analytical Summary Map, October 20, 2011
  
- Table 1: Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
- Table 2: Summary of Fuel Additives Analytical Data
- Table 3: Historic 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
BTEX:	Benzene, Toluene, Ethylbenzene, Total Xylenes	GRO:	Gasoline-Range Organics
1,2-DCA:	1,2-Dichloroethane	LNAPL:	Light Non-Aqueous Phase Liquid
DIPE:	Di-Isopropyl Ether	MTBE:	Methyl Tertiary Butyl Ether
DO:	Dissolved Oxygen	NO <sub>3</sub> :	Nitrate as Nitrogen
DRO:	Diesel-Range Organics	ppb:	parts per billion
EDB:	1,2-Dibromomethane	SO <sub>4</sub> :	Sulfate
Eh:	Oxidation Reduction Potential	TAME:	Tert-Amyl Methyl Ether
EPA:	Environmental Protection Agency	TBA:	Tertiary Butyl Ether
ETBE:	Ethyl Tertiary Butyl Ether	TOC:	Top of Casing
Fe <sup>2+</sup> :	Ferrous Iron	µg/L:	micrograms per liter
ft/ft:	feet per foot		

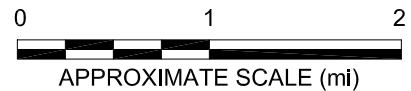
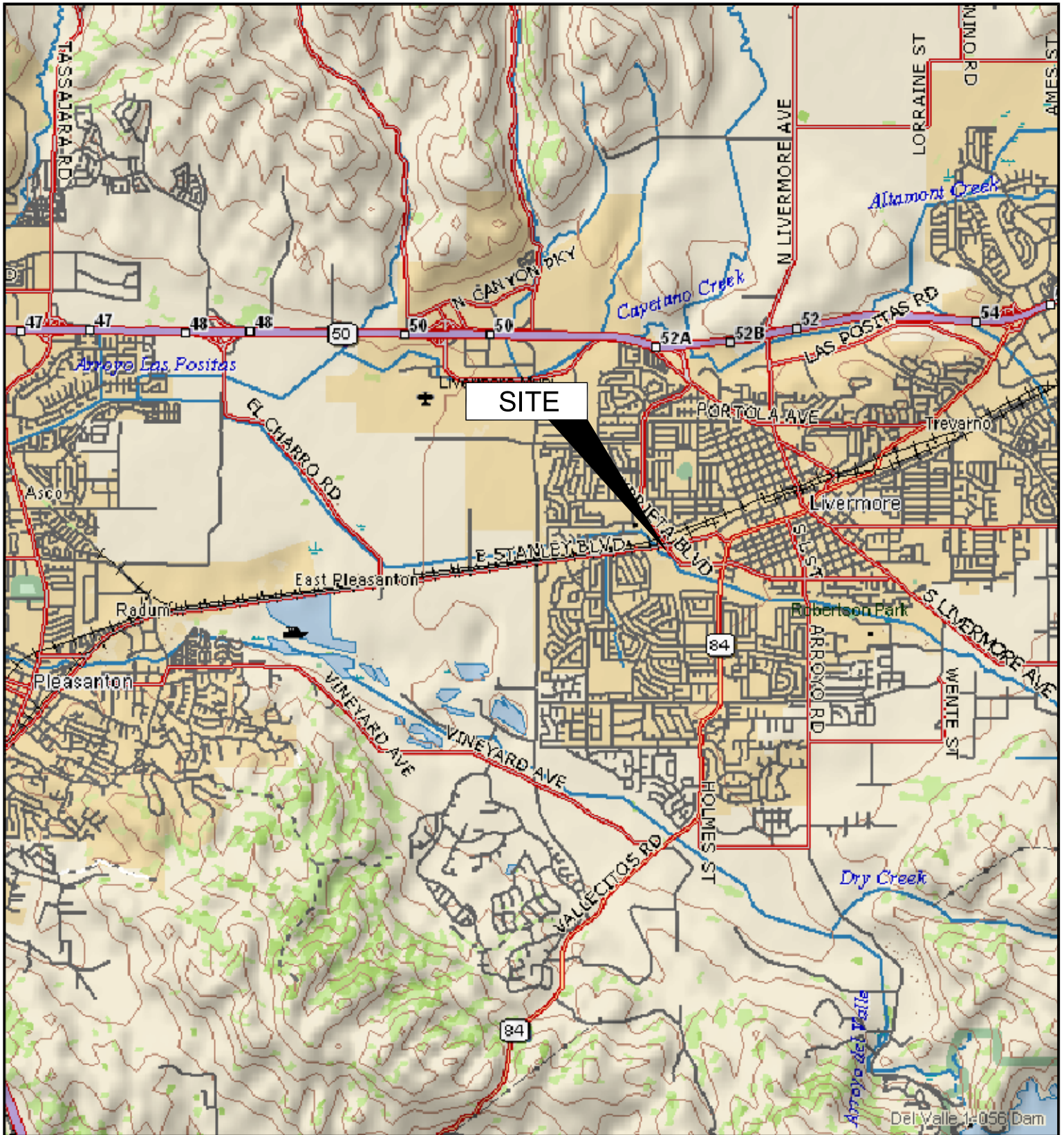
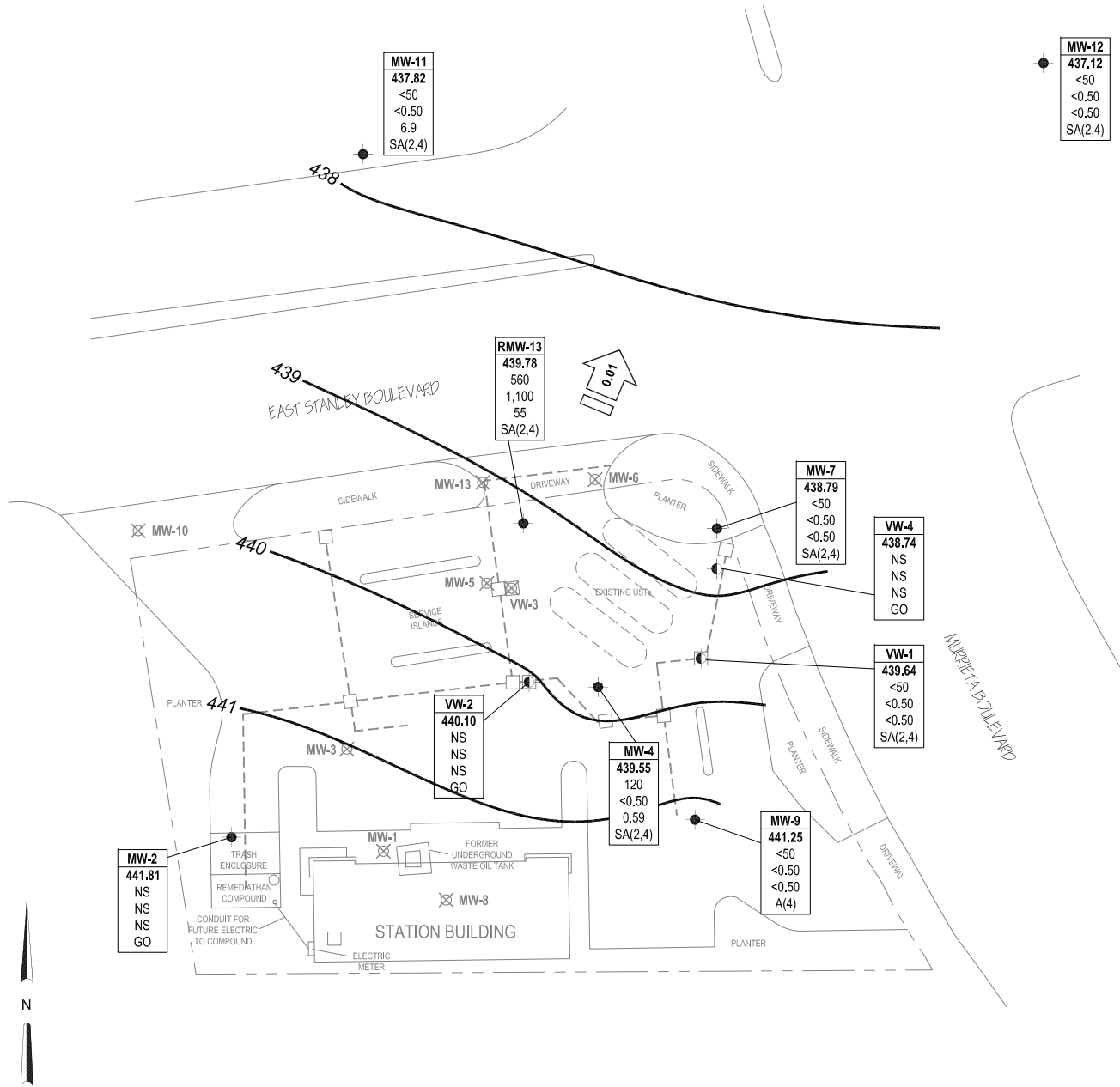


IMAGE SOURCE: DELORME



### LEGEND

- Monitoring well
- Vapor extraction well
- Abandoned well
- 441 Groundwater elevation contour (ft/MSL)

Well	Well Designation
ELEV	Ground-water Elevation
GRO	GRO, Benzene and MTBE concentration (µg/L)
Benzene	
MTBE	
A/SA	Sampling frequency
A(4)	Sampled annually, 4th quarter
SA(2,4)	Semi-annual sampling, 2nd and 4th quarters
GO	Gauge only
NS	Not Sampled
NS	Not Sampled
NS	Not Sampled
NM	Not Measured
*	Not Used in Contouring

- 0.01 Approximate groundwater flow gradient (ft/ft)
- Vault box
- Piping trench

NOTE: SITE MAP ADAPTED FROM CAMBRIA ENVIRONMENTAL FIGURES. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.



**BROADBENT & ASSOCIATES, INC.**  
 ENGINEERING, WATER RESOURCES & ENVIRONMENTAL  
 1324 Mangrove Ave, Suite 212, Chico, California 95926  
 Project No.: 06-82-637 Date: 1/4/2011

Station #6113  
 785 East Stanley Boulevard  
 Livermore, California

Groundwater Elevation Contour and  
 Analytical Summary Map  
 October 20, 2011

Drawing  
2



**Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses**  
**ARCO Service Station #6113, 785 East Stanley Blvd., Livermore, 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			
<b>MW-1</b>															
3/23/1995	--	457.04	29.00	44.00	14.12	442.92	--	--	--	--	--	--	--	--	e
5/31/1995	--		29.00	44.00	14.45	442.59	--	--	--	--	--	--	--	--	e
8/31/1995	--		29.00	44.00	17.12	439.92	--	--	--	--	--	--	--	--	e
11/28/1995	--		29.00	44.00	16.34	440.70	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
2/22/1996	--		29.00	44.00	13.23	443.81	--	--	--	--	--	--	--	--	e
5/23/1996	--		29.00	44.00	14.02	443.02	--	--	--	--	--	--	--	--	e
8/8/1996	--		29.00	44.00	16.13	440.91	--	--	--	--	--	--	--	--	e
11/7/1996	--		29.00	44.00	17.28	439.76	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
3/27/1997	--		29.00	44.00	14.91	442.13	--	--	--	--	--	--	--	--	e
5/19/1997	--		29.00	44.00	16.47	440.57	--	--	--	--	--	--	--	--	e
5/18/1998	--		29.00	44.00	14.69	442.35	--	--	--	--	--	--	--	--	e
11/2/1998	--		29.00	44.00	25.94	431.10	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
6/4/1999	--		29.00	44.00	17.38	439.66	--	--	--	--	--	--	--	--	e
11/11/1999	P		29.00	44.00	18.63	438.41	<50	<0.5	<0.5	<0.5	<1	<3	1.03	--	
6/20/2000	--		29.00	44.00	17.09	439.95	--	--	--	--	--	--	3.1	--	e
8/29/2000	--		29.00	44.00	18.20	438.84	--	--	--	--	--	--	2.66	--	e
11/29/2000	P		29.00	44.00	20.30	436.74	<50.0	<0.500	<0.500	<0.500	1.36	<2.50	0.71	--	
5/2/2001	--		29.00	44.00	22.39	434.65	--	--	--	--	--	--	--	--	e
8/15/2001	--		29.00	44.00	24.97	432.07	--	--	--	--	--	--	--	--	e
10/5/2001	P		29.00	44.00	25.09	431.95	<50	<0.50	<0.50	<0.50	<0.50	<2.5	0.78	--	
1/21/2002	--		29.00	44.00	24.58	432.46	--	--	--	--	--	--	--	--	e
4/26/2002	--		29.00	44.00	24.19	432.85	--	--	--	--	--	--	--	--	e
10/7/2002	--		29.00	44.00	20.13	436.91	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	--	
05/01/2003	--		29.00	44.00	17.98	439.06	--	--	--	--	--	--	--	--	r
10/27/2005	--	459.41	29.00	44.00	18.45	440.96	--	--	--	--	--	--	--	--	
04/12/2006	--		29.00	44.00	15.18	444.23	--	--	--	--	--	--	--	--	
10/31/2006	--		29.00	44.00	19.18	440.23	--	--	--	--	--	--	--	--	
4/19/2007	--		29.00	44.00	23.20	436.21	--	--	--	--	--	--	--	--	
10/16/2007	--		29.00	44.00	38.28	421.13	--	--	--	--	--	--	--	--	
4/24/2008	--		29.00	44.00	25.97	433.44	--	--	--	--	--	--	--	--	

**Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses**  
**ARCO Service Station #6113, 785 East Stanley Blvd., Livermore, 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			
<b>MW-1 Cont.</b>															
6/18/2008	--	459.41	29.00	44.00	--	--	--	--	--	--	--	--	--	--	k
<b>MW-2</b>															
3/23/1995	--	457.74	28.00	38.00	14.15	443.59	--	--	--	--	--	--	--	--	
5/31/1995	--		28.00	38.00	14.67	443.07	--	--	--	--	--	--	--	--	e
8/31/1995	--		28.00	38.00	17.24	440.50	--	--	--	--	--	--	--	--	e
11/28/1995	--		28.00	38.00	16.40	441.34	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
2/22/1996	--		28.00	38.00	13.55	444.19	--	--	--	--	--	--	--	--	e
5/23/1996	--		28.00	38.00	14.29	443.45	--	--	--	--	--	--	--	--	e
8/8/1996	--		28.00	38.00	16.19	441.55	--	--	--	--	--	--	--	--	e
11/7/1996	--		28.00	38.00	17.50	440.24	65	0.6	7.4	2.1	12	5	--	--	
3/27/1997	--		28.00	38.00	15.32	442.42	--	--	--	--	--	--	--	--	e
5/19/1997	--		28.00	38.00	16.62	441.12	--	--	--	--	--	--	--	--	e
5/18/1998	--		28.00	38.00	15.12	442.62	--	--	--	--	--	--	--	--	e
11/2/1998	--		28.00	38.00	26.66	431.08	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
6/4/1999	--		28.00	38.00	17.74	440.00	--	--	--	--	--	--	--	--	e
11/11/1999	P		28.00	38.00	18.75	438.99	<50	<0.5	<0.5	<0.5	<1	<3	0.82	--	
6/20/2000	--		28.00	38.00	17.21	440.53	--	--	--	--	--	--	2.6	--	e
8/29/2000	--		28.00	38.00	18.25	439.49	--	--	--	--	--	--	2.65	--	e
11/29/2000	P		28.00	38.00	20.69	437.05	<50.0	<0.500	0.581	0.827	4.38	<2.50	0.88	--	
5/2/2001	--		28.00	38.00	22.69	435.05	--	--	--	--	--	--	--	--	e
8/15/2001	--		28.00	38.00	25.15	432.59	--	--	--	--	--	--	--	--	e
10/5/2001	P		28.00	38.00	25.22	432.52	<50	<0.50	<0.50	<0.50	<0.50	<2.5	0.8	--	
1/21/2002	--		28.00	38.00	24.70	433.04	--	--	--	--	--	--	--	--	e
4/26/2002	--		28.00	38.00	24.53	433.21	--	--	--	--	--	--	--	--	e
10/7/2002	--		28.00	38.00	19.45	438.29	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.5	--	
05/01/2003	--		28.00	38.00	18.18	439.56	--	--	--	--	--	--	--	--	r
10/27/2005	--	460.07	28.00	38.00	--	--	--	--	--	--	--	--	--	--	t
04/12/2006	--		28.00	38.00	15.30	444.77	--	--	--	--	--	--	--	--	
10/31/2006	--		28.00	38.00	19.48	440.59	--	--	--	--	--	--	--	--	
4/19/2007	--		28.00	38.00	23.85	436.22	--	--	--	--	--	--	--	--	

**Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses**  
**ARCO Service Station #6113, 785 East Stanley Blvd., Livermore, CA**

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							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
<b>MW-2 Cont.</b>															
10/16/2007	--	460.07	28.00	38.00	36.78	423.29	--	--	--	--	--	--	--	--	
4/24/2008	--		28.00	38.00	26.38	433.69	--	--	--	--	--	--	--	--	
10/15/2008	--		28.00	38.00	37.21	422.86	--	--	--	--	--	--	--	--	
4/28/2009	--		28.00	38.00	33.30	426.77	--	--	--	--	--	--	--	--	
11/9/2009	--		28.00	38.00	21.87	438.20	--	--	--	--	--	--	--	--	
4/12/2010	--		28.00	38.00	18.53	441.54	--	--	--	--	--	--	--	--	
11/4/2010	--		28.00	38.00	19.31	440.76	--	--	--	--	--	--	--	--	
5/18/2011	--		28.00	38.00	17.72	442.35	--	--	--	--	--	--	--	--	
<b>10/20/2011</b>	--		<b>28.00</b>	<b>38.00</b>	<b>18.26</b>	<b>441.81</b>	--	--	--	--	--	--	--	--	
<b>MW-3</b>															
3/23/1995	--	456.97	28.50	38.50	14.13	442.84	--	--	--	--	--	--	--	--	e
5/31/1995	--		28.50	38.50	14.46	442.51	--	--	--	--	--	--	--	--	e
8/31/1995	--		28.50	38.50	17.06	439.91	--	--	--	--	--	--	--	--	e
11/28/1995	--		28.50	38.50	16.27	440.70	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
2/22/1996	--		28.50	38.50	13.14	443.83	--	--	--	--	--	--	--	--	e
5/23/1996	--		28.50	38.50	13.95	443.02	--	--	--	--	--	--	--	--	e
8/8/1996	--		28.50	38.50	16.03	440.94	--	--	--	--	--	--	--	--	e
11/7/1996	--		28.50	38.50	17.26	439.71	<50	<0.5	0.9	<0.5	1.5	<3	--	--	
3/27/1997	--		28.50	38.50	14.85	442.12	--	--	--	--	--	--	--	--	e
5/19/1997	--		28.50	38.50	16.40	440.57	--	--	--	--	--	--	--	--	e
5/18/1998	--		28.50	38.50	14.66	442.31	--	--	--	--	--	--	--	--	e
11/2/1998	--		28.50	38.50	25.85	431.12	<1,000	<10	<10	<10	<10	1,700	--	--	
6/4/1999	--		28.50	38.50	17.35	439.62	--	--	--	--	--	--	--	--	e
11/11/1999	P		28.50	38.50	18.58	438.39	<50	<0.5	<0.5	<0.5	<1	<3	0.79	--	
6/20/2000	--		28.50	38.50	17.03	439.94	--	--	--	--	--	--	2.8	--	e
8/29/2000	--		28.50	38.50	18.25	438.72	--	--	--	--	--	--	3.39	--	e
11/29/2000	--		28.50	38.50	20.27	436.70	<50.0	<0.500	<0.500	1.08	3.34	<2.50	0.67	--	
5/2/2001	--		28.50	38.50	22.33	434.64	--	--	--	--	--	--	--	--	e
8/15/2001	--		28.50	38.50	25.03	431.94	--	--	--	--	--	--	--	--	e
10/5/2001	P		28.50	38.50	25.17	431.80	<50	<0.50	<0.50	<0.50	<0.50	<2.5	0.79	--	

**Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses**  
**ARCO Service Station #6113, 785 East Stanley Blvd., Livermore, 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			
<b>MW-3 Cont.</b>															
1/21/2002	--	456.97	28.50	38.50	24.79	432.18	--	--	--	--	--	--	--	--	e
4/26/2002	--		28.50	38.50	24.27	432.70	--	--	--	--	--	--	--	--	e
10/7/2002	--		28.50	38.50	20.20	436.77	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	--	
05/01/2003	--		28.50	38.50	18.27	438.70	--	--	--	--	--	--	--	--	c, e
10/03/2003	P		28.50	38.50	20.07	436.90	<50	<0.50	<0.50	<0.50	<0.50	<0.50	5.2	7.3	d
04/06/2004	--	459.32	28.50	38.50	17.24	442.08	--	--	--	--	--	--	--	--	e
10/28/2004	P		28.50	38.50	19.38	439.94	<50	<0.50	<0.50	<0.50	<0.50	<0.50	8.1	7.3	
04/13/2005	--		28.50	38.50	16.02	443.30	--	--	--	--	--	--	--	--	
10/27/2005	--		28.50	38.50	--	--	--	--	--	--	--	--	--	--	t
04/12/2006	--		28.50	38.50	15.12	444.20	--	--	--	--	--	--	--	--	
10/31/2006	P		28.50	38.50	19.14	440.18	400	5.5	<0.50	5.5	9.6	22	--	7.64	
4/19/2007	--		28.50	38.50	23.07	436.25	--	--	--	--	--	--	--	--	
10/16/2007	--		28.50	38.50	--	--	--	--	--	--	--	--	--	--	f
4/24/2008	--		28.50	38.50	25.65	433.67	--	--	--	--	--	--	--	--	
9/10/2008	--		28.50	38.50	--	--	--	--	--	--	--	--	--	--	k
<b>MW-4</b>															
3/23/1995	--	456.55	21.00	27.00	15.39	441.16	210	2.1	0.6	0.8	2.1	--	--	--	
5/31/1995	--		21.00	27.00	15.32	441.23	190	1.6	<0.5	0.7	0.9	--	--	--	
8/31/1995	--		21.00	27.00	17.86	438.69	160	1.2	0.7	<0.5	<2	<3	--	--	
11/28/1995	--		21.00	27.00	17.18	439.37	150	0.7	<0.5	0.7	1.4	<3	--	--	
2/22/1996	--		21.00	27.00	14.80	441.75	100	<0.5	<0.5	<0.6	0.8	<3	--	--	
5/23/1996	--		21.00	27.00	14.43	442.12	86	<0.5	<0.5	<0.5	<0.7	<3	--	--	
8/8/1996	--		21.00	27.00	16.80	439.75	98	<0.5	<0.5	<0.5	1.3	<3	--	--	
11/7/1996	--		21.00	27.00	17.90	438.65	140	<0.5	<0.5	<0.9	1.3	<3	--	--	
3/27/1997	--		21.00	27.00	15.22	441.33	<50	1.1	<0.5	<0.5	1.6	<3	--	--	
5/19/1997	--		21.00	27.00	16.98	439.57	62	<0.5	<0.5	<0.5	0.6	<3	--	--	
5/18/1998	--		21.00	27.00	14.99	441.56	<50	<0.5	<0.5	<0.5	<0.5	64	--	--	
11/2/1998	--		21.00	27.00	25.29	431.26	74	<0.5	<0.5	<0.5	<0.5	96	--	--	
6/4/1999	P		21.00	27.00	17.95	438.60	100	<0.5	<0.5	<0.5	<0.5	38	--	--	
11/11/1999	P		21.00	27.00	19.25	437.30	88	<0.5	<0.5	<0.5	<1	10	0.77	--	

**Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses**  
**ARCO Service Station #6113, 785 East Stanley Blvd., Livermore, 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			
<b>MW-4 Cont.</b>															
6/20/2000	--	456.55	21.00	27.00	17.79	438.76	<50.0	<0.500	<0.500	<0.500	<0.500	62.3	--	--	q
6/20/2000	P		21.00	27.00	17.79	438.76	<50.0	<0.500	<0.500	<0.500	<0.500	82.4	1.3	--	
8/29/2000	P		21.00	27.00	18.90	437.65	56	<0.500	<0.500	<0.500	<0.500	47.9	0.97	--	
11/29/2000	P		21.00	27.00	20.50	436.05	<50.0	<0.500	<0.500	<0.500	<0.500	9.88/10.4	0.59	--	s
5/2/2001	--		21.00	27.00	22.65	433.90	<50.0	<0.500	<0.500	<0.500	<0.500	59.4/68.4	--	--	s
5/2/2001	P		21.00	27.00	22.65	433.90	<50.0	<0.500	<0.500	<0.500	<0.500	61.1/70.9	0.74	--	q, s
8/15/2001	--		21.00	27.00	--	--	--	--	--	--	--	--	--	--	f
10/5/2001	--		21.00	27.00	--	--	--	--	--	--	--	--	--	--	f
1/21/2002	--		21.00	27.00	--	--	--	--	--	--	--	--	--	--	f
4/26/2002	P		21.00	27.00	20.15	436.40	110	<0.50	<0.50	<0.50	<0.50	150	0.21	--	
10/7/2002	P		21.00	27.00	20.76	435.79	96	<0.50	<0.50	0.54	<0.50	260	1.0	--	a
05/01/2003	P		21.00	27.00	19.67	436.88	120	1.3	<0.50	<0.50	<0.50	86	1.7	--	c
10/03/2003	P		21.00	27.00	20.23	436.32	<50	<0.50	<0.50	<0.50	<0.50	22	13.5	6.8	d
04/06/2004	P	458.88	21.00	27.00	18.13	440.75	96	<0.50	<0.50	<0.50	<0.50	17	1.6	6.8	
10/28/2004	P		21.00	27.00	20.02	438.86	<50	<0.50	<0.50	<0.50	<0.50	4.5	1.2	6.7	
04/13/2005	P		21.00	27.00	16.68	442.20	<50	<0.50	<0.50	<0.50	<0.50	2.8	0.8	6.7	
10/27/2005	P		21.00	27.00	19.05	439.83	400	14	<0.50	11	1.8	22	1.0	6.9	
04/12/2006	P		21.00	27.00	15.47	443.41	100	<0.50	<0.50	<0.50	<0.50	1.9	1.6	7.2	
10/31/2006	P		21.00	27.00	19.67	439.21	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	7.63	
4/19/2007	NP		21.00	27.00	22.72	436.16	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.92	7.36	
10/16/2007	--		21.00	27.00	--	--	--	--	--	--	--	--	--	--	f
4/24/2008	--		21.00	27.00	--	--	--	--	--	--	--	--	--	--	f
10/15/2008	--		21.00	27.00	--	--	--	--	--	--	--	--	--	--	f
4/28/2009	--		21.00	27.00	--	--	--	--	--	--	--	--	--	--	f
11/9/2009	NP		21.00	27.00	22.73	436.15	270	4.6	<0.50	<0.50	<0.50	3.1	--	--	x (GRO)
4/12/2010	P		21.00	27.00	19.25	439.63	1,200	2.0	<0.50	<0.50	<0.50	2.7	0.81	6.87	
11/4/2010	P		21.00	27.00	20.40	438.48	330	<0.50	<0.50	<0.50	<0.50	1.7	0.44	6.5	x (GRO)
5/18/2011	P		21.00	27.00	17.84	441.04	290	<0.50	<0.50	<0.50	<0.50	1.2	1.04	7.1	x (GRO)
<b>10/20/2011</b>	<b>P</b>		<b>21.00</b>	<b>27.00</b>	<b>19.33</b>	<b>439.55</b>	<b>120</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>0.59</b>	<b>0.95</b>	<b>7.23</b>	<b>x (GRO)</b>
<b>MW-5</b>															

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**ARCO Service Station #6113, 785 East Stanley Blvd., Livermore, 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			
<b>MW-5 Cont.</b>															
3/23/1995	--	455.84	43.00	63.00	13.97	441.87	68	4.2	3.4	2.3	12	--	--	--	
5/31/1995	--		43.00	63.00	--	--	--	--	--	--	--	--	--	--	g
8/31/1995	--		43.00	63.00	--	--	--	--	--	--	--	--	--	--	g
11/28/1995	--		43.00	63.00	16.46	439.38	960	41	24	38	210	<5	--	--	
2/22/1996	--		43.00	63.00	13.34	442.50	--	--	--	--	--	--	--	--	f
5/23/1996	--		43.00	63.00	14.36	441.48	7,100	440	180	270	1,700	<50	--	--	
8/8/1996	--		43.00	63.00	16.38	439.46	--	--	--	--	--	--	--	--	f
11/7/1996	--		43.00	63.00	17.26	438.58	5,600	230	86	210	1,100	<80	--	--	
3/27/1997	--		43.00	63.00	15.95	439.89	--	--	--	--	--	--	--	--	f
5/19/1997	--		43.00	63.00	16.64	439.20	7,600	480	140	400	1,200	<40	--	--	
5/18/1998	--		43.00	63.00	14.75	441.09	990	46	13	45	180	4	--	--	
11/2/1998	--		43.00	63.00	27.83	428.01	14,000	690	140	550	2,200	100	--	--	
6/4/1999	P		43.00	63.00	17.47	438.37	8,300	690	370	90	440	1,400	--	--	
11/11/1999	P		43.00	63.00	18.80	437.04	18,000	900	190	1,100	3,200	72	0.86	--	
6/20/2000	P		43.00	63.00	17.14	438.70	10,200	618	122	832	2,020	<50.0	1.6	--	
8/29/2000	P		43.00	63.00	18.60	437.24	12,300	436	166	711	2,120	517	0.79	--	
11/29/2000	P		43.00	63.00	20.57	435.27	26,000	491	149	1,090	3,810	671/<20.0	0.51	--	s
5/2/2001	--		43.00	63.00	--	--	--	--	--	--	--	--	--	--	k
<b>MW-6</b>															
3/23/1995	--	454.93	48.00	68.00	13.38	441.55	<50	1.5	<0.5	<0.5	0.9	--	--	--	
5/31/1995	--		48.00	68.00	13.96	440.97	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
8/31/1995	--		48.00	68.00	16.71	438.22	150	9	1.8	4	12	<3	--	--	
11/28/1995	--		48.00	68.00	15.65	439.28	<50	0.6	<0.5	<0.5	0.8	<3	--	--	
2/22/1996	--		48.00	68.00	12.53	442.40	<50	1.9	<0.5	0.8	2.1	<3	--	--	
5/23/1996	--		48.00	68.00	13.24	441.69	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
8/8/1996	--		48.00	68.00	16.65	438.28	<50	0.5	<0.5	<0.5	0.5	<3	--	--	
11/7/1996	--		48.00	68.00	16.65	438.28	110	5.3	1.3	3.1	6.6	<3	--	--	
3/27/1997	--		48.00	68.00	14.25	440.68	<50	2.3	<0.5	0.9	3.5	4	--	--	
5/19/1997	--		48.00	68.00	15.87	439.06	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
5/18/1998	--		48.00	68.00	14.00	440.93	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	

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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			
<b>MW-6 Cont.</b>															
11/2/1998	--	454.93	48.00	68.00	24.95	429.98	<50	1.2	<0.5	<0.5	<0.5	3	--	--	
6/4/1999	P		48.00	68.00	16.68	438.25	310	41	3.8	11	19	33	--	--	
11/11/1999	P		48.00	68.00	16.12	438.81	<50	0.5	<0.5	<0.5	<1	<3	0.92	--	
6/20/2000	P		48.00	68.00	16.63	438.30	<50.0	<0.500	<0.500	<0.500	<0.500	17.3	1.9	--	
8/29/2000	--		48.00	68.00	17.91	437.02	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	--	--	q
8/29/2000	P		48.00	68.00	17.91	437.02	<50.0	<0.500	0.551	<0.500	<0.500	<2.50	1.67	--	
11/29/2000	P		48.00	68.00	20.30	434.63	<50.0	<0.500	<0.500	<0.500	1.03	<2.50	0.79	--	
5/2/2001	P		48.00	68.00	22.20	432.73	3,230	1,300	33.6	89.4	136	1,810/2,310	0.95	--	s
8/15/2001	P		48.00	68.00	27.95	426.98	<50	<0.50	<0.50	<0.50	<0.50	21/25	0.63	--	s
10/5/2001	P		48.00	68.00	28.05	426.88	<50	<0.50	<0.50	<0.50	<0.50	<2.5	0.85	--	
1/21/2002	P		48.00	68.00	26.81	428.12	<50	<0.50	<0.50	<0.50	<0.50	<5.0	0.91	--	
4/26/2002	P		48.00	68.00	26.27	428.66	<50	<0.50	<0.50	<0.50	<0.50	17	0.75	--	
10/7/2002	P		48.00	68.00	20.05	434.88	60	13	1.7	1.7	3.5	8	2.8	--	a
05/01/2003	P		48.00	68.00	17.62	437.31	<50	5.4	<0.50	0.63	1.3	12	1.6	--	c
10/03/2003	P		48.00	68.00	19.62	435.31	80	2.6	<2.5	<2.5	<2.5	120	5.1	6.9	d
04/06/2004	P	457.24	48.00	68.00	16.88	440.36	<2,500	<25	<25	<25	<25	1,700	4.1	7.0	
10/28/2004	P		48.00	68.00	19.20	438.04	3,200	<25	<25	<25	<25	3,100	6.8	6.9	
04/13/2005	P		48.00	68.00	15.15	442.09	<5,000	<50	<50	<50	<50	3,900	3.9	7.0	
10/27/2005	P		48.00	68.00	18.12	439.12	<5,000	<50	<50	<50	<50	2,900	3.15	7.0	
04/12/2006	P		48.00	68.00	15.32	441.92	<5,000	<50	<50	<50	<50	3,400	4.3	7.6	
10/31/2006	P		48.00	68.00	18.85	438.39	2,700	<25	<25	<25	<25	3,400	--	10.36	u, v
4/19/2007	P		48.00	68.00	22.25	434.99	970	<25	<25	<25	<25	2,200	5.54	10.52	v
10/16/2007	P		48.00	68.00	37.17	420.07	2,700	240	<25	50	55	2,600	4.56	10.26	v, w (MTBE)
4/24/2008	P		48.00	68.00	24.55	432.69	15,000	5,300	200	620	470	4,200	2.15	6.90	
9/10/2008	--		48.00	68.00	--	--	--	--	--	--	--	--	--	--	k
<b>MW-7</b>															
3/23/1995	--	454.92	48.00	68.00	13.29	441.63	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
5/31/1995	--		48.00	68.00	13.72	441.20	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
8/31/1995	--		48.00	68.00	16.53	438.39	<50	<0.5	<0.5	<0.5	1.2	<3	--	--	
11/28/1995	--		48.00	68.00	15.50	439.42	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	

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							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
<b>MW-7 Cont.</b>															
2/22/1996	--	454.92	48.00	68.00	12.30	442.62	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
5/23/1996	--		48.00	68.00	13.02	441.90	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
8/8/1996	--		48.00	68.00	--	--	--	--	--	--	--	--	--	--	m
11/7/1996	--		48.00	68.00	16.50	438.42	<50	<0.5	<0.5	<0.5	0.8	<3	--	--	
3/27/1997	--		48.00	68.00	14.22	440.70	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
5/19/1997	--		48.00	68.00	15.74	439.18	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
5/18/1998	--		48.00	68.00	13.82	441.10	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
11/2/1998	--		48.00	68.00	24.80	430.12	<50	<0.5	<0.5	<0.5	<0.5	4	--	--	
6/4/1999	P		48.00	68.00	16.55	438.37	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
11/11/1999	P		48.00	68.00	18.02	436.90	<50	<0.5	<0.5	<0.5	<1	<3	1.03	--	
6/20/2000	P		48.00	68.00	16.50	438.42	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	1.3	--	
8/29/2000	P		48.00	68.00	17.80	437.12	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	1.67	--	
11/29/2000	P		48.00	68.00	19.61	435.31	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	0.51	--	
5/2/2001	P		48.00	68.00	22.05	432.87	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50/2.66	0.9	--	s
8/15/2001	P		48.00	68.00	27.55	427.37	<50	<0.50	<0.50	<0.50	<0.50	<2.5	0.84	--	
10/5/2001	P		48.00	68.00	27.59	427.33	<50	<0.50	<0.50	<0.50	<0.50	<2.5	0.62	--	
1/21/2002	P		48.00	68.00	26.50	428.42	<50	<0.50	<0.50	<0.50	<0.50	15/21	0.65	--	s
4/26/2002	P		48.00	68.00	26.22	428.70	<50	<0.50	<0.50	<0.50	<0.50	18	0.61	--	
10/7/2002	--		48.00	68.00	20.04	434.88	<50	1.2	<0.50	<0.50	0.77	41	4.8	--	
05/01/2003	P		48.00	68.00	17.47	437.45	<50	<0.50	<0.50	<0.50	0.5	43	2.7	--	c
10/03/2003	P		48.00	68.00	19.55	435.37	<50	<1.0	<1.0	<1.0	<1.0	49	5.7	7.1	d
04/06/2004	P	457.17	48.00	68.00	16.60	440.57	<50	<0.50	<0.50	<0.50	0.75	0.76	0.7	7.0	
10/28/2004	P		48.00	68.00	19.17	438.00	<50	<0.50	<0.50	<0.50	<0.50	14	6.7	6.9	
04/13/2005	P		48.00	68.00	14.84	442.33	<50	<0.50	<0.50	<0.50	<0.50	1.7	2.3	6.9	
10/27/2005	P		48.00	68.00	17.38	439.79	<50	<0.50	<0.50	<0.50	<0.50	2.3	2.16	7.0	
04/12/2006	P		48.00	68.00	14.84	442.33	<50	<0.50	<0.50	<0.50	<0.50	1.1	3.0	7.2	
10/31/2006	P		48.00	68.00	18.74	438.43	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	7.55	
4/19/2007	P		48.00	68.00	22.11	435.06	<50	<0.50	<0.50	<0.50	<0.50	<0.50	4.37	7.60	
10/16/2007	P		48.00	68.00	37.23	419.94	140	68	6.8	<0.50	5.0	24	4.87	8.02	
4/24/2008	P		48.00	68.00	24.47	432.70	<50	<0.50	0.99	<0.50	<0.50	22	1.96	7.24	



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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			
<b>MW-7 Cont.</b>															
10/15/2008	P	457.17	48.00	68.00	43.40	413.77	<50	<0.50	<0.50	<0.50	<0.50	8.2	2.31	7.14	
4/28/2009	P		48.00	68.00	32.13	425.04	<50	<0.50	<0.50	<0.50	<0.50	<0.50	3.78	6.93	
11/9/2009	P		48.00	68.00	22.15	435.02	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	6.8	
4/12/2010	P		48.00	68.00	18.49	438.68	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	7.55	
11/4/2010	P		48.00	68.00	19.90	437.27	<50	<0.50	<0.50	<0.50	<0.50	0.59	4.15	8.4	
5/18/2011	P		48.00	68.00	16.96	440.21	<50	<0.50	<0.50	<0.50	<0.50	3.9	4.45	10.6	
<b>10/20/2011</b>	<b>P</b>		<b>48.00</b>	<b>68.00</b>	<b>18.38</b>	<b>438.79</b>	<b>&lt;50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>4.37</b>	<b>9.02</b>	
<b>MW-8</b>															
3/23/1995	--	456.97	47.00	67.00	11.55	445.42	--	--	--	--	--	--	--	--	e
5/31/1995	--		47.00	67.00	12.37	444.60	--	--	--	--	--	--	--	--	e
8/31/1995	--		47.00	67.00	15.68	441.29	--	--	--	--	--	--	--	--	e
11/28/1995	--		47.00	67.00	14.15	442.82	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
2/22/1996	--		47.00	67.00	10.97	446.00	--	--	--	--	--	--	--	--	e
5/23/1996	--		47.00	67.00	11.90	445.07	--	--	--	--	--	--	--	--	e
8/8/1996	--		47.00	67.00	13.85	443.12	--	--	--	--	--	--	--	--	e
11/7/1996	--		47.00	67.00	15.08	441.89	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
3/27/1997	--		47.00	67.00	12.96	444.01	--	--	--	--	--	--	--	--	e
5/19/1997	--		47.00	67.00	14.35	442.62	--	--	--	--	--	--	--	--	e
5/18/1998	--		47.00	67.00	12.97	444.00	--	--	--	--	--	--	--	--	e
11/2/1998	--		47.00	67.00	26.01	430.96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
6/4/1999	--		47.00	67.00	15.53	441.44	--	--	--	--	--	--	--	--	e
11/11/1999	P		47.00	67.00	16.67	440.30	<50	<0.5	<0.5	<0.5	<1	<3	1.01	--	
6/20/2000	--		47.00	67.00	15.29	441.68	--	--	--	--	--	--	2.4	--	e
8/29/2000	--		47.00	67.00	16.59	440.38	--	--	--	--	--	--	3.37	--	e
11/29/2000	P		47.00	67.00	19.80	437.17	<50.0	<0.500	<0.500	<0.500	0.772	<2.50	1.35	--	
5/2/2001	--		47.00	67.00	22.12	434.85	--	--	--	--	--	--	--	--	e
8/15/2001	--		47.00	67.00	27.63	429.34	--	--	--	--	--	--	--	--	e
10/5/2001	P		47.00	67.00	27.65	429.32	<50	<0.50	<0.50	<0.50	<0.50	<2.5	1.07	--	
1/21/2002	--		47.00	67.00	26.73	430.24	--	--	--	--	--	--	--	--	e
4/26/2002	--		47.00	67.00	26.39	430.58	--	--	--	--	--	--	--	--	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			
<b>MW-8 Cont.</b>															
10/7/2002	--	456.97	47.00	67.00	18.43	438.54	<50	<0.50	<0.50	<0.50	0.86	<0.50	4.2	--	
05/01/2003	--		47.00	67.00	16.47	440.50	--	--	--	--	--	--	--	--	r
10/27/2005	--		47.00	67.00	17.14	439.83	--	--	--	--	--	--	--	--	
04/12/2006	--		47.00	67.00	14.08	442.89	--	--	--	--	--	--	--	--	
10/31/2006	--		47.00	67.00	18.12	438.85	--	--	--	--	--	--	--	--	
4/19/2007	--		47.00	67.00	22.39	434.58	--	--	--	--	--	--	--	--	
10/16/2007	--		47.00	67.00	38.18	418.79	--	--	--	--	--	--	--	--	
4/24/2008	--		47.00	67.00	25.43	431.54	--	--	--	--	--	--	--	--	
6/18/2008	--		47.00	67.00	--	--	--	--	--	--	--	--	--	--	k
<b>MW-9</b>															
3/23/1995	--	456.18	48.00	68.00	13.18	443.00	--	--	--	--	--	--	--	--	e
5/31/1995	--		48.00	68.00	12.66	443.52	--	--	--	--	--	--	--	--	e
8/31/1995	--		48.00	68.00	14.40	441.78	--	--	--	--	--	--	--	--	e
11/28/1995	--		48.00	68.00	14.26	441.92	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
2/22/1996	--		48.00	68.00	12.05	444.13	--	--	--	--	--	--	--	--	e
5/23/1996	--		48.00	68.00	12.07	444.11	--	--	--	--	--	--	--	--	e
8/8/1996	--		48.00	68.00	14.12	442.06	--	--	--	--	--	--	--	--	e
11/7/1996	--		48.00	68.00	15.42	440.76	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
3/27/1997	--		48.00	68.00	13.01	443.17	--	--	--	--	--	--	--	--	e
5/19/1997	--		48.00	68.00	14.60	441.58	--	--	--	--	--	--	--	--	e
5/18/1998	--		48.00	68.00	12.60	443.58	--	--	--	--	--	--	--	--	e
11/2/1998	--		48.00	68.00	25.08	431.10	--	--	--	--	--	--	--	--	e
6/4/1999	P		48.00	68.00	15.87	440.31	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
11/11/1999	P		48.00	68.00	17.02	439.16	<50	<0.5	<0.5	<0.5	<1	<3	0.96	--	
6/20/2000	--		48.00	68.00	15.54	440.64	--	--	--	--	--	--	2.1	--	e
8/29/2000	--		48.00	68.00	16.81	439.37	--	--	--	--	--	--	2.59	--	e
11/29/2000	P		48.00	68.00	18.81	437.37	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	0.81	--	
5/2/2001	--		48.00	68.00	22.09	434.09	--	--	--	--	--	--	--	--	e
8/15/2001	--		48.00	68.00	27.59	428.59	--	--	--	--	--	--	--	--	e
10/5/2001	--		48.00	68.00	27.63	428.55	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	--	q

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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			
<b>MW-9 Cont.</b>															
10/5/2001	P	456.18	48.00	68.00	27.63	428.55	<50	<0.50	<0.50	<0.50	<0.50	<2.5	0.93	--	
1/21/2002	--		48.00	68.00	26.77	429.41	--	--	--	--	--	--	--	--	e
4/26/2002	--		48.00	68.00	26.41	429.77	--	--	--	--	--	--	--	--	e
10/7/2002	P		48.00	68.00	18.85	437.33	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.6	--	
05/01/2003	--		48.00	68.00	17.84	438.34	--	--	--	--	--	--	--	--	c, e
10/03/2003	P		48.00	68.00	18.69	437.49	<50	1.1	0.57	<0.50	<0.50	<0.50	4.9	6.8	d
04/06/2004	--	458.55	48.00	68.00	16.08	442.47	--	--	--	--	--	--	--	--	e
10/28/2004	P		48.00	68.00	18.35	440.20	<50	<0.50	<0.50	<0.50	<0.50	<0.50	6.8	6.9	
04/13/2005	--		48.00	68.00	14.09	444.46	--	--	--	--	--	--	--	--	e
10/27/2005	P		48.00	68.00	17.41	441.14	<50	0.51	<0.50	<0.50	<0.50	1.4	2.56	7.0	
04/12/2006	--		48.00	68.00	14.18	444.37	--	--	--	--	--	--	--	--	
10/31/2006	P		48.00	68.00	17.97	440.58	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	7.46	
4/19/2007	--		48.00	68.00	22.37	436.18	--	--	--	--	--	--	--	--	
10/16/2007	P		48.00	68.00	37.75	420.80	<50	0.83	<0.50	<0.50	<0.50	<0.50	1.27	7.59	
4/24/2008	--		48.00	68.00	24.89	433.66	--	--	--	--	--	--	--	--	
10/15/2008	P		48.00	68.00	44.16	414.39	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.14	7.08	
4/28/2009	--		48.00	68.00	32.61	425.94	--	--	--	--	--	--	--	--	
11/9/2009	P		48.00	68.00	20.69	437.86	<50	<0.50	<0.50	<0.50	<0.50	<0.50	3.33	6.82	
4/12/2010	--		48.00	68.00	17.29	441.26	--	--	--	--	--	--	--	--	
11/4/2010	P		48.00	68.00	18.62	439.93	<50	<0.50	<0.50	<0.50	<0.50	<0.50	4.73	6.8	
5/18/2011	--		48.00	68.00	15.83	442.72	--	--	--	--	--	--	--	--	
<b>10/20/2011</b>	<b>P</b>		<b>48.00</b>	<b>68.00</b>	<b>17.30</b>	<b>441.25</b>	<b>&lt;50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>4.87</b>	<b>7.96</b>	
<b>MW-10</b>															
3/23/1995	--	456.85	32.00	52.00	14.86	441.99	--	--	--	--	--	--	--	--	e
5/31/1995	--		32.00	52.00	15.63	441.22	--	--	--	--	--	--	--	--	e
8/31/1995	--		32.00	52.00	14.40	442.45	--	--	--	--	--	--	--	--	e
11/28/1995	--		32.00	52.00	17.24	439.61	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
2/22/1996	--		32.00	52.00	14.30	442.55	--	--	--	--	--	--	--	--	e
5/23/1996	--		32.00	52.00	14.93	441.92	--	--	--	--	--	--	--	--	e
8/8/1996	--		32.00	52.00	17.20	439.65	--	--	--	--	--	--	--	--	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			
<b>MW-10 Cont.</b>															
11/7/1996	--	456.85	32.00	52.00	18.25	438.60	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
3/27/1997	--		32.00	52.00	15.77	441.08	--	--	--	--	--	--	--	--	e
5/19/1997	--		32.00	52.00	17.38	439.47	--	--	--	--	--	--	--	--	e
5/18/1998	--		32.00	52.00	15.47	441.38	--	--	--	--	--	--	--	--	e
11/2/1998	--		32.00	52.00	26.94	429.91	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
6/4/1999	--		32.00	52.00	17.19	439.66	--	--	--	--	--	--	--	--	e
11/11/1999	P		32.00	52.00	19.35	437.50	<50	<0.5	<0.5	<0.5	<1	<3	0.68	--	
6/20/2000	--		32.00	52.00	17.92	438.93	--	--	--	--	--	--	2.9	--	e
8/29/2000	--		32.00	52.00	19.15	437.70	--	--	--	--	--	--	1.54	--	e
11/29/2000	P		32.00	52.00	21.30	435.55	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	0.95	--	
5/2/2001	--		32.00	52.00	29.95	426.90	--	--	--	--	--	--	--	--	e
8/15/2001	--		32.00	52.00	30.74	426.11	--	--	--	--	--	--	--	--	e
10/5/2001	P		32.00	52.00	30.95	425.90	<50	<0.50	<0.50	<0.50	<0.50	<2.5	0.89	--	
1/21/2002	--		32.00	52.00	28.97	427.88	--	--	--	--	--	--	--	--	e
4/26/2002	--		32.00	52.00	28.50	428.35	--	--	--	--	--	--	--	--	e
10/7/2002	--		32.00	52.00	21.15	435.70	<50	<0.50	<0.50	<0.50	<0.50	<0.50	3.0	--	
05/01/2003	--		32.00	52.00	18.90	437.95	--	--	--	--	--	--	--	--	c, e
10/03/2003	P		32.00	52.00	20.64	436.21	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	7.1	d
04/06/2004	--	459.20	32.00	52.00	17.99	441.21	--	--	--	--	--	--	--	--	e
10/28/2004	P		32.00	52.00	20.27	438.93	<50	<0.50	<0.50	<0.50	<0.50	<0.50	5.9	7.1	
04/13/2005	--		32.00	52.00	16.25	442.95	--	--	--	--	--	--	--	--	e
10/27/2005	P		32.00	52.00	19.03	440.17	<50	<0.50	<0.50	<0.50	<0.50	<0.50	3.38	7.2	
04/12/2006	--		32.00	52.00	14.95	444.25	--	--	--	--	--	--	--	--	
10/31/2006	P		32.00	52.00	20.20	439.00	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	7.30	
4/19/2007	--		32.00	52.00	24.00	435.20	--	--	--	--	--	--	--	--	
10/16/2007	NP		32.00	52.00	38.99	420.21	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.20	7.36	
4/24/2008	--		32.00	52.00	26.62	432.58	--	--	--	--	--	--	--	--	
9/10/2008	--		32.00	52.00	--	--	--	--	--	--	--	--	--	--	k
<b>MW-11</b>															
3/23/1995	--	455.07	38.00	45.00	17.34	437.73	--	--	--	--	--	--	--	--	

**Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses**  
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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			
<b>MW-11 Cont.</b>															
5/31/1995	--	455.07	38.00	45.00	16.68	438.39	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
8/31/1995	--		38.00	45.00	20.20	434.87	--	--	--	--	--	--	--	--	h
11/28/1995	--		38.00	45.00	17.80	437.27	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
2/22/1996	--		38.00	45.00	15.97	439.10	--	--	--	--	--	--	--	--	h
5/23/1996	--		38.00	45.00	15.50	439.57	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
8/8/1996	--		38.00	45.00	17.77	437.30	--	--	--	--	--	--	--	--	h
11/7/1996	--		38.00	45.00	17.45	437.62	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
3/27/1997	--		38.00	45.00	15.77	439.30	--	--	--	--	--	--	--	--	h
5/19/1997	--		38.00	45.00	16.80	438.27	<50	1.1	4.5	<0.5	2.2	<3	--	--	
5/18/1998	--		38.00	45.00	15.38	439.69	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
11/2/1998	--		38.00	45.00	24.15	430.92	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
6/4/1999	P		38.00	45.00	18.39	436.68	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
11/11/1999	P		38.00	45.00	18.62	436.45	<50	<0.5	<0.5	<0.5	<1	<3	1.01	--	
6/20/2000	P		38.00	45.00	17.82	437.25	<50.0	0.631	<0.500	<0.500	<0.500	<2.50	4.1	--	
8/29/2000	--		38.00	45.00	19.50	435.57	--	--	--	--	--	--	--	--	h
11/29/2000	P		38.00	45.00	20.60	434.47	<50.0	<0.500	<0.500	<0.500	1.63	<2.50	0.97	--	
5/2/2001	P		38.00	45.00	22.42	432.65	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	1.04	--	
8/15/2001	--		38.00	45.00	27.41	427.66	--	--	--	--	--	--	--	--	h
10/5/2001	P		38.00	45.00	27.59	427.48	<50	<0.50	<0.50	<0.50	<0.50	<2.5	1.05	--	
1/21/2002	--		38.00	45.00	26.75	428.32	--	--	--	--	--	--	--	--	h
4/26/2002	P		38.00	45.00	26.50	428.57	<50	<0.50	<0.50	<0.50	<0.50	<2.5	0.47	--	
10/7/2002	--		38.00	45.00	20.79	434.28	<50	<0.50	<0.50	<0.50	<0.50	1.0	1.4	--	
05/01/2003	P		38.00	45.00	20.55	434.52	<50	<0.50	<0.50	<0.50	<0.50	1.5	3.2	--	c
10/03/2003	P		38.00	45.00	20.58	434.49	<50	<0.50	<0.50	<0.50	<0.50	3.1	3.0	7.1	d
04/06/2004	P	457.40	38.00	45.00	17.52	439.88	<50	<0.50	<0.50	<0.50	<0.50	14	5.1	6.7	
10/28/2004	P		38.00	45.00	20.32	437.08	<50	<0.50	<0.50	<0.50	<0.50	29	1.3	7.2	
04/13/2005	P		38.00	45.00	16.20	441.20	<50	<0.50	<0.50	<0.50	<0.50	3.7	2.8	7.0	
10/27/2005	P		38.00	45.00	21.98	435.42	<50	<0.50	<0.50	<0.50	<0.50	21	1.04	7.2	
04/12/2006	--		38.00	45.00	--	--	--	--	--	--	--	--	--	--	Well inaccessible m
10/31/2006	--		38.00	45.00	--	--	--	--	--	--	--	--	--	--	

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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			
<b>MW-11 Cont.</b>															
4/19/2007	P	457.40	38.00	45.00	22.38	435.02	<50	<0.50	<0.50	<0.50	<0.50	12	7.11	7.57	
10/16/2007	P		38.00	45.00	37.11	420.29	<50	<0.50	<0.50	<0.50	<0.50	6.6	0.60	7.57	
4/24/2008	P		38.00	45.00	26.10	431.30	<50	<0.50	<0.50	<0.50	<0.50	17	1.83	7.26	
10/15/2008	--		38.00	45.00	43.34	414.06	--	--	--	--	--	--	--	--	
4/28/2009	P		38.00	45.00	32.85	424.55	<50	<0.50	<0.50	<0.50	<0.50	5.3	5.89	7.23	
11/9/2009	P		38.00	45.00	22.99	434.41	<50	<0.50	<0.50	<0.50	<0.50	12	0.72	7.0	
4/12/2010	P		38.00	45.00	21.14	436.26	<50	<0.50	<0.50	<0.50	<0.50	10	2.03	7.25	
11/4/2010	P		38.00	45.00	20.62	436.78	<50	<0.50	<0.50	<0.50	<0.50	9.9	1.64	6.9	
5/18/2011	P		38.00	45.00	19.17	438.23	<50	<0.50	<0.50	<0.50	<0.50	7.8	4.28	--	lw
<b>10/20/2011</b>	<b>P</b>		<b>38.00</b>	<b>45.00</b>	<b>19.58</b>	<b>437.82</b>	<b>&lt;50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>6.9</b>	<b>0.95</b>	<b>7.84</b>	
<b>MW-12</b>															
3/23/1995	--	455.04	18.00	34.50	15.54	439.50	--	--	--	--	--	--	--	--	h
5/31/1995	--		18.00	34.50	15.66	439.38	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
8/31/1995	--		18.00	34.50	18.23	436.81	--	--	--	--	--	--	--	--	h
11/28/1995	--		18.00	34.50	17.53	437.51	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
2/22/1996	--		18.00	34.50	14.45	440.59	--	--	--	--	--	--	--	--	h
5/23/1996	--		18.00	34.50	14.88	440.16	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
8/8/1996	--		18.00	34.50	17.30	437.74	--	--	--	--	--	--	--	--	h
11/7/1996	--		18.00	34.50	18.30	436.74	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
3/27/1997	--		18.00	34.50	15.69	439.35	--	--	--	--	--	--	--	--	h
5/19/1997	--		18.00	34.50	17.41	437.63	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
5/18/1998	--		18.00	34.50	15.21	439.83	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
11/2/1998	--		18.00	34.50	--	--	--	--	--	--	--	--	--	--	m
6/4/1999	--		18.00	34.50	--	--	--	--	--	--	--	--	--	--	m
11/11/1999	--		18.00	34.50	--	--	--	--	--	--	--	--	--	--	m
6/20/2000	--		18.00	34.50	--	--	--	--	--	--	--	--	--	--	m
8/29/2000	--		18.00	34.50	--	--	--	--	--	--	--	--	--	--	m
11/29/2000	--		18.00	34.50	--	--	--	--	--	--	--	--	--	--	m
5/2/2001	--		18.00	34.50	--	--	--	--	--	--	--	--	--	--	m
8/15/2001	--		18.00	34.50	--	--	--	--	--	--	--	--	--	--	m

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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			
<b>MW-12 Cont.</b>															
10/5/2001	--	455.04	18.00	34.50	--	--	--	--	--	--	--	--	--	--	m
1/21/2002	--		18.00	34.50	--	--	--	--	--	--	--	--	--	--	m
4/26/2002	--		18.00	34.50	--	--	--	--	--	--	--	--	--	--	m
10/7/2002	--		18.00	34.50	--	--	--	--	--	--	--	--	--	--	m
05/01/2003	--		18.00	34.50	--	--	--	--	--	--	--	--	--	--	c, m
10/03/2003	--		18.00	34.50	--	--	--	--	--	--	--	--	--	--	m
04/06/2004	P	457.37	18.00	34.50	18.14	439.23	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	6.4
10/28/2004	P		18.00	34.50	20.66	436.71	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.7	6.8
04/13/2005	P		18.00	34.50	16.25	441.12	<50	<0.50	<0.50	<0.50	0.55	<0.50	<0.50	1.9	7.5
10/27/2005	P		18.00	34.50	19.77	437.60	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.81	7.0
04/12/2006	P		18.00	34.50	16.08	441.29	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.6	7.2
10/31/2006	--		18.00	34.50	--	--	--	--	--	--	--	--	--	--	
4/19/2007	NP		18.00	34.50	22.34	435.03	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.66	7.28
10/16/2007	--		18.00	34.50	--	--	--	--	--	--	--	--	--	--	f
4/24/2008	--		18.00	34.50	--	--	--	--	--	--	--	--	--	--	m
10/15/2008	--		18.00	34.50	--	--	--	--	--	--	--	--	--	--	f
4/28/2009	NP		18.00	34.50	32.21	425.16	<50	<0.50	<0.50	<0.50	<0.50	1.4	7.68	6.63	
11/9/2009	NP		18.00	34.50	23.74	433.63	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	
4/12/2010	NP		18.00	34.50	19.93	437.44	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	7.18	
11/4/2010	NP		18.00	34.50	21.53	435.84	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.96	7.0	
5/18/2011	NP		18.00	34.50	18.40	438.97	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.93	--	z
<b>10/20/2011</b>	<b>NP</b>		<b>18.00</b>	<b>34.50</b>	<b>20.25</b>	<b>437.12</b>	<b>&lt;50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>0.87</b>	<b>7.94</b>	
<b>MW-13</b>															
1/21/2002	P	NS	--	--	24.61	--	15,000	160	68	1,700	3,200	4,900/5,200	0.71	--	
4/26/2002	P		--	--	24.20	--	17,000	98	<100	1,700	3,400	1,600	0.6	--	
10/7/2002	--		--	--	20.12	--	14,000	510	<50	2,200	2,300	2,800	0.8	--	b
05/01/2003	P		--	--	17.82	--	21,000	230	<50	1,900	2,300	1,600	1.9	--	c
10/03/2003	P		--	--	19.91	--	19,000	570	55	1,900	2,300	2,400	0.8	6.9	d
04/06/2004	P	457.91	--	--	17.14	440.77	15,000	470	35	1,600	1,300	1,800	2.0	6.7	
10/28/2004	P		--	--	18.83	439.08	18,000	350	<25	1,900	1,800	1,800	0.8	6.7	

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							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
<b>MW-13 Cont.</b>															
04/13/2005	P	457.91	--	--	15.23	442.68	9,700	110	<25	860	280	920	0.9	6.9	
10/27/2005	P		--	--	18.45	439.46	11,000	120	12	1,500	450	580	0.75	6.8	
04/12/2006	P		--	--	15.06	442.85	4,700	65	<10	450	69	470	1.2	6.8	
10/31/2006	P		--	--	19.06	438.85	15,000	150	<25	1,700	400	710	--	6.87	
4/19/2007	NP		--	--	22.21	435.70	14,000	60	<25	1,800	640	330	1.44	7.09	
10/16/2007	--		--	--	--	--	--	--	--	--	--	--	--	--	f
4/24/2008	NP		--	--	24.68	433.23	1,400	4.5	1.1	9.4	15	49	2.78	7.25	
9/10/2008	--		--	--	--	--	--	--	--	--	--	--	--	--	k
<b>RMW-13</b>															
4/12/2010	NP	458.03	15.00	35.00	18.50	439.53	63,000	7,800	200	1,600	6,400	1,500	2.47	7.21	y
11/4/2010	NP		15.00	35.00	18.83	439.20	31,000	4,000	<120	1,700	2,500	390	1.01	7.40	
5/18/2011	NP		15.00	35.00	17.43	440.60	26,000	4,700	<50	1,700	2,200	380	2.34	7.3	
10/20/2011	NP		15.00	35.00	18.25	439.78	560	1,100	<20	550	620	55	0.84	7.54	
<b>VW-1</b>															
8/29/2000	P	NS	24.00	45.00	17.40	--	2,360	27.6	11.6	26.3	33.2	110	4.47	--	
11/29/2000	P		24.00	45.00	18.75	--	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	0.46	--	
5/2/2001	--		24.00	45.00	21.59	--	--	--	--	--	--	--	--	--	
8/15/2001	P		24.00	45.00	24.62	--	1,200	6.3	4.3	1.7	1.3	20/17	--	--	s
8/15/2001	--		24.00	45.00	24.62	--	1,200	6.2	4.1	1.8	1.1	20/17	--	--	q
10/5/2001	P		24.00	45.00	24.75	--	1,500	140	55	28	82	610/660	0.71	--	s
1/21/2002	P		24.00	45.00	24.59	--	6,700	810	350	270	1,100	2,600/3,400	0.69	--	s
1/21/2002	--		24.00	45.00	24.59	--	8,000	770	320	96	1,100	2,500/3,200	--	--	q, s
4/26/2002	P		24.00	45.00	24.27	--	370	26	2.1	6.6	1.7	48	0.5	--	
4/26/2002	--		24.00	45.00	24.27	--	350	24	1.6	5.9	1.6	45	--	--	q
10/7/2002	P		24.00	45.00	19.20	--	410	25	2.2	8	4.3	88	1.7	--	b
05/01/2003	P		24.00	45.00	16.60	--	240	6.4	<0.50	3.3	1.3	36	1.7	--	c
10/03/2003	P		24.00	45.00	18.82	--	180	1.5	<0.50	0.69	<0.50	12	1.1	7.3	d
04/06/2004	P	457.08	24.00	45.00	15.78	441.30	300	2.2	<0.50	3.0	1.3	13	2.4	7.2	
10/28/2004	P		24.00	45.00	18.33	438.75	210	<0.50	<0.50	0.67	<0.50	<0.50	1.2	7.1	



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							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
<b>VW-1 Cont.</b>															
04/13/2005	P	457.08	24.00	45.00	14.02	443.06	740	1.8	<0.50	3.6	1.1	9.6	2.4	7.1	
10/27/2005	P		24.00	45.00	17.65	439.43	1,500	78	73	36	81	13	1.64	7.3	
04/12/2006	P		24.00	45.00	13.89	443.19	230	1.4	<0.50	2.2	0.76	1.6	1.4	7.3	
10/31/2006	P		24.00	45.00	17.87	439.21	80	<0.50	<0.50	2.3	0.82	<0.50	--	7.76	
4/19/2007	P		24.00	45.00	21.09	435.99	250	1.6	<0.50	4.7	1.3	3.0	1.15	7.66	
10/16/2007	NP		24.00	45.00	37.10	419.98	12,000	2,300	1,900	860	2,800	150	2.65	7.61	
4/24/2008	NP		24.00	45.00	24.40	432.68	<50	<0.50	<0.50	<0.50	<0.50	4.5	4.95	7.47	
10/15/2008	--		24.00	45.00	43.07	414.01	--	--	--	--	--	--	--	--	
4/28/2009	NP		24.00	45.00	31.06	426.02	3,500	140	2.8	25	4.0	19	6.38	7.02	
11/9/2009	P		24.00	45.00	21.12	435.96	230	1.8	<0.50	<0.50	<0.50	1.1	2.28	6.95	x (GRO)
4/12/2010	P		24.00	45.00	17.27	439.81	410	0.80	<0.50	<0.50	<0.50	<0.50	3.38	7.21	
11/4/2010	P		24.00	45.00	18.65	438.43	160	<0.50	<0.50	<0.50	<0.50	<0.50	1.15	6.9	x (GRO)
5/18/2011	P		24.00	45.00	15.77	441.31	69	<0.50	<0.50	<0.50	<0.50	<0.50	0.71	7.5	x (GRO)
<b>10/20/2011</b>	<b>P</b>		<b>24.00</b>	<b>45.00</b>	<b>17.44</b>	<b>439.64</b>	<b>&lt;50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>1.77</b>	<b>7.89</b>	
<b>VW-2</b>															
8/29/2000	--	NS	28.00	49.50	--	--	--	--	--	--	--	--	--	--	nc
11/29/2000	--		28.00	49.50	--	--	--	--	--	--	--	--	--	--	nc
5/2/2001	--		28.00	49.50	--	--	--	--	--	--	--	--	--	--	
10/5/2001	--		28.00	49.50	--	--	--	--	--	--	--	--	--	--	nc
1/21/2002	--		28.00	49.50	--	--	--	--	--	--	--	--	--	--	nc
4/26/2002	--		28.00	49.50	--	--	--	--	--	--	--	--	--	--	m
10/7/2002	--		28.00	49.50	--	--	--	--	--	--	--	--	--	--	nc
05/01/2003	--		28.00	49.50	--	--	--	--	--	--	--	--	--	--	c, g
10/03/2003	--		28.00	49.50	--	--	--	--	--	--	--	--	--	--	Well inaccessible g
04/06/2004	--	458.64	28.00	49.50	16.96	441.68	--	--	--	--	--	--	--	--	
10/28/2004	--		28.00	49.50	19.35	439.29	--	--	--	--	--	--	--	--	
04/13/2005	--		28.00	49.50	15.51	443.13	--	--	--	--	--	--	--	--	
10/27/2005	--		28.00	49.50	18.50	440.14	--	--	--	--	--	--	--	--	
04/12/2006	--		28.00	49.50	14.92	443.72	--	--	--	--	--	--	--	--	
10/31/2006	--		28.00	49.50	19.01	439.63	--	--	--	--	--	--	--	--	

**Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses**  
**ARCO Service Station #6113, 785 East Stanley Blvd., Livermore, 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			
<b>VW-2 Cont.</b>															
4/19/2007	--	458.64	28.00	49.50	22.52	436.12	--	--	--	--	--	--	--	--	
10/16/2007	--		28.00	49.50	38.58	420.06	--	--	--	--	--	--	--	--	
4/24/2008	--		28.00	49.50	24.91	433.73	--	--	--	--	--	--	--	--	
10/15/2008	--		28.00	49.50	43.31	415.33	--	--	--	--	--	--	--	--	
4/28/2009	--		28.00	49.50	32.56	426.08	--	--	--	--	--	--	--	--	
11/9/2009	--		28.00	49.50	22.38	436.26	--	--	--	--	--	--	--	--	
4/12/2010	--		28.00	49.50	18.50	440.14	--	--	--	--	--	--	--	--	
11/4/2010	--		28.00	49.50	19.87	438.77	--	--	--	--	--	--	--	--	
5/18/2011	--		28.00	49.50	16.94	441.70	--	--	--	--	--	--	--	--	
<b>10/20/2011</b>	<b>--</b>		<b>28.00</b>	<b>49.50</b>	<b>18.54</b>	<b>440.10</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	
<b>VW-3</b>															
8/29/2000	P	NS	15.50	24.00	17.93	--	25,400	3,540	10,600	1,280	43,000	44,700	--	--	
11/29/2000	P		15.50	24.00	19.75	--	54,200	9,450	1,870	2,350	9,400	12,300/15,100	0.47	--	s
5/2/2001	--		15.50	24.00	--	--	--	--	--	--	--	--	--	--	k
<b>VW-4</b>															
8/29/2000	--	NS	17.00	30.00	--	--	--	--	--	--	--	--	--	--	g
11/29/2000	--		17.00	30.00	19.45	--	36,100	3,700	206	1,850	7,890	6,430/8,460	--	--	q, s
11/29/2000	P		17.00	30.00	19.45	--	37,500	4,510	206	2,100	9,030	6,770/7,880	0.42	--	s
5/2/2001	--		17.00	30.00	21.66	--	--	--	--	--	--	--	--	--	
8/15/2001	--		17.00	30.00	--	--	--	--	--	--	--	--	--	--	
10/5/2001	--		17.00	30.00	--	--	--	--	--	--	--	--	--	--	f
1/21/2002	--		17.00	30.00	--	--	--	--	--	--	--	--	--	--	f
4/26/2002	--		17.00	30.00	--	--	--	--	--	--	--	--	--	--	f
10/7/2002	--		17.00	30.00	19.25	--	--	--	--	--	--	--	--	--	
05/01/2003	--		17.00	30.00	17.29	--	--	--	--	--	--	--	--	--	c
10/03/2003	P		17.00	30.00	19.10	--	48,000	3,300	1,700	3,600	21,000	1,600	10.5	6.7	d, n
04/06/2004	--	456.99	17.00	30.00	18.05	438.94	--	--	--	--	--	--	--	--	
10/28/2004	--		17.00	30.00	18.71	438.28	--	--	--	--	--	--	--	--	
04/13/2005	--		17.00	30.00	14.62	442.37	--	--	--	--	--	--	--	--	

**Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses**  
**ARCO Service Station #6113, 785 East Stanley Blvd., Livermore, 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			
<b>VW-4 Cont.</b>															
10/27/2005	--	456.99	17.00	30.00	18.00	438.99	--	--	--	--	--	--	--	--	
04/12/2006	--		17.00	30.00	14.42	442.57	--	--	--	--	--	--	--	--	
10/31/2006	--		17.00	30.00	18.30	438.69	--	--	--	--	--	--	--	--	
4/19/2007	--		17.00	30.00	20.91	436.08	--	--	--	--	--	--	--	--	
10/16/2007	--		17.00	30.00	--	--	--	--	--	--	--	--	--	--	f
4/24/2008	--		17.00	30.00	23.40	433.59	--	--	--	--	--	--	--	--	
10/15/2008	--		17.00	30.00	--	--	--	--	--	--	--	--	--	--	f
4/28/2009	--		17.00	30.00	--	--	--	--	--	--	--	--	--	--	f
11/9/2009	--		17.00	30.00	21.65	435.34	--	--	--	--	--	--	--	--	
4/12/2010	--		17.00	30.00	17.80	439.19	--	--	--	--	--	--	--	--	
11/4/2010	--		17.00	30.00	19.13	437.86	--	--	--	--	--	--	--	--	
5/18/2011	--		17.00	30.00	16.67	440.32	--	--	--	--	--	--	--	--	
<b>10/20/2011</b>	--		<b>17.00</b>	<b>30.00</b>	<b>18.25</b>	<b>438.74</b>	--	--	--	--	--	--	--	--	

Symbols & Abbreviations:

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

Footnotes:

a = Hydrocarbon pattern is present in the requested fuel quantitation range but does not resemble the pattern of the requested fuel  
b = Chromatogram Pattern: C6-C10  
c = TPH-g, benzene, toluene, ethylbenzene, and total xylenes (BTEX), and MTBE analyzed using EPA Method 8260B beginning second quarter 2003 (05/01/03)  
d = This sample was analyzed 3 days after the EPA recommended holding time. The results may still be useful for their intended purpose  
e = Well sampled annually in the fourth quarter  
f = Well dry  
g = Well inaccessible  
h = Well sampled semi-annually in second and fourth quarters  
k = Well abandoned  
m = Unable to locate well  
n = Sheen in well  
q = Duplicate sample  
r = Well removed from sampling schedule  
s = Original sample analyzed by 8021B and confirmation by 8260  
t = Bolts securing well box cover stripped at head. Unable to sample well  
u = Hydrocarbon result partly due to individ. peak(s) in quant. range  
v = pH measurement is believed to be erroneous  
w = Sample > 4x spike concentration  
x = Quantitation of unknown hydrocarbon(s) in sample based on gasoline  
y = Replacement well for abandoned wells MW-6 and MW-13 installed on 3/11/2010, and surveyed on 4/23/2010  
z = pH probe malfunctioned, pH measurement not collected

Notes:

Beginning in the second quarter 2003 (05/01/03) TPH-g and BTEX were analyzed using EPA Method 8260B, and MTBE was analyzed by EPA Method 8260B beginning in fourth quarter 2002. Prior to 05/01/03, TPH-g was analyzed by EPA Method 8015; BTEX by EPA Method 8021B (EPA method 8020 before 11/11/99); and MTBE by EPA Method 8021B. (EPA method 8020 before 11/11/99). Any MTBE detection by 8021B was confirmed by EPA Method 8260 beginning third quarter 2000 (08-29-00 results)

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

Wells were resurveyed to NAVD '88 datum by URS Corporation on March 8, 2004

Values for DO and pH were obtained through field measurements

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

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

**Table 2. Summary of Fuel Additives Analytical Data**  
**ARCO Service Station #6113, 785 East Stanley Blvd., Livermore, CA**

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>MW-1</b>									
11/28/1995	--	--	<3	--	--	--	--	--	
11/7/1996	--	--	<3	--	--	--	--	--	
11/2/1998	--	--	<3	--	--	--	--	--	
11/11/1999	--	--	<3	--	--	--	--	--	
11/29/2000	--	--	<2.50	--	--	--	--	--	
10/5/2001	--	--	<2.5	--	--	--	--	--	
10/7/2002	<40	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>MW-2</b>									
11/28/1995	--	--	<3	--	--	--	--	--	
11/7/1996	--	--	5	--	--	--	--	--	
11/2/1998	--	--	<3	--	--	--	--	--	
11/11/1999	--	--	<3	--	--	--	--	--	
11/29/2000	--	--	<2.50	--	--	--	--	--	
10/5/2001	--	--	<2.5	--	--	--	--	--	
10/7/2002	<40	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>MW-3</b>									
11/28/1995	--	--	<3	--	--	--	--	--	
11/7/1996	--	--	<3	--	--	--	--	--	
11/2/1998	--	--	1,700	--	--	--	--	--	
11/11/1999	--	--	<3	--	--	--	--	--	
11/29/2000	--	--	<2.50	--	--	--	--	--	
10/5/2001	--	--	<2.5	--	--	--	--	--	
10/7/2002	<40	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
10/03/2003	<100	<20	<0.50	<1.0	<1.0	<1.0	<0.50	<0.50	a
10/28/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
10/31/2006	<300	<20	22	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>MW-4</b>									
8/31/1995	--	--	<3	--	--	--	--	--	
11/28/1995	--	--	<3	--	--	--	--	--	
2/22/1996	--	--	<3	--	--	--	--	--	

**Table 2. Summary of Fuel Additives Analytical Data**  
**ARCO Service Station #6113, 785 East Stanley Blvd., Livermore, CA**

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>MW-4 Cont.</b>									
5/23/1996	--	--	<3	--	--	--	--	--	
8/8/1996	--	--	<3	--	--	--	--	--	
11/7/1996	--	--	<3	--	--	--	--	--	
3/27/1997	--	--	<3	--	--	--	--	--	
5/19/1997	--	--	<3	--	--	--	--	--	
5/18/1998	--	--	64	--	--	--	--	--	
11/2/1998	--	--	96	--	--	--	--	--	
6/4/1999	--	--	38	--	--	--	--	--	
11/11/1999	--	--	10	--	--	--	--	--	
6/20/2000	--	--	62.3	--	--	--	--	--	
6/20/2000	--	--	82.4	--	--	--	--	--	
8/29/2000	--	--	47.9	--	--	--	--	--	
11/29/2000	--	--	9.88/10.4	--	--	--	--	--	
5/2/2001	--	--	59.4/68.4	--	--	--	--	--	
5/2/2001	--	--	61.1/70.9	--	--	--	--	--	
4/26/2002	--	--	150	--	--	--	--	--	
10/7/2002	<400	<200	260	<5.0	<5.0	<5.0	<5.0	<5.0	
05/01/2003	<100	25	86	<0.50	<0.50	<0.50	<0.50	<0.50	
10/03/2003	<100	<20	22	<1.0	<1.0	<1.0	<0.50	<0.50	a
04/06/2004	<100	<20	17	<0.50	<0.50	<0.50	<0.50	<0.50	
10/28/2004	<100	<20	4.5	<0.50	<0.50	<0.50	<0.50	<0.50	
04/13/2005	<100	<20	2.8	<0.50	<0.50	<0.50	<0.50	<0.50	
10/27/2005	<100	<20	22	<0.50	<0.50	<0.50	<0.50	<0.50	
04/12/2006	<300	<20	1.9	<0.50	<0.50	<0.50	<0.50	<0.50	b
10/31/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
4/19/2007	<300	<20	<0.50	<0.50	<0.50	0.66	<0.50	<0.50	
11/9/2009	<300	12	3.1	<0.50	<0.50	<0.50	<0.50	<0.50	
4/12/2010	<300	<10	2.7	<0.50	<0.50	<0.50	<0.50	<0.50	
11/4/2010	<300	<10	1.7	<0.50	<0.50	<0.50	<0.50	<0.50	
5/18/2011	<300	<10	1.2	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>10/20/2011</b>	<b>&lt;300</b>	<b>&lt;10</b>	<b>0.59</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	

**Table 2. Summary of Fuel Additives Analytical Data**  
**ARCO Service Station #6113, 785 East Stanley Blvd., Livermore, CA**

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>MW-5</b>									
11/28/1995	--	--	<5	--	--	--	--	--	
5/23/1996	--	--	<50	--	--	--	--	--	
11/7/1996	--	--	<80	--	--	--	--	--	
5/19/1997	--	--	<40	--	--	--	--	--	
5/18/1998	--	--	4	--	--	--	--	--	
11/2/1998	--	--	100	--	--	--	--	--	
6/4/1999	--	--	1,400	--	--	--	--	--	
11/11/1999	--	--	72	--	--	--	--	--	
6/20/2000	--	--	<50.0	--	--	--	--	--	
8/29/2000	--	--	517	--	--	--	--	--	
11/29/2000	--	--	671/<20.0	--	--	--	--	--	
<b>MW-6</b>									
8/31/1995	--	--	<3	--	--	--	--	--	
11/28/1995	--	--	<3	--	--	--	--	--	
2/22/1996	--	--	<3	--	--	--	--	--	
5/23/1996	--	--	<3	--	--	--	--	--	
8/8/1996	--	--	<3	--	--	--	--	--	
11/7/1996	--	--	<3	--	--	--	--	--	
3/27/1997	--	--	4	--	--	--	--	--	
5/19/1997	--	--	<3	--	--	--	--	--	
5/18/1998	--	--	<3	--	--	--	--	--	
11/2/1998	--	--	3	--	--	--	--	--	
6/4/1999	--	--	33	--	--	--	--	--	
11/11/1999	--	--	<3	--	--	--	--	--	
6/20/2000	--	--	17.3	--	--	--	--	--	
8/29/2000	--	--	<2.50	--	--	--	--	--	
8/29/2000	--	--	<2.50	--	--	--	--	--	
11/29/2000	--	--	<2.50	--	--	--	--	--	
5/2/2001	--	--	1,810/2,310	--	--	--	--	--	
8/15/2001	--	--	21/25	--	--	--	--	--	
10/5/2001	--	--	<2.5	--	--	--	--	--	



**Table 2. Summary of Fuel Additives Analytical Data**  
**ARCO Service Station #6113, 785 East Stanley Blvd., Livermore, CA**

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>MW-6 Cont.</b>									
1/21/2002	--	--	<5.0	--	--	--	--	--	
4/26/2002	--	--	17	--	--	--	--	--	
10/7/2002	<40	<20	8	<0.50	<0.50	<0.50	<0.50	<0.50	
05/01/2003	<100	<20	12	<0.50	<0.50	<0.50	<0.50	<0.50	
10/03/2003	<500	<100	120	<5.0	<5.0	<5.0	<2.5	<2.5	a
04/06/2004	<5,000	<1,000	1,700	<25	<25	<25	<25	<25	
10/28/2004	<5,000	<1,000	3,100	<25	<25	<25	<25	<25	
04/13/2005	<10,000	<2,000	3,900	<50	<50	<50	<50	<50	
10/27/2005	<10,000	<2,000	2,900	<50	<50	<50	<50	<50	b
04/12/2006	<30,000	<2,000	3,400	<50	<50	<50	<50	<50	b
10/31/2006	<15,000	<1,000	3,400	<25	<25	<25	<25	<25	b
4/19/2007	<15,000	<1,000	2,200	<25	<25	<25	<25	<25	
10/16/2007	<15,000	<1,000	2,600	<25	<25	<25	<25	<25	c (MTBE)
4/24/2008	<6,000	1,500	4,200	<10	<10	<10	<10	<10	
<b>MW-7</b>									
8/31/1995	--	--	<3	--	--	--	--	--	
11/28/1995	--	--	<3	--	--	--	--	--	
2/22/1996	--	--	<3	--	--	--	--	--	
5/23/1996	--	--	<3	--	--	--	--	--	
11/7/1996	--	--	<3	--	--	--	--	--	
3/27/1997	--	--	<3	--	--	--	--	--	
5/19/1997	--	--	<3	--	--	--	--	--	
5/18/1998	--	--	<3	--	--	--	--	--	
11/2/1998	--	--	4	--	--	--	--	--	
6/4/1999	--	--	<3	--	--	--	--	--	
11/11/1999	--	--	<3	--	--	--	--	--	
6/20/2000	--	--	<2.50	--	--	--	--	--	
8/29/2000	--	--	<2.50	--	--	--	--	--	
11/29/2000	--	--	<2.50	--	--	--	--	--	
5/2/2001	--	--	<2.50/2.66	--	--	--	--	--	
8/15/2001	--	--	<2.5	--	--	--	--	--	

**Table 2. Summary of Fuel Additives Analytical Data**  
**ARCO Service Station #6113, 785 East Stanley Blvd., Livermore, CA**

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>MW-7 Cont.</b>									
10/5/2001	--	--	<2.5	--	--	--	--	--	
1/21/2002	--	--	15/21	--	--	--	--	--	
4/26/2002	--	--	18	--	--	--	--	--	
10/7/2002	<40	<20	41	<0.50	<0.50	<0.50	<0.50	<0.50	
05/01/2003	<100	<20	43	<0.50	<0.50	<0.50	<0.50	<0.50	
10/03/2003	<200	<40	49	<2.0	<2.0	<2.0	<1.0	<1.0	a
04/06/2004	<100	<20	0.76	<0.50	<0.50	<0.50	<0.50	<0.50	
10/28/2004	<100	<20	14	<0.50	<0.50	<0.50	<0.50	<0.50	
04/13/2005	<100	<20	1.7	<0.50	<0.50	<0.50	<0.50	<0.50	
10/27/2005	<100	<20	2.3	<0.50	<0.50	<0.50	<0.50	<0.50	b
04/12/2006	<300	<20	1.1	<0.50	<0.50	<0.50	<0.50	<0.50	b
10/31/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b
4/19/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
10/16/2007	<300	<20	24	<0.50	<0.50	<0.50	<0.50	<0.50	
4/24/2008	<300	<10	22	<0.50	<0.50	<0.50	<0.50	<0.50	
10/15/2008	<300	<10	8.2	<0.50	<0.50	<0.50	<0.50	<0.50	
4/28/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	d
11/9/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
4/12/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/4/2010	<300	<10	0.59	<0.50	<0.50	<0.50	<0.50	<0.50	
5/18/2011	<300	<10	3.9	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>10/20/2011</b>	<b>&lt;300</b>	<b>&lt;10</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	
<b>MW-8</b>									
11/28/1995	--	--	<3	--	--	--	--	--	
11/7/1996	--	--	<3	--	--	--	--	--	
11/2/1998	--	--	<3	--	--	--	--	--	
11/11/1999	--	--	<3	--	--	--	--	--	
11/29/2000	--	--	<2.50	--	--	--	--	--	
10/5/2001	--	--	<2.5	--	--	--	--	--	
10/7/2002	<40	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

**Table 2. Summary of Fuel Additives Analytical Data**  
**ARCO Service Station #6113, 785 East Stanley Blvd., Livermore, CA**

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>MW-9</b>									
11/28/1995	--	--	<3	--	--	--	--	--	
11/7/1996	--	--	<3	--	--	--	--	--	
6/4/1999	--	--	<3	--	--	--	--	--	
11/11/1999	--	--	<3	--	--	--	--	--	
11/29/2000	--	--	<2.50	--	--	--	--	--	
10/5/2001	--	--	<2.5	--	--	--	--	--	
10/5/2001	--	--	<2.5	--	--	--	--	--	
10/7/2002	<40	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
10/03/2003	<100	<20	<0.50	<1.0	<1.0	<1.0	<0.50	<0.50	a
10/28/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
10/27/2005	<100	<20	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	b
10/31/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b
10/16/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
10/15/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/9/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/4/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>10/20/2011</b>	<b>&lt;300</b>	<b>&lt;10</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	
<b>MW-10</b>									
11/28/1995	--	--	<3	--	--	--	--	--	
11/7/1996	--	--	<3	--	--	--	--	--	
11/2/1998	--	--	<3	--	--	--	--	--	
11/11/1999	--	--	<3	--	--	--	--	--	
11/29/2000	--	--	<2.50	--	--	--	--	--	
10/5/2001	--	--	<2.5	--	--	--	--	--	
10/7/2002	<40	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
10/03/2003	<100	<20	<0.50	<1.0	<1.0	<1.0	<0.50	<0.50	a
10/28/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
10/27/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
10/31/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b
10/16/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

**Table 2. Summary of Fuel Additives Analytical Data**  
**ARCO Service Station #6113, 785 East Stanley Blvd., Livermore, CA**

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>MW-11</b>									
11/28/1995	--	--	<3	--	--	--	--	--	
5/23/1996	--	--	<3	--	--	--	--	--	
11/7/1996	--	--	<3	--	--	--	--	--	
5/19/1997	--	--	<3	--	--	--	--	--	
5/18/1998	--	--	<3	--	--	--	--	--	
11/2/1998	--	--	<3	--	--	--	--	--	
6/4/1999	--	--	<3	--	--	--	--	--	
11/11/1999	--	--	<3	--	--	--	--	--	
6/20/2000	--	--	<2.50	--	--	--	--	--	
11/29/2000	--	--	<2.50	--	--	--	--	--	
5/2/2001	--	--	<2.50	--	--	--	--	--	
10/5/2001	--	--	<2.5	--	--	--	--	--	
4/26/2002	--	--	<2.5	--	--	--	--	--	
10/7/2002	<40	<20	1.0	<0.50	<0.50	<0.50	<0.50	<0.50	
05/01/2003	<100	<20	1.5	<0.50	<0.50	<0.50	<0.50	<0.50	
10/03/2003	<100	<20	3.1	<1.0	<1.0	<1.0	<0.50	<0.50	a
04/06/2004	<100	<20	14	<0.50	<0.50	<0.50	<0.50	<0.50	
10/28/2004	<100	<20	29	<0.50	<0.50	<0.50	<0.50	<0.50	
04/13/2005	<100	<20	3.7	<0.50	<0.50	<0.50	<0.50	<0.50	
10/27/2005	<100	<20	21	<0.50	<0.50	<0.50	<0.50	<0.50	
04/12/2006	--	--	--	--	--	--	--	--	Well inaccessible
4/19/2007	<300	<20	12	<0.50	<0.50	<0.50	<0.50	<0.50	
10/16/2007	<300	<20	6.6	<0.50	<0.50	<0.50	<0.50	<0.50	
4/24/2008	<300	<10	17	<0.50	<0.50	<0.50	<0.50	<0.50	
4/28/2009	<300	<10	5.3	<0.50	<0.50	<0.50	<0.50	<0.50	d
11/9/2009	<300	<10	12	<0.50	<0.50	<0.50	<0.50	<0.50	
4/12/2010	<300	<10	10	<0.50	<0.50	<0.50	<0.50	<0.50	
11/4/2010	<300	<10	9.9	<0.50	<0.50	<0.50	<0.50	<0.50	
5/18/2011	<300	<10	7.8	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>10/20/2011</b>	<b>&lt;300</b>	<b>&lt;10</b>	<b>6.9</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	
<b>MW-12</b>									

**Table 2. Summary of Fuel Additives Analytical Data**  
**ARCO Service Station #6113, 785 East Stanley Blvd., Livermore, CA**

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>MW-12 Cont.</b>									
11/28/1995	--	--	<3	--	--	--	--	--	
5/23/1996	--	--	<3	--	--	--	--	--	
11/7/1996	--	--	<3	--	--	--	--	--	
5/19/1997	--	--	<3	--	--	--	--	--	
5/18/1998	--	--	<3	--	--	--	--	--	
04/06/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
10/28/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
04/13/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
10/27/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
04/12/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b
4/19/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
4/28/2009	<300	<10	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	d
11/9/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
4/12/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/4/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/18/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>10/20/2011</b>	<b>&lt;300</b>	<b>&lt;10</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	
<b>MW-13</b>									
1/21/2002	--	--	4,900/5,200	--	--	--	--	--	
4/26/2002	--	--	1,600	--	--	--	--	--	
10/7/2002	<4,000	<2,000	2,800	<50	<50	<50	<50	<50	
05/01/2003	<10,000	<2,000	1,600	<50	<50	<50	<50	<50	
10/03/2003	<10,000	<2,000	2,400	<100	<100	<100	<50	<50	a
04/06/2004	<5,000	<1,000	1,800	<25	<25	<25	<25	<25	
10/28/2004	<5,000	<1,000	1,800	<25	<25	<25	<25	<25	
04/13/2005	<5,000	<1,000	920	<25	<25	<25	<25	<25	
10/27/2005	<2,000	<400	580	<10	<10	<10	<10	<10	
04/12/2006	<6,000	<400	470	<10	<10	<10	<10	<10	b
10/31/2006	<15,000	<1,000	710	<25	<25	<25	<25	<25	b
4/19/2007	<15,000	<1,000	330	<25	<25	<25	<25	<25	
4/24/2008	<300	14	49	<0.50	<0.50	<0.50	<0.50	<0.50	

**Table 2. Summary of Fuel Additives Analytical Data**  
**ARCO Service Station #6113, 785 East Stanley Blvd., Livermore, CA**

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>RMW-13</b>									
4/12/2010	<75,000	<2,500	1,500	<120	<120	<120	<120	<120	
11/4/2010	<75,000	<2,500	390	<120	<120	<120	130	<120	
5/18/2011	<30,000	<1,000	380	<50	<50	<50	<50	<50	
<b>10/20/2011</b>	<b>&lt;12,000</b>	<b>&lt;400</b>	<b>55</b>	<b>&lt;20</b>	<b>&lt;20</b>	<b>&lt;20</b>	<b>&lt;20</b>	<b>&lt;20</b>	
<b>VW-1</b>									
8/29/2000	--	--	110	--	--	--	--	--	
11/29/2000	--	--	<2.50	--	--	--	--	--	
8/15/2001	--	--	20/17	--	--	--	--	--	
8/15/2001	--	--	20/17	--	--	--	--	--	
10/5/2001	--	--	610/660	--	--	--	--	--	
1/21/2002	--	--	2,600/3,400	--	--	--	--	--	
1/21/2002	--	--	2,500/3,200	--	--	--	--	--	
4/26/2002	--	--	48	--	--	--	--	--	
4/26/2002	--	--	45	--	--	--	--	--	
10/7/2002	<80	<40	88	<1.0	<1.0	<1.0	<1.0	<1.0	
05/01/2003	<100	<20	36	<0.50	<0.50	<0.50	<0.50	<0.50	
10/03/2003	<100	<20	12	<1.0	<1.0	<1.0	<0.50	<0.50	a
04/06/2004	<100	<20	13	<0.50	<0.50	<0.50	<0.50	<0.50	
10/28/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
04/13/2005	<100	<20	9.6	<0.50	<0.50	<0.50	<0.50	<0.50	
10/27/2005	<100	<20	13	<0.50	<0.50	<0.50	<0.50	<0.50	
04/12/2006	<300	<20	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	b
10/31/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b
4/19/2007	<300	<20	3.0	<0.50	<0.50	<0.50	<0.50	<0.50	
10/16/2007	<15,000	<1,000	150	<25	<25	<25	<25	<25	b
4/24/2008	<300	<10	4.5	<0.50	<0.50	<0.50	<0.50	<0.50	
4/28/2009	<300	<10	19	<0.50	<0.50	<0.50	<0.50	<0.50	d
11/9/2009	<300	<10	1.1	<0.50	<0.50	<0.50	<0.50	<0.50	
4/12/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/4/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/18/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

**Table 2. Summary of Fuel Additives Analytical Data**  
**ARCO Service Station #6113, 785 East Stanley Blvd., Livermore, CA**

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>VW-1 Cont.</b>									
10/20/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>VW-2</b>									
10/03/2003	--	--	--	--	--	--	--	--	Well inaccessible
<b>VW-3</b>									
8/29/2000	--	--	44,700	--	--	--	--	--	
11/29/2000	--	--	12,300/15,100	--	--	--	--	--	
<b>VW-4</b>									
11/29/2000	--	--	6,430/8,460	--	--	--	--	--	
11/29/2000	--	--	6,770/7,880	--	--	--	--	--	
10/03/2003	<100,000	<20,000	1,600	<1,000	<1,000	<1,000	<500	<500	a

Symbols & Abbreviations:

-- = Not analyzed/applicable/measured/available

< = Not detected at or above specified laboratory reporting limit

1,2-DCA = 1,2-Dichloroethane

DIPE = Diisopropyl 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

Footnotes:

a = This sample was analyzed 3 days after the EPA recommended holding time. The results may still be useful for their intended purpose

b = Calibration verification for ethanol was within method limits but outside contract limits

c = Sample >4x spike concentration

d = Calibrtn. verif. recov. Below method CL for TAME

Notes:

All volatile organic compounds analyzed using EPA Method 8260B

Note: 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 #6113, 785 East Stanley Blvd., Livermore, CA**

<b>Date Measured</b>	<b>Approximate Gradient Direction</b>	<b>Approximate Gradient Magnitude (ft/ft)</b>
3/23/1995	Northwest	0.035
5/31/1995	North-Northwest	0.028
8/31/1995	North-Northwest	0.03
11/28/1995	North-Northwest	0.025
2/22/1996	North-Northwest	0.031
5/23/1996	North-Northwest	0.025
8/8/1996	North	0.019
11/7/1996	North-Northeast	0.019
3/27/1997	North-Northwest	0.021
5/19/1997	North	0.019
5/18/1998	North	0.02
11/2/1998	North	0.02
6/4/1999	North	0.02
11/11/1999	North	0.03
6/20/2000	North-Northeast	0.014
8/29/2000	North-Northeast	0.013
11/29/2000	North-Northwest	0.026
5/2/2001	Northeast	0.026
8/15/2001	Northeast	0.047
10/5/2001	Northeast	0.031
1/21/2002	Northeast	0.033
4/26/2002	Northeast	0.031
10/7/2002	Northeast	0.017
5/1/2003	North-Northeast	0.011
10/3/2003	North-Northeast	0.016
4/6/2004	North-Northeast	0.013
10/28/2004	North-Northeast	0.014
4/13/2005	North-Northwest	0.02
10/27/2005	North-Northwest	0.01 to 0.03
4/12/2006	Northeast	0.01
10/31/2006	Northeast	0.014
4/19/2007	Northeast	0.013
10/16/2007	Northeast	0.031
4/24/2008	North-Northwest	0.013
10/15/2008	Northeast	0.070
4/28/2009	Northeast	0.008
11/9/2009	Northeast	0.02
4/12/2010	North-Northeast	0.03
11/4/2010	Northeast	0.01
5/18/2011	North	0.02
<b>10/20/2011</b>	<b>North-Northeast</b>	<b>0.01</b>

**Table 3. Historical Groundwater Gradient - Direction and Magnitude**  
**ARCO Service Station #6113, 785 East Stanley Blvd., Livermore, CA**

<b>Date Measured</b>	<b>Approximate Gradient Direction</b>	<b>Approximate Gradient Magnitude (ft/ft)</b>
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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**

## BROADBENT & ASSOCIATES INC. FIELD PROCEDURES

### A.1 QUALITY ASSURANCE/QUALITY CONTROL FIELD PROTOCOLS

Field protocols have been implemented to enhance the accuracy and reliability of data collection, groundwater sample collection, transportation and laboratory analysis. Discussion of these protocols is provided below.

#### A.1.1 Water Level & Free-Product Measurement

Prior to groundwater sample collection from each monitoring well, the presence of separate-phase hydrocarbons (SPH or free product, FP) and depth to groundwater shall be measured. Depth to groundwater will be measured with a standard water level indicator that has been decontaminated prior to its use in accordance with procedures discussed below. Depth to groundwater will be gauged from a saw cut notch at the top of the well casing on each well head. Where FP is suspected, the initial gauging will be done with an oil-water interface probe. Once depth to water has been measured, the first retrieval of a new disposable bailer will be scrutinized for the presence of SPH/FP.

#### A.1.2 Monitoring Well Purging

Subsequent to measuring depth to groundwater and prior to the collection of groundwater samples, purging of standing water within the monitoring well will be performed if called for. Consistent with the American Society for Testing and Materials (ASTM) Standard D6452-99, Section 7.1, the well will be purged of approximately three wetted-casing volumes of water, or until the well is dewatered, or until monitored field parameters indicate stabilization. The well will be purged using a pre-cleaned disposable bailer or submersible pump and disposable plastic tubing dedicated to each individual well. The well will be purged at a low flow rate to minimize the possibility of purging the well dry. So that the sample collected is representative of formation water, several field parameters will be monitored during the purging process. The sample will not be collected until these parameters (i.e. temperature, pH, and conductivity) have stabilized to within 10% of the previously measured value. If a well is purged dry, the sample should not be collected until the well has recovered to a minimum 50% of its initial volume.

#### A.1.3 Groundwater Sample Collection

Once the wells are satisfactorily purged, water samples will be collected from each well. Water samples for organic analyses will be collected using a pre-cleaned, new, disposable bailer and transferred into the appropriate, new, laboratory-prepared containers such that no head space or air bubbles are present in the sample container (if appropriate to the analysis). The samples will be properly labeled (i.e. sample identification, sampler initials, date/time of collection, site location, requested analyses), placed in an ice chest with bagged ice or ice substitute, and delivered to the contracted analytical laboratory.

#### A.1.4 Surface Water Sample Collection

Unless specified otherwise, surface water samples will be collected from mid-depth in the central area of the associated surface water body. Water samples will be collected into appropriate, new, laboratory-prepared containers by dipping the container into the surface water unless the container has a preservative present. If a sample preservative is present, a new, cleaned non-preserved surrogate container will be used to obtain the sample which will then be directly transferred into a new, laboratory-provided, preserved container. Samples will be properly labeled and transported as described above.

#### A.1.5 Decontamination Protocol

Prior to use in each well, re-usable groundwater sampling equipment (e.g., water level indicator, oil-interface probe, purge pump, etc.) will be decontaminated. Decontamination protocol will include thoroughly cleaning with a solution of Liquinox, rinsing with clean water, and final rinsing with control water (potable water of known quality, distilled, or de-ionized water). Pre-cleaned new disposable bailers and disposable plastic tubing will be dedicated to each individual well.

#### A.1.6 Chain of Custody Procedures

Sample identification documents will be carefully prepared so identification and chain of custody can be maintained and sample disposition can be controlled. The sample identification documents include Chain-of-Custody (COC) records and Daily Field Report forms. Chain of custody procedures are outlined below.

##### Field Custody Procedures

The field sampler is individually responsible for the care and custody of the samples collected until they are properly transferred.

Samples will have unique labels. The information on these labels will correspond to the COC which shows the identification of individual samples and the contents of the shipping container. The original COC will accompany the shipment and a copy will be retained by the field sampler.

##### Transfer of Custody and Shipment

A COC will accompany samples during transfer and shipment. When transferring samples, the individual relinquishing and the individual receiving the samples will each sign, date, and note the time on the COC. This documents the sample custody transfer.

Samples will be packaged properly for shipment and dispatched to the appropriate laboratory for analysis, with a separate COC accompanying each shipment. Shipments will be accompanied by the original COC. Samples will be delivered by BAI personnel to the laboratory, or shipped by responsible courier. When a shipping courier is utilized, the sample shipment number will be identified on the COC.

#### A.1.7 Field Records

In addition to sample identification numbers and COC records, Daily Field Report records will be maintained by field staff to provide daily records of significant events, observations, and measurements during field investigations. These documents will contain observed information such as: the personnel present, site conditions, sampling procedures, measurement procedures, calibration records, equipment used, supplies used, etc. Field measurements will be recorded on the appropriate forms. Entries on the data forms will be signed and dated. The data forms will be kept as permanent file records.

**APPENDIX B**

FIELD DATA SHEETS AND NON-HAZARDOUS WASTE DATA FORM

Project: 06-82-637 Project No.: 06-82-637  
 Field Representative(s): JR, LD Day: THURS, Date: 10-20-11  
 Time Onsite: From: 7<sup>00</sup> To: \_\_\_\_\_; From: \_\_\_\_\_ To: \_\_\_\_\_; From: \_\_\_\_\_ To: \_\_\_\_\_

Signed HASP  Safety Glasses  Hard Hat  Steel Toe Boots  Safety Vest  
 UST Emergency System Shut-off Switches Located  Proper Gloves  
 Proper Level of Barricading  Other PPE (describe) SUN SCREEN

Weather: 0700 - OVERCAST

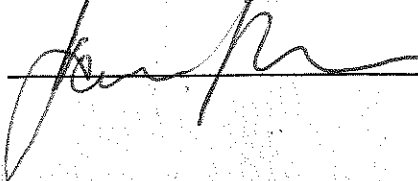
Equipment In Use: Water level indicator, pH/conductivity/temp/orp meter, DO meter, disposable bailers,

Visitors: \_\_\_\_\_

TIME:

WORK DESCRIPTION:

TIME:	WORK DESCRIPTION:
<u>0700</u>	<u>ARRIVE ONSITE. / START SAFETY MEETING &amp; PAPERWORK</u>
<u>0800</u>	<u>Signed &amp; setup on well MW-9 Sampled @ 0835</u>
<u>0848</u>	<u>Setup @ VW-4 &amp; MW7; tag VW-4 @ 0849 - sample MW-7 @ 918</u>
<u>0920</u>	<u>Setup @ VW-1 - sample at 0947</u>
<u>0955</u>	<u>Setup @ MW-4 - Sample @ 1006</u>
<u>1017</u>	<u>Setup @ RMW-13 - Sample @ 1030</u>
<u>1038</u>	<u>Setup @ VW-2 to gauge - gauged at 1045</u>
<u>1050</u>	<u>Setup @ MW-2 to gauge - gauged at 1055</u>
<u>1100</u>	<u>Break for lunch</u>
<u>1150</u>	<u>Setup @ MW-11; sampled @ 1218</u>

Signature: 

Project: 06-82-637 BP 6113 Project No.: 06-82-637

Field Representative(s): JR & LD Day: THURS Date: 10-20-11

Time Onsite: From: 700 To: 1300; From: \_\_\_\_\_ To: \_\_\_\_\_; From: \_\_\_\_\_ To: \_\_\_\_\_

- Signed HASP
- Safety Glasses
- Hard Hat
- Steel Toe Boots
- Safety Vest
- UST Emergency System Shut-off Switches Located
- Proper Gloves
- Proper Level of Barricading
- Other PPE (describe) SUNSCREEN

Weather: 6700 - overcast

Equipment In Use: water level indicator, pH / conductivity / temp / ORP meters, DO meter, disposable bailers

Visitors: —

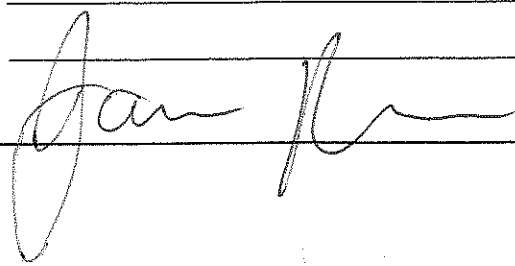
**TIME:** **WORK DESCRIPTION:**

1230 Set up at MW-12  
- sampled at 1250

1300 left site & signed out

# 1300-1430 Drove back to office

1430-1500 Packed samples & called GSO for pickup

Signature: 





**Groundwater Sampling Data Sheet**

Well I.D.: \_\_\_\_\_  
 Project Name/Location: MW-4  
 Sampler's Name: BP/LO Project #: 06-82-637  
 Purging Equipment: BAILOR Date: 10-20-11  
 Sampling Equipment: BAILOR

Casing Type: PVC  
 Casing Diameter: 4 inch  
 Total Well Depth: 26.68 feet  
 Depth to Water: - 19.33 feet  
 Water Column Thickness: = 7.35 feet  
 Unit Casing Volume\*: x 0.65 gallon / foot  
 Casing Water Volume: = ~~2.54~~ 4.77 gallons  
 Casing Volume: x 3 each  
 Estimated Purge Volume: = 14.33 gallons

**\*UNIT CASING VOLUMES**

2" = 0.16 gal/lin ft.  
 3" = 0.37 gal/lin ft.  
 4" = 0.65 gal/lin ft.  
 6" = 1.47 gal/lin ft.

Free product measurement (if present): \_\_\_\_\_

Purged (gallons)	Time (24:00)	DO	ORP (mV)	Fe	Conductance (µS)	Temperature (Fahrenheit)	pH	Observations
0	09:59	0.95	149	—	812.5	19.2	7.52	
1	10:00	X	X	X	806.2	20.0	7.39	
2	10:02	X	X	X	806.5	20.0	7.32	
3	10:04	X	X	X	809.5	20.0	7.23	
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				

Total Water Volume Purged: 3 gallons  
 Depth to Water at Sample Collection: \_\_\_\_\_ feet  
 Sample Collection Time: 1006

Purged Dry? (Y/N) (N)

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Groundwater Sampling Data Sheet**

Well I.D.:           
 Project Name/Location:                   Project #: 06-82-637  
 Sampler's Name:          Date: 10-20-11  
 Purging Equipment:           
 Sampling Equipment:         

Casing Type: PVC

Casing Diameter:          4 inch  
 Total Well Depth:          67.45 feet  
 Depth to Water:          - 18.38 feet  
 Water Column Thickness:          = 49.07 feet  
 Unit Casing Volume\*:          x 0.65 gallon / foot  
 Casing Water Volume:          = 31.90 gallons  
 Casing Volume:          x 3 each  
 Estimated Purge Volume:          = 95.7 gallons

**\*UNIT CASING VOLUMES**

2" = 0.16 gal/lin ft.  
 3" = 0.37 gal/lin ft.  
 4" = 0.65 gal/lin ft.  
 6" = 1.47 gal/lin ft.

Free product measurement (if present):         

Purged (gallons)	Time (24:00)	DO	ORP (mV)	Fe	Conductance (µS)	Temperature (Fahrenheit)	pH	Observations
0	0900	4.37	124	—	491.6	18.7	8.84	
3	0902	X	X	X	492.6	19.5	9.05	
6	0904	X	X	X	506.7	19.4	9.10	
9	0908	X	X	X	527.2	18.9	9.02	
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				

Total Water Volume Purged:          9 gallons

Depth to Water at Sample Collection:          feet

Sample Collection Time:          0910

Purged Dry? (Y/N) (N)

Comments:

**Groundwater Sampling Data Sheet**

Well I.D.: MW-9  
 Project Name/Location: BP 6113 Project #: 06-82-637  
 Sampler's Name: JR & LD Date: 10-20-11  
 Purging Equipment: Bailer  
 Sampling Equipment: Bailer

Casing Type: PVC

Casing Diameter: 4 inch

**\*UNIT CASING VOLUMES**

Total Well Depth: 67.92 feet

2" = 0.16 gal/lin ft.

Depth to Water: - 17.30 feet

3" = 0.37 gal/lin ft.

Water Column Thickness: = 50.62 feet

4" = 0.65 gal/lin ft.

Unit Casing Volume\*: x 0.65 gallon / foot

6" = 1.47 gal/lin ft.

Casing Water Volume: = 3290 gallons

Casing Volume: x 3 each

Estimated Purge Volume: = 498.71 gallons

Free product measurement (if present): \_\_\_\_\_

Purged (gallons)	Time (24:00)	DO	ORP (mV)	Fe	Conductance (µS)	Temperature (Fahrenheit)	pH	Observations
0	0819	4.87	102	-	578.3	17.3	8.60	
3	0824	X	X	X	574.2	18.9	8.06	
6	0827	X	X	X	572.2	18.8	7.98	
9	0831	X	X	X	580.2	18.5	7.96	
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				

Total Water Volume Purged: 9 gallons

Depth to Water at Sample Collection: \_\_\_\_\_ feet

Sample Collection Time: 0835

Purged Dry? (Y/N) (N)

Comments:

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**Groundwater Sampling Data Sheet**

Well I.D.: MW-11  
 Project Name/Location: BP 6113 Project #: 06-82-637  
 Sampler's Name: JE / LD Date: 10-20-11  
 Purging Equipment: BMLER  
 Sampling Equipment: BMLER

Casing Type: PVC

Casing Diameter: 2 inch  
 Total Well Depth: 45.0 feet  
 Depth to Water: 19.58 feet  
 Water Column Thickness: = 25.42 feet  
 Unit Casing Volume\*: x 0.16 gallon / foot  
 Casing Water Volume: = 4.1 gallons  
 Casing Volume: x 3 each  
 Estimated Purge Volume: = 12.30 gallons

**\*UNIT CASING VOLUMES**

2" = 0.16 gal/lin ft.  
 3" = 0.37 gal/lin ft.  
 4" = 0.65 gal/lin ft.  
 6" = 1.47 gal/lin ft.

Free product measurement (if present): \_\_\_\_\_

Purged (gallons)	Time (24:00)	DO	ORP (mV)	Fe	Conductance (µS)	Temperature (Fahrenheit)	pH	Observations
0	12:07	8.95	97	-	673.2	20.1	8.66	
1	12:08	X	X	X	671.1	20.0	8.44	
2	12:10	X	X	X	667.2	19.1	8.08	
3	12:13	X	X	X	669.3	19.1	7.84	
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				

Total Water Volume Purged: 3 gallons

Depth to Water at Sample Collection: \_\_\_\_\_ feet

Sample Collection Time: 1218

Purged Dry? (Y/N) (N)

Comments:

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**Groundwater Sampling Data Sheet**

Well I.D.: MW-12  
 Project Name/Location: BP 0113 Project #: 06-~~88~~-637<sup>92</sup>  
 Sampler's Name: JR/LD Date: 10-20-11  
 Purging Equipment: Bailer  
 Sampling Equipment: Bailer

Casing Type: PVC  
 Casing Diameter: 2 inch  
 Total Well Depth: 34.04 feet  
 Depth to Water: 20.25 feet  
 Water Column Thickness: = 13.79 feet  
 Unit Casing Volume\*: x 0.16 gallon / foot  
 Casing Water Volume: = 2.21 gallons  
 Casing Volume: x 3 each  
 Estimated Purge Volume: = 6.63 gallons

**\*UNIT CASING VOLUMES**  
 2" = 0.16 gal/lin ft.  
 3" = 0.37 gal/lin ft.  
 4" = 0.65 gal/lin ft.  
 6" = 1.47 gal/lin ft.

Free product measurement (if present): \_\_\_\_\_

Purged (gallons)	Time (24:00)	DO	ORP (mV)	Fe	Conductance (µS)	Temperature (Fahrenheit)	pH	Observations
0	1245	0.87	126	-	571.1	20.0	7.94	
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				

Total Water Volume Purged: 0 gallons  
 Depth to Water at Sample Collection: \_\_\_\_\_ feet  
 Sample Collection Time: 1250  
 Purged Dry? (Y/N) (N)

Comments: NP @ 18'

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**Groundwater Sampling Data Sheet**

Well I.D.: RMW-13  
 Project Name/Location: BP 6113 Project #: 06-82-637  
 Sampler's Name: JR/LD Date: 10-20-11  
 Purging Equipment: Bailer  
 Sampling Equipment: Bailer

Casing Type: PVC

Casing Diameter: 4 inch

Total Well Depth: 35.00 feet

Depth to Water: - 18.25 feet

Water Column Thickness: = 16.75 feet

Unit Casing Volume\*: x 0.65 gallon / foot

Casing Water Volume: = 10.89 gallons

Casing Volume: x 3 each

Estimated Purge Volume: = 32.66 gallons

**\*UNIT CASING VOLUMES**

2" = 0.16 gal/lin ft.

3" = 0.37 gal/lin ft.

4" = 0.65 gal/lin ft.

6" = 1.47 gal/lin ft.

Free product measurement (if present): \_\_\_\_\_

Purged (gallons)	Time (24:00)	DO	ORP (mV)	Fe	Conductance (µS)	Temperature (Fahrenheit)	pH	Observations
0	1027	0.84	136	-	8793	19.5	7.54	
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				

Total Water Volume Purged: 0 gallons

Depth to Water at Sample Collection: \_\_\_\_\_ feet

Sample Collection Time: 1030

Purged Dry? (Y/N) (N)

Comments: NPA 15'

HC ODOR (STRONG)

**Groundwater Sampling Data Sheet**

Well I.D.: VW-1  
 Project Name/Location: BP 6113 Project #: 06-82-637  
 Sampler's Name: JR/LD Date: 10-20-11  
 Purging Equipment: Bailer  
 Sampling Equipment: Bailer

Casing Type: PVC

Casing Diameter: 4 inch

**\*UNIT CASING VOLUMES**

Total Well Depth: 44.34 feet

2" = 0.16 gal/lin ft.

Depth to Water: - 17.44 feet

3" = 0.37 gal/lin ft.

Water Column Thickness: = 26.90 feet

4" = 0.65 gal/lin ft.

Unit Casing Volume\*: x 0.65 gallon / foot

6" = 1.47 gal/lin ft.

Casing Water Volume: = 17.49 gallons

Casing Volume: x 3 each

Estimated Purge Volume: = 52.46 gallons

Free product measurement (if present):

Purged (gallons)	Time (24:00)	DO	ORP (mV)	Fe	Conductance (µS)	Temperature (Fahrenheit)	pH	Observations
0	0932	1.77	131	-	486.0	18.6	8.68	
1	0935	X	X	X	484.6	19.3	8.28	
2	0937	X	X	X	483.5	19.2	8.10	
3	0940	X	X	X	482.4	19.1	7.93	slight HC ORP
4	0942	X	X	X	482.5	19.1	7.89	
		X	X	X				
		X	X	X				
		X	X	X				

Total Water Volume Purged: 4 gallons

Depth to Water at Sample Collection: \_\_\_\_\_ feet

Sample Collection Time: 0947

Purged Dry? (Y/N) (N)

Comments: BROWN PARTICULATES IN WATER



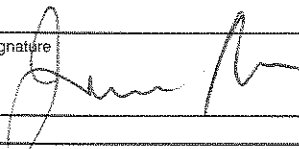
NO. 689902

# NON-HAZARDOUS WASTE DATA FORM

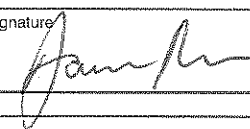
BESI # \_\_\_\_\_

Generator's Name and Mailing Address BP WEST COAST PRODUCTS, LLC P.O. BOX 80249 RANCHO SANTA MARGARITA, CA 92868  Generator's Phone: 949-460-5200	Generator's Site Address (if different than mailing address) BP 6113 785 E. Stanley Blvd. Livermore, CA 94550
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Container type removed from site: <input type="checkbox"/> Drums <input type="checkbox"/> Vacuum Truck <input type="checkbox"/> Roll-off Truck <input type="checkbox"/> Dump Truck <input type="checkbox"/> Other _____  Quantity <u>28</u>	Container type transported to receiving facility: <input type="checkbox"/> Drums <input type="checkbox"/> Vacuum Truck <input type="checkbox"/> Roll-off Truck <input type="checkbox"/> Dump Truck <input type="checkbox"/> Other _____  Quantity _____ Volume _____																		
WASTE DESCRIPTION <u>NON-HAZARDOUS WATER</u>	GENERATING PROCESS <u>WELL FURGING / DECON WATER</u>																		
<table border="1" style="width:100%"> <thead> <tr> <th>COMPONENTS OF WASTE</th> <th>PPM</th> <th>%</th> </tr> </thead> <tbody> <tr> <td>1. WATER</td> <td></td> <td>99-100%</td> </tr> <tr> <td>2. TPH</td> <td></td> <td>&lt;1%</td> </tr> </tbody> </table>	COMPONENTS OF WASTE	PPM	%	1. WATER		99-100%	2. TPH		<1%	<table border="1" style="width:100%"> <thead> <tr> <th>COMPONENTS OF WASTE</th> <th>PPM</th> <th>%</th> </tr> </thead> <tbody> <tr> <td>3. _____</td> <td></td> <td></td> </tr> <tr> <td>4. _____</td> <td></td> <td></td> </tr> </tbody> </table>	COMPONENTS OF WASTE	PPM	%	3. _____			4. _____		
COMPONENTS OF WASTE	PPM	%																	
1. WATER		99-100%																	
2. TPH		<1%																	
COMPONENTS OF WASTE	PPM	%																	
3. _____																			
4. _____																			
Waste Profile _____ PROPERTIES: pH <u>7-10</u> <input type="checkbox"/> SOLID <input checked="" type="checkbox"/> LIQUID <input type="checkbox"/> SLUDGE <input type="checkbox"/> SLURRY <input type="checkbox"/> OTHER _____																			
HANDLING INSTRUCTIONS: <u>WEAR ALL APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT.</u>																			

Generator Printed/Typed Name <u>James Ramos</u>	Signature 	Month Day Year <u>11</u>   <u>7</u>   <u>11</u>
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The Generator certifies that the waste as described is 100% non-hazardous

Transporter 1 Company Name BROADBENT & ASSOCIATES, INC>	Phone# 530-566-1400
Transporter 1 Printed/Typed Name <u>James Ramos</u>	Signature 
Transporter Acknowledgment of Receipt of Materials	
Transporter 2 Company Name	Phone#
Transporter 2 Printed/Typed Name	Signature
Transporter Acknowledgment of Receipt of Materials	

Designated Facility Name and Site Address INSTRAT, INC. 1105 AIRPORT RD. RIO VISTA, CA 94571	Phone# 530-753-1828
Printed/Typed Name	Signature
Designated Facility Owner or Operator: Certification of receipt of materials covered by this data form.	

GENERATOR

TRANSPORTER

RECEIVING FACILITY

**APPENDIX C**

**LABORATORY REPORT  
AND CHAIN-OF-CUSTODY DOCUMENTATION**



# CALSCIENCE

## WORK ORDER NUMBER: 11-10-1506

*The difference is service*



AIR | SOIL | WATER | MARINE CHEMISTRY

### Analytical Report For

**Client:** Broadbent & Associates, Inc.

**Client Project Name:** BP 6113

**Attention:** Jason Duda  
1324 Mangrove Ave, Ste 212  
Chico, CA 95926-2642

Approved for release on 11/4/2011 by:  
Richard Villafania  
Project Manager

ResultLink ▶

Email your PM ▶



Calscience Environmental Laboratories certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety. Note that the Chain-of-Custody Record and Sample Receipt Form are integral parts of this report.



**Analytical Report**



Broadbent & Associates, Inc.  
 1324 Mangrove Ave, Ste 212  
 Chico, CA 95926-2642

Date Received: 10/21/11  
 Work Order No: 11-10-1506  
 Preparation: EPA 5030C  
 Method: EPA 8015B (M)

Project: BP 6113

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>MW-4</b>	<b>11-10-1506-1-D</b>	<b>10/20/11 10:06</b>	<b>Aqueous</b>	<b>GC 57</b>	<b>10/24/11</b>	<b>10/24/11 14:41</b>	<b>111024B01</b>

Comment(s): -LW Quantitated against gasoline.

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	120	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	116	38-134	

<b>MW-7</b>	<b>11-10-1506-2-D</b>	<b>10/20/11 09:10</b>	<b>Aqueous</b>	<b>GC 57</b>	<b>10/24/11</b>	<b>10/24/11 13:07</b>	<b>111024B01</b>
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Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	117	38-134	

<b>MW-9</b>	<b>11-10-1506-3-D</b>	<b>10/20/11 08:35</b>	<b>Aqueous</b>	<b>GC 57</b>	<b>10/24/11</b>	<b>10/24/11 15:12</b>	<b>111024B01</b>
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Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	90	38-134	

<b>MW-11</b>	<b>11-10-1506-4-D</b>	<b>10/20/11 12:18</b>	<b>Aqueous</b>	<b>GC 57</b>	<b>10/24/11</b>	<b>10/24/11 15:44</b>	<b>111024B01</b>
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Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	111	38-134	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

**Analytical Report**



Broadbent & Associates, Inc.  
 1324 Mangrove Ave, Ste 212  
 Chico, CA 95926-2642

Date Received: 10/21/11  
 Work Order No: 11-10-1506  
 Preparation: EPA 5030C  
 Method: EPA 8015B (M)

Project: BP 6113

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-12	11-10-1506-5-D	10/20/11 12:50	Aqueous	GC 57	10/24/11	10/24/11 16:15	111024B01

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	74	38-134			

RMW-13	11-10-1506-6-D	10/20/11 10:30	Aqueous	GC 57	10/24/11	10/24/11 17:20	111024B01
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Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	560	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	130	38-134			

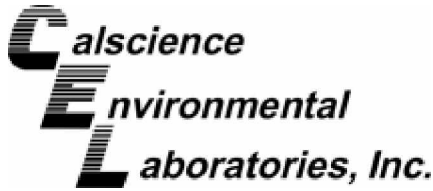
VW-1	11-10-1506-7-D	10/20/11 09:47	Aqueous	GC 57	10/24/11	10/24/11 17:51	111024B01
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Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	97	38-134			

Method Blank	099-12-695-1,183	N/A	Aqueous	GC 57	10/24/11	10/24/11 11:33	111024B01
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Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	105	38-134			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Broadbent & Associates, Inc.  
1324 Mangrove Ave, Ste 212  
Chico, CA 95926-2642

Date Received: 10/21/11  
Work Order No: 11-10-1506  
Preparation: EPA 5030C  
Method: EPA 8260B  
Units: ug/L

Project: BP 6113

Page 1 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-4	11-10-1506-1-A	10/20/11 10:06	Aqueous	GC/MS BB	10/25/11	10/26/11 02:47	111025L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	0.59	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.50	1	
Toluene	ND	0.50	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.50	1	
Xylenes (total)	ND	0.50	1		Ethanol	ND	300	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	101	68-120			Dibromofluoromethane	101	80-127		
1,2-Dichloroethane-d4	97	80-128			Toluene-d8	100	80-120		

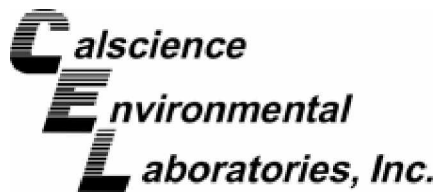
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-7	11-10-1506-2-A	10/20/11 09:10	Aqueous	GC/MS BB	10/25/11	10/26/11 04:48	111025L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.50	1	
Toluene	ND	0.50	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.50	1	
Xylenes (total)	ND	0.50	1		Ethanol	ND	300	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	98	68-120			Dibromofluoromethane	99	80-127		
1,2-Dichloroethane-d4	95	80-128			Toluene-d8	97	80-120		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-9	11-10-1506-3-A	10/20/11 08:35	Aqueous	GC/MS BB	10/25/11	10/26/11 05:18	111025L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.50	1	
Toluene	ND	0.50	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.50	1	
Xylenes (total)	ND	0.50	1		Ethanol	ND	300	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	98	68-120			Dibromofluoromethane	98	80-127		
1,2-Dichloroethane-d4	95	80-128			Toluene-d8	98	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Broadbent & Associates, Inc.  
1324 Mangrove Ave, Ste 212  
Chico, CA 95926-2642

Date Received: 10/21/11  
Work Order No: 11-10-1506  
Preparation: EPA 5030C  
Method: EPA 8260B  
Units: ug/L

Project: BP 6113

Page 2 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-11	11-10-1506-4-A	10/20/11 12:18	Aqueous	GC/MS BB	10/25/11	10/26/11 05:49	111025L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	6.9	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.50	1	
Toluene	ND	0.50	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.50	1	
Xylenes (total)	ND	0.50	1		Ethanol	ND	300	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	100	68-120			Dibromofluoromethane	99	80-127		
1,2-Dichloroethane-d4	96	80-128			Toluene-d8	99	80-120		

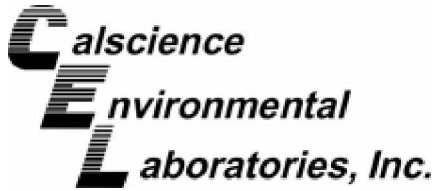
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-12	11-10-1506-5-A	10/20/11 12:50	Aqueous	GC/MS BB	10/25/11	10/26/11 06:19	111025L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.50	1	
Toluene	ND	0.50	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.50	1	
Xylenes (total)	ND	0.50	1		Ethanol	ND	300	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	97	68-120			Dibromofluoromethane	100	80-127		
1,2-Dichloroethane-d4	97	80-128			Toluene-d8	97	80-120		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
RMW-13	11-10-1506-6-B	10/20/11 10:30	Aqueous	GC/MS BB	10/26/11	10/26/11 20:23	111026L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	1100	20	40		Methyl-t-Butyl Ether (MTBE)	55	20	40	
1,2-Dibromoethane	ND	20	40		Tert-Butyl Alcohol (TBA)	ND	400	40	
1,2-Dichloroethane	ND	20	40		Diisopropyl Ether (DIPE)	ND	20	40	
Ethylbenzene	550	20	40		Ethyl-t-Butyl Ether (ETBE)	ND	20	40	
Toluene	ND	20	40		Tert-Amyl-Methyl Ether (TAME)	ND	20	40	
Xylenes (total)	620	20	40		Ethanol	ND	12000	40	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	98	68-120			Dibromofluoromethane	96	80-127		
1,2-Dichloroethane-d4	91	80-128			Toluene-d8	98	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Broadbent & Associates, Inc.  
1324 Mangrove Ave, Ste 212  
Chico, CA 95926-2642

Date Received: 10/21/11  
Work Order No: 11-10-1506  
Preparation: EPA 5030C  
Method: EPA 8260B  
Units: ug/L

Project: BP 6113

Page 3 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
VW-1	11-10-1506-7-A	10/20/11 09:47	Aqueous	GC/MS BB	10/25/11	10/26/11 07:20	111025L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.50	1	
Toluene	ND	0.50	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.50	1	
Xylenes (total)	ND	0.50	1		Ethanol	ND	300	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	99	68-120			Dibromofluoromethane	96	80-127		
1,2-Dichloroethane-d4	97	80-128			Toluene-d8	99	80-120		

Method Blank	099-12-703-1,907	N/A	Aqueous	GC/MS BB	10/25/11	10/26/11 02:16	111025L02
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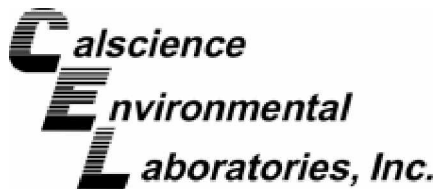
Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.50	1	
Toluene	ND	0.50	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.50	1	
Xylenes (total)	ND	0.50	1		Ethanol	ND	300	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	98	68-120			Dibromofluoromethane	99	80-127		
1,2-Dichloroethane-d4	97	80-128			Toluene-d8	98	80-120		

Method Blank	099-12-703-1,908	N/A	Aqueous	GC/MS BB	10/26/11	10/26/11 14:46	111026L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.50	1	
Toluene	ND	0.50	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.50	1	
Xylenes (total)	ND	0.50	1		Ethanol	ND	300	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
1,4-Bromofluorobenzene	97	68-120			Dibromofluoromethane	92	80-127		
1,2-Dichloroethane-d4	90	80-128			Toluene-d8	98	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers





Quality Control - Spike/Spike Duplicate



Broadbent & Associates, Inc.  
 1324 Mangrove Ave, Ste 212  
 Chico, CA 95926-2642

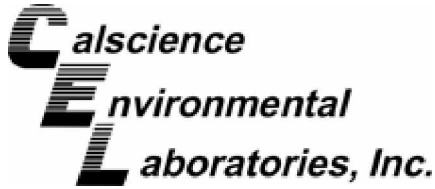
Date Received: 10/21/11  
 Work Order No: 11-10-1506  
 Preparation: EPA 5030C  
 Method: EPA 8015B (M)

Project BP 6113

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
MW-7	Aqueous	GC 57	10/24/11	10/24/11	111024S01

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	2000	92	92	38-134	0	0-25	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - Spike/Spike Duplicate



Broadbent & Associates, Inc.  
 1324 Mangrove Ave, Ste 212  
 Chico, CA 95926-2642

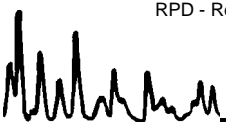
Date Received: 10/21/11  
 Work Order No: 11-10-1506  
 Preparation: EPA 5030C  
 Method: EPA 8260B

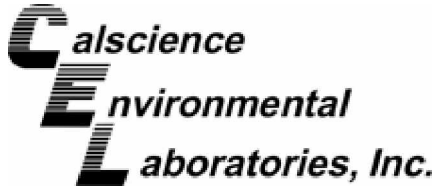
Project BP 6113

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
MW-4	Aqueous	GC/MS BB	10/25/11	10/26/11	111025S02

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	10.00	110	106	76-124	3	0-20	
Carbon Tetrachloride	10.00	105	107	74-134	2	0-20	
Chlorobenzene	10.00	109	107	80-120	2	0-20	
1,2-Dibromoethane	10.00	112	111	80-120	1	0-20	
1,2-Dichlorobenzene	10.00	110	108	80-120	1	0-20	
1,2-Dichloroethane	10.00	110	106	80-120	3	0-20	
Ethylbenzene	10.00	110	107	78-126	2	0-20	
Toluene	10.00	108	105	80-120	2	0-20	
Trichloroethene	10.00	116	104	77-120	10	0-20	
Methyl-t-Butyl Ether (MTBE)	10.00	105	106	67-121	1	0-49	
Tert-Butyl Alcohol (TBA)	50.00	104	108	36-162	4	0-30	
Diisopropyl Ether (DIPE)	10.00	104	104	60-138	1	0-45	
Ethyl-t-Butyl Ether (ETBE)	10.00	104	104	69-123	1	0-30	
Tert-Amyl-Methyl Ether (TAME)	10.00	107	105	65-120	2	0-20	
Ethanol	100.0	103	106	30-180	3	0-72	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - Spike/Spike Duplicate



Broadbent & Associates, Inc.  
 1324 Mangrove Ave, Ste 212  
 Chico, CA 95926-2642

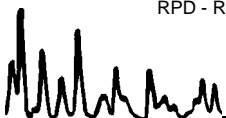
Date Received: 10/21/11  
 Work Order No: 11-10-1506  
 Preparation: EPA 5030C  
 Method: EPA 8260B

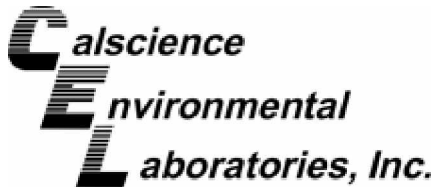
Project BP 6113

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-10-1683-2	Aqueous	GC/MS BB	10/26/11	10/26/11	111026S01

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	200.0	103	104	76-124	1	0-20	
Carbon Tetrachloride	200.0	97	103	74-134	6	0-20	
Chlorobenzene	200.0	108	111	80-120	3	0-20	
1,2-Dibromoethane	200.0	107	108	80-120	1	0-20	
1,2-Dichlorobenzene	200.0	111	117	80-120	5	0-20	
1,2-Dichloroethane	200.0	97	98	80-120	1	0-20	
Ethylbenzene	200.0	109	112	78-126	3	0-20	
Toluene	200.0	104	105	80-120	1	0-20	
Trichloroethene	200.0	102	102	77-120	0	0-20	
Methyl-t-Butyl Ether (MTBE)	200.0	93	105	67-121	4	0-49	
Tert-Butyl Alcohol (TBA)	1000	106	110	36-162	2	0-30	
Diisopropyl Ether (DIPE)	200.0	93	95	60-138	3	0-45	
Ethyl-t-Butyl Ether (ETBE)	200.0	92	96	69-123	5	0-30	
Tert-Amyl-Methyl Ether (TAME)	200.0	101	102	65-120	1	0-20	
Ethanol	2000	109	110	30-180	1	0-72	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Broadbent & Associates, Inc.  
 1324 Mangrove Ave, Ste 212  
 Chico, CA 95926-2642

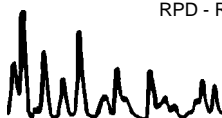
Date Received: N/A  
 Work Order No: 11-10-1506  
 Preparation: EPA 5030C  
 Method: EPA 8015B (M)

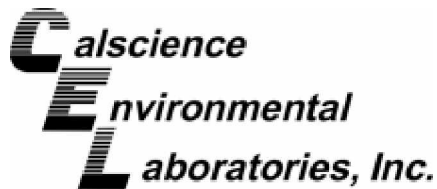
Project: BP 6113

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-695-1,183	Aqueous	GC 57	10/24/11	10/24/11	111024B01

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	2000	93	92	78-120	1	0-20	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Broadbent & Associates, Inc.  
 1324 Mangrove Ave, Ste 212  
 Chico, CA 95926-2642

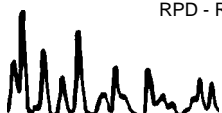
Date Received: N/A  
 Work Order No: 11-10-1506  
 Preparation: EPA 5030C  
 Method: EPA 8260B

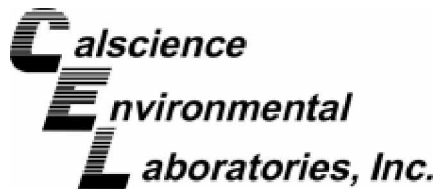
Project: BP 6113

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number			
099-12-703-1,907	Aqueous	GC/MS BB	10/25/11	10/26/11	111025L02			
Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	10.00	111	109	80-120	73-127	1	0-20	
Carbon Tetrachloride	10.00	112	114	74-134	64-144	2	0-20	
Chlorobenzene	10.00	113	110	80-120	73-127	3	0-20	
1,2-Dibromoethane	10.00	112	112	79-121	72-128	1	0-20	
1,2-Dichlorobenzene	10.00	114	114	80-120	73-127	0	0-20	
1,2-Dichloroethane	10.00	110	109	80-120	73-127	1	0-20	
Ethylbenzene	10.00	114	112	80-120	73-127	1	0-20	
Toluene	10.00	111	109	80-120	73-127	2	0-20	
Trichloroethene	10.00	121	109	79-127	71-135	11	0-20	
Methyl-t-Butyl Ether (MTBE)	10.00	108	108	69-123	60-132	0	0-20	
Tert-Butyl Alcohol (TBA)	50.00	108	102	63-123	53-133	6	0-20	
Diisopropyl Ether (DIPE)	10.00	107	105	59-137	46-150	2	0-37	
Ethyl-t-Butyl Ether (ETBE)	10.00	107	107	69-123	60-132	0	0-20	
Tert-Amyl-Methyl Ether (TAME)	10.00	108	110	70-120	62-128	1	0-20	
Ethanol	100.0	102	107	28-160	6-182	5	0-57	

Total number of LCS compounds : 15  
 Total number of ME compounds : 0  
 Total number of ME compounds allowed : 1  
 LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Broadbent & Associates, Inc.  
 1324 Mangrove Ave, Ste 212  
 Chico, CA 95926-2642

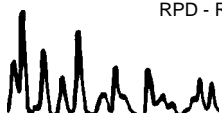
Date Received: N/A  
 Work Order No: 11-10-1506  
 Preparation: EPA 5030C  
 Method: EPA 8260B

Project: BP 6113

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number			
<b>099-12-703-1,908</b>	<b>Aqueous</b>	<b>GC/MS BB</b>	<b>10/26/11</b>	<b>10/26/11</b>	<b>111026L01</b>			
Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	10.00	103	102	80-120	73-127	0	0-20	
Carbon Tetrachloride	10.00	103	103	74-134	64-144	0	0-20	
Chlorobenzene	10.00	111	111	80-120	73-127	1	0-20	
1,2-Dibromoethane	10.00	111	110	79-121	72-128	0	0-20	
1,2-Dichlorobenzene	10.00	116	114	80-120	73-127	2	0-20	
1,2-Dichloroethane	10.00	99	98	80-120	73-127	1	0-20	
Ethylbenzene	10.00	112	112	80-120	73-127	0	0-20	
Toluene	10.00	103	104	80-120	73-127	0	0-20	
Trichloroethene	10.00	102	102	79-127	71-135	1	0-20	
Methyl-t-Butyl Ether (MTBE)	10.00	96	93	69-123	60-132	3	0-20	
Tert-Butyl Alcohol (TBA)	50.00	107	103	63-123	53-133	3	0-20	
Diisopropyl Ether (DIPE)	10.00	91	92	59-137	46-150	1	0-37	
Ethyl-t-Butyl Ether (ETBE)	10.00	92	92	69-123	60-132	0	0-20	
Tert-Amyl-Methyl Ether (TAME)	10.00	100	99	70-120	62-128	1	0-20	
Ethanol	100.0	98	91	28-160	6-182	7	0-57	

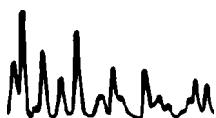
Total number of LCS compounds : 15  
 Total number of ME compounds : 0  
 Total number of ME compounds allowed : 1  
 LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit



Work Order Number: 11-10-1506

<u>Qualifier</u>	<u>Definition</u>
AX	Sample too dilute to quantify surrogate.
BA	Relative percent difference out of control.
BA,AY	BA = Relative percent difference out of control. AY = Matrix interference suspected.
BB	Sample > 4x spike concentration.
BF	Reporting limits raised due to high hydrocarbon background.
BH	Reporting limits raised due to high level of non-target analytes.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
BY	Sample received at improper temperature.
BZ	Sample preserved improperly.
CL	Initial analysis within holding time but required dilution.
CQ	Analyte concentration greater than 10 times the blank concentration.
CU	Surrogate concentration diluted to not detectable during analysis.
DF	Reporting limits elevated due to matrix interferences.
DU	Insufficient sample quantity for matrix spike/dup matrix spike.
ET	Sample was extracted past end of recommended max. holding time.
ET	Sample was extracted past end of recommended maximum holding time.
EY	Result exceeds normal dynamic range; reported as a min est.
GR	Internal standard recovery is outside method recovery limit.
IB	CCV recovery abovelimit; analyte not detected.
IH	Calibrtn. verif. recov. below method CL for this analyte.
IJ	Calibrtn. verif. recov. above method CL for this analyte.
J,DX	J=EPA Flag -Estimated value; DX= Value < lowest standard (MQL), but > than MDL.
LA	Confirmatory analysis was past holding time.
LG,AY	LG= Surrogate recovery below the acceptance limit. AY= Matrix interference suspected.
LH,AY	LH= Surrogate recovery above the acceptance limit. AY= Matrix interference suspected.
LM,AY	LM= MS and/or MSD above acceptance limits. See Blank Spike (LCS). AY= Matrix interference suspected.
LN,AY	LN= MS and/or MSD below acceptance limits. See Blank Spike (LCS). AY= Matrix interference suspected.
LQ	LCS recovery above method control limits.
LR	LCS recovery below method control limits.
LW	Quantitation of unknown hydrocarbon(s) in sample based on gasoline.
LX	Quantitation of unknown hydrocarbon(s) in sample based on diesel.
MB	Analyte present in the method blank.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
PC	Sample taken from VOA vial with air bubble > 6mm diameter.
PI	Primary and confirm results varied by > than 40% RPD.
RB	RPD exceeded method control limit; % recoveries within limits.
SG	A silica gel cleanup procedure was performed.



Qualifier

Definition

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.







# Laboratory Management Program LaMP Chain of Custody Record

BP/ARC Project Name: BP 6113  
 BP/ARC Facility No: 6113

Req Due Date (mm/dd/yy): \_\_\_\_\_ Rush TAT: Yes \_\_\_ No X  
 Lab Work Order Number: **11-10-1506**

Lab Name: <u>Calscience</u>	BP/ARC Facility Address: <u>785 E. Stanley Boulevard</u>	Consultant/Contractor: <u>Broadbent &amp; Associates, Inc.</u>
Lab Address: <u>7440 Lincoln Way</u>	City, State, ZIP Code: <u>Livermore, CA</u>	Consultant/Contractor Project No: <u>06-82-637-401-880</u>
Lab PM: <u>Richard Villafania</u>	Lead Regulatory Agency: <u>ACEH</u>	Address: <u>1324 Mangrove Ave. Ste. 212, Chico, CA 95926</u>
Lab Phone: <u>714-895-5494</u>	California Global ID No.: <u>T0600100111</u>	Consultant/Contractor PM: <u>Jason Duda</u>
Lab Shipping Acct#: <u>9225</u>	Enfos Proposal No: <u>005X5-0001</u>	Phone: <u>530-566-1400</u>
Lab Bottle Order No:	Accounting Mode: Provision <u>X</u> OOC-BU ___ OOC-RM ___	Email EDD To: <u>jduda@broadbentinc.com</u>
Other Info:	Stage: <u>Execute (4)</u> Activity: <u>Project Spend (80)</u>	Invoice To: <u>BP/ARC X</u> Contractor ___

BP/ARC EBM: <u>Shannon Couch</u>				Matrix			No. Containers / Preservative						Requested Analyses						Report Type & QC Level		
EBM Phone:				Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	Methanol	GRO (8015)	BTEX (8260)	5 Oxy (8260)	EDB (8260)	1,2-DCA (8260)	Ethanol (8260)	Standard <u>X</u>		
EBM Email:																			Full Data Package ___		
Lab No.	Sample Description	Date	Time																	Comments	
1	MW-4	10-20-11	1006	X			6				X	X	X	X	X	X					
2	MW-7		0910	X			6				X	X	X	X	X	X					
3	MW-9		0835	X			6				X	X	X	X	X	X					
4	MW-11		1218	X			6				X	X	X	X	X	X					
5	MW-12		1250	X			6				X	X	X	X	X	X					
6	RMW-13		1030	X			6				X	X	X	X	X	X					
7	VW-1		0947	X			6				X	X	X	X	X	X					
8	TB-6113- 10202011	10-20-11	1255	X			2													Hold	

Sampler's Name: <u>James Ramos / Lu Damerell</u>	Relinquished By / Affiliation		Date	Time	Accepted By / Affiliation		Date	Time
Sampler's Company: <u>BAI</u>	<u>James Ramos</u>		<u>10-20-11</u>	<u>17:00</u>	<u>Lu Damerell</u>		<u>10/21/11</u>	<u>10:00</u>
Shipment Method: <u>GSO</u> Ship Date: <u>10-20-11</u>	<u>J. Damerell</u>		<u>10/20/11</u>	<u>17:00</u>	<u>Lu Damerell</u>		<u>10/21/11</u>	<u>10:00</u>
Shipment Tracking No: <u>107158513</u>								

Special Instructions:

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

1506

DATE 10-26-11

COMPANY Broadbent & Associates

ADDRESS 875 Cortina Lane

CITY Vacaville

SENDERS NAME James R/L/D

STE/ROOM 9

ZIP CODE 95688

PHONE NUMBER 707-935-7296

---

COMPANY CAL SCIENCE

NAME Kristina

ADDRESS 7240 LINCOLN WAY

CITY GARDEN GROVE

PHONE NUMBER 714-856-5494

STE/ROOM

ZIP CODE 92841

YOUR INTERNAL BILLING REFERENCE WILL APPEAR ON YOUR INVOICE

451-2746

CIAL RUCTIONS



SHIPPING AIR BILL

4 PACKAGE INFORMATION

LETTER (MAX 8 OZ)

PACKAGE (WT) \_\_\_\_\_

DECLARED VALUE \$ \_\_\_\_\_

COD AMOUNT \$ \_\_\_\_\_  
(CASH NOT ACCEPTED)

PACKAGE LABEL

5 DELIVERY SERVICE  PRIORITY OVERNIGHT BY 10:30 AM  EARLY PRIORITY BY 8:00 AM  SATURDAY DELIVERY

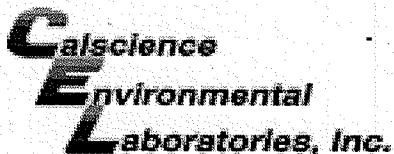
\*DELIVERY TIMES MAY BE LATER IN SOME AREAS • CONSULT YOUR SERVICE GUIDE OR CALL GOLDEN STATE OVERNIGHT.

6 RELEASE SIGNATURE \_\_\_\_\_  
SIGN TO AUTHORIZE DELIVERY WITHOUT OBTAINING SIGNATURE

7 \_\_\_\_\_

8 PICK UP INFORMATION \_\_\_\_\_  
TIME DRIVER # ROUTE #

9 GSO TRACKING NUMBER 107158513



WORK ORDER #: 11-10-1506

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: Broadbent & Assoc, Inc

DATE: 10/21/11

TEMPERATURE: Thermometer ID: SC1 (Criteria: 0.0°C - 6.0°C, not frozen)
Temperature 2.8°C + 0.5°C (CF) = 3.3°C
Ambient Temperature: Air Filter Initial: NE

CUSTODY SEALS INTACT:
Cooler Sample No (Not Intact) Not Present N/A Initial: NE
Sample No (Not Intact) Not Present Initial: Ag

SAMPLE CONDITION:
Chain-Of-Custody (COC) document(s) received with samples...
COC document(s) received complete...
Sampler's name indicated on COC...
Sample container label(s) consistent with COC...
Sample container(s) intact and good condition...
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours...
Volatile analysis container(s) free of headspace...
Tedlar bag(s) free of condensation...

CONTAINER TYPE:
Solid: 4ozCGJ 8ozCGJ 16ozCGJ Sleeve EnCores TerraCores
Water: VOA VOAh VOAna2 125AGB 125AGBh 125AGBp 1AGB 1AGBna2 1AGBs
Air: Tedlar Summa Other: Trip Blank Lot#: 11011A Labeled/Checked by: Ag
Reviewed by: YL
Scanned by: YL

**APPENDIX D**

**GEOTRACKER UPLOAD CONFIRMATION RECEIPTS**

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STATE WATER RESOURCES CONTROL BOARD  
**GEOTRACKER ESI**

UPLOADING A GEO\_WELL FILE

**SUCCESS**

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

<b><u>Submittal Type:</u></b>	<b>GEO_WELL</b>
<b><u>Submittal Title:</u></b>	<b>4Q11 GEO_WELL 6113</b>
<b><u>Facility Global ID:</u></b>	<b>T0600100111</b>
<b><u>Facility Name:</u></b>	<b>ARCO #06113</b>
<b><u>File Name:</u></b>	<b>GEO_WELL.zip</b>
<b><u>Organization Name:</u></b>	<b>Broadbent &amp; Associates, Inc.</b>
<b><u>Username:</u></b>	<b>BROADBENT-C</b>
<b><u>IP Address:</u></b>	<b>67.118.40.90</b>
<b><u>Submittal Date/Time:</u></b>	<b>1/4/2012 2:49:00 PM</b>
<b><u>Confirmation Number:</u></b>	<b>2483947694</b>

---

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!

<b><u>Submittal Type:</u></b>	EDF - Monitoring Report - Semi-Annually
<b><u>Submittal Title:</u></b>	4Q11 GW Monitoring
<b><u>Facility Global ID:</u></b>	T0600100111
<b><u>Facility Name:</u></b>	ARCO #06113
<b><u>File Name:</u></b>	11101506.zip
<b><u>Organization Name:</u></b>	Broadbent & Associates, Inc.
<b><u>Username:</u></b>	BROADBENT-C
<b><u>IP Address:</u></b>	67.118.40.90
<b><u>Submittal Date/Time:</u></b>	1/4/2012 2:08:54 PM
<b><u>Confirmation Number:</u></b>	6186494231

[VIEW QC REPORT](#)

[VIEW DETECTIONS REPORT](#)