

Atlantic Richfield Company

Shannon Couch
Operations Project Manager

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

July 30, 2012

Re: Second Quarter 2012 Monitoring Report
Atlantic Richfield Company Station #2162
15135 Hesperian Boulevard, San Leandro, California
ACEH Case #RO0000190

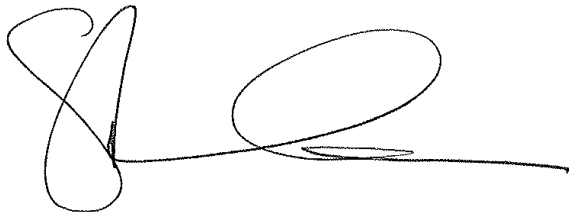
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8:26 am, Aug 01, 2012

Alameda County
Environmental Health

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

Submitted by,



Shannon Couch
Operations Project Manager

Attachment



BROADBENT

1324 Mangrove Ave., Suite 212, Chico, CA 95926

[T] 530-566-1400 [F] 530-566-1401

broadbentinc.com

Creating Solutions. Building Trust.

July 30, 2012

Project No. 06-88-620

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

Attn.: Ms. Shannon Couch

Re: Second Quarter 2012 Monitoring Report, Atlantic Richfield Company Station #2162,
15135 Hesperian Boulevard, San Leandro, California; ACEH Case #RO0000190

Dear Ms. Couch:

Attached is the Second Quarter 2012 Monitoring Report for Atlantic Richfield Company Station #2162 located at 15135 Hesperian Boulevard in San Leandro, Alameda County, California. This report presents the observations and results of semi-annual groundwater monitoring and sampling conducted during the Second Quarter of 2012, and a summary of recent developments at the Site.

Should you have questions regarding the work performed or results obtained, please do not hesitate to contact me at 530-566-1400.

Sincerely,
BROADBENT & ASSOCIATES, INC.

Thomas A. Venus, PE
Senior Engineer



Enclosures

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

**SECOND QUARTER 2012
MONITORING REPORT
ARCO STATION #2162, SAN LEANDRO, CALIFORNIA**

Broadbent & Associates, Inc. (Broadbent) is pleased to present this *Second Quarter 2012 Monitoring Report* on behalf of Atlantic Richfield Company (a BP affiliated company) for ARCO Station #2162 located in San Leandro, Alameda County, California. Quarterly reporting is being submitted to the Alameda County Environmental Health Services Agency (ACEH) consistent with their requirements under the legal authority of the California Regional Water Quality Control Board, as codified by the California Code of Regulations Title 23, Section 2652(d). Details of work performed, discussion of results, and recommendations are provided below.

Facility Name / Address:	<u>ARCO Station #2162 / 15135 Hesperian Boulevard, San Leandro</u>
Client Project Manager / Title:	<u>Ms. Shannon Couch / Remediation Management Project Manager</u>
Broadbent Contact:	<u>Mr. Tom Venus, PE / (530) 566-1400</u>
Broadbent Project No.:	<u>06-88-620</u>
Primary Regulatory Agency / ID No.:	<u>ACEH, Case #RO0000190</u>
Current phase of project:	<u>Monitoring, Offsite Assessment</u>
List of Acronyms / Abbreviations:	<u>See end of report text for list of acronyms/abbreviations used in report.</u>

WORK PERFORMED THIS QUARTER (Second Quarter 2012):

1. Submitted *First Quarter 2012 Status Report* (Broadbent, 4/5/2012).
2. Conducted groundwater monitoring/sampling for Second Quarter 2012 on June 21, 2012.
3. Secured well permit from ACPWA for five offsite GeoProbe soil and groundwater sampling borings proposed in *Work Plan for Off-Site Groundwater Investigation* (Broadbent, 1/5/2012).

WORK SCHEDULED FOR NEXT QUARTER (Third Quarter 2012):

1. Submit *Second Quarter 2012 Monitoring Report* (contained herein).
2. Implement *Work Plan for Off-Site Groundwater Investigation* (Broadbent, 1/5/2012) upon approval from ACEH.

GROUNDWATER MONITORING PLAN SUMMARY:

Groundwater level gauging:	<u>MW-1 through MW-6</u>	(2Q & 4Q)
Groundwater sample collection:	<u>MW-1, MW-2 MW-3, MW-4, MW-5, MW-6</u>	(2Q) (2Q & 4Q)
Biodegradation indicator parameter monitoring:	<u>MW-1, MW-2 MW-3, MW-4, MW-5, MW-6</u>	(2Q) (2Q & 4Q)

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>N/A</u>	(gal)

Groundwater Elevation and Gradient:

Depth to groundwater:	<u>7.63 (MW-2) to 9.07 (MW-4)</u>	(ft below TOC)
Gradient direction:	<u>South-Southwest</u>	(compass direction)
Gradient magnitude:	<u>0.003</u>	(ft/ft)
Average change in elevation:	<u>+0.02</u>	(ft since last measurement)

Laboratory Analytical Data

Summary:	<u>GRO, Benzene, Ethylbenzene, and TAME were detected in MW-6. MTBE was detected in MW-3 and MW-6.</u>
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ACTIVITIES CONDUCTED & RESULTS:

Second Quarter 2012 semi-annual groundwater monitoring was conducted at wells MW-1 through MW-6 on June 21, 2012 by Broadbent personnel. 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 7.63 ft at MW-2 to 9.07 ft at MW-4. Resulting groundwater surface elevations ranged from 24.90 ft at MW-4 to 25.32 ft at well MW-2. Groundwater elevations are summarized in Table 1. Water level elevations yielded a potentiometric horizontal groundwater gradient to the South-Southwest at approximately 0.003 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.

Consistent with the current program, groundwater samples were collected from wells MW-1 through MW-6 on June 21, 2012. 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 8260. No significant irregularities were encountered during analysis of the samples with the following exceptions: The laboratory noted GRO concentrations for samples from MW-2, MW-5, and MW-6 with "LW = Quantitation of unknown hydrocarbon(s) in sampled based on gasoline." 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 wells MW-2, MW-5 and MW-6 at concentrations of 62 micrograms per liter ($\mu\text{g/L}$), 55 $\mu\text{g/L}$ and 5,000 $\mu\text{g/L}$, respectively. Benzene was detected above the laboratory reporting limit in well MW-6 at a concentration of 4.6 $\mu\text{g/L}$. Ethylbenzene was detected above the laboratory reporting limit in well MW-6 at a concentration of 3.6 $\mu\text{g/L}$. MTBE was detected above the laboratory reporting limit in wells MW-3 and MW-6 at concentrations of 1.4 $\mu\text{g/L}$ and 120 $\mu\text{g/L}$, respectively. TAME was detected above the laboratory reporting limit in well MW-6 at a concentration of 9.1 $\mu\text{g/L}$. The remaining analytes were not detected above their laboratory reporting limits in the wells sampled during 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 the monitoring wells associated with ARCO Station #2162. Groundwater elevations yielded a horizontal potentiometric groundwater gradient to the South-Southwest at approximately 0.003 ft/ft, generally consistent with the historic groundwater gradient and magnitude data presented in Table 3.

This event's detected analytical concentrations were within the historic minimum and maximum ranges recorded for each well. Recent and historic laboratory analytical results are summarized in Table 1 and Table 2.

RECOMMENDATIONS:

Groundwater monitoring and sampling is scheduled to be conducted at ARCO Station #2162 during Fourth Quarter 2012, consistent with the current sampling plan. In order to progress this case towards closure, a *Work Plan for Off-Site Groundwater Investigation* (Broadbent, 1/5/2012) was prepared and submitted to ACEH. The objective of this work is to determine off-site concentrations of contaminants of concern in the adjacent parking lot for the neighboring Kentucky Fried Chicken restaurant at 15179 Hesperian Boulevard. Broadbent and BP look forward to receiving approval from the ACEH to the proposed work. In the event that a response is not received from the ACEH within 90 days, BP may independently decide to proceed with implementing the work plan as submitted. An access agreement has already been secured from the owner of the adjacent property. Well permits have also been secured from the ACPWA for the five soil and groundwater sampling borings proposed to be advanced by direct-push GeoProbe drilling techniques.

LIMITATIONS:

The findings presented in this report are based upon: observations of Broadbent field personnel (see Appendix A), 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 report was written. No other warranty, expressed or implied was made. This report has been prepared for the exclusive use of Atlantic Richfield Company (a BP affiliated company). It is possible that variations in soil or groundwater conditions could exist beyond points explored in this investigation. Also, changes in site conditions could occur in the future due to variations in rainfall, temperature, regional water usage, or other factors.

ATTACHMENTS:

- Drawing 1: Site Location Map
- Drawing 2: Groundwater Elevation Contours and Analytical Summary Map, June 21, 2012

- 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	ft/ft:	feet per foot
ACPWA:	Alameda County Public Works Agency	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 ₃ :	Nitrate as Nitrogen
DRO:	Diesel-Range Organics	ppb:	parts per billion
EDB:	1,2-Dibromomethane	SO ₄ :	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 ²⁺ :	Ferrous Iron	µg/L:	micrograms per liter

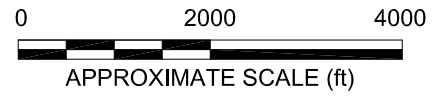
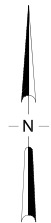
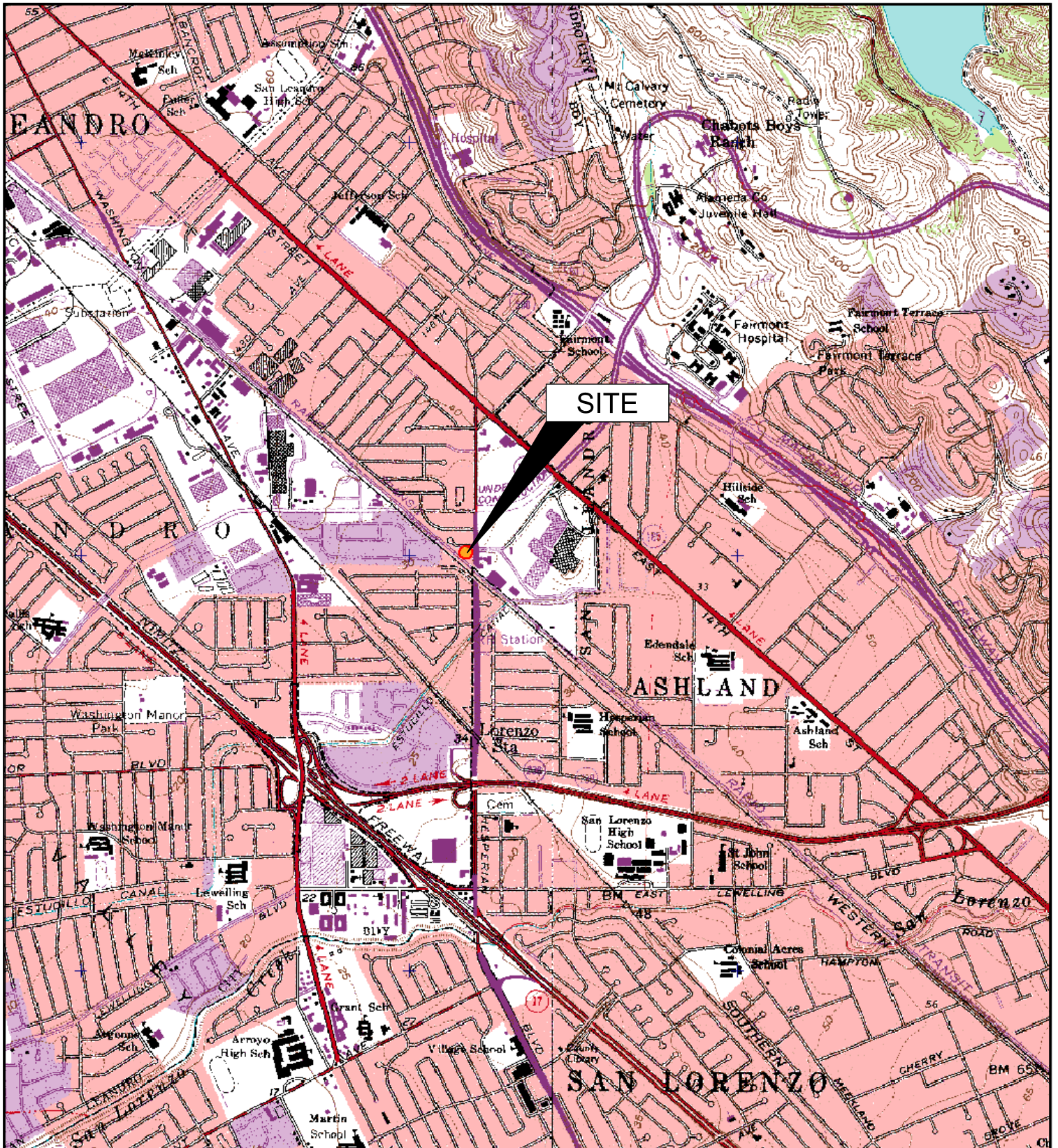
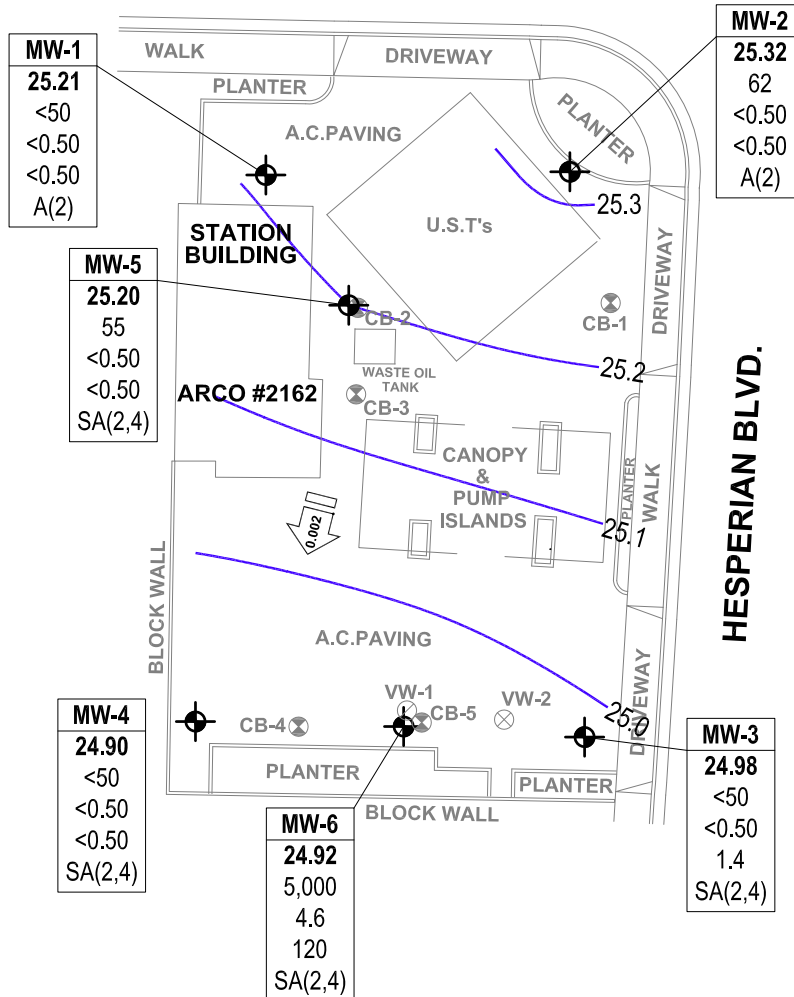


IMAGE SOURCE: USGS

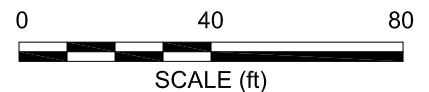
RUTH COURT



LEGEND

- GROUNDWATER MONITORING WELL
- VAPOR EXTRACTION WELL
- SOIL BORING
- 25.1 GROUNDWATER ELEVATION CONTOUR (FEET ABOVE DATUM)
- APPROXIMATE GROUNDWATER FLOW DIRECTION AND GRADIENT (FT/FT)

- | Well | WELL DESIGNATION |
|---------|---|
| ELEV | GROUNDWATER ELEVATION (FEET) |
| GRO | GRO. BENZENE & MTBE CONCENTRATIONS (µg/L) |
| Benzene | |
| MTBE | |
| A/Q/SA | SAMPLING FREQUENCY |
- < NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMITS
 - * DATA NOT USED FOR CONTOURING
 - SA SAMPLED SEMI-ANNUALLY



NOTE: SITE MAP ADAPTED FROM WOOD RODGERS SURVYING.

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, 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			
MW-1															
6/20/2000	--	31.19	8.00	16.00	8.33	22.86	<50	<0.5	0.8	<0.5	<1.0	<10	--	--	
9/29/2000	--		8.00	16.00	9.07	22.12	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
12/17/2000	--		8.00	16.00	8.69	22.50	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
3/23/2001	--		8.00	16.00	8.19	23.00	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
6/20/2001	--		8.00	16.00	8.97	22.22	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
9/22/2001	--		8.00	16.00	9.56	21.63	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
12/28/2001	--		8.00	16.00	8.40	22.79	<50	<0.5	<0.5	<0.5	0.63	<2.5	--	--	
3/14/2002	--		8.00	16.00	8.05	23.14	<50	<0.5	<0.5	<0.5	<0.5	170	--	--	
4/18/2002	--		8.00	16.00	8.27	22.92	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
7/19/2002	NP		8.00	16.00	8.88	22.31	<50	<0.5	<0.5	<0.5	<0.5	11	1.0	8.2	
10/09/02	NP		8.00	16.00	--	--	--	--	--	--	--	--	--	--	a
03/28/2003	NP		8.00	16.00	--	--	--	--	--	--	--	--	--	--	a, c
4/7/2003	NP		8.00	16.00	8.28	22.91	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	6.9	
7/9/2003	NP		8.00	16.00	8.62	22.57	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	7.2	
10/08/2003	--	31.13	8.00	16.00	9.19	21.94	--	--	--	--	--	--	--	--	d, e
01/13/2004	--		8.00	16.00	8.35	22.78	--	--	--	--	--	--	--	--	
04/05/2004	--	33.70	8.00	16.00	7.29	26.41	--	--	--	--	--	--	--	--	
07/12/2004	NP		8.00	16.00	9.00	24.70	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.8	7.0	
10/19/2004	--		8.00	16.00	9.47	24.23	--	--	--	--	--	--	--	--	
01/11/2005	--		8.00	16.00	7.64	26.06	--	--	--	--	--	--	--	--	
04/14/2005	--		8.00	16.00	7.35	26.35	--	--	--	--	--	--	--	--	
08/01/2005	--		8.00	16.00	8.21	25.49	--	--	--	--	--	--	--	--	
7/31/2006	--		8.00	16.00	8.10	25.60	--	--	--	--	--	--	--	--	
6/12/2009	P		8.00	16.00	8.93	24.77	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.59	7.40	
11/6/2009	--		8.00	16.00	9.18	24.52	--	--	--	--	--	--	--	--	
6/4/2010	P		8.00	16.00	8.13	25.57	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.31	7.2	
11/19/2010	--		8.00	16.00	9.28	24.42	--	--	--	--	--	--	--	--	
5/19/2011	P		8.00	16.00	7.76	25.94	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.36	6.8	
12/1/2011	--		8.00	16.00	8.40	25.30	--	--	--	--	--	--	--	--	
6/21/2012	P		8.00	16.00	8.49	25.21	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.73	7.39	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, 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			
MW-2															
6/20/2000	--	30.38	8.00	16.00	7.38	23.00	--	--	--	--	--	--	--	--	--
9/29/2000	--		8.00	16.00	8.08	22.30	266	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
12/17/2000	--		8.00	16.00	7.80	22.58	175	<0.5	<0.5	0.659	<0.5	<2.5	--	--	
3/23/2001	--		8.00	16.00	7.23	23.15	351	<0.5	<0.5	0.912	<0.5	<2.5	--	--	
6/20/2001	--		8.00	16.00	7.98	22.40	360	<0.5	<0.5	0.74	<0.5	<2.5	--	--	
9/22/2001	--		8.00	16.00	8.55	21.83	190	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
12/28/2001	--		8.00	16.00	7.53	22.85	130	<0.5	0.93	<0.5	0.51	<2.5	--	--	
3/14/2002	--		8.00	16.00	7.17	23.21	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
4/18/2002	--		8.00	16.00	7.31	23.07	74	<0.5	<0.5	<0.5	<0.5	--	--	--	
7/19/2002	P		8.00	16.00	7.93	22.45	<50	<0.5	<0.5	<0.5	<0.5	<2.5	1.1	7.6	
10/9/2002	P		8.00	16.00	8.55	21.83	<50	<0.5	<0.5	<0.5	<0.5	<2.5	0.7	7.3	
03/28/2003	P		8.00	16.00	7.30	23.08	<50	<0.50	0.83	<0.50	<0.50	<0.50	1.48	7.7	c
4/7/2003	P		8.00	16.00	7.36	23.02	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	7.0	
7/9/2003	P		8.00	16.00	7.71	22.67	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.5	7.6	
10/08/2003	--		8.00	16.00	8.25	22.13	--	--	--	--	--	--	--	--	
01/13/2004	--		8.00	16.00	7.55	22.83	--	--	--	--	--	--	--	--	
04/05/2004	--	32.97	8.00	16.00	7.29	25.68	--	--	--	--	--	--	--	--	
07/12/2004	NP		8.00	16.00	8.09	24.88	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	7.2	
10/19/2004	--		8.00	16.00	8.29	24.68	--	--	--	--	--	--	--	--	
01/11/2005	--		8.00	16.00	6.81	26.16	--	--	--	--	--	--	--	--	
04/14/2005	--		8.00	16.00	6.69	26.28	--	--	--	--	--	--	--	--	
08/01/2005	--		8.00	16.00	7.40	25.57	--	--	--	--	--	--	--	--	
7/31/2006	--		8.00	16.00	7.22	25.75	--	--	--	--	--	--	--	--	
6/12/2009	P	32.95	8.00	16.00	8.18	24.77	51	<0.50	<0.50	<0.50	<0.50	<0.50	0.60	7.55	
11/6/2009	--		8.00	16.00	8.32	24.63	--	--	--	--	--	--	--	--	
6/4/2010	P		8.00	16.00	7.24	25.71	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	7.33	
11/19/2010	--		8.00	16.00	8.38	24.57	--	--	--	--	--	--	--	--	
5/19/2011	P		8.00	16.00	7.12	25.83	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.24	9.0	
12/1/2011	--		8.00	16.00	7.57	25.38	--	--	--	--	--	--	--	--	
6/21/2012	P		8.00	16.00	7.63	25.32	62	<0.50	<0.50	<0.50	<0.50	<0.50	1.47	7.42	lw

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

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, 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			
MW-3														
6/20/2000	--	30.30	8.00	15.00	7.75	22.55	--	--	--	--	--	--	--	--
9/29/2000	--		8.00	15.00	8.46	21.84	<50	<0.5	<0.5	<0.5	<0.5	128	--	--
12/17/2000	--		8.00	15.00	8.01	22.29	<50	<0.5	<0.5	<0.5	<0.5	46.7	--	--
3/23/2001	--		8.00	15.00	7.70	22.60	<50	<0.5	<0.5	<0.5	<0.5	26.8	--	--
6/20/2001	--		8.00	15.00	8.23	22.07	<50	<0.5	<0.5	<0.5	<0.5	30	--	--
9/22/2001	--		8.00	15.00	8.89	21.41	<50	<0.5	<0.5	<0.5	<0.5	12	--	--
12/28/2001	--		8.00	15.00	7.83	22.47	<50	<0.5	<0.5	<0.5	<0.5	6.2	--	--
3/14/2002	--		8.00	15.00	7.48	22.82	<50	<0.5	<0.5	<0.5	<0.5	47	--	--
4/18/2002	--		8.00	15.00	7.62	22.68	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
7/19/2002	P		8.00	15.00	8.23	22.07	100	<1.0	<1.0	<1.0	<1.0	330	0.9	7.6 b (TPH-g)
10/9/2002	P		8.00	15.00	8.83	21.47	<50	<0.5	<0.5	<0.5	<0.5	61	0.5	7.4
03/28/2003	P		8.00	15.00	7.85	22.45	52	<0.50	1.2	<0.50	<0.50	45	1.42	7.6 c
4/7/2003	P		8.00	15.00	7.71	22.59	56	<0.50	<0.50	<0.50	<0.50	56	1.1	6.8
7/9/2003	P		8.00	15.00	8.00	22.30	<500	<5.0	<5.0	<5.0	<5.0	87	1.6	7.4
10/08/2003	P		8.00	15.00	8.59	21.71	<50	<0.50	<0.50	<0.50	<0.50	25	0.9	--
01/15/2004	P		8.00	15.00	7.90	22.40	<50	<0.50	<0.50	<0.50	<0.50	9.8	2.9	7.3
04/05/2004	P	32.89	8.00	15.00	7.61	25.28	<50	<0.50	<0.50	<0.50	<0.50	15	1.5	7.0
07/12/2004	P		8.00	15.00	8.45	24.44	<50	<0.50	<0.50	<0.50	<0.50	7.3	1.6	6.9
10/19/2004	P		8.00	15.00	8.95	23.94	<50	<0.50	<0.50	<0.50	<0.50	5.0	0.96	7.1
01/11/2005	P		8.00	15.00	7.27	25.62	<50	<0.50	<0.50	<0.50	<0.50	2.3	--	7.2
04/14/2005	P		8.00	15.00	7.10	25.79	<50	<0.50	<0.50	<0.50	1.5	5.6	2.0	7.2
08/01/2005	P		8.00	15.00	7.71	25.18	<50	<0.50	<0.50	<0.50	<0.50	5.2	1.18	7.0
7/31/2006	P		8.00	15.00	7.64	25.25	<50	<0.50	<0.50	<0.50	<0.50	4.3	--	6.8
6/12/2009	P	32.88	8.00	15.00	8.36	24.52	<50	0.75	<0.50	<0.50	<0.50	0.53	0.61	7.45
11/6/2009	P		8.00	15.00	8.58	24.30	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.51	7.17
6/4/2010	P		8.00	15.00	7.60	25.28	<50	<0.50	<0.50	<0.50	<0.50	1.9	0.69	7.4
11/19/2010	NP		8.00	15.00	8.63	24.25	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.69	7.0
5/19/2011	P		8.00	15.00	7.22	25.66	56	<0.50	<0.50	<0.50	<0.50	2.1	0.83	9.2 lw
12/1/2011	P		8.00	15.00	8.00	24.88	<50	<0.50	<0.50	<0.50	<0.50	0.50	3.15	7.8
6/21/2012	P		8.00	15.00	7.90	24.98	<50	<0.50	<0.50	<0.50	<0.50	1.4	1.24	7.33

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

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, 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			
MW-4														
6/20/2000	--	30.39	10.00	18.00	8.87	21.52	--	--	--	--	--	--	--	--
9/29/2000	--		10.00	18.00	9.61	20.78	<50	1.02	<0.5	<0.5	<0.5	12.2	--	--
12/17/2000	--		10.00	18.00	9.17	21.22	<50	<0.5	<0.5	<0.5	<0.5	5.81	--	--
3/23/2001	--		10.00	18.00	8.70	21.69	<50	<0.5	<0.5	<0.5	<0.5	3.04	--	--
6/20/2001	--		10.00	18.00	9.51	20.88	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
9/22/2001	--		10.00	18.00	10.06	20.33	<50	<0.5	<0.5	<0.5	<0.5	5.2	--	--
12/28/2001	--		10.00	18.00	8.86	21.53	<50	<0.5	<0.5	<0.5	<0.5	4.3	--	--
3/14/2002	--		10.00	18.00	8.52	21.87	<50	<0.5	<0.5	<0.5	<0.5	5.1	--	--
4/18/2002	--		10.00	18.00	8.76	21.63	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
7/19/2002	NP		10.00	18.00	9.39	21.00	<50	<0.5	<0.5	<0.5	<0.5	30	1.8	7.8
10/9/2002	NP		10.00	18.00	10.08	20.31	<50	<0.5	<0.5	<0.5	<0.5	28	1.0	8.0
03/28/2003	NP		10.00	18.00	8.88	21.51	<50	<0.50	1.3	<0.50	<0.50	4.4	0.98	7.2 c
4/7/2003	NP		10.00	18.00	8.78	21.61	<50	<0.50	<0.50	<0.50	<0.50	14	1.1	7.0
7/9/2003	NP		10.00	18.00	9.14	21.25	<50	<0.50	<0.50	<0.50	<0.50	1.8	1.6	7.4
10/08/2003	NP		10.00	18.00	9.77	20.62	<50	<0.50	<0.50	<0.50	<0.50	3.1	2.6	6.4
01/15/2004	P		10.00	18.00	8.68	21.71	<50	1.4	0.84	<0.50	1.5	6.6	2.9	7.1
04/05/2004	NP	33.97	10.00	18.00	8.77	25.20	<50	<0.50	<0.50	<0.50	<0.50	1.3	1.2	7.0
07/12/2004	NP		10.00	18.00	9.46	24.51	<50	<0.50	<0.50	<0.50	<0.50	1.0	2.5	6.6
10/19/2004	NP		10.00	18.00	9.91	24.06	<50	<0.50	<0.50	<0.50	<0.50	4.4	1.21	7.9
01/11/2005	P		10.00	18.00	7.80	26.17	59	2.0	<0.50	<0.50	<0.50	11	0.9	7.1
04/14/2005	NP		10.00	18.00	8.07	25.90	<50	<0.50	<0.50	<0.50	<0.50	0.64	2.8	7.4
08/01/2005	NP		10.00	18.00	8.58	25.39	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.48	5.7
7/31/2006	P		10.00	18.00	8.75	25.22	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	6.7
6/12/2009	P		10.00	18.00	9.51	24.46	<50	0.68	<0.50	<0.50	<0.50	<0.50	0.70	7.51
11/6/2009	P		10.00	18.00	9.74	24.23	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.15	7.15
6/4/2010	P		10.00	18.00	8.71	25.26	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.70	7.24
11/19/2010	P		10.00	18.00	9.83	24.14	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.09	7.1
5/19/2011	P		10.00	18.00	8.24	25.73	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.88	7.5
12/1/2011	P		10.00	18.00	9.11	24.86	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.09	7.6
6/21/2012	P		10.00	18.00	9.07	24.90	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.64	7.31

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

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, 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			
MW-5															
6/12/2009	NP	33.96	8.00	16.00	9.25	24.71	85	<0.50	<0.50	<0.50	<0.50	<0.50	0.59	7.50	
11/6/2009	P		8.00	16.00	9.49	24.47	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.56	7.1	
6/4/2010	NP		8.00	16.00	8.42	25.54	67	<0.50	<0.50	<0.50	<0.50	<0.50	1.24	7.65	
11/19/2010	NP		8.00	16.00	9.58	24.38	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.72	7.3	
5/19/2011	NP		8.00	16.00	8.02	25.94	52	<0.50	<0.50	<0.50	<0.50	<0.50	2.17	9.1	lw
12/1/2011	P		8.00	16.00	8.87	25.09	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.76	7.5	
6/21/2012	P		8.00	16.00	8.76	25.20	55	<0.50	<0.50	<0.50	<0.50	<0.50	1.58	7.24	lw
MW-6															
6/12/2009	NP	33.48	8.00	16.00	9.02	24.46	1,800	4.9	<0.50	2.8	<0.50	59	0.68	7.39	
11/6/2009	P		8.00	16.00	9.21	24.27	880	1.7	<0.50	0.77	<0.50	37	0.43	6.9	
6/4/2010	NP		8.00	16.00	8.22	25.26	6,200	15	1.6	8.2	1.2	190	0.87	7.16	
11/19/2010	NP		8.00	16.00	9.30	24.18	5,600	8.0	1.2	9.9	<1.0	130	0.78	6.8	
5/19/2011	P		8.00	16.00	7.77	25.71	7,100	4.0	<2.0	7.9	<2.0	76	1.40	8.2	
12/1/2011	P		8.00	16.00	8.56	24.92	4,100	9.3	1.3	8.5	<1.0	180	0.53	7.3	lw
6/21/2012	P		8.00	16.00	8.56	24.92	5,000	4.6	<2.5	3.6	<2.5	120	1.38	6.97	lw

Symbols & Abbreviations:

--- = Not analyzed/applicable/measured/available
< = Not detected at or above laboratory reporting limit
DO = Dissolved oxygen
DTW = Depth to water in feet below ground surface
ft bgs = feet below ground surface
GRO = Gasoline Range Organics, range C4-C12
GWE = Groundwater elevation measured in feet
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 feet above mean sea level
TPH-g = Total petroleum hydrocarbons as gasoline
ug/L = Micrograms per liter

Footnotes:

a = Well not accessible - car parked over.
b = Hydrocarbon pattern is present in the requested fuel quantitation range but does not represent the pattern of the requested fuel
c =TPH-g, BTEX and MTBE analyzed by EPA method 8260 beginning on 1st Quarter 2003 sampling event (3/28/03)
d = Guaged with stinger in well
e = Well casing lowered 0.06 feet during well repairs on 9/17/2003
lw = Quantitate against gasoline

Notes:

Beginning in the fourth quarter 2003, the laboratory modified the reported analyte list. TPHg was changed to GRO. The resulting data may be impacted by the potential of non-TPHg 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 originally surveyed to NAVD'88 datum by URS Corporation on February 23, 2004

Wells were resurveyed to NAVD'88 datum by Wood Rodgers Surveying on May 11, 2009

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 #2162, 15135 Hesperian Blvd., San Leandro, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-1									
6/20/2000	--	--	<10	--	--	--	--	--	
9/29/2000	--	--	<2.5	--	--	--	--	--	
12/17/2000	--	--	<2.5	--	--	--	--	--	
3/23/2001	--	--	<2.5	--	--	--	--	--	
6/20/2001	--	--	<2.5	--	--	--	--	--	
9/22/2001	--	--	<2.5	--	--	--	--	--	
12/28/2001	--	--	<2.5	--	--	--	--	--	
3/14/2002	--	--	170	--	--	--	--	--	
7/19/2002	--	--	11	--	--	--	--	--	
4/7/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
7/9/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
07/12/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/12/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/19/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/21/2012	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-2									
9/29/2000	--	--	<2.5	--	--	--	--	--	
12/17/2000	--	--	<2.5	--	--	--	--	--	
3/23/2001	--	--	<2.5	--	--	--	--	--	
6/20/2001	--	--	<2.5	--	--	--	--	--	
9/22/2001	--	--	<2.5	--	--	--	--	--	
12/28/2001	--	--	<2.5	--	--	--	--	--	
3/14/2002	--	--	<2.5	--	--	--	--	--	
7/19/2002	--	--	<2.5	--	--	--	--	--	
10/9/2002	--	--	<2.5	--	--	--	--	--	
03/28/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
4/7/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
7/9/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
07/12/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/12/2009	<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 #2162, 15135 Hesperian Blvd., San Leandro, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-2 Cont.									
6/4/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/19/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/21/2012	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-3									
9/29/2000	--	--	128	--	--	--	--	--	
12/17/2000	--	--	46.7	--	--	--	--	--	
3/23/2001	--	--	26.8	--	--	--	--	--	
6/20/2001	--	--	30	--	--	--	--	--	
9/22/2001	--	--	12	--	--	--	--	--	
12/28/2001	--	--	6.2	--	--	--	--	--	
3/14/2002	--	--	47	--	--	--	--	--	
7/19/2002	--	--	330	--	--	--	--	--	
10/9/2002	--	--	61	--	--	--	--	--	
03/28/2003	<100	<20	45	<0.50	<0.50	0.73	<0.50	<0.50	
4/7/2003	<100	<20	56	<0.50	<0.50	0.72	<0.50	<0.50	
7/9/2003	<1,000	<200	87	<5.0	<5.0	<5.0	<5.0	<5.0	
10/08/2003	<100	<20	25	<0.50	<0.50	<0.50	<0.50	<0.50	
01/15/2004	<100	<20	9.8	<0.50	<0.50	<0.50	<0.50	<0.50	a (TBA and EDB)
04/05/2004	<100	<20	15	<0.50	<0.50	<0.50	<0.50	<0.50	
07/12/2004	<100	<20	7.3	<0.50	<0.50	<0.50	<0.50	<0.50	
10/19/2004	<100	<20	5.0	<0.50	<0.50	<0.50	<0.50	<0.50	
01/11/2005	<100	<20	2.3	<0.50	<0.50	<0.50	<0.50	<0.50	b
04/14/2005	<100	<20	5.6	<0.50	<0.50	<0.50	<0.50	<0.50	
08/01/2005	<100	<20	5.2	<0.50	<0.50	<0.50	<0.50	<0.50	b
7/31/2006	<300	<20	4.3	<0.50	<0.50	<0.50	<0.50	<0.50	c
6/12/2009	<300	<10	0.53	<0.50	<0.50	<0.50	<0.50	<0.50	
11/6/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2010	<300	<10	1.9	<0.50	<0.50	<0.50	<0.50	<0.50	
11/19/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/19/2011	<300	<10	2.1	<0.50	<0.50	<0.50	<0.50	<0.50	
12/1/2011	<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 #2162, 15135 Hesperian Blvd., San Leandro, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-3 Cont.									
6/21/2012	<300	<10	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-4									
9/29/2000	--	--	12.2	--	--	--	--	--	
12/17/2000	--	--	5.81	--	--	--	--	--	
3/23/2001	--	--	3.04	--	--	--	--	--	
6/20/2001	--	--	<2.5	--	--	--	--	--	
9/22/2001	--	--	5.2	--	--	--	--	--	
12/28/2001	--	--	4.3	--	--	--	--	--	
3/14/2002	--	--	5.1	--	--	--	--	--	
7/19/2002	--	--	30	--	--	--	--	--	
10/9/2002	--	--	28	--	--	--	--	--	
03/28/2003	<100	<20	4.4	<0.50	<0.50	<0.50	<0.50	<0.50	
4/7/2003	<100	<20	14	<0.50	<0.50	<0.50	<0.50	<0.50	
7/9/2003	<100	<20	1.8	<0.50	<0.50	<0.50	<0.50	<0.50	
10/08/2003	<100	<20	3.1	<0.50	<0.50	<0.50	<0.50	<0.50	
01/15/2004	<100	<20	6.6	<0.50	<0.50	<0.50	<0.50	<0.50	a (TBA and EDB)
04/05/2004	<100	<20	1.3	<0.50	<0.50	<0.50	<0.50	<0.50	
07/12/2004	<100	<20	1.0	<0.50	<0.50	<0.50	<0.50	<0.50	
10/19/2004	<100	<20	4.4	<0.50	<0.50	<0.50	<0.50	<0.50	
01/11/2005	<100	<20	11	<0.50	<0.50	<0.50	<0.50	<0.50	b
04/14/2005	<100	<20	0.64	<0.50	<0.50	<0.50	<0.50	<0.50	
08/01/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b
7/31/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	c
6/12/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/6/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/19/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/19/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/1/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/21/2012	<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 #2162, 15135 Hesperian Blvd., San Leandro, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-5									
6/12/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/6/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/19/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/19/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/1/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/21/2012	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-6									
6/12/2009	<300	<10	59	<0.50	<0.50	5.2	<0.50	<0.50	
11/6/2009	<300	24	37	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2010	<300	17	190	<0.50	<0.50	17	<0.50	<0.50	
11/19/2010	<600	<20	130	<1.0	<1.0	<1.0	<1.0	<1.0	
5/19/2011	<1,200	<40	76	<2.0	<2.0	6.1	<2.0	<2.0	
12/1/2011	<600	31	180	<1.0	<1.0	18	<1.0	<1.0	
6/21/2012	<1,500	<50	120	<2.5	<2.5	9.1	<2.5	<2.5	

Symbols & Abbreviations:

< = Not detected at or above specified laboratory reporting limit

--- = Not analyzed/applicable/measured/available

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

ug/L = Micrograms per liter

Footnotes:

a = The result was reported with a possible high bias due to the continuing calibration verification falling outside acceptance criteria

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

c = LCS rec. above meth. control limits. Analyte ND. Data not impacted

d = Quantitated against gasoline

Notes:

All fuel oxygenate compounds analyzed using EPA Method 8260B

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

Table 3. Historical Groundwater Gradient - Direction and Magnitude
ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, CA

Date Measured	Approximate Gradient Direction	Approximate Gradient Magnitude (ft/ft)
3/23/2001	Southwest	0.011
6/20/2001	Southwest	0.013
9/22/2001	Southwest	0.012
12/28/2001	Southwest	0.010
3/14/2002	Southwest	0.011
4/18/2002	Southwest	0.012
7/19/2002	Southwest	0.012
10/9/2002	Southwest	0.013
3/28/2003	Southwest	0.013
4/7/2003	Southwest	0.011
7/9/2003	Southwest	0.010
10/8/2003	Southwest	0.010
1/15/2004	Southwest	0.008
4/5/2004	South-Southwest	0.004
7/12/2004	South and Southwest	0.003 and 0.005
10/19/2004	Southwest	0.004
1/11/2005	Southwest (a) to Southeast (b)	0.005 to 0.004
4/14/2005	Southeast	0.004
8/1/2005	Southwest	0.002
7/31/2006	South-Southwest	0.003
6/12/2009	South	0.003
11/6/2009	South-Southwest	0.003
6/4/2010	South-Southwest	0.004
11/19/2010	South-Southwest	0.003
5/19/2011	South-Southeast	0.003
12/1/2011	South-Southwest	0.001
6/21/2012	South-Southwest	0.003

Footnotes:

a = Direction at underground storage tanks

b = Direction at dispensers

Notes:

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

APPENDIX A
FIELD METHODS



QUALITY ASSURANCE/QUALITY CONTROL FIELD METHODS

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

1.0 EQUIPMENT CALIBRATION

Equipment calibration was performed per equipment manufacturer specifications before use.

2.0 DEPTH TO GROUNDWATER AND LIGHT NON-AQUEOUS PHASE LIQUID MEASUREMENT

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

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

3.0 WELL PURGING AND GROUNDWATER SAMPLE COLLECTION

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

3.1 Purging a Predetermined Well Volume

Purging a predetermined well volume is performed per ASTM International (ASTM) D4448-01. This purging method has the objective of removing a predetermined

volume of stagnant water from the well prior to sampling. The volume of stagnant water is defined as either the volume of water contained within the well casing, or the volume within the well casing and sand/gravel in the annulus if natural flow through these is deemed insufficient to keep them flushed out.

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

To evaluate when purging is complete, one or more groundwater stabilization parameters are monitored and recorded during purging activities until stabilization is achieved. Most commonly, stabilization parameters include temperature, conductivity, and pH, but field procedures detailed in the scope of work may also include monitoring of dissolved oxygen concentrations, oxidation reduction potential, and/or turbidity¹. Parameters are considered stable when two (2) consecutive readings recorded three (3) minutes apart fall within ranges provided below in Table 1. In the event that the parameters have not stabilized and five (5) well casing volumes have been removed, purging activities will cease and be considered complete. Once the well is purged, a groundwater sample(s) is collected from the well using a new disposable bailer. If a new disposable bailer was used for purging, that bailer may be used to collect the sample(s). A sample is not collected if the well is inadvertently purged dry.

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

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

3.2 Low-Flow Purging and Sampling

“Low-Flow”, “Minimal Drawdown”, or “Low-Stress” purging is performed per ASTM D6771-02. It is a method of groundwater removal from within a well’s screened interval that is intended to minimize drawdown and mixing of the water column in the well casing. This is accomplished by pumping the well using a decontaminated pump with new disposable plastic discharge or suction tubing or dedicated well tubing at a low flow rate while evaluating the groundwater elevation during pumping.

The low flow pumping rate is well specific and is generally established at a volume that is less than or equal to the natural recovery rate of the well. A pump with adjustable flow rate control is positioned with the intake at or near the mid-point of the

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

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

To evaluate when purging is complete, one or more groundwater stabilization parameters are monitored and recorded during purging activities until stabilization is achieved. Most commonly, stabilization parameters include temperature, conductivity, and pH, but field procedures detailed in the scope of work may also include monitoring of dissolved oxygen concentrations, oxidation reduction potential, and/or turbidity¹. The frequency between measurements will be at an interval of one (1) to three (3) minutes; however, if a flow cell is used, the frequency will be determined based on the time required to evacuate one cell volume. Stabilization is defined as three (3) consecutive readings recorded several minutes apart falling within ranges provided in Table 1. Samples will be collected by filling appropriate containers from the pump discharge tubing at a rate not to exceed the established pumping rate.

3.3 Minimal Purge, Discrete Depth, and Passive Sampling

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

4.0 DECONTAMINATION

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

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

5.0 SAMPLE CONTAINERS, LABELING, AND STORAGE

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

6.0 CHAIN OF CUSTODY RECORD AND PROCEDURE

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

7.0 FIELD RECORDS

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

APPENDIX B

FIELD DATA SHEETS
AND
NON-HAZARDOUS WASTE DATA FORM



DAILY REPORT

Page 1 of 1

Project: BP 2162 Project No.: 06-88-620

Field Representative(s): J. Ramos/A. Martinez Day: Thursday, Date: 6/21/12

Time Onsite: From: 0730 To: 1300; From: To: ; From: To:

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

Weather: cloudy/overcast

Equipment In Use: bailers, water level indicator, pH/temp/cond meter, DO meter

Visitors:

TIME:

WORK DESCRIPTION:

Table with 2 columns: TIME and WORK DESCRIPTION. Rows include: 0730 Arrived on-site; started paperwork/safety meeting; 0820 set up @ MW-5; 0910 set up @ MW-1; 0945 set up @ MW-2; 1025 set up @ MW-4; 1115 set up @ MW-3; 1155 set up @ MW-6; 1300 cleaned up, completed fieldwork @ offsite; 1330 proceeded to GSO; 1350 arrived @ GSO & prepared samples/petrol samples; 1430 Left GSO.

Signature: [Handwritten Signature]



GROUNDWATER MONITORING SITE SHEET

Project: BP 2162 Project No.: 06-88-620 Date: 6/27/12

Field Representative: J. Ramos/A. Martinez Elevation: _____

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

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

WELL ID RECORD					WELL GAUGING RECORD					LAB ANALYSES			
Well ID	Well Sampling Order	As-Built Well Diameter (inches)	As-Built Well Screen Interval (ft)	Previous Depth to Water (ft)	Time (24:00)	Depth to LNAPL (ft)	Apparent LNAPL Thickness (ft)*	Depth to Water (ft)	Well Total Depth (ft)				
MW-1					0911	-	-	8.49	15.93				
MW-2					0950	-	-	7.63	16.02				
MW-3					1121	-	-	7.90	15.03				
MW-4					1032	-	-	9.07	17.77				
MW-5					0832	-	-	8.76	16.14				
MW-6					1200	-	-	8.56	16.15				
* Device used to measure LNAPL thickness: Bailer Oil/Water Interface Meter (circle one)													
If bailer used, note bailer dimensions (inches): Entry Diameter _____ Chamber Diameter _____													

Signature: [Handwritten Signature]



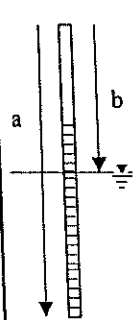
Project: RP 2162 Project No.: 06-88-620 Date: 6/21/12
 Field Representative: J. Ramos/A. Martinez
 Well ID: Mw-1 Start Time: _____ End Time: _____ Total Time (minutes): _____

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

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

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

PREDETERMINED WELL VOLUME					LOW-FLOW	
Casing Diameter Unit Volume (gal/ft) (circle one)					Previous Low-Flow Purge Rate: _____ (gpm)	
1" (0.04)	1.25" (0.08)	2" (0.17)	3" (0.38)	Other: _____	Total Well Depth (a): _____ (ft)	Initial Depth to Water (b): _____ (ft)
<input checked="" type="radio"/> 4" (0.66)	6" (1.50)	8" (2.60)	12" (5.81)	" ()	Pump In-take Depth = b + (a-b)/2: _____ (ft)	Maximum Allowable Drawdown = (a-b)/8: _____ (ft)
Total Well Depth (a): <u>15.93</u> (ft)					Low-Flow Purge Rate: _____ (gpm)*	
Initial Depth to Water (b): <u>8.49</u> (ft)					Comments: _____	
Water Column Height (WCH) = (a - b): <u>7.44</u> (ft)					*Low-flow purge rate should be within range of instruments used but should not exceed 0.25 gpm. Drawdown should not exceed Maximum Allowable Drawdown.	
Water Column Volume (WCV) = WCH x Unit Volume: <u>4.91</u> (gal)						
Three Casing Volumes = WCV x 3: <u>14.73</u> (gal)						
Five Casing Volumes = WCV x 5: <u>24.55</u> (gal)						
Pump Depth (if pump used): _____ (ft)						



GROUNDWATER STABILIZATION PARAMETER RECORD

Time (24:00)	Cumulative Volume (gal)	Temperature (°C)	pH	Conductivity (µS)	Other	NOTES Odor, color, sheen, turbidity, or other
0914	00	18.0	7.37	575		Clear*
0926	5	18.9	7.24	578		
0929	10	19.2	7.32	571		
0933	15	18.8	7.39	574		
0935	16	19.1	7.39	579		
						*Small black & orange particles in suspension

Previous Stabilized Parameters _____

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

SAMPLE COLLECTION RECORD		GEOCHEMICAL PARAMETERS	
Depth to Water at Sampling:	Parameter	Time	Measurement
<u>8.61</u> (ft)	DO (mg/L)	<u>0914</u>	<u>1.73</u>
Sample Collected Via: <input checked="" type="checkbox"/> Disp. Bailer _____ Dedicated Pump Tubing _____ _____ Disp. Pump Tubing _____ Other: _____	Ferrous Iron (mg/L)		
Sample ID: <u>Mw-1</u> Sample Collection Time: <u>0936</u> (24:00)	Redox Potential (mV)	<u>0914</u>	<u>119</u>
Containers (#): <u>6</u> VOA (<input checked="" type="checkbox"/> preserved or _____ unpreserved) _____ Liter Amber _____ Other: _____ Other: _____ _____ Other: _____ Other: _____	Alkalinity (mg/L)		
	Other:		
	Other:		

Signature: _____



Project: BP 216Z Project No.: 06-88-620 Date: 6/21/12
 Field Representative: J. Ramos/A. Martinez
 Well ID: MW-2 Start Time: _____ End Time: _____ Total Time (minutes): _____

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

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

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

PREDETERMINED WELL VOLUME

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

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

Total Well Depth (a): 16.02 (ft)
 Initial Depth to Water (b): 7.63 (ft)
 Water Column Height (WCH) = (a - b): 8.39 (ft)
 Water Column Volume (WCV) = WCH x Unit Volume: 5.53 (gal)
 Three Casing Volumes = WCV x 3: 16.59 (gal)
 Five Casing Volumes = WCV x 5: 27.65 (gal)
 Pump Depth (if pump used): _____ (ft)

LOW-FLOW

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

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

GROUNDWATER STABILIZATION PARAMETER RECORD

Time (24:00)	Cumulative Volume (gal)	Temperature (°C)	pH	Conductivity (µS)	Other	NOTES
0955	0	18.2	7.53	563		Odor, color, sheen, turbidity, or other <u>small black particulates in water</u>
0958	5.5	19.1	7.38	560		
1010	11.0	19.2	7.38	563		
1015	16.5	19.2	7.40	563		
1017	17.5	19.0	7.42	562		
Previous Stabilized Parameters						

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

SAMPLE COLLECTION RECORD		GEOCHEMICAL PARAMETERS	
Parameter	Time	Measurement	
Depth to Water at Sampling: <u>7.76</u> (ft)			
Sample Collected Via: <input checked="" type="checkbox"/> Disp. Bailer _____ Dedicated Pump Tubing _____ _____ Disp. Pump Tubing _____ Other: _____			
Sample ID: <u>MW-2</u> Sample Collection Time: _____ (24:00)	<u>0955</u>	<u>147</u>	DO (mg/L)
Containers (#): <u>6</u> VOA (<input checked="" type="checkbox"/> preserved or _____ unpreserved) _____ Liter Amber			Ferrous Iron (mg/L)
Other: _____ Other: _____	<u>0955</u>	<u>129</u>	Redox Potential (mV)
Other: _____ Other: _____			Alkalinity (mg/L)
			Other: _____
			Other: _____

Signature: [Signature]



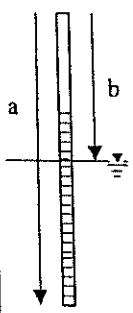
Project: BP 2162 Project No.: 06-88-620 Date: 6/21/12
 Field Representative: J. Ramos/A. Martinez
 Well ID: MW-3 Start Time: _____ End Time: _____ Total Time (minutes): _____

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

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

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

PREDETERMINED WELL VOLUME					LOW-FLOW				
Casing Diameter Unit Volume (gal/ft) (circle one)					Previous Low-Flow Purge Rate: _____ (gpm)				
1" (0.04)	1.25" (0.08)	2" (0.17)	3" (0.38)	Other: _____	Total Well Depth (a): _____ (ft)				
4" (0.66)	6" (1.50)	8" (2.60)	12" (5.81)	" ()	Initial Depth to Water (b): _____ (ft)				
Total Well Depth (a): <u>15.03</u> (ft)					Pump In-take Depth = b + (a-b)/2: _____ (ft)				
Initial Depth to Water (b): <u>7.90</u> (ft)					Maximum Allowable Drawdown = (a-b)/8: _____ (ft)				
Water Column Height (WCH) = (a - b): <u>7.13</u> (ft)					Low-Flow Purge Rate: _____ (gpm)*				
Water Column Volume (WCV) = WCH x Unit Volume: <u>4.70</u> (gal)					Comments: _____				
Three Casing Volumes = WCV x 3: <u>14.11</u> (gal)					*Low-flow purge rate should be within range of instruments used but should not exceed 0.25 gpm. Drawdown should not exceed Maximum Allowable Drawdown.				
Five Casing Volumes = WCV x 5: <u>23.50</u> (gal)									
Pump Depth (if pump used): _____ (ft)									



Time (24:00)	Cumulative Volume (gal)	Temperature (°C)	pH	Conductivity (µS)	Other	NOTES
1124	0	18.7	7.52	535		
1134	5	20.6	7.33	537		
1136	10	21.0	7.31	546		
1143	15	20.3	7.35	550		
1145	16	20.9	7.33	549		
						Small particles in suspension
Previous Stabilized Parameters						

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

SAMPLE COLLECTION RECORD		GEOCHEMICAL PARAMETERS	
Depth to Water at Sampling: <u>8.13</u> (ft)	Parameter	Time	Measurement
Sample Collected Via: <input checked="" type="checkbox"/> Disp. Bailer <input type="checkbox"/> Dedicated Pump Tubing	DO (mg/L)	1124	1.24
<input type="checkbox"/> Disp. Pump Tubing Other: _____	Ferrous Iron (mg/L)		
Sample ID: <u>MW-3</u> Sample Collection Time: <u>1148</u> (24:00)	Redox Potential (mV)	1124	127
Containers (#): <u>6</u> VOA (<input checked="" type="checkbox"/> preserved or <input type="checkbox"/> unpreserved) <input type="checkbox"/> Liter Amber	Alkalinity (mg/L)		
Other: _____ Other: _____	Other:		
Other: _____ Other: _____	Other:		

Signature: [Handwritten Signature]

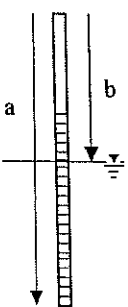


GROUNDWATER SAMPLING DATA SHEET

Page 4 of 6

Project: BP 2162 Project No.: 06-88-620 Date: 6/21/12
 Field Representative: J. Ramos/A. Martinez
 Well ID: MW-4 Start Time: _____ End Time: _____ Total Time (minutes): _____

PURGE EQUIPMENT		<input checked="" type="checkbox"/> Disp. Bailer	<input type="checkbox"/> 120V Pump	<input type="checkbox"/> Flow Cell
<input type="checkbox"/> Disp. Tubing	<input type="checkbox"/> 12V Pump	<input type="checkbox"/> Peristaltic Pump	Other/ID#:	
WELL HEAD INTEGRITY (cap, lock, vault, etc.)		Comments: _____		
<input checked="" type="radio"/> Good		<input type="radio"/> Improvement Needed (circle one)		
PURGING/SAMPLING METHOD		<input checked="" type="radio"/> Predetermined Well Volume	<input type="radio"/> Low-Flow	<input type="radio"/> Other: _____ (circle one)
PREDETERMINED WELL VOLUME				
Casing Diameter Unit Volume (gal/ft) (circle one)				
1" (0.04)	1.25" (0.08)	2" (0.17)	3" (0.38)	Other: _____
<input checked="" type="radio"/> 4" (0.66)	6" (1.50)	8" (2.60)	12" (5.81)	" ()
Total Well Depth (a):	<u>17.77</u> (ft)			
Initial Depth to Water (b):	<u>9.07</u> (ft)			
Water Column Height (WCH) = (a - b):	<u>8.7</u> (ft)			
Water Column Volume (WCV) = WCH x Unit Volume:	<u>5.7</u> (gal)			
Three Casing Volumes = WCV x 3:	<u>17.22</u> (gal)			
Five Casing Volumes = WCV x 5:	_____ (gal)			
Pump Depth (if pump used):	_____ (ft)			



LOW-FLOW	
Previous Low-Flow Purge Rate:	_____ (gpm)
Total Well Depth (a):	_____ (ft)
Initial Depth to Water (b):	_____ (ft)
Pump In-take Depth = b + (a-b)/2:	_____ (ft)
Maximum Allowable Drawdown = (a-b)/8:	_____ (ft)
Low-Flow Purge Rate:	_____ (gpm)*
Comments: _____	
*Low-flow purge rate should be within range of instruments used but should not exceed 0.25 gpm. Drawdown should not exceed Maximum Allowable Drawdown.	

GROUNDWATER STABILIZATION PARAMETER RECORD

Time (24:00)	Cumulative Volume (gal)	Temperature (°C)	pH	Conductivity (µS)	Other	NOTES
1037	0	19.0	7.34	585		
1047	6	19.4	7.32	586		
1051	12	19.7	7.33	587		
1059	18	19.2	7.37	599		
1100	19	19.8	7.31	594		
						Black & brown particles in suspension
Previous Stabilized Parameters						

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

SAMPLE COLLECTION RECORD		GEOCHEMICAL PARAMETERS	
Depth to Water at Sampling:	<u>9.09</u> (ft)	Parameter	Time
Sample Collected Via:	<input checked="" type="checkbox"/> Disp. Bailer <input type="checkbox"/> Dedicated Pump Tubing	DO (mg/L)	<u>1037</u> <u>1.64</u>
	<input type="checkbox"/> Disp. Pump Tubing Other: _____	Ferrous Iron (mg/L)	
Sample ID: <u>MW-4</u>	Sample Collection Time: <u>1105</u> (24:00)	Redox Potential (mV)	<u>1037</u> <u>121</u>
Containers (#): <u>6</u> VOA (<input checked="" type="checkbox"/> preserved or <input type="checkbox"/> unpreserved)	<input type="checkbox"/> Liter Amber	Alkalinity (mg/L)	
Other: _____	Other: _____	Other:	
Other: _____	Other: _____	Other:	

Signature:



Project: BP 2162 Project No.: 06-88-620 Date: 6/21/12
 Field Representative: A. Martinez / J. Ramos
 Well ID: Mw-5 Start Time: _____ End Time: _____ Total Time (minutes): _____

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

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

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

PREDETERMINED WELL VOLUME

Casing Diameter	Unit Volume (gal/ft)	(circle one)
1" (0.04)	1.25" (0.08)	2" (0.17)
3" (0.38)	Other: _____	
<u>4" (0.66)</u>	6" (1.50)	8" (2.60)
12" (5.81)		

Total Well Depth (a): 16.14 (ft)
 Initial Depth to Water (b): 8.76 (ft)
 Water Column Height (WCH) = (a - b): 7.38 (ft)
 Water Column Volume (WCV) = WCH x Unit Volume: 4.87 (gal)
 Three Casing Volumes = WCV x 3: 14.61 (gal)
 Five Casing Volumes = WCV x 5: 24.35 (gal)
 Pump Depth (if pump used): _____ (ft)

LOW-FLOW

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

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

GROUNDWATER STABILIZATION PARAMETER RECORD						NOTES
Time (24:00)	Cumulative Volume (gal)	Temperature (°C)	pH	Conductivity	Other	
<u>0837</u>	<u>0</u>	<u>18.4</u>	<u>6.84</u>	<u>581</u>		<u>Black particulates in water</u>
<u>0840</u>	<u>5</u>	<u>17.1</u>	<u>7.14</u>	<u>566</u>		
<u>0845</u>	<u>10</u>	<u>18.6</u>	<u>7.22</u>	<u>567</u>		
<u>0857</u>	<u>15</u>	<u>19.0</u>	<u>7.22</u>	<u>560</u>		
<u>0900</u>	<u>16</u>	<u>19.0</u>	<u>7.24</u>	<u>561</u>		

Previous Stabilized Parameters _____

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

SAMPLE COLLECTION RECORD		GEOCHEMICAL PARAMETERS	
Depth to Water at Sampling: <u>8.57</u> (ft)	Parameter	Time	Measurement
Sample Collected Via: <input checked="" type="checkbox"/> Disp. Bailer _____ Dedicated Pump Tubing	DO (mg/L)	<u>0837</u>	<u>1.58</u>
_____ Disp. Pump Tubing _____ Other: _____	Ferrous Iron (mg/L)		
Sample ID: <u>Mw-5</u> Sample Collection Time: <u>0900</u> (24:00)	Redox Potential (mV)	<u>0837</u>	<u>43</u>
Containers (#): <u>6</u> VOA (<input checked="" type="checkbox"/> preserved or _____ unpreserved) _____ Liter Amber	Alkalinity (mg/L)		
_____ Other: _____	Other:		
_____ Other: _____	Other:		

Signature: [Signature]



Project: BP 2162 Project No.: 06-88-620 Date: 6/21/12
Field Representative: S. Ramos/A. Martinez
Well ID: MW-6 Start Time: _____ End Time: _____ Total Time (minutes): _____

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

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

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

PREDETERMINED WELL VOLUME						LOW-FLOW			
Casing Diameter Unit Volume (gal/ft) (circle one)						Previous Low-Flow Purge Rate: _____ (gpm)			
1" (0.04)	1.25" (0.08)	2" (0.17)	3" (0.38)	Other: _____		Total Well Depth (a): _____ (ft)			
<u>4" (0.66)</u>	6" (1.50)	8" (2.60)	12" (5.81)	_____ ()		Initial Depth to Water (b): _____ (ft)			
Total Well Depth (a): <u>16.15</u> (ft)						Pump In-take Depth = b + (a-b)/2: _____ (ft)			
Initial Depth to Water (b): <u>8.56</u> (ft)						Maximum Allowable Drawdown = (a-b)/8: _____ (ft)			
Water Column Height (WCH) = (a - b): <u>7.59</u> (ft)						Low-Flow Purge Rate: _____ (gpm)*			
Water Column Volume (WCV) = WCH x Unit Volume: <u>5.01</u> (gal)						Comments: _____			
Three Casing Volumes = WCV x 3: <u>15.02</u> (gal)						*Low-flow purge rate should be within range of instruments used but should not exceed 0.25 gpm. Drawdown should not exceed Maximum Allowable Drawdown.			
Five Casing Volumes = WCV x 5: <u>25.05</u> (gal)									
Pump Depth (if pump used): _____ (ft)									

Time (24:00)	Cumulative Volume (gal)	Temperature (°C)	pH	Conductivity (µS)	Other	NOTES
1202	0	19.9	6.94	651		
1208	5	20.2	6.93	641		
1211	10	20.7	6.89	620		
1217	15	19.9	6.97	619		
1219	16	20.6	6.92	615		Slight NC odor

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

SAMPLE COLLECTION RECORD			GEOCHEMICAL PARAMETERS		
Depth to Water at Sampling: <u>8.71</u> (ft)	Parameter	Time	Measurement		
Sample Collected Via: <input checked="checked" type="checkbox"/> Disp. Bailer <input type="checkbox"/> Dedicated Pump Tubing <input type="checkbox"/> Disp. Pump Tubing Other: _____	DO (mg/L)	<u>1202</u>	<u>1.38</u>		
Sample ID: <u>MW-6</u> Sample Collection Time: <u>1221</u> (24:00)	Ferrous Iron (mg/L)				
Containers (#): <u>6</u> VOA (<input checked="checked" type="checkbox"/> preserved or <input type="checkbox"/> unpreserved) <input type="checkbox"/> Liter Amber	Redox Potential (mV)	<u>1202</u>	<u>-27</u>		
Other: _____	Alkalinity (mg/L)				
Other: _____	Other:				
Other: _____	Other:				

Signature: _____

Revision: 1/24/2012



Laboratory Management Program LaMP Chain of Custody Record

BP/ARC Project Name: BP 2162

Req Due Date (mm/dd/yy): _____ Rush TAT: Yes ___ No x

BP/ARC Facility No: 2162

Lab Work Order Number: _____

Lab Name: Cal Science	BP/ARC Facility Address: 15135 Hesperian Blvd	Consultant/Contractor: Broadbent
Lab Address: 7440 Lincoln Way, Garden Grove, CA	City, State, ZIP Code: San Leandro, CA	Consultant/Contractor Project No: 06-88-620
Lab PM: Richard Villafania	Lead Regulatory Agency: Alameda County	Address: 1324 Mangrove Ave., Ste. 212, Chico, CA 95926
Lab Phone: 714-895-5494 / 714-894-7501 (fax)	California Global ID No.: T0600100084	Consultant/Contractor PM: Tom Venus
Lab Shipping Acct: 9255	Enfos Proposal No: 00604-0002/WR145682	Phone: 530-566-1400 / 530-566-1401
Lab Bottle Order No:	Accounting Mode: Provision <u>X</u> OOC-BU ___ OOC-RM ___	Email EDD To: tvenus@broadbentinc.com
Other Info:	Stage: Execute (40) Activity: Project Spend (80)	Invoice To: BP/ARC <u>x</u> Contractor ___

BP/ARC EBM: Shannon Couch	Matrix	No. Containers / Preservative	Requested Analyses	Report Type & QC Level
EBM Phone: 925-275-3804				Standard <u>X</u>
EBM Email: shannon.couch@bp.com				Full Data Package ___

Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	GRO (8015M)	BTEX (8260B)	5 FO + EDB (8260B)	1,2-DCA (8260 B)	Ethanol (8260B)	Comments	
																			Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.
	MW-1	6/21/2012	0936		x		6						x	x	x	x	x		
	MW-2	6/21/2012	1020		x		6						x	x	x	x	x		
	MW-3	6/21/2012	1148		x		6						x	x	x	x	x		
	MW-4	6/21/2012	1105		x		6						x	x	x	x	x		
	MW-5	6/21/2012	0900		x		6						x	x	x	x	x		
	MW-6	6/21/2012	1221		x		6						x	x	x	x	x		
	TB-2162-0621202	6.21.12	1230		x		1												ON HOLD

Sampler's Name: <u>James Ramos</u>	Relinquished By / Affiliation		Date	Time	Accepted By / Affiliation		Date	Time
Sampler's Company: Broadbent	<u>James Ramos</u>		<u>6/21</u>	<u>1700</u>				
Shipment Method: <u>G50</u> Ship Date: <u>6-21-12</u>								
Shipment Tracking No: <u>107394352</u>								

Special Instructions: Please cc results to bpedf@broadbentinc.com

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

NO. 689956

NON-HAZARDOUS WASTE DATA FORM

BESI # _____

GENERATOR	Generator's Name and Mailing Address BP WEST COAST PRODUCTS, LLC P.O. BOX 80249 RANCHO SANTA MARGARITA, CA 92688		Generator's Site Address (if different than mailing address) BP 2162 15135 Hesperian Blvd. San Leandro, CA																		
	Generator's Phone: 949-460-5200																				
	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 _____		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 <u>100.5 gallons</u>		Quantity _____ Volume _____																		
WASTE DESCRIPTION <u>NON-HAZARDOUS WATER</u>		GENERATING PROCESS <u>WELL PURGING / DECON WATER</u>																			
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">COMPONENTS OF WASTE</th> <th style="width: 10%;">PPM</th> <th style="width: 10%;">%</th> </tr> </thead> <tbody> <tr> <td>1. <u>WATER</u></td> <td></td> <td><u>99-100%</u></td> </tr> <tr> <td>2. <u>TPH</u></td> <td></td> <td><u><1%</u></td> </tr> </tbody> </table>		COMPONENTS OF WASTE	PPM	%	1. <u>WATER</u>		<u>99-100%</u>	2. <u>TPH</u>		<u><1%</u>	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">COMPONENTS OF WASTE</th> <th style="width: 10%;">PPM</th> <th style="width: 10%;">%</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. <u>WATER</u>		<u>99-100%</u>																			
2. <u>TPH</u>		<u><1%</u>																			
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>Alex Martinez</u>	Signature <u>Alex Martinez</u>	Month <u>6</u>	Day <u>28</u>	Year <u>12</u>
--	-----------------------------------	-------------------	------------------	-------------------

The Generator certifies that the waste as described is 100% non-hazardous

TRANSPORTER	Transporter 1 Company Name <u>BROADBENT & ASSOCIATES, INC></u>		Phone# <u>530-566-1400</u>	
	Transporter 1 Printed/Typed Name <u>Alex Martinez</u>		Signature <u>Alex Martinez</u>	
			Month Day Year <u>6 28 12</u>	
	Transporter Acknowledgment of Receipt of Materials			
Transporter 2 Company Name		Phone#		
Transporter 2 Printed/Typed Name		Signature		Month Day Year
Transporter Acknowledgment of Receipt of Materials				

RECEIVING FACILITY	Designated Facility Name and Site Address <u>INSTRAT, INC.</u> <u>1105 AIRPORT RD.</u> <u>RIO VISTA, CA 94571</u>		Phone# <u>530-753-1829</u>	
	Printed/Typed Name		Signature	
			Month Day Year	
Designated Facility Owner or Operator: Certification of receipt of materials covered by this data form.				

APPENDIX C

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



CALSCIENCE

WORK ORDER NUMBER: 12-06-1563

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: Broadbent & Associates, Inc.

Client Project Name: BP 2162

Attention: Tom Venus
1324 Mangrove Ave, Ste 212
Chico, CA 95926-2642

Approved for release on 07/9/2012 by:
Richard Villafania
Project Manager

ResultLink ▶

Email your PM ▶



Calscience Environmental Laboratories, Inc. (Calscience) 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 attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any litigation which may arise.





Contents

Client Project Name: BP 2162
Work Order Number: 12-06-1563

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2	Quality Control Sample Data	8
2.1	MS/MSD and/or Duplicate	8
2.2	LCS/LCSD	11
3	Glossary of Terms and Qualifiers	14
4	Chain of Custody/Sample Receipt Form	15

Analytical Report



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

Date Received: 06/22/12
Work Order No: 12-06-1563
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project: BP 2162

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-1	12-06-1563-1-D	06/21/12 09:36	Aqueous	GC 22	06/23/12	06/23/12 15:07	120623B01

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	80	38-134			

MW-2	12-06-1563-2-D	06/21/12 10:20	Aqueous	GC 22	06/23/12	06/23/12 16:56	120623B01
------	----------------	----------------	---------	-------	----------	----------------	-----------

Comment(s): -LW Quantitated against Gasoline.

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	62	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	83	38-134			

MW-3	12-06-1563-3-D	06/21/12 11:48	Aqueous	GC 22	06/23/12	06/23/12 17:29	120623B01
------	----------------	----------------	---------	-------	----------	----------------	-----------

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	81	38-134			

MW-4	12-06-1563-4-D	06/21/12 11:05	Aqueous	GC 22	06/23/12	06/23/12 18:01	120623B01
------	----------------	----------------	---------	-------	----------	----------------	-----------

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	80	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: 06/22/12
Work Order No: 12-06-1563
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project: BP 2162

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-5	12-06-1563-5-D	06/21/12 09:00	Aqueous	GC 22	06/23/12	06/23/12 19:06	120623B01

Comment(s): -LW Quantitated against Gasoline.

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	55	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	80	38-134	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-6	12-06-1563-6-D	06/21/12 12:21	Aqueous	GC 22	06/23/12	06/23/12 19:38	120623B01

Comment(s): -LW Quantitated against Gasoline.

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	5000	250	5		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	101	38-134	

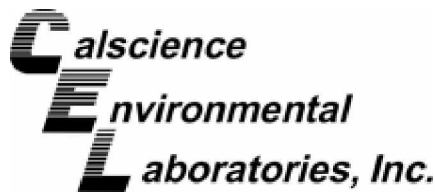
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-695-1,356	N/A	Aqueous	GC 22	06/23/12	06/23/12 13:30	120623B01

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

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	78	38-134	

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

Return to Contents



Analytical Report



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

Date Received: 06/22/12
Work Order No: 12-06-1563
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

Project: BP 2162

Page 1 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-1	12-06-1563-1-A	06/21/12 09:36	Aqueous	GC/MS T	06/25/12	06/26/12 03:51	120625L02

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	85	68-120			Dibromofluoromethane	105	80-127		
1,2-Dichloroethane-d4	98	80-128			Toluene-d8	102	80-120		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	12-06-1563-2-A	06/21/12 10:20	Aqueous	GC/MS T	06/25/12	06/26/12 06:40	120625L02

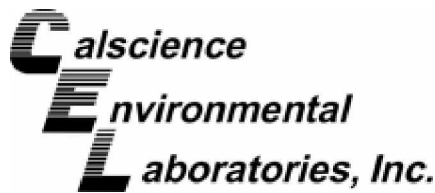
Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.50	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	88	68-120			Dibromofluoromethane	102	80-127		
1,2-Dichloroethane-d4	113	80-128			Toluene-d8	95	80-120		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-3	12-06-1563-3-A	06/21/12 11:48	Aqueous	GC/MS T	06/25/12	06/26/12 07:08	120625L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	1.4	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	86	68-120			Dibromofluoromethane	105	80-127		
1,2-Dichloroethane-d4	102	80-128			Toluene-d8	102	80-120		

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

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Analytical Report



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

Date Received: 06/22/12
Work Order No: 12-06-1563
Preparation: EPA 5030C
Method: EPA 8260B
Units: ug/L

Project: BP 2162

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-4	12-06-1563-4-A	06/21/12 11:05	Aqueous	GC/MS T	06/25/12	06/26/12 07:36	120625L02

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	85	68-120			Dibromofluoromethane	108	80-127		
1,2-Dichloroethane-d4	103	80-128			Toluene-d8	103	80-120		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-5	12-06-1563-5-A	06/21/12 09:00	Aqueous	GC/MS T	06/25/12	06/26/12 08:04	120625L02

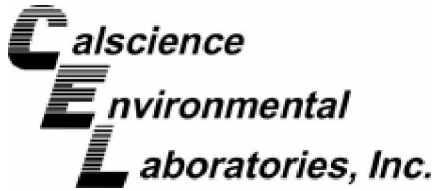
Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.50	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	88	68-120			Dibromofluoromethane	105	80-127		
1,2-Dichloroethane-d4	97	80-128			Toluene-d8	103	80-120		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-6	12-06-1563-6-A	06/21/12 12:21	Aqueous	GC/MS T	06/25/12	06/26/12 08:32	120625L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	4.6	2.5	5		Methyl-t-Butyl Ether (MTBE)	120	2.5	5	
1,2-Dibromoethane	ND	2.5	5		Tert-Butyl Alcohol (TBA)	ND	50	5	
1,2-Dichloroethane	ND	2.5	5		Diisopropyl Ether (DIPE)	ND	2.5	5	
Ethylbenzene	3.6	2.5	5		Ethyl-t-Butyl Ether (ETBE)	ND	2.5	5	
Toluene	ND	2.5	5		Tert-Amyl-Methyl Ether (TAME)	9.1	2.5	5	
Xylenes (total)	ND	2.5	5		Ethanol	ND	1500	5	
<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	94	68-120			Dibromofluoromethane	101	80-127		
1,2-Dichloroethane-d4	101	80-128			Toluene-d8	111	80-120		

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

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Analytical Report



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

Date Received: 06/22/12
 Work Order No: 12-06-1563
 Preparation: EPA 5030C
 Method: EPA 8260B
 Units: ug/L

Project: BP 2162

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-703-2,161	N/A	Aqueous	GC/MS T	06/25/12	06/26/12 03:23	120625L02

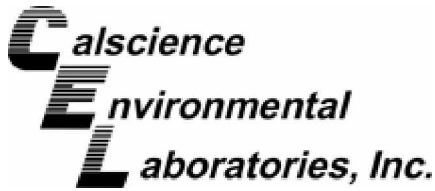
Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.50	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	87	68-120			Dibromofluoromethane	98	80-127		
1,2-Dichloroethane-d4	93	80-128			Toluene-d8	98	80-120		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-703-2,162	N/A	Aqueous	GC/MS T	06/26/12	06/26/12 14:05	120626L01

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	88	68-120			Dibromofluoromethane	104	80-127		
1,2-Dichloroethane-d4	104	80-128			Toluene-d8	103	80-120		

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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: 06/22/12
 Work Order No: 12-06-1563
 Preparation: EPA 5030C
 Method: EPA 8015B (M)

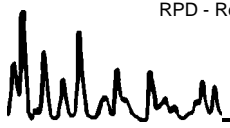
Project BP 2162

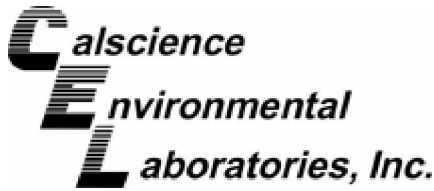
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
MW-1	Aqueous	GC 22	06/23/12	06/23/12	120623S01

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	ND	2000	2078	104	2159	108	38-134	4	0-25	

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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: 06/22/12
 Work Order No: 12-06-1563
 Preparation: EPA 5030C
 Method: EPA 8260B

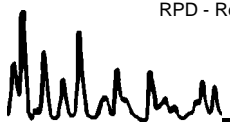
Project BP 2162

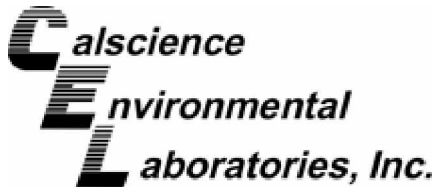
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
MW-1	Aqueous	GC/MS T	06/25/12	06/26/12	120625S02

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	ND	10.00	10.82	108	11.23	112	76-124	4	0-20	
1,2-Dibromoethane	ND	10.00	10.37	104	11.07	111	80-120	7	0-20	
1,2-Dichloroethane	ND	10.00	10.30	103	10.49	105	80-120	2	0-20	
Ethylbenzene	ND	10.00	10.75	107	11.17	112	78-126	4	0-20	
Toluene	ND	10.00	11.30	113	11.72	117	80-120	4	0-20	
Methyl-t-Butyl Ether (MTBE)	ND	10.00	9.199	92	9.793	98	67-121	6	0-49	
Tert-Butyl Alcohol (TBA)	ND	50.00	136.0	272	77.05	154	36-162	55	0-30	LM,BA,AY
Diisopropyl Ether (DIPE)	ND	10.00	10.09	101	10.48	105	60-138	4	0-45	
Ethyl-t-Butyl Ether (ETBE)	ND	10.00	10.56	106	10.96	110	69-123	4	0-30	
Tert-Amyl-Methyl Ether (TAME)	ND	10.00	9.505	95	10.12	101	65-120	6	0-20	
Ethanol	ND	100.0	114.8	115	128.5	128	30-180	11	0-72	

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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: 06/22/12
 Work Order No: 12-06-1563
 Preparation: EPA 5030C
 Method: EPA 8260B

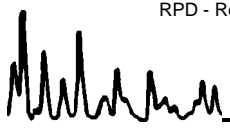
Project BP 2162

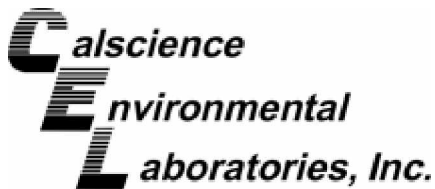
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12-06-1649-2	Aqueous	GC/MS T	06/26/12	06/26/12	120626S01

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	4.800	20.00	26.19	107	25.97	106	76-124	1	0-20	
1,2-Dibromoethane	ND	20.00	21.23	106	21.37	107	80-120	1	0-20	
1,2-Dichloroethane	ND	20.00	20.99	105	20.56	103	80-120	2	0-20	
Ethylbenzene	ND	20.00	21.93	110	21.80	109	78-126	1	0-20	
Toluene	ND	20.00	23.24	116	22.79	114	80-120	2	0-20	
Methyl-t-Butyl Ether (MTBE)	14.14	20.00	33.86	99	34.38	101	67-121	2	0-49	
Tert-Butyl Alcohol (TBA)	304.3	100.0	389.5	85	399.2	95	36-162	2	0-30	
Diisopropyl Ether (DIPE)	ND	20.00	21.19	106	21.13	106	60-138	0	0-45	
Ethyl-t-Butyl Ether (ETBE)	ND	20.00	22.28	111	22.84	114	69-123	3	0-30	
Tert-Amyl-Methyl Ether (TAME)	ND	20.00	20.09	100	20.95	105	65-120	4	0-20	
Ethanol	ND	200.0	202.9	101	223.3	112	30-180	10	0-72	

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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: 12-06-1563
 Preparation: EPA 5030C
 Method: EPA 8015B (M)

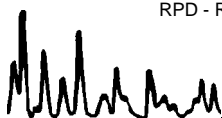
Project: BP 2162

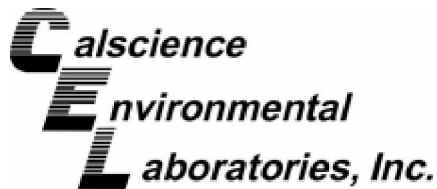
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-695-1,356	Aqueous	GC 22	06/23/12	06/23/12	120623B01

Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Gasoline Range Organics (C6-C12)	2000	2060	103	2059	103	78-120	0	0-20	

Return to Contents

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: 12-06-1563
 Preparation: EPA 5030C
 Method: EPA 8260B

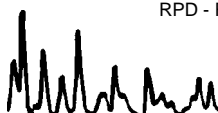
Project: BP 2162

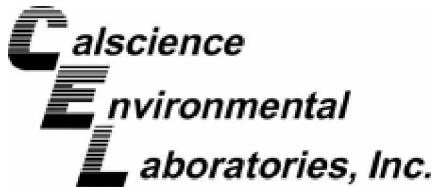
Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number					
099-12-703-2,161	Aqueous	GC/MS T	06/25/12	06/26/12	120625L02					
Parameter	<u>SPIKE ADDED</u>	<u>LCS CONC</u>	<u>LCS %REC</u>	<u>LCSD CONC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>ME CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Benzene	10.00	10.88	109	10.93	109	80-120	73-127	0	0-20	
1,2-Dibromoethane	10.00	10.41	104	10.77	108	79-121	72-128	3	0-20	
1,2-Dichloroethane	10.00	10.82	108	10.58	106	80-120	73-127	2	0-20	
Ethylbenzene	10.00	10.86	109	10.82	108	80-120	73-127	0	0-20	
Toluene	10.00	10.82	108	11.28	113	80-120	73-127	4	0-20	
Methyl-t-Butyl Ether (MTBE)	10.00	8.416	84	8.894	89	69-123	60-132	6	0-20	
Tert-Butyl Alcohol (TBA)	50.00	46.85	94	50.29	101	63-123	53-133	7	0-20	
Diisopropyl Ether (DIPE)	10.00	9.166	92	9.098	91	59-137	46-150	1	0-37	
Ethyl-t-Butyl Ether (ETBE)	10.00	9.636	96	9.844	98	69-123	60-132	2	0-20	
Tert-Amyl-Methyl Ether (TAME)	10.00	9.585	96	9.879	99	70-120	62-128	3	0-20	
Ethanol	100.0	113.2	113	119.5	120	28-160	6-182	5	0-57	

Total number of LCS compounds : 11
 Total number of ME compounds : 0
 Total number of ME compounds allowed : 1
 LCS ME CL validation result : Pass

Return to Contents

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: 12-06-1563
 Preparation: EPA 5030C
 Method: EPA 8260B

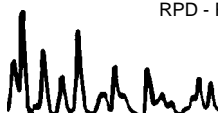
Project: BP 2162

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number					
099-12-703-2,162	Aqueous	GC/MS T	06/26/12	06/26/12	120626L01					
Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	10.00	10.81	108	10.95	110	80-120	73-127	1	0-20	
1,2-Dibromoethane	10.00	11.37	114	11.27	113	79-121	72-128	1	0-20	
1,2-Dichloroethane	10.00	10.52	105	10.47	105	80-120	73-127	1	0-20	
Ethylbenzene	10.00	11.30	113	11.24	112	80-120	73-127	1	0-20	
Toluene	10.00	11.27	113	11.38	114	80-120	73-127	1	0-20	
Methyl-t-Butyl Ether (MTBE)	10.00	9.345	93	9.775	98	69-123	60-132	4	0-20	
Tert-Butyl Alcohol (TBA)	50.00	46.97	94	47.18	94	63-123	53-133	0	0-20	
Diisopropyl Ether (DIPE)	10.00	9.841	98	10.09	101	59-137	46-150	3	0-37	
Ethyl-t-Butyl Ether (ETBE)	10.00	10.42	104	10.81	108	69-123	60-132	4	0-20	
Tert-Amyl-Methyl Ether (TAME)	10.00	9.950	100	10.34	103	70-120	62-128	4	0-20	
Ethanol	100.0	108.3	108	107.5	107	28-160	6-182	1	0-57	

Total number of LCS compounds : 11
 Total number of ME compounds : 0
 Total number of ME compounds allowed : 1
 LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit



Work Order Number: 12-06-1563

<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 above limit; 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.

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.

MPN - Most Probable Number





Laboratory Management Program LaMP Chain of Custody Record

BP/ARC Project Name: BP 2162
 BP/ARC Facility No: 2162

Req Due Date (mm/dd/yy): _____
 Lab Work Order Number: _____

Rush TAT: Yes ___ No x

12-06-1563

Lab Name: Cal Science	BP/ARC Facility Address: 15135 Hesperian Blvd	Consultant/Contractor: Broadbent
Lab Address: 7440 Lincoln Way, Garden Grove, CA	City, State, ZIP Code: San Leandro, CA	Consultant/Contractor Project No: 06-88-620
Lab PM: Richard Villafania	Lead Regulatory Agency: Alameda County	Address: 1324 Mangrove Ave., Ste. 212, Chico, CA 95926
Lab Phone: 714-895-5494 / 714-894-7501 (fax)	California Global ID No.: T0600100084	Consultant/Contractor PM: Tom Venus
Lab Shipping Acct: 9255	Enfos Proposal No: 00604-0002/WR145682	Phone: 530-566-1400 / 530-566-1401
Lab Bottle Order No:	Accounting Mode: Provision <u>X</u> OOC-BU ___ OOC-RM ___	Email EDD To: tvenus@broadbentinc.com
Other Info:	Stage: Execute (40) Activity: Project Spend (80)	Invoice To: BP/ARC <u>x</u> Contractor ___

BP/ARC EBM: Shannon Couch				Matrix		No. Containers / Preservative						Requested Analyses						Report Type & QC Level		
EBM Phone: 925-275-3804																		Standard <u>X</u>		
EBM Email: shannon.couch@bp.com																		Full Data Package ___		
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	Methanol	GRO (8015M)	BTEX (8260B)	5 FO + EDB (8260B)	1,2-DCA (8260 B)	Ethanol (8260B)	Comments		
1	MW-1	6/21/2012	0936		x		6						x	x	x	x	x			
2	MW-2	6/21/2012	1020		x		6						x	x	x	x	x			
3	MW-3	6/21/2012	1148		x		6						x	x	x	x	x			
4	MW-4	6/21/2012	1105		x		6						x	x	x	x	x			
5	MW-5	6/21/2012	0900		x		6						x	x	x	x	x			
6	MW-6	6/21/2012	1221		x		6						x	x	x	x	x			
7	TB-2162-06212012	6.21.12	1230		x		1													ON HOLD

Sampler's Name: <u>James Ramos</u>	Relinquished By / Affiliation		Date	Time	Accepted By / Affiliation		Date	Time
Sampler's Company: Broadbent	<u>James Ramos</u>		<u>6/21/12</u>	<u>1700</u>	<u>[Signature]</u>		<u>6/22/12</u>	<u>1030</u>
Shipment Method: <u>GSO</u>	Ship Date: <u>6.21.12</u>							
Shipment Tracking No: <u>107394352</u>								

Special Instructions: Please cc results to bpedf@broadbentinc.com

1563

SHIPPER'S GSO
 ADDRESS
 CITY Vacaville
 STATE/ROOM G
 ZIP CODE 95688
 SENDER'S NAME James Ramos
 PHONE NUMBER 707-455-7290
 COMPANY Cal Science
 NAME Richard Villafrania
 PHONE NUMBER 714-895-5494
 ADDRESS 7440 Lincoln Way
 ADDRESS
 STATE/ROOM CA
 ZIP CODE 92841

GSO
 GOLDEN STATE OVERNIGHT
 1-800-322-5555
 WWW.GSO.COM

P
 GARDEN GROVE
 92841
 16 lb
 2376338
 1206211835



5 DELIVERY SERVICE **PRIORITY OVERNIGHT** BY 10:30 AM
 PRIORITY BY 8:00 AM
 *DELIVERY TIMES MAY BE LATER IN SOME AREAS • CONSULT YOUR SERVICE GUIDE OR CALL GOLDEN STATE OVERNIGHT

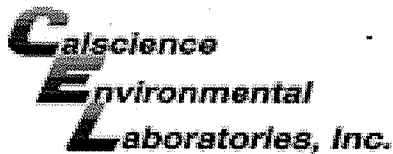
6 RELEASE SIGNATURE SIGN TO AUTHORIZE DELIVERY WITHOUT OBTAINING SIGNATURE

7 CREDIT CARD CREDIT CARD NUMBER EXP. DATE
 M/C
 VISA AM EX

8 PICK UP INFORMATION TIME DRIVER #
 107394352
 GSO TRACKING NUMBER

ON PAY 3 LIFT TAG AND REMOVE FROM RECORD

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WORK ORDER #: 12-06-11563

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: Broadbent

DATE: 06/22/12

TEMPERATURE: Thermometer ID: SC2 (Criteria: 0.0°C - 6.0°C, not frozen)

Temperature 4.1°C - 0.3°C (CF) = 3.8°C [X] Blank [] Sample

[] Sample(s) outside temperature criteria (PM/APM contacted by: _____).

[] Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

[] Received at ambient temperature, placed on ice for transport by Courier.

Ambient Temperature: [] Air [] Filter

Initial: [Signature]

CUSTODY SEALS INTACT:

[X] Cooler [] _____ [] No (Not Intact) [] Not Present [] N/A

Initial: [Signature]

[] Sample [] _____ [] No (Not Intact) [X] Not Present

Initial: [Signature]

SAMPLE CONDITION:

Table with 4 columns: Item, Yes, No, N/A. Rows include Chain-Of-Custody (COC) document(s) received with samples, COC document(s) received complete, Collection date/time, matrix, and/or # of containers logged in based on sample labels, No analysis requested, Not relinquished, No date/time relinquished, Sampler's name indicated on COC, Sample container label(s) consistent with COC, Sample container(s) intact and good condition, Proper containers and sufficient volume for analyses requested, Analyses received within holding time, pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours, Proper preservation noted on COC or sample container, Unpreserved vials received for Volatiles analysis, Volatile analysis container(s) free of headspace, Tedlar bag(s) free of condensation.

CONTAINER TYPE:

Solid: [] 4ozCGJ [] 8ozCGJ [] 16ozCGJ [] Sleeve (____) [] EnCores® [] TerraCores® [] _____
Water: [] VOA [X] VOAh [] VOAna2 [] 125AGB [] 125AGBh [] 125AGBp [] 1AGB [] 1AGBna2 [] 1AGBs
[] 500AGB [] 500AGJ [] 500AGJs [] 250AGB [] 250CGB [] 250CGBs [] 1PB [] 1PBna [] 500PB
[] 250PB [] 250PBn [] 125PB [] 125PBzanna [] 100PJ [] 100PJna2 [] _____ [] _____ [] _____

Air: [] Tedlar® [] Summa® Other: [] _____ Trip Blank Lot#: 120531A Labeled/Checked by: [Signature]

Container: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope Reviewed by: [Signature]

Preservative: h: HCL n: HNO3 na2:Na2S2O3 na: NaOH p: H3PO4 s: H2SO4 u: Ultra-pure zna: ZnAc2+NaOH f: Filtered Scanned by: [Signature]



APPENDIX D

GEOTRACKER UPLOAD CONFIRMATION RECEIPTS

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!**

<u>Submittal Type:</u>	GEO_WELL
<u>Submittal Title:</u>	2Q12 GEO_WELL 2162
<u>Facility Global ID:</u>	T0600100084
<u>Facility Name:</u>	ARCO #2162
<u>File Name:</u>	GEO_WELL.zip
<u>Organization Name:</u>	Broadbent & Associates, Inc.
<u>Username:</u>	BROADBENT-C
<u>IP Address:</u>	67.118.40.90
<u>Submittal Date/Time:</u>	7/24/2012 3:24:47 PM
<u>Confirmation Number:</u>	2663526415

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STATE WATER RESOURCES CONTROL BOARD
GEOTRACKER ESI

UPLOADING A EDF FILE

SUCCESS

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

<u>Submittal Type:</u>	EDF - Monitoring Report - Semi-Annually
<u>Submittal Title:</u>	2Q12 GW Monitoring
<u>Facility Global ID:</u>	T0600100084
<u>Facility Name:</u>	ARCO #2162
<u>File Name:</u>	12061563.zip
<u>Organization Name:</u>	Broadbent & Associates, Inc.
<u>Username:</u>	BROADBENT-C
<u>IP Address:</u>	67.118.40.90
<u>Submittal Date/Time:</u>	7/24/2012 3:21:01 PM
<u>Confirmation Number:</u>	5485961854

[VIEW QC REPORT](#)

[VIEW DETECTIONS REPORT](#)

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