Atlantic Richfield Company

Chuck Carmel
Environmental Business Manager

PO Box 1257
San Ramon, CA 94583
Phone: (925) 275-3803
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E-Mail: charles.carmel @bp.com

5 October 2009

Re: Third Quarter 2009 Ground-Water Monitoring Report
Atlantic Richfield Company Service Station #6148
5131 Shattuck Avenue, Oakland, California
ACEH Case #RO0000077

"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,

Chuck Carmel
Environmental Business Manager

Attachment

Third Quarter 2009 Annual Ground-Water Monitoring Report
Atlantic Richfield Company Station #6148
5131 Shattuck Avenue, Oakland, California
ACEH Case #RO0000077

Prepared for

Mr. Chuck Carmel
Environmental Business Manager
Atlantic Richfield Company
P.O. Box 1257
San Ramon, California 94583

Prepared by

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL

1324 Mangrove Avenue, Suite 212
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(530) 566-1400
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5 October 2009

Project No. 06-88-638

Broadbent & Associates, Inc.
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BROADBENT & ASSOCIATES, INC
ENVIRONMENTAL, WATER RESOURCES & ENGINEERING

5 October 2009

Project No. 06-88-638

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

Attn.: Mr. Chuck Carmel

Re: Third Quarter 2009 Annual Ground-Water Monitoring Report, Atlantic Richfield Company (a BP affiliated company) Station #6148, 5131 Shattuck Avenue, Oakland, Alameda County, California; ACEH Case #RO000077

Dear Mr. Carmel:

Provided herein is the *Third Quarter 2009 Annual Ground-Water Monitoring Report* for Atlantic Richfield Company Station #6148 (herein referred to as Station #6148) located at 5131 Shattuck Avenue, Oakland, Alameda County, California (Site). This report presents results of annual ground-water monitoring conducted at the Site during Third Quarter 2009. Case closure was requested by BP from Alameda County Environmental Health (ACEH) on 13 April 2004. On 15 November 2007, Broadbent & Associates, Inc. provided ACEH with a completed Case Closure Summary document to assist the ACEH with its closure review. BP is currently awaiting a response from ACEH to the case closure request and case closure summary.

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

Sincerely,

BROADBENT & ASSOCIATES, INC.

Thomas A. Venus, P.E.
Senior Engineer

Robert H. Miller, P.G., C.HG.
Principal Hydrogeologist

PROFESSIONAL GEOLOGIST
ROBERT H. MILLER
No. 561
CERTIFIED HYDROGEOLOGIST
EXP. 4-30-10
STATE OF CALIFORNIA

Enclosures

cc: Mr. Paresh Khatri, ACEH (Submitted via ACEH ftp Site)
Electronic copy uploaded to GeoTracker

STATION #6148 GROUND-WATER MONITORING REPORT

Facility: #6148 Address:	5131 Shattuck Avenue, Oakland
Environmental Business Manager:	Mr. Chuck Carmel
Consulting Co./Contact Persons:	Broadbent & Associates, Inc.(BAI)/Rob Miller & Tom Venus (530) 566-1400
Consultant Project No.:	06-88-638
Primary Agency/Regulatory ID No.:	Alameda County Environmental Health (ACEH) ACEH Case #RO0000077
Facility Permits/Permitting Agency.:	NA

WORK PERFORMED THIS QUARTER (Third Quarter 2009):

1. Prepared and submitted *Second Quarter 2009 Status Report* (BAI, 7/7/2009).
2. Conducted Third Quarter 2009 annual ground-water monitoring/sampling. Work performed by Stratus Environmental, Inc (Stratus) on 4 August 2009.

WORK PROPOSED FOR NEXT QUARTER (Fourth Quarter 2009):

1. Prepared and submitted this Third Quarter 2009 Annual Ground-Water Monitoring Report (contained herein).
2. Conduct ground-water monitoring/sampling from the Site's monitoring wells during Fourth Quarter 2009. Submit the fourth quarter ground-water monitoring report subsequent to analysis and review of the findings.

QUARTERLY RESULTS SUMMARY:

Current phase of project:	**Ground-water monitoring/sampling**
Frequency of ground-water monitoring:	**Annually (3Q): Wells MW-1 through MW-7**
Frequency of ground-water sampling:	**Annually (3Q): Wells MW-1 through MW-7**
Is free product (FP) present on-site:	**No**
FP recovered this quarter:	**None**
Cumulative FP recovered:	**None**
Current remediation techniques:	**NA**
Depth to ground water (below TOC):	**14.77 ft (MW-6) to 18.19 ft (MW-1)**
General ground-water flow direction:	**Southwest**
Approximate hydraulic gradient:	**0.01 ft/ft**

DISCUSSION:

Third quarter 2009 annual ground-water monitoring and sampling was conducted at Station #6148 on 4 August 2009 by Stratus personnel. Water levels were gauged in each of the seven wells at the Site. No irregularities were noted during water level gauging. Depth to water measurements ranged from 14.77 ft at MW-6 to 18.19 ft at MW-1. Resulting ground-water surface elevations ranged from 96.92 ft above datum in up-gradient well MW-7 to 94.90 ft above mean sea level in down-gradient well MW-3. Water level elevations were between historic minimum and maximum ranges for each well, as summarized in Table 1. Water level elevations yielded a potentiometric ground-water flow direction and gradient to the southwest at approximately 0.01 ft/ft, consistent with historical data (see Table 3). Ground-water monitoring field data sheets are provided within Appendix A. Measured depths to ground-water and respective ground-water elevations are summarized in Table 1. A Site Location Map is provided as Drawing 1. Potentiometric ground-water elevation contours are presented in Drawing 2.

Ground-water samples were collected from each of the seven wells at the Site. 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, C6-12) by EPA Method 8015B; for Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX) by EPA Method 8260B; and Tert-Amyl Methyl Ether (TAME), Tert-Butyl Alcohol (TBA), Di-Isopropyl Ether (DIPE), 1,2-Dibromomethane (EDB), 1,2-Dichloroethane (1,2-DCA), Ethanol, Ethyl Tert-Butyl Ether (ETBE), and Methyl Tert-Butyl Ether (MTBE) by EPA Method 8260B. No significant irregularities were encountered during laboratory analysis of the samples. Ground-water sampling field data sheets and the laboratory analytical report, including chain of custody documentation, are provided in Appendix A.

Gasoline range organics (GRO) were detected above the laboratory reporting limits in three of the seven wells sampled at concentrations up to 4,300 micrograms per liter (µg/L) in well MW-2. BTEX were detected above the laboratory reporting limits in well MW-2 at concentrations of 61.0 µg/L, 3.9 µg/L, 250 µg/L, and 22 µg/L, respectively. The remaining fuel additives and oxygenates were not detected above their laboratory reporting limits in the seven wells sampled this quarter. Detected analyte concentrations were within the historic minimum and maximum ranges recorded for each well. Historic laboratory analytical results are summarized in Table 1, Table 2, and Appendix B. The most recent GRO, Benzene, and MTBE concentrations are also presented in Drawing 2. A copy of the Laboratory Analytical Report, including chainof-custody documentation is provided in Appendix A. Ground-water monitoring data (GEO_WELL) and laboratory analytical results (EDF) were uploaded to the GeoTracker AB2886 database. Upload confirmation pages are provided in Appendix C.

CONCLUSIONS AND RECOMMENDATIONS:

Although the petroleum hydrocarbon concentrations detected in wells MW-2, MW-3, and MW-5 were below historical maximums, they do represent a suspicious anomoly to the generally decreasing trends observed in the past several years. For that reason, a one-time round of ground-water monitoring and sampling from the Site's monitoring wells will be conducted during the Fourth Quarter of 2009.

As a reminder, case closure was requested by BP on 13 April 2004 from ACEH. On 15 November 2007, BAI provided ACEH with a completed Case Closure Summary document to assist the ACEH with its review. BP is currently awaiting a response from the ACEH to the case closure request and case closure summary.

CLOSURE:

The findings presented in this report are based upon: observations of Stratus field personnel (see Appendix A), the points investigated, and results of laboratory tests performed by Calscience Environmental Laboratories, Inc. (Garden Grove, CA). 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. It is possible that variations in soil or ground-water conditions could exist beyond points explored in this investigation. Also, changes in site conditions could occur in the future due to variations in rainfall, temperature, regional water usage, or other factors.

ATTACHMENTS:

Drawing 1. Site Location Map, Station #6148, 5131 Shattuck Avenue, Oakland, California

Drawing 2. Ground-Water Elevation Contour and Analytical Summary Map, 4 August 2009, Station #6148, 5131 Shattuck Avenue, Oakland, California

Table 1. Summary of Ground-Water Monitoring Data: Relative Water Elevations and Laboratory Analyses, Station #6148, 5131 Shattuck Ave., Oakland, California

Table 2. Summary of Fuel Additives Analytical Data, Station #6148, 5131 Shattuck Ave., Oakland, California

Table 3. Historical Ground-Water Flow Direction and Gradient, Station #6148, 5131 Shattuck Ave., Oakland, California

Appendix A. Stratus Ground-Water Sampling Data Package (Includes Field Data Sheets, Laboratory Analytical Report with Chain-of-Custody Documentation and Field Procedures)

Appendix B. Historical Ground-Water Monitoring Data

Appendix C: GeoTracker Upload Confirmation Receipts

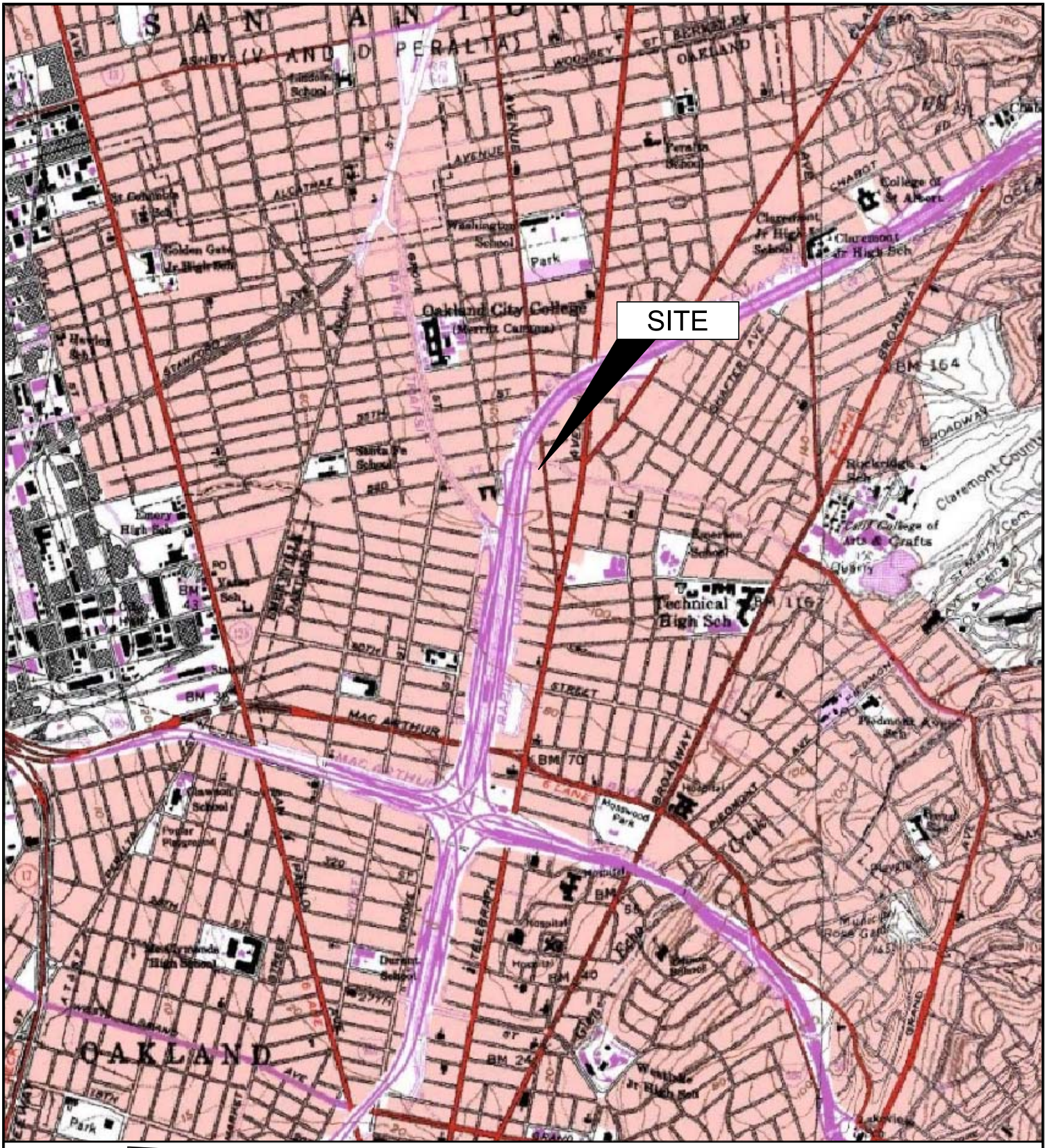


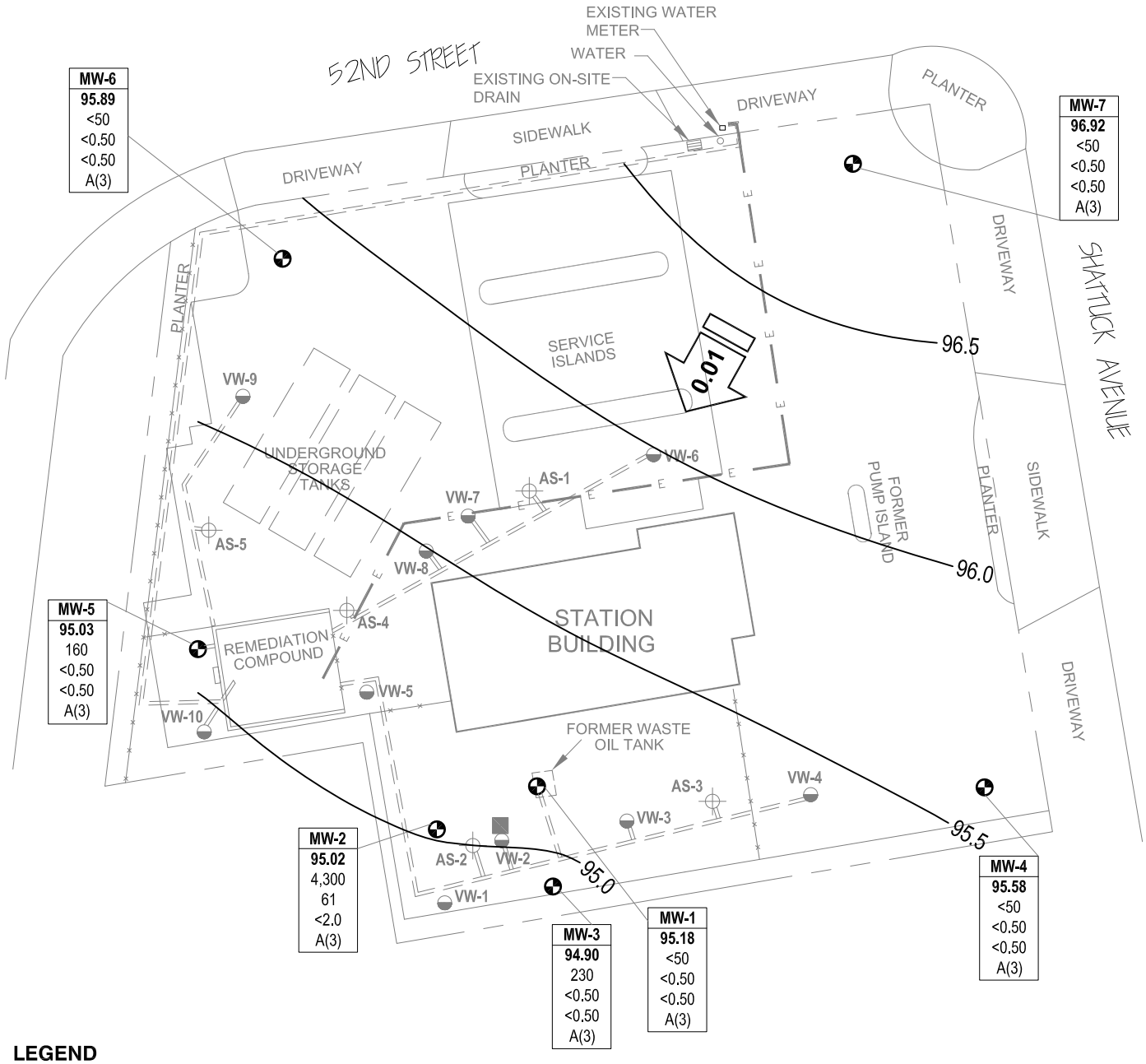
IMAGE SOURCE: USGS

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, CA 95926
Project No.: 06-88-638 Date: 9/4/09

ARCO Service Station #6148
5131 Shattuck Avenue
Oakland, California

Site Location Map

Drawing
1



LEGEND

- MONITORING WELL
- AIR SPARGING WELL
- SOIL VAPOR EXTRACTION WELL
- DESTROYED WELL
- E — ELECTRICAL LINE
- FENCING
- REMEDIATION PIPING
- 0.01 — GROUND-WATER FLOW DIRECTION AND GRADIENT (FT/FT)
- 95.0 — GROUND-WATER ELEVATION CONTOUR (FT/NAVD88)

Well	WELL DESIGNATION
ELEV	GROUND-WATER ELEVATION (FT ABOVE NAVD88)
GRO Benzene MTBE	CONCENTRATION OF GRO, BENZENE AND MTBE IN GROUND WATER (µg/L)
A	SAMPLING FREQUENCY
A(3)	SAMPLED ANNUALLY, 3RD QUARTER
<	NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMITS
NS	NOT SAMPLED
ORC	OXYGEN RELEASING COMPOUND SOCK

N

0 30 60

SCALE (ft)

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

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, California 95926
Project No.: 06-88-638 Date: 9/4/09

ARCO Service Station #6148
5131 Shattuck Avenue
Oakland, California

Ground-Water Elevation Contours and Analytical Summary Map
4 August 2009

Drawing 2

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

Station #6148, 5131 Shattuck Ave., Oakland, CA

Well and Sample Date	P/NP	Comments	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-1															
6/21/2000	--		107.80	13.00	**26.00**	17.49	90.31	<50	<0.5	<0.5	<0.5	<1.0	<3.0	--	--
9/20/2000	--		107.80	13.00	**26.00**	17.64	90.16	<50	<0.5	0.677	<0.5	0.969	<2.5	--	--
12/22/2000	--		107.80	13.00	**26.00**	16.87	90.93	186	5.38	0.522	9.52	30.2	8.91	--	--
3/26/2001	--		107.80	13.00	**26.00**	16.60	91.20	<50	<0.5	<0.5	<0.5	<0.5	9.1	--	--
5/30/2001	--		107.80	13.00	**26.00**	17.10	90.70	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
9/23/2001	--		107.80	13.00	**26.00**	17.53	90.27	<50	<0.5	<0.5	<0.5	<0.5	6.7	--	--
12/28/2001	--		107.80	13.00	**26.00**	15.57	92.23	<50	2.7	<0.5	<0.5	<0.5	20	--	--
3/21/2002	--		107.80	13.00	**26.00**	15.57	92.23	--	--	--	--	--	--	--	--
4/17/2002	--		107.80	13.00	**26.00**	16.25	91.55	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
8/19/2002	--		107.80	13.00	**26.00**	17.69	90.11	<50	<0.5	<0.5	<0.5	<0.5	<2.5	2.0	7.1
11/27/2002	--		107.80	13.00	**26.00**	17.45	90.35	<50	<0.50	1.8	0.65	3.5	1.7	1.0	6.3
2/5/2003	--	d	107.80	13.00	**26.00**	16.93	90.87	<50	<0.50	<0.50	<0.50	<0.50	1.1	1.2	7.3
5/13/2003	--		107.80	13.00	**26.00**	16.95	90.85	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.0	6.5
7/31/2003	--		107.80	13.00	**26.00**	17.74	90.06	<50	<0.50	<0.50	<0.50	<0.50	0.55	1.2	6
12/17/2003	NP		107.80	13.00	26.00	17.03	90.77	<50	<0.50	<0.50	<0.50	<0.50	2.5	2.0	6.5
05/05/2004	NP		113.37	13.00	26.00	17.28	96.09	<50	<0.50	<0.50	<0.50	<0.50	0.60	2.6	6.4
08/25/2004	NP		113.37	13.00	26.00	17.72	95.65	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	6.9
11/29/2004	NP		113.37	13.00	26.00	17.45	95.92	<50	<0.50	<0.50	<0.50	<0.50	0.62	0.92	6.8
01/31/2005	NP		113.37	13.00	26.00	16.67	96.70	<50	<0.50	<0.50	<0.50	<0.50	0.59	1.63	6.1
05/09/2005	NP		113.37	13.00	26.00	16.77	96.60	<50	<0.50	<0.50	<0.50	<0.50	0.55	1.03	6.7
08/10/2005	NP		113.37	13.00	26.00	17.76	95.61	<50	<0.50	<0.50	<0.50	<0.50	0.62	0.9	7.0
8/29/2006	P		113.37	13.00	26.00	17.63	95.74	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.5	6.6
8/15/2007	NP		113.37	13.00	26.00	17.92	95.45	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.09	7.14
8/20/2008	NP		113.37	13.00	26.00	18.09	95.28	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.03	6.47
8/4/2009	**NP**		**113.37**	**13.00**	**26.00**	**18.19**	**95.18**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**1.11**	**6.94**
MW-2															
6/21/2000	--		107.28	14.00	**26.00**	17.19	90.09	69	<0.5	<0.5	<0.5	<1.0	12	--	--
9/20/2000	--		107.28	14.00	**26.00**	17.31	89.97	<50	0.964	<0.5	<0.5	<.05	5.05	--	--
12/22/2000	--		107.28	14.00	**26.00**	16.58	90.70	2,140	174	60.2	118	438	123	--	--
3/26/2001	--		107.28	14.00	**26.00**	16.45	90.83	8,490	333	148	495	1,660	<250	--	--

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

Station #6148, 5131 Shattuck Ave., Oakland, CA

Well and Sample Date	P/NP	Comments	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-2 Cont.															
5/30/2001	--		107.28	14.00	26.00	16.83	90.45	4,700	200	71	260	780	43	--	--
9/23/2001	--		107.28	14.00	26.00	17.30	89.98	160	5.9	1.8	0.8	41	14	--	--
12/28/2001	--		107.28	14.00	26.00	15.38	91.90	1,800	54	<5.0	<5.0	240	30	--	--
3/21/2002	--		107.28	14.00	26.00	15.36	91.92	--	--	--	--	--	--	--	--
4/17/2002	--		107.28	14.00	26.00	16.01	91.27	<50	<0.5	<0.5	<0.5	<0.5	10	--	--
8/19/2002	--	a	107.28	14.00	26.00	17.53	89.75	170	22	0.92	14	26	<2.5	3.0	6.9
11/27/2002	--		107.28	14.00	26.00	17.21	90.07	340	22	0.68	13	26	<0.50	1.6	6.6
2/5/2003	--	d	107.28	14.00	26.00	16.72	90.56	83	2.7	<0.50	0.97	15	4.3	0.7	7.0
05/13/2003	NP	f	107.28	14.00	26.00	16.72	90.56	<50	0.91	<0.50	<0.50	0.6	2.8	0.7	6.5
7/31/2003	--		107.28	14.00	26.00	17.51	89.77	<50	<0.50	<0.50	<0.50	<0.50	2.0	7.1	6.7
12/17/2003	NP		107.28	14.00	26.00	16.78	90.50	51	1.0	<0.50	<0.50	<0.50	2.4	8.1	7.1
02/13/2004	NP	e	112.87	14.00	26.00	16.63	96.24	50	0.70	<0.50	0.54	0.90	1.6	5.6	6.7
05/05/2004	NP		112.87	14.00	26.00	17.04	95.83	<50	<0.50	<0.50	<0.50	<0.50	0.99	4.3	6.9
08/25/2004	NP		112.87	14.00	26.00	17.55	95.32	<50	<0.50	<0.50	<0.50	<0.50	0.63	7.5	6.6
11/29/2004	NP		112.87	14.00	26.00	17.24	95.63	85	10	<0.50	4.6	1.0	0.55	1.41	6.9
01/31/2005	NP		112.87	14.00	26.00	16.48	96.39	<50	<0.50	<0.50	<0.50	<0.50	1.2	0.76	6.1
05/09/2005	NP		112.87	14.00	26.00	16.52	96.35	<50	0.68	<0.50	<0.50	<0.50	1.8	0.7	6.6
08/10/2005	NP		112.87	14.00	26.00	17.48	95.39	<50	1.8	<0.50	<0.50	<0.50	1.5	0.62	6.7
8/29/2006	P		112.87	14.00	26.00	17.33	95.54	660	6.4	<0.50	1.5	2.5	<0.50	0.8	6.4
8/15/2007	NP		112.87	14.00	26.00	17.60	95.27	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.75	6.81
8/20/2008	NP		112.87	14.00	26.00	17.80	95.07	220	3.0	<0.50	<0.50	<0.50	<0.50	0.96	6.38
8/4/2009	**NP**		**112.87**	**14.00**	**26.00**	**17.85**	**95.02**	**4,300**	**61**	**3.9**	**250**	**22**	**<2.0**	**0.98**	**6.98**
MW-3															
6/21/2000	--		107.61	14.00	26.00	17.52	90.09	200	<0.5	<0.5	<0.5	2.1	24	--	--
9/20/2000	--		107.61	14.00	26.00	17.61	90.00	<50	<0.5	<0.5	<0.5	<0.5	20	--	--
12/22/2000	--		107.61	14.00	26.00	16.85	90.76	227	4.73	1.06	2.58	5.22	27.3	--	--
3/26/2001	--		107.61	14.00	26.00	16.79	90.82	287	6.29	1.58	6.47	12.1	24.2	--	--
5/30/2001	--		107.61	14.00	26.00	17.11	90.50	500	10	<0.5	7.00	16	20	--	--
9/23/2001	--		107.61	14.00	26.00	17.57	90.04	400	6.4	0.74	<0.5	0.62	22	--	--
12/28/2001	--		107.61	14.00	26.00	15.41	92.20	270	2.5	2.4	<0.5	2.3	9.2	--	--

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

Station #6148, 5131 Shattuck Ave., Oakland, CA

Well and Sample Date	P/NP	Comments	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-3 Cont.															
3/21/2002	--		107.61	14.00	26.00	15.58	92.03	--	--	--	--	--	--	--	--
4/17/2002	--		107.61	14.00	26.00	16.25	91.36	360	2.5	0.72	<0.5	<0.5	12	--	--
8/19/2002	--	b	107.61	14.00	26.00	17.66	89.95	750	11	2.1	<0.5	2.4	14	1.4	6.8
11/27/2002	--		107.61	14.00	26.00	17.69	89.92	470	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	6.6
2/5/2003	--	d	107.61	14.00	26.00	16.82	90.79	<50	<0.50	<0.50	<0.50	<0.50	2.4	1.3	6.6
5/13/2003	--		107.61	14.00	26.00	17.12	90.49	300	<0.50	<0.50	<0.50	<0.50	2.2	1.4	6.7
7/31/2003	--		107.61	14.00	26.00	17.72	89.89	320	<0.50	<0.50	<0.50	<0.50	2.1	1.4	6.8
12/17/2003	NP		107.61	14.00	26.00	16.95	90.66	340	0.51	<0.50	<0.50	<0.50	4.8	1.3	6.7
02/13/2004	NP	e	113.05	14.00	26.00	16.77	96.28	<50	<0.50	<0.50	<0.50	<0.50	3.1	2.1	7.1
05/05/2004	NP		113.05	14.00	26.00	17.22	95.83	<50	<0.50	<0.50	<0.50	<0.50	1.3	1.2	6.9
08/25/2004	NP		113.05	14.00	26.00	17.66	95.39	<50	<0.50	<0.50	<0.50	<0.50	3.3	1.2	7.1
11/29/2004	NP		113.05	14.00	26.00	17.47	95.58	110	<0.50	<0.50	<0.50	<0.50	1.4	1.0	6.9
01/31/2005	NP		113.05	14.00	26.00	16.16	96.89	<50	<0.50	<0.50	<0.50	<0.50	2.0	0.87	6.2
05/09/2005	NP		113.05	14.00	26.00	16.64	96.41	50	<0.50	<0.50	<0.50	<0.50	0.80	0.83	6.7
08/10/2005	NP		113.05	14.00	26.00	17.59	95.46	65	<0.50	<0.50	<0.50	<0.50	<0.50	0.82	6.7
8/29/2006	P		113.05	14.00	26.00	17.60	95.45	<50	<0.50	<0.50	<0.50	0.74	0.51	1.0	6.4
8/15/2007	NP		113.05	14.00	26.00	17.88	95.17	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.74	6.67
8/20/2008	NP		113.05	14.00	26.00	17.93	95.12	560	<0.50	<0.50	<0.50	<0.50	0.56	1.05	6.40
8/4/2009	**NP**		**113.05**	**14.00**	**26.00**	**18.15**	**94.90**	**230**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**1.08**	**6.91**
MW-4															
6/21/2000	--		106.71	11.50	26.50	16.00	90.71	1,400	5.3	7.3	36	85	4	--	--
9/20/2000	--		106.71	11.50	26.50	16.03	90.68	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
12/22/2000	--		106.71	11.50	26.50	--	--	--	--	--	--	--	--	--	--
3/26/2001	--		106.71	11.50	26.50	15.05	91.66	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
5/30/2001	--		106.71	11.50	26.50	15.62	91.09	--	--	--	--	--	--	--	--
9/23/2001	--		106.71	11.50	26.50	16.07	90.64	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
12/28/2001	--		106.71	11.50	26.50	13.68	93.03	--	--	--	--	--	--	--	--
3/21/2002	--		106.71	11.50	26.50	14.04	92.67	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
4/17/2002	--		106.71	11.50	26.50	14.78	91.93	--	--	--	--	--	--	--	--
8/19/2002	--		106.71	11.50	26.50	16.18	90.53	<50	<0.5	<0.5	<0.5	<0.5	<2.5	1.4	6.8

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

Station #6148, 5131 Shattuck Ave., Oakland, CA

Well and Sample Date	P/NP	Comments	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-4 Cont.															
11/27/2002	--		106.71	11.50	26.50	15.89	90.82	--	--	--	--	--	--	--	--
2/5/2003	--	d	106.71	11.50	26.50	15.40	91.31	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	6.6
5/13/2003	--		106.71	11.50	26.50	15.42	91.29	--	--	--	--	--	--	--	--
7/31/2003	--		106.71	11.50	26.50	16.23	90.48	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	6.4
12/17/2003	--		106.71	11.50	26.50	15.57	91.14	--	--	--	--	--	--	--	--
02/13/2004	P	e	112.15	11.50	26.50	15.30	96.85	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	6.3
05/05/2004	--		112.15	11.50	26.50	15.69	96.46	--	--	--	--	--	--	--	--
08/25/2004	P		112.15	11.50	26.50	16.07	96.08	<50	<0.50	<0.50	<0.50	0.51	<0.50	1.6	6.4
11/29/2004	--		112.15	11.50	26.50	15.86	96.29	--	--	--	--	--	--	--	--
01/31/2005	P		112.15	11.50	26.50	15.17	96.98	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.61	6.2
05/09/2005	--		112.15	11.50	26.50	15.25	96.90	--	--	--	--	--	--	--	--
08/10/2005	P		112.15	11.50	26.50	16.23	95.92	<50	<0.50	0.50	<0.50	1.1	<0.50	0.68	6.5
8/29/2006	P		112.15	11.50	26.50	16.04	96.11	<50	<0.50	<0.50	<0.50	0.53	<0.50	1.2	6.5
8/15/2007	NP		112.15	11.50	26.50	16.20	95.95	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.09	7.92
8/20/2008	NP		112.15	11.50	26.50	16.37	95.78	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.99	6.56
8/4/2009	**NP**		**112.15**	**11.50**	**26.50**	**16.57**	**95.58**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**1.03**	**7.18**
MW-5															
3/26/2000	--		106.60	10.00	25.00	15.45	91.15	767	12.4	<5.0	<5.0	<5.0	163	--	--
6/21/2000	--		106.60	10.00	25.00	16.52	90.08	67	<0.5	<0.5	<0.5	<1.0	10	--	--
9/20/2000	--		106.60	10.00	25.00	16.34	90.26	<50	<0.5	<0.5	<0.5	<0.5	3.48	--	--
12/22/2000	--		106.60	10.00	25.00	15.58	91.02	341	11.5	2.53	4.02	6.25	146	--	--
5/30/2001	--		106.60	10.00	25.00	15.77	90.83	110	2.3	<0.5	<0.5	0.81	72	--	--
9/23/2001	--		106.60	10.00	25.00	16.16	90.44	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
12/28/2001	--		106.60	10.00	25.00	14.09	92.51	240	2.8	1.9	<0.5	2.6	48	--	--
3/21/2002	--		106.60	10.00	25.00	14.43	92.17	--	<0.5	<0.5	<0.5	<0.5	--	--	--
4/17/2002	--		106.60	10.00	25.00	14.96	91.64	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
8/19/2002	--	c	106.60	10.00	25.00	16.34	90.26	--	--	--	--	--	--	--	--
11/27/2002	--	c	106.60	10.00	25.00	--	--	--	--	--	--	--	--	--	--
2/5/2003	--	c , d	106.60	10.00	25.00	--	--	--	--	--	--	--	--	--	--
5/13/2003	NP	f	106.60	10.00	25.00	15.43	91.17	<50	<0.50	<0.50	<0.50	<0.50	15	1.4	6.2

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

Station #6148, 5131 Shattuck Ave., Oakland, CA

Well and Sample Date	P/NP	Comments	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-5 Cont.															
7/31/2003	--		106.60	10.00	25.00	16.47	90.13	<50	<0.50	<0.50	<0.50	<0.50	1.2	14.1	8.1
12/17/2003	NP		106.60	10.00	25.00	15.99	90.61	<50	<0.50	<0.50	<0.50	<0.50	1.8	15.4	8.5
02/13/2004	NP	e	112.04	10.00	25.00	15.90	96.14	<50	<0.50	<0.50	<0.50	<0.50	2.6	11.1	7.0
05/05/2004	NP		112.04	10.00	25.00	16.28	95.76	51	<0.50	<0.50	<0.50	<0.50	1.2	0.8	7.2
08/25/2004	NP		112.04	10.00	25.00	16.67	95.37	<50	<0.50	<0.50	<0.50	<0.50	1.1	10.5	--
11/29/2004	NP		112.04	10.00	25.00	16.37	95.67	<50	<0.50	<0.50	<0.50	<0.50	0.61	1.0	7.0
01/31/2005	NP		112.04	10.00	25.00	15.73	96.31	<50	<0.50	<0.50	<0.50	<0.50	0.86	1.63	6.3
05/09/2005	NP		112.04	10.00	25.00	15.90	96.14	<50	<0.50	<0.50	<0.50	<0.50	0.60	1.12	7.2
08/10/2005	NP		112.04	10.00	25.00	16.65	95.39	740	<0.50	<0.50	<0.50	<0.50	2.5	--	7.3
8/29/2006	P		112.04	10.00	25.00	16.60	95.44	230	<0.50	<0.50	<0.50	<0.50	1.1	--	6.4
8/20/2008	NP		112.04	10.00	25.00	17.07	94.97	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.60	6.74
8/4/2009	**NP**		**112.04**	**10.00**	**25.00**	**17.01**	**95.03**	**160**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**1.49**	**7.73**
MW-6															
6/21/2000	--		105.13	12.00	27.00	13.91	91.22	--	--	--	--	--	--	--	--
9/20/2000	--		105.13	12.00	27.00	14.03	91.10	--	--	--	--	--	--	--	--
12/22/2000	--		105.13	12.00	27.00	--	--	--	--	--	--	--	--	--	--
3/26/2001	--		105.13	12.00	27.00	12.59	92.54	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
5/30/2001	--		105.13	12.00	27.00	13.40	91.73	--	--	--	--	--	--	--	--
9/23/2001	--		105.13	12.00	27.00	13.49	91.64	--	--	--	--	--	--	--	--
12/28/2001	--		105.13	12.00	27.00	12.07	93.06	--	--	--	--	--	--	--	--
3/21/2002	--		105.13	12.00	27.00	11.79	93.34	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
4/17/2002	--		105.13	12.00	27.00	12.45	92.68	--	--	--	--	--	--	--	--
8/19/2002	--		105.13	12.00	27.00	13.96	91.17	<50	<0.5	<0.5	<0.5	<0.5	<2.5	2.8	6.9
11/27/2002	--		105.13	12.00	27.00	14.07	91.06	--	--	--	--	--	--	--	--
2/5/2003	--	d	105.13	12.00	27.00	13.55	91.58	--	--	--	--	--	--	--	--
5/13/2003	--		105.13	12.00	27.00	13.57	91.56	--	--	--	--	--	--	--	--
7/31/2003	--		105.13	12.00	27.00	14.18	90.95	67	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	6.5
12/17/2003	--		105.13	12.00	27.00	14.12	91.01	--	--	--	--	--	--	--	--
02/13/2004	--	e	110.66	12.00	27.00	13.51	97.15	--	--	--	--	--	--	--	--
05/05/2004	--		110.66	12.00	27.00	13.95	96.71	--	--	--	--	--	--	--	--

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

Station #6148, 5131 Shattuck Ave., Oakland, CA

Well and Sample Date	P/NP	Comments	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-6 Cont.															
08/25/2004	P		110.66	12.00	27.00	14.42	96.24	55	<0.50	0.98	<0.50	1.5	<0.50	3.6	6.7
11/29/2004	--		110.66	12.00	27.00	14.20	96.46	--	--	--	--	--	--	--	--
01/31/2005	--		110.66	12.00	27.00	13.33	97.33	--	--	--	--	--	--	--	--
05/09/2005	--		110.66	12.00	27.00	13.45	97.21	--	--	--	--	--	--	--	--
08/10/2005	P		110.66	12.00	27.00	14.29	96.37	53	<0.50	1.2	<0.50	2.6	<0.50	2.63	6.5
8/29/2006	P		110.66	12.00	27.00	14.29	96.37	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	6.5
8/15/2007	NP		110.66	12.00	27.00	14.47	96.19	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.19	6.81
8/20/2008	NP		110.66	12.00	27.00	14.87	95.79	<50	<0.50	<0.50	<0.50	<0.50	<0.50	3.64	6.63
8/4/2009	**NP**		**110.66**	**12.00**	**27.00**	**14.77**	**95.89**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**2.67**	**7.44**
MW-7															
6/21/2000	--		107.05	12.00	27.00	14.57	92.48	--	--	--	--	--	--	--	--
9/20/2000	--		107.05	12.00	27.00	14.58	92.47	--	--	--	--	--	--	--	--
12/22/2000	--		107.05	12.00	27.00	13.21	93.84	--	--	--	--	--	--	--	--
3/26/2001	--		107.05	12.00	27.00	13.18	93.87	71.4	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
5/30/2001	--		107.05	12.00	27.00	13.80	93.25	--	--	--	--	--	--	--	--
9/23/2001	--		107.05	12.00	27.00	14.27	92.78	--	--	--	--	--	--	--	--
12/28/2001	--		107.05	12.00	27.00	12.24	94.81	--	--	--	--	--	--	--	--
3/21/2002	--		107.05	12.00	27.00	12.16	94.89	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
4/17/2002	--		107.05	12.00	27.00	13.08	93.97	--	--	--	--	--	--	--	--
8/19/2002	--		107.05	12.00	27.00	14.73	92.32	<50	<0.5	<0.5	<0.5	<0.5	<2.5	1.4	6.7
11/27/2002	--		107.05	12.00	27.00	14.76	92.29	--	--	--	--	--	--	--	--
2/5/2003	--	d	107.05	12.00	27.00	14.07	92.98	--	--	--	--	--	--	--	--
5/13/2003	--		107.05	12.00	27.00	14.00	93.05	--	--	--	--	--	--	--	--
7/31/2003	--		107.05	12.00	27.00	14.00	93.05	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	6.4
12/17/2003	--		107.05	12.00	27.00	14.10	92.95	--	--	--	--	--	--	--	--
02/13/2004	--	e	112.59	12.00	27.00	13.91	98.68	--	--	--	--	--	--	--	--
05/05/2004	--		112.59	12.00	27.00	14.60	97.99	--	--	--	--	--	--	--	--
08/25/2004	P		112.59	12.00	27.00	15.25	97.34	<50	<0.50	0.53	<0.50	0.91	<0.50	1.2	6.4
11/29/2004	--		112.59	12.00	27.00	15.00	97.59	--	--	--	--	--	--	--	--
01/31/2005	--		112.59	12.00	27.00	13.69	98.90	--	--	--	--	--	--	--	--

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

Station #6148, 5131 Shattuck Ave., Oakland, CA

Well and Sample Date	P/NP	Comments	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-7 Cont.															
05/09/2005	--		112.59	12.00	27.00	13.79	98.80	--	--	--	--	--	--	--	--
08/10/2005	P		112.59	12.00	27.00	15.02	97.57	<50	<0.50	0.51	<0.50	<0.50	<0.50	1.45	6.4
8/29/2006	P		112.59	12.00	27.00	15.00	97.59	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	6.4
8/15/2007	NP		112.59	12.00	27.00	15.10	97.49	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.00	7.03
8/20/2008	NP		112.59	12.00	27.00	15.75	96.84	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.17	6.56
8/4/2009	**NP**		**112.59**	**12.00**	**27.00**	**15.67**	**96.92**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**1.15**	**7.23**

SYMBOLS AND ABBREVIATIONS:
-- = Not analyzed/applicable/measured/available
< = Not detected at or above specified laboratory reporting limit
DO = Dissolved Oxygen
DTW = Depth to water in feet below ground surface
ft bgs = feet below ground surface
GWE = Groundwater measured in feet above mean sea level
GRO = Gasoline Range Organics
mg/L = Milligrams per liter or parts per million (ppm)
MTBE = Methyl tertiary butyl ether analyzed by EPA Method 8021B unless otherwise noted (Prior to 2/5/03)
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 = Hydrocarbon pattern is present in the requested fuel quantitation range but does not resemble the pattern of the requested fuel (TPHg/GRO).
b = Chromatogram Pattern: Gasoline C6-C10 (TPHg/GRO).
c = Well MW-5 not sampled due to ORC sock wedged in well.
d = TPH-g, BTEX, and MTBE analyzed by EPA meathod 8260B beginning on 1st quarter sampling event (2/5/03).
e = Wells surveyed to NAVD'88 datum on January 29, 2004.
f = During this monitoring event, the oxygen releasing compounds (ORC) were replaced for this well.

NOTES:
Beginning in the fourth quarter 2003, the laboratory modified the reported analyte list. TPH-g was changed to GRO. The resulting data may be impacted by the potential inclusion of non-TPH-g analytes within the requested fuel range resulting in a higher concentration being reported. Beginning in the second quarter 2004, the carbon range for GRO was changed from C6-C10 to C4-C12.

The values for pH and DO were obtained from field measurements.

The top and bottom of screen depths for wells MW-1, MW-2 and MW-3 were obtained from EMCON O&M sampling sheets not from well logs.

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.

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

Table 2. Summary of Fuel Additives Analytical Data

Station #6148, 5131 Shattuck Ave., Oakland, CA

Well and Sample Date	Concentrations in (µg/L)								Comments
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-1									
2/5/2003	<40	<20	1.1	<0.50	<0.50	<0.50	--	--	
5/13/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	--	--	
7/31/2003	<100	<20	0.55	<0.50	<0.50	<0.50	<0.50	<0.50	
12/17/2003	<100	<20	2.5	<0.50	<0.50	<0.50	<0.50	<0.50	
05/05/2004	<100	<20	0.60	<0.50	<0.50	<0.50	<0.50	<0.50	
08/25/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	a
11/29/2004	<100	<20	0.62	<0.50	<0.50	<0.50	<0.50	<0.50	
01/31/2005	<100	<20	0.59	<0.50	<0.50	<0.50	<0.50	<0.50	
05/09/2005	<100	<20	0.55	<0.50	<0.50	<0.50	<0.50	<0.50	
08/10/2005	<100	<20	0.62	<0.50	<0.50	<0.50	<0.50	<0.50	
8/29/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/15/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b
8/20/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/4/2009	**<300**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-2									
2/5/2003	<40	<20	4.3	<0.50	<0.50	<0.50	--	--	
5/13/2003	<100	<20	2.8	<0.50	<0.50	<0.50	--	--	
7/31/2003	<100	<20	2.0	<0.50	<0.50	<0.50	<0.50	<0.50	
12/17/2003	<100	<20	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	
02/13/2004	<100	<20	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	
05/05/2004	<100	<20	0.99	<0.50	<0.50	<0.50	<0.50	<0.50	
08/25/2004	<100	<20	0.63	<0.50	<0.50	<0.50	<0.50	<0.50	
11/29/2004	<100	<20	0.55	<0.50	<0.50	<0.50	<0.50	<0.50	
01/31/2005	<100	<20	1.2	<0.50	<0.50	<0.50	<0.50	<0.50	
05/09/2005	<100	<20	1.8	<0.50	<0.50	<0.50	<0.50	<0.50	
08/10/2005	<100	<20	1.5	<0.50	<0.50	<0.50	<0.50	<0.50	
8/29/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/15/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b
8/20/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/4/2009	**<1,200**	**<40**	**<2.0**	**<2.0**	**<2.0**	**<2.0**	**<2.0**	**<2.0**	

Table 2. Summary of Fuel Additives Analytical Data

Station #6148, 5131 Shattuck Ave., Oakland, CA

Well and Sample Date	Concentrations in (µg/L)								Comments
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-3									
2/5/2003	<40	<20	2.4	<0.50	<0.50	<0.50	--	--	
5/13/2003	<100	<20	2.2	<0.50	<0.50	<0.50	--	--	
7/31/2003	<100	<20	2.1	<0.50	<0.50	<0.50	<0.50	<0.50	
12/17/2003	<100	<20	4.8	<0.50	<0.50	<0.50	<0.50	<0.50	
02/13/2004	<100	<20	3.1	<0.50	<0.50	<0.50	<0.50	<0.50	
05/05/2004	<100	<20	1.3	<0.50	<0.50	<0.50	<0.50	<0.50	
08/25/2004	<100	<20	3.3	<0.50	<0.50	<0.50	<0.50	<0.50	
11/29/2004	<100	<20	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	
01/31/2005	<100	<20	2.0	<0.50	<0.50	<0.50	<0.50	<0.50	
05/09/2005	<100	<20	0.80	<0.50	<0.50	<0.50	<0.50	<0.50	
08/10/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/29/2006	<300	<20	0.51	<0.50	<0.50	<0.50	<0.50	<0.50	
8/15/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b
8/20/2008	<300	<10	0.56	<0.50	<0.50	<0.50	<0.50	<0.50	
8/4/2009	**<300**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-4									
7/31/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
02/13/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
08/25/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
01/31/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
08/10/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/29/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/15/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b
8/20/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/4/2009	**<300**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-5									
5/13/2003	<100	<20	15	<0.50	<0.50	1.1	--	--	
7/31/2003	<100	<20	1.2	<0.50	<0.50	<0.50	<0.50	<0.50	
12/17/2003	<100	<20	1.8	<0.50	<0.50	<0.50	<0.50	<0.50	
02/13/2004	<100	<20	2.6	<0.50	<0.50	<0.50	<0.50	<0.50	

Table 2. Summary of Fuel Additives Analytical Data

Station #6148, 5131 Shattuck Ave., Oakland, CA

Well and Sample Date	Concentrations in (µg/L)								Comments
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-5 Cont.									
05/05/2004	<100	<20	1.2	<0.50	<0.50	<0.50	<0.50	<0.50	
08/25/2004	<100	<20	1.1	<0.50	<0.50	<0.50	<0.50	<0.50	
11/29/2004	<100	<20	0.61	<0.50	<0.50	<0.50	<0.50	<0.50	
01/31/2005	<100	<20	0.86	<0.50	<0.50	<0.50	<0.50	<0.50	
05/09/2005	<100	<20	0.60	<0.50	<0.50	<0.50	<0.50	<0.50	
08/10/2005	<100	<20	2.5	<0.50	<0.50	<0.50	<0.50	<0.50	
8/29/2006	<300	<20	1.1	<0.50	<0.50	<0.50	<0.50	<0.50	
8/20/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/4/2009	**<300**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-6									
7/31/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
08/25/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
08/10/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/29/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/15/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b
8/20/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/4/2009	**<300**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-7									
7/31/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
08/25/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
08/10/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/29/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/15/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b
8/20/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/4/2009	**<300**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	

SYMBOLS AND ABBREVIATIONS:
< = Not detected at or above the specified laboratory reporting limit
-- = Not available/analyzed/applicable
DIPE = Di-isopropyl ether
EDB = 1,2-Dibromoethane
ETBE = Ethyl tert butyl ether
MTBE = Methyl tert-butyl ether
1,2-DCA = 1,2-Dichloroethane
TAME = tert-Amyl methyl ether
TBA = tert-Butyl alcohol
ug/L = micrograms per liter

FOOTNOTES:
a = This sample was analyzed beyond the EPA recommended holding time. The results may still be useful for their intended purpose.
b = Calib. Verif. Is within method limits but outside contract limits for Ethanol.

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

Table 3. Historical Ground-Water Flow Direction and Gradient

Station #6148, 5131 Shattuck Ave., Oakland, CA

Date Sampled	Approximate Flow Direction	Approximate Hydraulic Gradient
6/21/2000	South-Southwest	0.016
9/20/2000	South-Southwest	0.017
12/22/2000	South-Southwest	0.022
3/26/2001	South-Southwest	0.02
5/30/2001	South-Southwest	0.02
9/23/2001	South-Southwest	0.019
12/28/2001	Southwest	0.019
3/21/2002	Southwest	0.019
4/17/2002	Southwest	0.017
8/19/2002	Southwest	0.016
11/27/2002	Southwest	0.015
2/5/2003	Southwest	0.017
5/13/2003	Southwest	0.013
7/31/2003	Southwest	0.014
2/13/2004	Southwest	0.016
5/5/2004	Southwest	0.016
8/25/2004	Southwest	0.013
11/29/2004	Southwest	0.013
1/31/2005	Southwest	0.02
5/9/2005	Southwest	0.02
8/10/2005	Southwest	0.02
8/29/2006	Southwest	0.014
8/15/2007	Southwest	0.015
8/20/2008	Southwest	0.012
8/4/2009	**Southwest**	**0.01**

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

APPENDIX A

STRATUS GROUND-WATER SAMPLING DATA PACKAGE
(INCLUDES FIELD DATA SHEETS, LABORATORY ANALYTICAL REPORT
WITH CHAIN-OF-CUSTODY DOCUMENTATION, AND FIELD PROCEDURES)

STRATUS
ENVIRONMENTAL, INC.

3330 Cameron Park Drive, Ste 550
Cameron Park, California 95682
(530) 676-6004 ~ Fax: (530) 676-6005

August 18, 2009

Mr. Rob Miller
Broadbent & Associates, Inc.
2000 Kirman Avenue
Reno, NV 89502

Re: Groundwater Sampling Data Package, BP Service Station No. 6148, located at 5131 Shattuck Avenue, Oakland, California

General Information

Data Submittal Prepared / Reviewed by: Carol Huff / Jay Johnson
Phone Number: (530) 676-6000
On-Site Supplier Representative: Roberto Heimlich and Diego Heimlich

Sampling Date: August 4, 2009
Unusual Field Conditions: None
Scope of Work Performed: Quarterly monitoring and sampling
Variations from Work Scope: None noted.

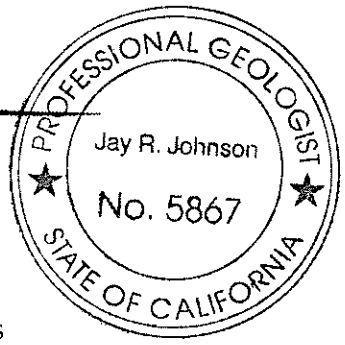
This submittal presents the data collected in association with routine groundwater monitoring. The attachments include field data sheets, chain of custody documentation, certified analytical results, and field procedures for groundwater monitoring and sampling. The information is being provided to BP-ARCO's Scoping Supplier for use in preparing a report for regulatory submittal. This submittal is limited to presentation of collected data and does not include data interpretation or conclusions or recommendations.

August 18, 2009

Any questions concerning this submittal should be addressed to the Preparer/Reviewer identified above.

Sincerely,

STRATUS ENVIRONMENTAL, INC.



Jay R. Johnson, P.G.
Project Manager

Attachments:

- Field Data Sheets
- Chain of Custody Documentation
- Certified Analytical Results
- Field Procedures for Groundwater Sampling

cc: Mr. Paul Supple, BP/ARCO

BP Alameda Portfolio

HYDROLOGIC DATA SHEET

AT 6:10

Gauge Date: 8/4/09 **Project Name:** 5131 Shattuck Avenue, Oakland

Field Technician: ROBERTO **Project Number:** 6148

TOC = Top of Well Casing Elevation
TOS = Depth to Top of Screen
DTW = Depth to Groundwater Below TOC
DTB = Depth to Bottom of Well Casing Below TOC

DIA = Well Casing Diameter
ELEV = Groundwater Elevation
DUP = Duplicate

WELL OR LOCATION	TIME	MEASUREMENT						PURGE & SAMPLE	SHEEN CONFIRMATION (w/bailer)	COMMENTS
		TOC	TOS	DTW	DTB	DIA	ELEV			
mw-1	6:53			18.19	25.42	4"		YES		FW
mw-2	6:49			17.85	25.40	4"		YES		FW
mw-3	6:44			18.15	25.45	4"		YES		FW
mw-4	6:39			16.57	25.90	4"		YES		FW
mw-5	6:19			17.01	19.80	4"		YES		FW
mw-6	6:27			14.77	26.45	4"		YES		FW
mw-7	6:32			15.67	26.85	4"		YES		FW

FW - Diego Heimlich

pH/Conductivity/temperature Meter - YSI Model 63

DO Meter - YSI 55 Series (DO is always measured before purge)

Please refer to groundwater sampling field procedures

Calibration Date

pH 8/4/09

Conductivity 8/4/09

DO 8/4/09

BP ALAMEDA PORTFOLIO

WATER SAMPLE FIELD DATA SHEET

PROJECT #: 6148 | PURGED BY: RH | WELL I.D.: MW-1

CLIENT NAME: | SAMPLED BY: RH | SAMPLE I.D.:

LOCATION: 5131 Shattuck Avenue, Oakland | QA SAMPLES: DUP-1

DATE PURGED 8/4/09 NP | START (2400hr) 8:19 | END (2400hr) 8:27

DATE SAMPLED 8/4/09 | SAMPLE TIME (2400hr) 8:25

SAMPLE TYPE: Groundwater x | Surface Water ___ | Treatment Effluent ___ | Other ___

CASING DIAMETER: 2" ___ (0.17) | 3" ___ (0.38) | 4" 4 (0.67) | 5" ___ (1.02) | 6" ___ (1.50) | 8" ___ (2.60) | Other ___ ( )

Casing Volume: (gallons per foot)

DEPTH TO BOTTOM (feet) = 25.42 | CASING VOLUME (gal) =

DEPTH TO WATER (feet) = 18.19 | CALCULATED PURGE (gal) = NP

WATER COLUMN HEIGHT (feet) = 7.23 | ACTUAL PURGE (gal) =

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees C)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
8/4/09	8:22	NP	19.9	441.8	6.94	clear	
		NO PURGE					

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: 18.19 | SAMPLE TURBIDITY: clear

80% RECHARGE: X YES ___ NO | ANALYSES: 8260

ODOR: NO | SAMPLE VESSEL / PRESERVATIVE: 6 VOAs/HCl

PURGING EQUIPMENT

___ Bladder Pump | ___ Bailer (Teflon)
___ Centrifugal Pump | ___ Bailer (PVC)
___ Submersible Pump NA | ___ Bailer (Stainless Steel)
___ Peristalic Pump | ___ Dedicated ___

Other: ___

Pump Depth: NA

SAMPLING EQUIPMENT

___ Bladder Pump | ___ Bailer (Teflon)
___ Centrifugal Pump | X Bailer (___ PVC or X disposable)
___ Submersible Pump | ___ Bailer (Stainless Steel)
___ Peristalic Pump | ___ Dedicated ___

Other: ___

WELL INTEGRITY: GOOD | LOCK#: NA

REMARKS: DO 4.11

SIGNATURE: [signature] | Page ___ of ___

BP ALAMEDA PORTFOLIO

WATER SAMPLE FIELD DATA SHEET

PROJECT #: 6148 PURGED BY: KH WELL I.D.: MW-2

CLIENT NAME: SAMPLED BY: KH SAMPLE I.D.:

LOCATION: 5131 Shattuck Avenue, Oakland QA SAMPLES: MW-2

DATE PURGED 8/4/09 NP START (2400hr) 7:48 END (2400hr) 7:58

DATE SAMPLED 8/4/09 SAMPLE TIME (2400hr) 7:55

SAMPLE TYPE: Groundwater x Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER: 2" ____ (0.17) 3" ____ (0.38) 4" ✓ (0.67) 5" ____ (1.02) 6" ____ (1.50) 8" ____ (2.60) Other ____ ( )

Casing Volume: (gallons per foot)

DEPTH TO BOTTOM (feet) = 25.40 CASING VOLUME (gal) = N/P

DEPTH TO WATER (feet) = 17.85 CALCULATED PURGE (gal) = N/P

WATER COLUMN HEIGHT (feet) = 7.5 ACTUAL PURGE (gal) =

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees C)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
8/4/09	7:51	NP	18.8	633	6.98	clear	

NO PURGE

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: 17.85 SAMPLE TURBIDITY: clear

80% RECHARGE: ✓ YES ____ NO ANALYSES: 5 WD

ODOR: NO SAMPLE VESSEL / PRESERVATIVE: 6 VOAs/HCl

PURGING EQUIPMENT

____ Bladder Pump ____ Bailer (Teflon)
____ Centrifugal Pump ____ Bailer (PVC)
____ Submersible Pump NA ____ Bailer (Stainless Steel)
____ Peristalic Pump ____ Dedicated ____
Other: ____
Pump Depth: NA

SAMPLING EQUIPMENT

____ Bladder Pump ____ Bailer (Teflon)
____ Centrifugal Pump ~~✓~~ Bailer (____ PVC or ✓ disposable)
____ Submersible Pump ____ Bailer (Stainless Steel)
____ Peristalic Pump ____ Dedicated ____
Other: ____

WELL INTEGRITY: GOOD LOCK#: NA (PRO CAP)

REMARKS: DO 0.98

SIGNATURE: Kirk Page ____ of ____

BP ALAMEDA PORTFOLIO

WATER SAMPLE FIELD DATA SHEET

PROJECT #: 6148 | PURGED BY: EH | WELL I.D.: MW-3

CLIENT NAME: | SAMPLED BY: EH | SAMPLE I.D.:

LOCATION: 5131 Shattuck Avenue, Oakland | QA SAMPLES: MW-3

DATE PURGED 8/4/09 NP | START (2400hr) 8:04 | END (2400hr) 8:13

DATE SAMPLED 8/4/09 | SAMPLE TIME (2400hr) 8:11

SAMPLE TYPE: Groundwater x | Surface Water ___ | Treatment Effluent ___ | Other ___

CASING DIAMETER: 2" ___ (0.17) | 3" ___ (0.38) | 4" x (0.67) | 5" ___ (1.02) | 6" ___ (1.50) | 8" ___ (2.60) | Other ___ ( )

Casing Volume: (gallons per foot)

DEPTH TO BOTTOM (feet) = 25.45 | CASING VOLUME (gal) =

DEPTH TO WATER (feet) = 18.15 | CALCULATED PURGE (gal) =

WATER COLUMN HEIGHT (feet) = 7.3 | ACTUAL PURGE (gal) =

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees C)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
8/4/09	8:07	NP	19.1	630	6.91	clear	
		NO PURGE					

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: 18.15 | SAMPLE TURBIDITY: clear

80% RECHARGE: x YES ___ NO | ANALYSES: GWS

ODOR: NO | SAMPLE VESSEL / PRESERVATIVE: 6 VOAS/HCL

PURGING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump NA
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated ___

Other: ___

Pump Depth: NA

SAMPLING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristalic Pump
___ Bailer (Teflon)
x Bailer (___ PVC or x disposable)
___ Bailer (Stainless Steel)
___ Dedicated ___

Other: ___

WELL INTEGRITY: GOOD | LOCK#: NP (PVC CAP

REMARKS: DO 1.08

SIGNATURE: | Page ___ of ___

BP ALAMEDA PORTFOLIO

WATER SAMPLE FIELD DATA SHEET

PROJECT #: 6148 | PURGED BY: RH | WELL I.D.: MW-4

CLIENT NAME: | SAMPLED BY: RH | SAMPLE I.D.:

LOCATION: 5131 Shattuck Avenue, Oakland | QA SAMPLES: MW-4

DATE PURGED: 8/4/09 NP | START (2400hr): 7:33 | END (2400hr): 7:42

DATE SAMPLED: 8/4/09 | SAMPLE TIME (2400hr): 7:40

SAMPLE TYPE: Groundwater x | Surface Water ___ | Treatment Effluent ___ | Other ___

CASING DIAMETER: 2" ___ (0.17) | 3" ___ (0.38) | 4" ✓ (0.67) | 5" ___ (1.02) | 6" ___ (1.50) | 8" ___ (2.60) | Other ___ ( )

Casing Volume: (gallons per foot)

DEPTH TO BOTTOM (feet) = 25.90 | CASING VOLUME (gal) =

DEPTH TO WATER (feet) = 16.57 | CALCULATED PURGE (gal) = NP

WATER COLUMN HEIGHT (feet) = 9.33 | ACTUAL PURGE (gal) =

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees C)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
8/4/09	7:37	NP	19.8	4758	7.18	clear	
		N/O PURGE					

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: 16.57 | SAMPLE TURBIDITY: clear

80% RECHARGE: ✓ YES ___ NO | ANALYSES: GW8

ODOR: NO | SAMPLE VESSEL / PRESERVATIVE: 6 VOAs / HCl

PURGING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump NA
___ Peristaltic Pump
___ Bailer (Teflon)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated ___

Other: ___

Pump Depth: NA

SAMPLING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristaltic Pump
___ Bailer (Teflon)
✓ Bailer (___ PVC or ✓ disposable)
___ Bailer (Stainless Steel)
___ Dedicated ___

Other: ___

WELL INTEGRITY: GOOD | LOCK#: NA (no cap)

REMARKS: DO 1.03

SIGNATURE: [signature] | Page ___ of ___

BP ALAMEDA PORTFOLIO

WATER SAMPLE FIELD DATA SHEET

PROJECT #: 6148 | PURGED BY: EM | WELL I.D.: MW-5

CLIENT NAME: | SAMPLED BY: EM | SAMPLE I.D.:

LOCATION: 5131 Shattuck Avenue, Oakland | QA SAMPLES: MW-5

DATE PURGED 8/4/09 ND | START (2400hr) 7:00 | END (2400hr) 7:09

DATE SAMPLED 8/4/09 | SAMPLE TIME (2400hr) 7:07

SAMPLE TYPE: Groundwater x | Surface Water ___ | Treatment Effluent ___ | Other ___

CASING DIAMETER: 2" ___ (0.17) | 3" ___ (0.38) | 4" 4 (0.67) | 5" ___ (1.02) | 6" ___ (1.50) | 8" ___ (2.60) | Other ___ ( )

Casing Volume: (gallons per foot)

DEPTH TO BOTTOM (feet) = 19.80 | CASING VOLUME (gal) =

DEPTH TO WATER (feet) = 17.01 | CALCULATED PURGE (gal) = NP

WATER COLUMN HEIGHT (feet) = 2.79 | ACTUAL PURGE (gal) =

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees C)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
8/4/09	7:04	NP	18.1	603	7.73	clear	
		NO PURGE					

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: 17.01 | SAMPLE TURBIDITY: clear

80% RECHARGE: X YES ___ NO | ANALYSES: 8260

ODOR: NO | SAMPLE VESSEL / PRESERVATIVE: 6 VOAs/HCL

PURGING EQUIPMENT

___ Bladder Pump | ___ Bailer (Teflon)
___ Centrifugal Pump | ___ Bailer (PVC)
___ Submersible Pump NA | ___ Bailer (Stainless Steel)
___ Peristalic Pump | ___ Dedicated ___

Other: ___

Pump Depth: NA

SAMPLING EQUIPMENT

___ Bladder Pump | ___ Bailer (Teflon)
___ Centrifugal Pump | X ~~Bailer~~ (___ PVC or X ~~disposable~~)
___ Submersible Pump | ___ Bailer (Stainless Steel)
___ Peristalic Pump | ___ Dedicated ___

Other: ___

WELL INTEGRITY: GOOD | LOCK#: NA (PVC CAP)

REMARKS: DO 1.49

SIGNATURE: | Page ___ of ___

BP ALAMEDA PORTFOLIO

WATER SAMPLE FIELD DATA SHEET

PROJECT #: 6148 | PURGED BY: CH | WELL I.D.: MW-6

CLIENT NAME: | SAMPLED BY: CH | SAMPLE I.D.:

LOCATION: 5131 Shattuck Avenue, Oakland | QA SAMPLES: MW-6

DATE PURGED 8/4/09 NP | START (2400hr) 7:05 | END (2400hr) 7:13

DATE SAMPLED 8/4/09 | SAMPLE TIME (2400hr) 7:11

SAMPLE TYPE: Groundwater x | Surface Water | Treatment Effluent | Other

CASING DIAMETER: 2" | 3" | 4" ✓ | 5" | 6" | 8" | Other

Casing Volume: (gallons per foot) (0.17) | (0.38) | (0.67) | (1.02) | (1.50) | (2.60) | ( )

DEPTH TO BOTTOM (feet) = 26.45 | CASING VOLUME (gal) =

DEPTH TO WATER (feet) = 14.77 | CALCULATED PURGE (gal) = NP

WATER COLUMN HEIGHT (feet) = 11.6 | ACTUAL PURGE (gal) =

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees C)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
8/4/09	7:08	NP	19.4	388.5	7.44	clear	
		NO		PURGE			

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: 14.77 | SAMPLE TURBIDITY: clear

80% RECHARGE: ✓ YES ___ NO | ANALYSES: 8260

ODOR: NO | SAMPLE VESSEL / PRESERVATIVE: 6 VOAs/HCl

PURGING EQUIPMENT

___ Bladder Pump | ___ Bailer (Teflon)

___ Centrifugal Pump | ___ Bailer (PVC)

___ Submersible Pump NA | ___ Bailer (Stainless Steel)

___ Peristaltic Pump | ___ Dedicated

Other:

Pump Depth: NA

SAMPLING EQUIPMENT

___ Bladder Pump | ___ Bailer (Teflon)

___ Centrifugal Pump | ✓ Bailer (___ PVC or ✓ disposable)

___ Submersible Pump | ___ Bailer (Stainless Steel)

___ Peristaltic Pump | ___ Dedicated

Other:

WELL INTEGRITY: Good | LOCK#: MASTER

REMARKS: DO 2.67

SIGNATURE: | Page ___ of ___

BP ALAMEDA PORTFOLIO

WATER SAMPLE FIELD DATA SHEET

PROJECT #: 6148 | PURGED BY: RH | WELL I.D.: MW-7

CLIENT NAME: | SAMPLED BY: RH | SAMPLE I.D.:

LOCATION: 5131 Shattuck Avenue, Oakland | QA SAMPLES: MW-7

DATE PURGED 8/4/09 NP | START (2400hr) 7:18 | END (2400hr) 7:27

DATE SAMPLED 8/4/09 | SAMPLE TIME (2400hr) 7:25

SAMPLE TYPE: Groundwater x | Surface Water ___ | Treatment Effluent ___ | Other ___

CASING DIAMETER: 2" ___ (0.17) | 3" ___ (0.38) | 4" / (0.67) | 5" ___ (1.02) | 6" ___ (1.50) | 8" ___ (2.60) | Other ___ ( )

Casing Volume: (gallons per foot)

DEPTH TO BOTTOM (feet) = 26.85 | CASING VOLUME (gal) =

DEPTH TO WATER (feet) = 15.67 | CALCULATED PURGE (gal) = NP

WATER COLUMN HEIGHT (feet) = 11.18 | ACTUAL PURGE (gal) =

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees C)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
8/4/09	7:22	NP	20.0	404.3	7.23	clear	
		NO PURGE					

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: 15.67 | SAMPLE TURBIDITY: clear

80% RECHARGE: / YES ___ NO | ANALYSES: SVOC

ODOR: NO | SAMPLE VESSEL / PRESERVATIVE: 4 VOAs HCL

PURGING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump NA
___ Peristaltic Pump
___ Bailer (Teflon)
___ Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated

Other:

Pump Depth: NA

SAMPLING EQUIPMENT

___ Bladder Pump
___ Centrifugal Pump
___ Submersible Pump
___ Peristaltic Pump
___ Bailer (Teflon)
/ Bailer (___ PVC or / disposable)
___ Bailer (Stainless Steel)
___ Dedicated

Other:

WELL INTEGRITY: GOOD | LOCK#: MASTER

REMARKS: DO 1.15

SIGNATURE: | Page ___ of ___

WELLHEAD OBSERVATION FORM

STRATUS ENVIRONMENTAL, INC.

Site Name/Number: 6148 *Date:* 3/4/09 *Technician:* ROBERTO

Well I.D.	Box in Good Condition? X = Yes Blank = No	Lock Missing? X = Yes (replaced) Blank = No	Water in Wellbox? X = Yes Blank = No	Water Level Relative to Cap? A = Above cap B = Below cap L = Level w/cap	Well Cap? I = Intact M = Missing or Compromised (replaced)	Bolts Missing? X = Yes Blank = No	Bolts Stripped? X = Yes Blank = No	Bolt Holes Stripped? X = Yes Blank = No	Cracked or Broken Lid? X = Yes Blank = No	Cracked or Broken Box? X = Yes Blank = No	Grout Level more than 1ft below TOC? X = Yes Blank = No	Additional Comments (such as missing lid, concrete needs replacement, or other - explain)
MW-1	X	NA	—	—	I	—	—	—	—	—	—	
MW-2	X	NA	—	—	I	—	—	—	—	—	—	
MW-3	X	NA	—	—	I	—	—	—	—	—	—	
MW-4	X	NA	—	—	I	—	—	—	—	—	—	
MW-5	X	NA	X	A	I	—	—	—	—	—	—	
MW-6	X	—	—	—	I	—	—	—	—	—	—	
MW-7	X	—	—	—	I	—	—	—	—	—	—	

DRUM INVENTORY

Drums on site? (Yes) No (circle)

Type and # 2 Steel 2 Plastic: —

Note whether drums are full or empty, solids or liquids:

1 EMPTY / 1 ½ FULL WITH TOXIC ABSORBENT & CONTAM

Drum label info (description, date, contact info):

NONE

GENERAL SITE CONDITIONS

Make notes on housekeeping conditions (such as trash around remediation system enclosure/compound, bent or missing bollards, signs missing from compound fences, graffiti on compound, etc.)

(updated 3-28-08, SS)

Atlantic Richfield Company
A BP affiliated company

Laboratory Management Program LaMP Chain of Custody Record

BP/ARC Project Name: BP 6148 | Req Due Date (mm/dd/yy): 14 Day TAT | Rush TAT: Yes ___ No X

BP/ARC Facility No: 6148 | Lab Work Order Number:

Lab Name: CalScience	BP/ARC Facility Address: 5131 Shattuck Ave	Consultant/Contractor: Stratus Environmental Inc
Lab Address: 7440 Lincoln Way, Garden Grove, CA 92841	City, State, ZIP Code: Oakland, CA	Consultant/Contractor Project No:
Lab PM: Richard Villafania	Lead Regulatory Agency: Alameda	Address: 3330 Cameron Park Drive, #550, Cameron Park, CA 95682
Lab Phone: 714-895-5494 Fax: 714-895-7501	California Global ID No.: T0600100103	Consultant/Contractor PM: Jay Johnson
Lab Shipping Accnt:	Enfos Proposal No: 000V0-0002	Phone: 530-676-6000 Fax: 530-676-6005
Lab Bottle Order No:	Accounting Mode: Provision X OOC-BU ___ OOC-RM ___	Email EDD To: Chuff@stratusinc.net
Other Info:	Stage: Operate Activity: Monitor	Invoice To: BP/ARC X Contractor ___

BP/ARC EBM: Paul Supple
EBM Phone: (925) 275-3801 FAX (925) 275-3815
EBM Email: paul.supple@bp.com

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	Matrix:	No. Containers / Preservative: Total Number of Containers	Unpreserved	H_2SO_4	HNO_3	HCl	Methanol		Requested Analyses: GRO by 8015M	BTEX/5 FO* by 8260B	Ethanol by 8260B	EDB by 8260B	1,2-DCA by 8260B						Report Type & QC Level
	MW-1	3/4/09	8:25		X			6				X			X	X	X	X	X						
	MW-2	"	7:55		X			6				X			X	X	X	X	X						
	MW-3	"	8:11		X			6				X			X	X	X	X	X						
	MW-4	"	7:40		X			6				X			X	X	X	X	X						
	MW-5	"	7:07		X			6				X			X	X	X	X	X						
	MW-6	"	7:11		X			6				X			X	X	X	X	X						
	MW-7	"	7:25		X			6				X			X	X	X	X	X						
	TB-6148- 03042009	"	5:00		X			3				X													ON HOLD

Standard X
Full Data Package ___

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

Comments

*Oxy = MTBE, TAME, ETBE, DIPE, TBA

Sampler's Name: ROBERTO HERNANDEZ	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: Stratus Environmental Inc.	[signature] / Stratus ENV	3/4/09	12:00			
Shipment Method: Ship Date:						
Shipment Tracking No:						

Special Instructions: TB Sample ON HOLD! Cc results to rmiller@broadbentinc.com; bpalameda@secor.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

Calscience Environmental Laboratories, Inc.

August 17, 2009

Jay Johnson
Stratus Environmental, inc.
3330 Cameron Park Drive, Suite 550
Cameron Park, CA 95682-8861

Subject: **Calscience Work Order No.: 09-08-0455**
Client Reference: BP 6148

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 8/6/2009 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

for

Calscience Environmental
Laboratories, Inc.
Richard Villafania
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

Stratus Environmental, inc.	Date Received:	08/06/09
3330 Cameron Park Drive, Suite 550	Work Order No:	09-08-0455
Cameron Park, CA 95682-8861	Preparation:	EPA 5030B
	Method:	EPA 8015B (M)

Project: BP 6148

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-1	**09-08-0455-1-E**	**08/04/09 08:25**	**Aqueous**	**GC 11**	**08/08/09**	**08/09/09 06:09**	**090808B01**

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			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	**09-08-0455-2-E**	**08/04/09 07:55**	**Aqueous**	**GC 11**	**08/08/09**	**08/09/09 06:43**	**090808B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	4300	1000	20		ug/L
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
1,4-Bromofluorobenzene	82	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-3	**09-08-0455-3-E**	**08/04/09 08:11**	**Aqueous**	**GC 11**	**08/08/09**	**08/09/09 07:17**	**090808B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	230	50	1		ug/L
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
1,4-Bromofluorobenzene	85	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-4	**09-08-0455-4-E**	**08/04/09 07:40**	**Aqueous**	**GC 11**	**08/08/09**	**08/09/09 07:51**	**090808B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
1,4-Bromofluorobenzene	77	38-134			

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

Calscience Environmental Laboratories, Inc.

Analytical Report

Stratus Environmental, inc.	Date Received:	08/06/09
3330 Cameron Park Drive, Suite 550	Work Order No:	09-08-0455
Cameron Park, CA 95682-8861	Preparation:	EPA 5030B
	Method:	EPA 8015B (M)

Project: BP 6148

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-5	**09-08-0455-5-E**	**08/04/09 07:07**	**Aqueous**	**GC 11**	**08/08/09**	**08/09/09 08:24**	**090808B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	160	50	1		ug/L
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
1,4-Bromofluorobenzene	82	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-6	**09-08-0455-6-D**	**08/04/09 07:11**	**Aqueous**	**GC 29**	**08/11/09**	**08/11/09 17:25**	**090810B02**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
1,4-Bromofluorobenzene	87	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-7	**09-08-0455-7-D**	**08/04/09 07:25**	**Aqueous**	**GC 29**	**08/11/09**	**08/11/09 17:58**	**090810B02**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
1,4-Bromofluorobenzene	89	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-695-634**	**N/A**	**Aqueous**	**GC 11**	**08/08/09**	**08/08/09 18:22**	**090808B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
1,4-Bromofluorobenzene	77	38-134			

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

Calscience Environmental Laboratories, Inc.

Analytical Report

Stratus Environmental, inc.	Date Received:	08/06/09
3330 Cameron Park Drive, Suite 550	Work Order No:	09-08-0455
Cameron Park, CA 95682-8861	Preparation:	EPA 5030B
	Method:	EPA 8015B (M)

Project: BP 6148

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-695-636**	**N/A**	**Aqueous**	**GC 29**	**08/10/09**	**08/11/09 02:18**	**090810B02**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
1,4-Bromofluorobenzene	88	38-134			

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

Calscience Environmental Laboratories, Inc.

Analytical Report

Stratus Environmental, inc.
3330 Cameron Park Drive, Suite 550
Cameron Park, CA 95682-8861

Date Received: 08/06/09
Work Order No: 09-08-0455
Preparation: EPA 5030B
Method: EPA 8260B
Units: ug/L

Project: BP 6148

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-1	**09-08-0455-1-B**	**08/04/09 08:25**	**Aqueous**	**GC/MS BB**	**08/12/09**	**08/12/09 13:53**	**090812L01**

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	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	111	80-128			Dibromofluoromethane	112	80-127		
Toluene-d8	96	80-120			1,4-Bromofluorobenzene	89	68-120		

MW-2	09-08-0455-2-B	08/04/09 07:55	Aqueous	GC/MS BB	08/12/09	08/12/09 19:11	090812L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	61	2.0	4		Methyl-t-Butyl Ether (MTBE)	ND	2.0	4	
1,2-Dibromoethane	ND	2.0	4		Tert-Butyl Alcohol (TBA)	ND	40	4	
1,2-Dichloroethane	ND	2.0	4		Diisopropyl Ether (DIPE)	ND	2.0	4	
Ethylbenzene	250	5.0	10		Ethyl-t-Butyl Ether (ETBE)	ND	2.0	4	
Toluene	3.9	2.0	4		Tert-Amyl-Methyl Ether (TAME)	ND	2.0	4	
Xylenes (total)	22	2.0	4		Ethanol	ND	1200	4	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	124	80-128			Dibromofluoromethane	123	80-127		
Toluene-d8	98	80-120			1,4-Bromofluorobenzene	97	68-120		

MW-3	09-08-0455-3-B	08/04/09 08:11	Aqueous	GC/MS BB	08/12/09	08/12/09 19:43	090812L01

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	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	110	80-128			Dibromofluoromethane	112	80-127		
Toluene-d8	98	80-120			1,4-Bromofluorobenzene	96	68-120		

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

Calscience Environmental Laboratories, Inc.

Analytical Report

Stratus Environmental, inc.
3330 Cameron Park Drive, Suite 550
Cameron Park, CA 95682-8861

Date Received: 08/06/09
Work Order No: 09-08-0455
Preparation: EPA 5030B
Method: EPA 8260B
Units: ug/L

Project: BP 6148

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-4	**09-08-0455-4-B**	**08/04/09 07:40**	**Aqueous**	**GC/MS BB**	**08/12/09**	**08/12/09 20:14**	**090812L01**

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	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	114	80-128			Dibromofluoromethane	114	80-127		
Toluene-d8	100	80-120			1,4-Bromofluorobenzene	84	68-120		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-5	**09-08-0455-5-B**	**08/04/09 07:07**	**Aqueous**	**GC/MS BB**	**08/12/09**	**08/12/09 20:46**	**090812L01**

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	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	113	80-128			Dibromofluoromethane	115	80-127		
Toluene-d8	99	80-120			1,4-Bromofluorobenzene	97	68-120		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-6	**09-08-0455-6-B**	**08/04/09 07:11**	**Aqueous**	**GC/MS BB**	**08/12/09**	**08/12/09 21:18**	**090812L01**

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	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	115	80-128			Dibromofluoromethane	114	80-127		
Toluene-d8	100	80-120			1,4-Bromofluorobenzene	94	68-120		

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

Calscience Environmental Laboratories, Inc.

Analytical Report

Stratus Environmental, inc.	Date Received:	08/06/09
3330 Cameron Park Drive, Suite 550	Work Order No:	09-08-0455
Cameron Park, CA 95682-8861	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	ug/L
Project: BP 6148		Page 3 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-7	**09-08-0455-7-B**	**08/04/09 07:25**	**Aqueous**	**GC/MS BB**	**08/12/09**	**08/12/09 21:49**	**090812L01**

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	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	119	80-128			Dibromofluoromethane	119	80-127		
Toluene-d8	101	80-120			1,4-Bromofluorobenzene	81	68-120		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-703-1,035**	**N/A**	**Aqueous**	**GC/MS BB**	**08/12/09**	**08/12/09 13:22**	**090812L01**

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	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	102	80-128			Dibromofluoromethane	102	80-127		
Toluene-d8	95	80-120			1,4-Bromofluorobenzene	90	68-120		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-703-1,037**	**N/A**	**Aqueous**	**GC/MS BB**	**08/13/09**	**08/13/09 13:36**	**090813L01**

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	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	107	80-128			Dibromofluoromethane	110	80-127		
Toluene-d8	92	80-120			1,4-Bromofluorobenzene	89	68-120		

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

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Stratus Environmental, inc.		Date Received:	08/06/09
3330 Cameron Park Drive, Suite 550		Work Order No:	09-08-0455
Cameron Park, CA 95682-8861		Preparation:	EPA 5030B
		Method:	EPA 8015B (M)

Project BP 6148

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
09-08-0456-1	**Aqueous**	**GC 11**	**08/08/09**	**08/08/09**	**090808S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	93	95	38-134	3	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Stratus Environmental, inc.	Date Received: 08/06/09
3330 Cameron Park Drive, Suite 550	Work Order No: 09-08-0455
Cameron Park, CA 95682-8861	Preparation: EPA 5030B
	Method: EPA 8015B (M)

Project BP 6148

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
09-08-0450-7	**Aqueous**	**GC 29**	**08/10/09**	**08/11/09**	**090810S02**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	87	85	38-134	1	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Stratus Environmental, inc.	Date Received:	08/06/09
3330 Cameron Park Drive, Suite 550	Work Order No:	09-08-0455
Cameron Park, CA 95682-8861	Preparation:	EPA 5030B
	Method:	EPA 8260B

Project BP 6148

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
MW-1	**Aqueous**	**GC/MS BB**	**08/12/09**	**08/12/09**	**090812S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	103	101	76-124	1	0-20	
Carbon Tetrachloride	98	101	74-134	3	0-20	
Chlorobenzene	95	93	80-120	2	0-20	
1,2-Dibromoethane	92	92	80-120	1	0-20	
1,2-Dichlorobenzene	95	95	80-120	0	0-20	
1,1-Dichloroethene	101	99	73-127	2	0-20	
Ethylbenzene	91	89	78-126	3	0-20	
Toluene	91	93	80-120	2	0-20	
Trichloroethene	102	100	77-120	2	0-20	
Vinyl Chloride	103	116	72-126	12	0-20	
Methyl-t-Butyl Ether (MTBE)	92	95	67-121	3	0-49	
Tert-Butyl Alcohol (TBA)	93	101	36-162	7	0-30	
Diisopropyl Ether (DIPE)	96	98	60-138	2	0-45	
Ethyl-t-Butyl Ether (ETBE)	91	92	69-123	0	0-30	
Tert-Amyl-Methyl Ether (TAME)	82	82	65-120	1	0-20	
Ethanol	110	123	30-180	11	0-72	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Stratus Environmental, inc.	Date Received:	08/06/09
3330 Cameron Park Drive, Suite 550	Work Order No:	09-08-0455
Cameron Park, CA 95682-8861	Preparation:	EPA 5030B
	Method:	EPA 8260B

Project BP 6148

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
09-08-0454-2	**Aqueous**	**GC/MS BB**	**08/13/09**	**08/13/09**	**090813S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	109	111	76-124	1	0-20	
Carbon Tetrachloride	112	117	74-134	4	0-20	
Chlorobenzene	105	102	80-120	3	0-20	
1,2-Dibromoethane	100	105	80-120	5	0-20	
1,2-Dichlorobenzene	99	101	80-120	2	0-20	
1,1-Dichloroethene	102	109	73-127	7	0-20	
Ethylbenzene	92	92	78-126	1	0-20	
Toluene	97	103	80-120	6	0-20	
Trichloroethene	104	107	77-120	3	0-20	
Vinyl Chloride	91	95	72-126	4	0-20	
Methyl-t-Butyl Ether (MTBE)	84	95	67-121	12	0-49	
Tert-Butyl Alcohol (TBA)	105	101	36-162	4	0-30	
Diisopropyl Ether (DIPE)	89	95	60-138	6	0-45	
Ethyl-t-Butyl Ether (ETBE)	86	92	69-123	7	0-30	
Tert-Amyl-Methyl Ether (TAME)	81	88	65-120	8	0-20	
Ethanol	111	119	30-180	7	0-72	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Stratus Environmental, inc.		Date Received:	N/A
3330 Cameron Park Drive, Suite 550		Work Order No:	09-08-0455
Cameron Park, CA 95682-8861		Preparation:	EPA 5030B
		Method:	EPA 8015B (M)

Project: BP 6148

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-695-634	**Aqueous**	**GC 11**	**08/08/09**	**08/08/09**	**090808B01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	97	98	78-120	1	0-20	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Stratus Environmental, inc.		Date Received:	N/A
3330 Cameron Park Drive, Suite 550		Work Order No:	09-08-0455
Cameron Park, CA 95682-8861		Preparation:	EPA 5030B
		Method:	EPA 8015B (M)

Project: BP 6148

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-695-636	**Aqueous**	**GC 29**	**08/10/09**	**08/11/09**	**090810B02**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	87	88	78-120	1	0-20	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Stratus Environmental, inc.		Date Received:	N/A
3330 Cameron Park Drive, Suite 550		Work Order No:	09-08-0455
Cameron Park, CA 95682-8861		Preparation:	EPA 5030B
		Method:	EPA 8260B

Project: BP 6148

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-703-1,035	Aqueous	GC/MS BB	08/12/09	08/12/09	090812L01

Parameter	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Benzene	99	100	80-120	73-127	1	0-20	
Carbon Tetrachloride	97	100	74-134	64-144	3	0-20	
Chlorobenzene	92	92	80-120	73-127	0	0-20	
1,2-Dibromoethane	88	94	79-121	72-128	6	0-20	
1,2-Dichlorobenzene	92	96	80-120	73-127	3	0-20	
1,1-Dichloroethene	98	100	78-126	70-134	2	0-28	
Ethylbenzene	89	90	80-120	73-127	1	0-20	
Toluene	92	94	80-120	73-127	1	0-20	
Trichloroethene	98	98	79-127	71-135	0	0-20	
Vinyl Chloride	110	105	72-132	62-142	4	0-20	
Methyl-t-Butyl Ether (MTBE)	83	88	69-123	60-132	5	0-20	
Tert-Butyl Alcohol (TBA)	101	95	63-123	53-133	5	0-20	
Diisopropyl Ether (DIPE)	91	93	59-137	46-150	2	0-37	
Ethyl-t-Butyl Ether (ETBE)	87	90	69-123	60-132	4	0-20	
Tert-Amyl-Methyl Ether (TAME)	78	81	70-120	62-128	4	0-20	
Ethanol	118	99	28-160	6-182	18	0-57	

Total number of LCS compounds : 16
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Stratus Environmental, inc.		Date Received:	N/A
3330 Cameron Park Drive, Suite 550		Work Order No:	09-08-0455
Cameron Park, CA 95682-8861		Preparation:	EPA 5030B
		Method:	EPA 8260B

Project: BP 6148

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-703-1,037	**Aqueous**	**GC/MS BB**	**08/13/09**	**08/13/09**	**090813L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	109	110	80-120	73-127	1	0-20	
Carbon Tetrachloride	112	113	74-134	64-144	1	0-20	
Chlorobenzene	103	103	80-120	73-127	0	0-20	
1,2-Dibromoethane	99	105	79-121	72-128	6	0-20	
1,2-Dichlorobenzene	100	102	80-120	73-127	2	0-20	
1,1-Dichloroethene	109	111	78-126	70-134	2	0-28	
Ethylbenzene	97	98	80-120	73-127	1	0-20	
Toluene	100	102	80-120	73-127	2	0-20	
Trichloroethene	109	111	79-127	71-135	2	0-20	
Vinyl Chloride	99	103	72-132	62-142	4	0-20	
Methyl-t-Butyl Ether (MTBE)	86	89	69-123	60-132	3	0-20	
Tert-Butyl Alcohol (TBA)	104	103	63-123	53-133	1	0-20	
Diisopropyl Ether (DIPE)	90	101	59-137	46-150	11	0-37	
Ethyl-t-Butyl Ether (ETBE)	86	95	69-123	60-132	10	0-20	
Tert-Amyl-Methyl Ether (TAME)	84	86	70-120	62-128	2	0-20	
Ethanol	113	126	28-160	6-182	11	0-57	

Total number of LCS compounds : 16
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 09-08-0455

Qualifier	Definition
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.
EY	Result exceeds normal dynamic range; reported as a min est.
GR	Internal standard recovery is outside method recovery limit.
IB	CCV recovery abovelimit; analyte not detected.
IH	Calibrtn. verif. recov. below method CL for this analyte.
IJ	Calibrtn. verif. recov. above method CL for this analyte.
J,DX	J=EPA Flag -Estimated value; DX= Value < lowest standard (MQL), but > than MDL.
LA	Confirmatory analysis was past holding time.
LG,AY	LG= Surrogate recovery below the acceptance limit. AY= Matrix interference suspected.
LH,AY	LH= Surrogate recovery above the acceptance limit. AY= Matrix interference suspected.
LM,AY	LM= MS and/or MSD above acceptance limits. See Blank Spike (LCS). AY= Matrix interference suspected.
LN,AY	LN= MS and/or MSD below acceptance limits. See Blank Spike (LCS). AY= Matrix interference suspected.
LQ	LCS recovery above method control limits.

Work Order Number: 09-08-0455

Qualifier	Definition
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.
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.

Atlantic Richfield Company
A BP affiliated company

Laboratory Management Program LaMP Chain of Custody Record

0455

BP/ARC Project Name: BP 6148 | Req Due Date (mm/dd/yy): 14 Day TAT | Rush TAT: Yes ___ No X

BP/ARC Facility No: 6148 | Lab Work Order Number:

Lab Name:	CalScience	BP/ARC Facility Address:	5131 Shattuck Ave	Consultant/Contractor:	Stratus Environmental Inc.
Lab Address:	7440 Lincoln Way, Garden Grove, CA 92841	City, State, ZIP Code:	Oakland, CA	Consultant/Contractor Project No:	
Lab PM:	Richard Villafania	Lead Regulatory Agency:	Alameda	Address:	3330 Cameron Park Drive, #550, Cameron Park, CA 95682
Lab Phone:	714-895-5494 Fax: 714-895-7501	California Global ID No.:	T0600100103	Consultant/Contractor PM:	Jay Johnson
Lab Shipping Accnt:		Enfos Proposal No:	000V0-0002	Phone:	530-676-6000 Fax: 530-676-6005
Lab Bottle Order No:		Accounting Mode:	Provision X OOC-BU ___ OOC-RM ___	Email EDD To:	Chuff@stratusinc.net
Other Info:		Stage: Operate	Activity: Monitor	Invoice To:	BP/ARC X Contractor ___
BP/ARC EBM:	Paul Supple				
EBM Phone:	(925) 275-3801 FAX (925) 275-3815				
EBM Email:	paul.supple@bp.com				

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	No. Containers / Preservative: Total Number of Containers	Unpreserved	H_2SO_4	HNO_3	HCl	Methanol	GRO by 8015M	BTEX/5 FO* by 8260B	Ethanol by 8260B	EDB by 8260B	1,2-DCA by 8260B	Report Type & QC Level
1	MW-1	8/4/09	8:25		X		6				X		X	X	X	X	X	
2	MW-2		7:55		X		6				X		X	X	X	X	X	
3	MW-3		8:11		X		6				X		X	X	X	X	X	
4	MW-4		7:40		X		6				X		X	X	X	X	X	
5	MW-5		7:07		X		6				X		X	X	X	X	X	
6	MW-6		7:11		X		6				X		X	X	X	X	X	
7	MW-7		7:25		X		6				X		X	X	X	X	X	
8	TB-6148- 08042009		5:00		X		3				X							ON HOLD

Report Type & QC Level: Standard X; Full Data Package ___

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

Comments: *Oxy = MTBE, TAME, ETBE, DIPE, TBA

Sampler's Name:	ROBERTO HEIMLICH	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company:	Stratus Environmental Inc.	[signature] / DOUGLAS. ENV	8/4/09	12:00			
Shipment Method:	Ship Date:						
Shipment Tracking No:	105528631				[signature]	8/6/09	1030

Special Instructions: ...esults to rmiller@broadbentinc.com; bpalameda@secor.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

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 09-08-0455

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: Stratus

DATE: 08/06/09

TEMPERATURE: (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature 2.3 °C - 0.2 °C (CF) = 2.1 °C ☑ 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 ☐ Metals Only ☐ PCBs Only Initial: JP

CUSTODY SEALS INTACT:

☑ Cooler ☐_____ ☐ No (Not Intact) ☐ Not Present ☐ N/A Initial: JP

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Initial: JP

SAMPLE CONDITION:	Yes	No	N/A
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.			
☐ COC not relinquished. ☐ No date relinquished. ☐ No time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Correct containers and volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
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 ☑VOAh ☐VOAna_2 ☐125AGB ☐125AGBh ☐125AGBp ☐1AGB ☐1AGBna_2 ☐1AGBs

☐500AGB ☐500AGJ ☐500AGJs ☐250AGB ☐250CGB ☐250CGBs ☐1PB ☐500PB ☐500PBna

☐250PB ☐250PBn ☐125PB ☐125PBznna ☐100PJ ☐100PJna_2 ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Summa® ☐_____ **Other:** ☐_____ **Checked/Labeled by:** SO

Container: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelop **Reviewed by:** W.Sc 8/6/09

Preservative: h: HCL n: HNO3 na_2:$Na_2S_2O_3$ Na: NaOH p: H_3PO_4 s: H_2SO_4 znna: $ZnAc_2$+NaOH f: Field-filtered **Scanned by:** _____

ATTACHMENT

FIELD PROCEDURES FOR GROUNDWATER SAMPLING

The sampling procedures for groundwater monitoring events are contained in this appendix.

Groundwater and Liquid-Phase Petroleum Hydrocarbon Depth Assessment

Prior to measuring the depth to liquid in the well, the well caps are removed and the liquid level allowed to stabilize. A water/hydrocarbon interface probe is used to assess the liquid-phase petroleum hydrocarbon (LPH) thickness, if present, and a water level indicator is used to measure the groundwater depth in monitoring wells that do not contain LPH. Depth to groundwater or LPH is measured from a datum point at the top of each monitoring well casing. The datum point is typically a notch cut in the north side of the casing edge. If a water level indicator is used, the tip is subjectively analyzed for hydrocarbon sheen.

Subjective Analysis of Groundwater

Prior to purging, a water sample is collected from the monitoring well for subjective assessment. The sample is retrieved by gently lowering a clean, disposable bailer to approximately one-half the bailer length past the air/liquid interface. The bailer is then retrieved, and the sample contained within the bailer is examined for floating LPH and the appearance of a LPH sheen.

Monitoring Well Sampling

In many cases, determining whether to purge or not to purge wells prior to sample collection is made in the field and is often based on depth to water relative to the screen interval of the well. Site-specific field data sheets present details associated with the purge method and equipment used.

Monitoring wells, when purged, use a pump or bailer until pH, temperature, and conductivity of the purge water has stabilized and a minimum of three well volumes of water has been removed. Field measuring equipment is calibrated and maintained according to the manufacturer's instructions. If three well volumes cannot be removed in one half hour's time the well is allowed to recharge to 80% of original level. After recharging, a groundwater sample is then collected from each of the wells using disposable bailers.

A Teflon bailer, electric submersible or bladder pump will be the only equipment used for well sampling. When samples for volatile organic analysis are being collected, the pump flow will be regulated at approximately 100 milliliters per minute to minimize pump effluent turbulence and aeration. Glass bottles of at least 40-milliliters volume and fitted with Teflon-lined septa will be used in sampling for volatile organics. These

bottles will be filled completely to prevent air accumulation in the bottle. A positive meniscus forms when the bottle is completely full. A convex Teflon septum will be placed over the positive meniscus to eliminate air. After the bottle is capped, it is inverted and tapped to verify that it contains no air bubbles. The sample containers for other parameters will be filled, filtered as required, and capped. Glass and plastic bottles used by Stratus to collect groundwater samples are supplied by the laboratory.

Groundwater Sample Labeling and Preservation

Samples are collected in appropriate containers supplied by the laboratory. All required chemical preservation is added to the bottles prior to delivery to Stratus. Sample label information includes a unique sample identification number, job identification number, date, and time. After labeling, all groundwater samples are placed in a Ziploc® type bag and placed in an ice chest cooled to approximately 4° Celsius. Upon arriving at Stratus' office the samples are transferred to a locked refrigerator cooled to approximately 4° Celsius. Chemical preservation is controlled by the required analysis and is noted on the chain-of-custody form. Trip and temperature blanks supplied by the laboratory accompany the groundwater sample containers and groundwater samples.

Sample Identification and Chain-of-Custody Procedures

Sample identification and chain-of-custody procedures document sample possession from the time of collection to ultimate disposal. Each sample container submitted for analysis has a label affixed to identify the job number, sampler, date and time of sample collection, and a sample number unique to that sample. This information, in addition to a description of the sample, field measurements made, sampling methodology, names of on-site personnel, and any other pertinent field observations, is recorded in the field records. The samples are analyzed by a California-certified laboratory.

A chain-of-custody form is used to record possession of the sample from time of collection to its arrival at the laboratory. When the samples are shipped, the person in custody of them relinquishes the samples by signing the chain-of-custody form and noting the time. The sample-control officer at the laboratory verifies sample integrity and confirms that the samples are collected in the proper containers, preserved correctly, and contain adequate volumes for analysis. These conditions are noted on a Laboratory Sample Receipt Checklist that becomes part of the laboratory report upon request.

If these conditions are met, each sample is assigned a unique log number for identification throughout analysis and reporting. The log number is recorded on the chain-of-custody form and in the legally-required log book maintained by the laboratory. The sample description, date received, client's name, and other relevant information is also recorded.

Equipment Cleaning

All reusable sampling equipments are cleaned using phosphate-free detergents and rinsed with de-ionized water.

APPENDIX B

HISTORICAL GROUND-WATER MONITORING DATA

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 01-26-95
Project Number: 0805-135.01

Well Designation	Water Level Field Date	TOC Elevation	Depth to Water	Ground-Water Elevation	Floating Product Thickness	Ground-Water Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
MW-1	12-23-91	108.03	18.26	89.77	Sheen	NR	NR
MW-1	01-07-92	108.03	17.44	90.59	Sheen	NR	NR
MW-1	01-19-92	108.03	17.17	90.86	ND	NR	NR
MW-1	02-19-92	108.03	16.52	91.51	ND	NR	NR
MW-1	03-18-92	108.03	16.81	91.22	ND	NR	NR
MW-1	04-20-92	108.03	17.56	90.47	ND	NR	NR
MW-1	05-15-92	108.03	17.96	90.07	ND	NR	NR
MW-1	06-12-92	108.03	18.16	89.87	ND	NR	NR
MW-1	07-15-92	108.03	18.32	89.71	ND	NR	NR
MW-1	08-07-92	108.03	18.34	89.69	ND	NR	NR
MW-1	09-14-92	108.03	18.46	89.57	ND	NR	NR
MW-1	10-07-92	108.03	18.52	89.51	ND	NR	NR
MW-1	11-12-92	108.03	18.11	89.92	ND	NR	NR
MW-1	12-09-92	108.03	17.10	90.93	ND	NR	NR
MW-1	01-21-93	108.03	15.44	92.59	ND	NR	NR
MW-1	02-22-93	108.03	16.54	91.49	ND	NR	NR
MW-1	03-25-93	108.03	17.05	90.98	ND	NR	NR
MW-1	04-14-93	108.03	17.45	90.58	ND	NR	NR
MW-1	05-22-93	108.03	17.78	90.25	ND	NR	NR
MW-1	06-17-93	108.03	17.90	90.13	ND	NR	NR
MW-1	07-27-93	108.03	18.10	89.93	ND	NR	NR
MW-1	08-29-93	108.03	18.31	89.72	ND	NR	NR
MW-1	09-30-93	108.03	18.24	89.79	ND	NR	NR
MW-1	11-16-93	108.03	18.17	89.86	ND	NR	NR
MW-1	02-02-94	108.03	17.31	90.72	ND	NR	NR
MW-1	04-29-94	108.03	17.31	90.72	ND	NR	NR
MW-1	08-02-94	108.03	17.95	90.08	ND	SW	0.017
MW-1	11-16-94	108.03	17.04	90.99	ND	SW	0.02

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 01-26-95
Project Number: 0805-135.01

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Floating Product Thickness feet	Ground-Water Flow Direction MWN	Hydraulic Gradient foot/foot
MW-2	12-23-91	107.43	17.98	89.45	Sheen	NR	NR
MW-2	01-07-92	107.43	17.15	90.28	Sheen	NR	NR
MW-2	01-19-92	107.43	17.47	89.96	ND	NR	NR
MW-2	02-19-92	107.43	16.28	91.15	ND	NR	NR
MW-2	03-18-92	107.43	16.52	90.91	ND	NR	NR
MW-2	04-20-92	107.43	17.27	90.16	ND	NR	NR
MW-2	05-15-92	107.43	17.62	89.81	ND	NR	NR
MW-2	06-12-92	107.43	^17.63	^89.80	0.05	NR	NR
MW-2	07-15-92	107.43	17.65	89.78	ND	NR	NR
MW-2	08-07-92	107.43	17.80	89.63	ND	NR	NR
MW-2	09-14-92	107.43	^18.09	^89.34	0.55	NR	NR
MW-2	10-07-92	107.43	^18.55	^88.88	0.31	NR	NR
MW-2	11-12-92	107.43	17.95	89.48	Sheen	NR	NR
MW-2	12-09-92	107.43	^16.85	^90.58	0.02	NR	NR
MW-2	01-21-93	107.43	^15.08	^92.35	0.01	NR	NR
MW-2	02-22-93	107.43	^16.20	^91.23	0.01	NR	NR
MW-2	03-25-93	107.43	^16.72	^90.71	0.01	NR	NR
MW-2	04-14-93	107.43	^17.15	^90.28	ND	NR	NR
MW-2	05-22-93	107.43	^17.44	^89.99	ND	NR	NR
MW-2	06-17-93	107.43	17.57	89.86	ND	NR	NR
MW-2	07-27-93	107.43	^17.71	^89.72	ND	NR	NR
MW-2	08-29-93	107.43	^18.20	^89.23	ND	NR	NR
MW-2	09-30-93	107.43	^18.14	^89.29	ND	NR	NR
MW-2	11-16-93	107.43	^17.85	^89.58	ND	NR	NR
MW-2	02-02-94	107.43	16.96	90.47	ND	NR	NR
MW-2	04-29-94	107.43	16.95	90.48	ND	NR	NR
MW-2	08-02-94	107.43	17.59	89.84	ND	SW	0.017
MW-2	11-16-94	107.43	16.73	90.70	ND	SW	0.02

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 01-26-95
Project Number: 0805-135.01

Well Designation	Water Level Field Date	TOC Elevation	Depth to Water	Ground-Water Elevation	Floating Product Thickness	Ground-Water Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
MW-3	12-23-91	107.77	18.14	89.63	Sheen	NR	NR
MW-3	01-07-92	107.77	17.26	90.51	Sheen	NR	NR
MW-3	01-19-92	107.77	17.63	90.14	ND	NR	NR
MW-3	02-19-92	107.77	16.34	91.43	ND	NR	NR
MW-3	03-18-92	107.77	16.62	91.15	ND	NR	NR
MW-3	04-20-92	107.77	17.38	90.39	ND	NR	NR
MW-3	05-15-92	107.77	17.80	89.97	ND	NR	NR
MW-3	06-12-92	107.77	18.01	89.76	ND	NR	NR
MW-3	07-15-92	107.77	18.17	89.60	ND	NR	NR
MW-3	08-07-92	107.77	18.23	89.54	ND	NR	NR
MW-3	09-14-92	107.77	18.36	89.41	ND	NR	NR
MW-3	10-07-92	107.77	18.90	88.87	Sheen	NR	NR
MW-3	11-12-92	107.77	18.00	89.77	Sheen	NR	NR
MW-3	12-09-92	107.77	16.85	90.92	Droplets	NR	NR
MW-3	01-21-93	107.77	15.24	92.53	ND	NR	NR
MW-3	02-22-93	107.77	16.36	91.41	ND	NR	NR
MW-3	03-25-93	107.77	16.89	90.88	ND	NR	NR
MW-3	04-14-93	107.77	17.29	90.48	ND	NR	NR
MW-3	05-22-93	107.77	17.64	90.13	ND	NR	NR
MW-3	06-17-93	107.77	17.75	90.02	ND	NR	NR
MW-3	07-27-93	107.77	17.98	89.79	ND	NR	NR
MW-3	08-29-93	107.77	18.14	89.63	ND	NR	NR
MW-3	09-30-93	107.77	18.14	89.63	ND	NR	NR
MW-3	11-16-93	107.77	18.30	89.47	ND	NR	NR
MW-3	02-02-94	107.77	17.16	90.61	ND	NR	NR
MW-3	04-29-94	107.77	17.14	90.63	ND	NR	NR
MW-3	08-02-94	107.77	17.81	89.96	ND	SW	0.017
MW-3	11-16-94	107.77	16.91	90.86	ND	SW	0.02

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Well Designation	Water Level Field Date	TOC Elevation	Depth to Water	Ground-Water Elevation	Floating Product Thickness	Ground-Water Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
MW-4	11-12-92	106.58	16.08	90.50	ND	NR	NR
MW-4	12-09-92	106.58	15.00	91.58	ND	NR	NR
MW-4	01-21-93	106.58	13.35	93.23	ND	NR	NR
MW-4	02-22-93	106.58	14.48	92.10	ND	NR	NR
MW-4	03-25-93	106.58	15.06	91.52	ND	NR	NR
MW-4	04-14-93	106.58	15.50	91.08	ND	NR	NR
MW-4	05-22-93	106.58	15.79	90.79	ND	NR	NR
MW-4	06-17-93	106.58	14.90	91.68	ND	NR	NR
MW-4	07-27-93	106.58	16.11	90.47	ND	NR	NR
MW-4	08-29-93	106.58	16.21	90.37	ND	NR	NR
MW-4	09-30-93	106.58	16.23	90.35	ND	NR	NR
MW-4	11-16-93	106.58	16.30	90.28	ND	NR	NR
MW-4	02-02-94	106.58	15.36	91.22	ND	NR	NR
MW-4	04-29-94	106.58	15.36	91.22	ND	NR	NR
MW-4	08-02-94	106.58	15.94	90.64	ND	SW	0.017
MW-4	11-16-94	106.58	14.99	91.59	ND	SW	0.02
MW-5	11-12-92	106.68	16.81	89.87	ND	NR	NR
MW-5	12-09-92	106.68	16.40	90.28	ND	NR	NR
MW-5	01-21-93	106.68	14.58	92.10	ND	NR	NR
MW-5	02-22-93	106.68	15.65	91.03	ND	NR	NR
MW-5	03-25-93	106.68	16.07	90.61	ND	NR	NR
MW-5	04-14-93	106.68	16.34	90.34	ND	NR	NR
MW-5	05-22-93	106.68	16.56	90.12	ND	NR	NR
MW-5	06-17-93	106.68	Not surveyed:				
MW-5	07-27-93	106.68	16.80	89.88	ND	NR	NR
MW-5	08-29-93	106.68	16.93	89.75	ND	NR	NR
MW-5	09-30-93	106.68	16.97	89.71	ND	NR	NR
MW-5	11-16-93	106.68	17.03	89.65	ND	NR	NR
MW-5	02-02-94	106.68	16.38	90.30	ND	NR	NR
MW-5	04-29-94	106.68	16.41	90.27	ND	NR	NR
MW-5	08-02-94	106.68	16.81	89.87	ND	SW	0.017
MW-5	11-16-94	106.68	16.12	90.56	ND	SW	0.02

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 01-26-95
Project Number: 0805-135.01

Well Designation	Water Level Field Date	TOC Elevation	Depth to Water	Ground-Water Elevation	Floating Product Thickness	Ground-Water Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
MW-6	11-12-92	105.16	14.05	91.11	ND	NR	NR
MW-6	12-09-92	105.16	13.37	91.79	ND	NR	NR
MW-6	01-21-93	105.16	11.76	93.40	ND	NR	NR
MW-6	02-22-93	105.16	12.62	92.54	ND	NR	NR
MW-6	03-25-93	105.16	13.04	92.12	ND	NR	NR
MW-6	04-14-93	105.16	13.47	91.69	ND	NR	NR
MW-6	05-22-93	105.16	13.80	91.36	ND	NR	NR
MW-6	06-17-93	105.16	13.88	91.28	ND	NR	NR
MW-6	07-27-93	105.16	14.13	91.03	ND	NR	NR
MW-6	08-29-93	105.16	14.19	90.97	ND	NR	NR
MW-6	09-30-93	105.16	14.34	90.82	ND	NR	NR
MW-6	11-16-93	105.16	14.41	90.75	ND	NR	NR
MW-6	02-02-94	105.16	13.60	91.56	ND	NR	NR
MW-6	04-29-94	105.16	13.66	91.50	ND	NR	NR
MW-6	08-02-94	105.16	13.99	91.17	ND	SW	0.017
MW-6	11-16-94	105.16	13.11	92.05	ND	SW	0.02
MW-7	11-12-92	107.08	14.75	92.33	ND	NR	NR
MW-7	12-09-92	107.08	12.55	94.53	ND	NR	NR
MW-7	01-21-93	107.08	11.52	95.56	ND	NR	NR
MW-7	02-22-93	107.08	12.82	94.26	ND	NR	NR
MW-7	03-25-93	107.08	13.43	93.65	ND	NR	NR
MW-7	04-14-93	107.08	13.98	93.10	ND	NR	NR
MW-7	05-22-93	107.08	14.41	92.67	ND	NR	NR
MW-7	06-17-93	107.08	14.50	92.58	ND	NR	NR
MW-7	07-27-93	107.08	14.82	92.26	ND	NR	NR
MW-7	08-29-93	107.08	15.05	92.03	ND	NR	NR
MW-7	09-30-93	107.08	15.04	92.04	ND	NR	NR
MW-7	11-16-93	107.08	15.12	91.96	ND	NR	NR
MW-7	02-02-94	107.08	14.04	93.04	ND	NR	NR
MW-7	04-29-94	107.08	14.10	92.98	ND	NR	NR
MW-7	08-02-94	107.08	14.61	92.47	ND	SW	0.017
MW-7	11-16-94	107.08	13.37	93.71	ND	SW	0.02
AS-2	09-30-93	NR	18.31	NR	ND	NR	NR

TOC = Top of casing
ft-MSL = Elevation in feet, relative to mean sea level
MWN = Ground-water flow direction and gradient apply to the entire monitoring well network
NR = Not reported; data not available
ND = None detected
SW = Southwest
^ = Groundwater elevation (GWE) and depth to water (DTW) adjusted to include 80 percent of the floating product thickness (FPT):
[GWE = (TOC - DTW) + (FPT x 0.8)]

Table 3
Historical Groundwater Analytical Data
(TPHG, BTEX, and TRPH)

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 01-26-95
Project Number: 0805-135.01

Well Designation	Water Sample Field Date	TPHG	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TOG or TRPH
		ppb	ppb	ppb	ppb	ppb	ppm
MW-1	03-18-92	790	310	26	12	44	<0.5 (1.4)
MW-1	06-12-92	1000	290	15	10	30	<0.5
MW-1	09-14-92	1000	370	6.5	6.5	17	0.9
MW-1	10-07-92	590	200	19	6.7	19	<0.5
MW-1	01-22-93	1200	370	57	18	39	NA
MW-1	04-14-93	140	46	<2.5	<2.5	<2.5	NA
MW-1	09-30-93	220	64	0.9	2.2	4	NA
MW-1	11-16-93	180	53	0.7	1.7	4.1	NA
MW-1	02-02-94	250	93	<0.5	1.9	1	NA
MW-1	04-29-94	350	99	1.3	3.9	11	NA
MW-1	08-02-94	210	82	<1	<1	2.5	NA
MW-1	11-16-94	650	260	38	6.1	15	NA
MW-2	03-18-92	8400	1400	1000	220	870	1.2 (3.0)
MW-2	06-12-92	Not sampled: well contained floating product					
MW-2	09-14-92	Not sampled: well contained floating product					
MW-2	10-07-92	Not sampled: well contained floating product					
MW-2	01-22-93	Not sampled: well contained floating product					
MW-2	04-14-93	Not sampled: well contained floating product					
MW-2	09-30-93	Not sampled: well contained floating product					
MW-2	11-16-93	Not sampled: well contained floating product					
MW-2	02-02-94	16000	1300	2500	540	2700	NA
MW-2	04-29-94	11000	1400	1200	360	1400	NA
MW-2	08-02-94	4900	800	290	120	620	NA
MW-2	11-16-94	49000	3300	8300	1400	7200	NA
MW-3	03-18-92	20000	3200	560	380	1000	7.8 (8.1)
MW-3	06-12-92	46000	3400	4200	1300	5400	16
MW-3	09-14-92	53000	4300	5700	1300	7300	5.5
MW-3	10-07-92	Not sampled: well contained floating product					
MW-3	01-22-93	35000	2100	1400	1200	4400	31
MW-3	04-14-93	13000	1800	390	990	3500	26
MW-3	09-30-93	79000	2400	3400	1900	8100	23
MW-3	11-16-93	72000	1400	2100	1900	8300	38
MW-3	02-02-94	26000	1400	1200	1200	4400	7.7 (7.8)
MW-3	04-29-94	22000	1400	620	910	3400	10
MW-3	08-02-94	17000	530	410	720	2600	6.6
MW-3	11-16-94	18000	1400	560	790	2800	2.3

Table 3
Historical Groundwater Analytical Data
(TPHG, BTEX, and TRPH)

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 01-26-95
Project Number: 0805-135.01

Well Designation	Water Sample Field Date	TPHG ppb	Benzene ppb	Toluene ppb	Ethyl-benzene ppb	Total Xylenes ppb	TOG or TRPH ppm
MW-4	11-12-92	77	32	<0.5	<0.5	<0.5	NA
MW-4	01-22-93	170	66	0.8	<0.5	1.5	NA
MW-4	04-14-93	<50	4.6	<0.5	<0.5	<0.5	NA
MW-4	09-30-93	52	13	<0.5	<0.5	<0.5	NA
MW-4	11-16-93	230	34	<0.5	<0.5	<0.5	NA
MW-4	02-02-94	<50	3.9	<0.5	<0.5	<0.5	NA
MW-4	04-29-94	<50	4.2	<0.5	<0.5	<0.5	NA
MW-4	08-02-94	<50	3.8	<0.5	<0.5	<0.5	NA
MW-4	11-16-94	110	31	<0.5	<0.5	<0.5	NA
MW-5	11-12-92	2900	1300	12	67	18	NA
MW-5	01-22-93	17000	5000	780	260	330	NA
MW-5	04-14-93	12000	4600	<50	180	130	NA
MW-5	09-30-93	4500	1100	<10	39	16	NA
MW-5	11-16-93	3300	700	<10	22	<10	NA
MW-5	02-02-94	10000	3000	65	240	78	NA
MW-5	04-29-94	7600	2400	27	130	44	NA
MW-5	08-02-94	1900	680	<10	24	<10	NA
MW-5	11-16-94	17000	5900	700	440	320	NA
MW-6	11-12-92	51	2.6	<0.5	<0.5	<0.5	NA
MW-6	01-22-93	<50	1.2	<0.5	<0.5	<0.5	NA
MW-6	04-14-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-6	09-30-93	74	2	<0.5	<0.5	<0.5	NA
MW-6	11-16-93	72	2.6	<0.5	<0.5	<0.5	NA
MW-6	02-02-94	61	2.2	<0.5	<0.5	<0.5	NA
MW-6	04-29-94	<50	0.6	<0.5	<0.5	<0.5	NA
MW-6	08-02-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-6	11-16-94	<50	1.1	<0.5	<0.5	<0.5	NA

Table 3
Historical Groundwater Analytical Data
(TPHG, BTEX, and TRPH)

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Date: 01-26-95
Project Number: 0805-135.01

Well Designation	Water Sample Field Date	TPHG	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TOG or TRPH
		ppb	ppb	ppb	ppb	ppb	ppm
MW-7	11-12-92	<50	1.8	<0.5	<0.5	<0.5	NA
MW-7	01-22-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	04-14-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	09-30-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	11-16-93	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	02-02-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	04-29-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	08-02-94	<50	<0.5	<0.5	<0.5	<0.5	NA
MW-7	11-16-94	<50	<0.5	<0.5	<0.5	<0.5	NA
AS-2	09-30-93	<50	1.2	<0.5	<0.5	<0.5	NA

TPHG = Total petroleum hydrocarbons as gasoline
TOG = Total oil and grease measured by EPA Method 5520 C&F
TRPH = Total recoverable petroleum hydrocarbons measured by EPA Method 418.1
ppb = Parts per billion or micrograms per liter (µg/l)
ppm = Parts per million or milligrams per liter (mg/l)
NA = Not analyzed

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

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Well Number	Date Gauged/ Sampled	Top of Casing Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	TRPH (mg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
MW-1	03-20-95	108.03	15.75	ND	92.28	830	140	5	41	110	--	--		
MW-1	06-06-95	108.03	17.68	ND	90.35	210	30	<0.5	7.3	16	--	--		
MW-1	08-24-95	107.80	17.45	ND	90.35	Not sampled: well was inaccessible due to construction								
MW-1	11-16-95	107.80	17.64	ND	90.16	<50	5.6	<0.5	1.4	1.2	55	--		
MW-1	02-27-96	107.80	15.21	ND	92.59	1,400	240	88	44	110	200	--		
MW-1	05-15-96	107.80	17.53	ND	90.27	Not sampled: well sampled semi-annually, during the first and third quarter								
MW-1	08-14-96	107.80	17.15	ND	90.65	98	18	<0.5	1.9	1	45	--		
MW-1	11-11-96	107.80	17.78	ND	90.02	Not sampled: well sampled semi-annually, during the first and third quarter								
MW-1	03-25-97	107.80	17.68	ND	90.12	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-1	05-15-97	107.80	17.91	ND	89.89	Not sampled: well sampled semi-annually, during the first and third quarter								
MW-1	10-26-97	107.80	18.85	ND	88.95	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-1	11-10-97	107.80	18.10	ND	89.70	<50	<0.5	<0.5	<0.5	<0.5	4	--		
MW-1	02-13-98	107.80	13.15	ND	94.65	<100	8.4	<1	<1	14	130	--		
MW-1	05-12-98	107.80	12.30	ND	95.50	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-1	07-28-98	107.80	17.04	ND	90.76	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-1	10-28-98	107.80	18.10	ND	89.70	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-1	02-12-99	107.80	15.84	ND	91.96	72	<0.5	<0.5	<0.5	<0.5	23	--		
MW-1	06-03-99	107.80	17.62	ND	90.18	890	33	1.5	12	2.8	250	--	1.44	NP
MW-1	10-26-99	107.80	16.92	ND	90.88	<50	<0.5	<0.5	<0.5	<1	9	--	9.58	NP
MW-1	02-02-00	107.80	15.70	ND	92.10	<50	<0.5	<0.5	<0.5	<1	<3	--	8.9	NP
MW-2	03-20-95	107.43	15.50	ND#	91.93	Not sampled: floating product entered well during purging								
MW-2	06-06-95	107.43	17.43	ND	90.00	1,200	60	21	35	140	--	--		
MW-2	08-24-95	107.28	17.22	ND	90.06	Not sampled: well was inaccessible due to construction								
MW-2	11-16-95	107.28	17.36	ND	89.92	360	45	1.3	7.1	7.5	210	--		
MW-2	02-27-96	107.28	14.82	ND	92.46	8,900	1,400	980	150	550	940	--		
MW-2	05-15-96	107.28	17.40	ND	89.88	480	82	48	8	48	87	--		

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

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Well Number	Date Gauged/ Sampled	Top of Casing Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	TRPH (mg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
MW-2	08-14-96	107.28	17.00	ND	90.28	130	22	4	2	9	120	--		
MW-2	11-11-96	107.28	17.55	ND	89.73	1,200	150	120	21	160	110	--		
MW-2	03-25-97	107.28	17.32	ND	89.96	670	23	58	13	120	28	--		
MW-2	05-15-97	107.28	17.61	ND	89.67	<50	<0.5	<0.5	<0.5	<0.5	23	--		
MW-2	10-26-97	107.28	18.43	ND	88.85	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-2	11-10-97	107.28	17.84	ND	89.44	<100	<1	<1	<1	1	74	--		
MW-2	02-13-98	107.28	12.75	ND	94.53	220	9.5	3.9	3.7	48	84	--		
MW-2	05-12-98	107.28	17.02	ND	90.26	3,900	210	280	86	910	35	--		
MW-2	07-28-98	107.28	17.30	ND	89.98	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-2	10-28-98	107.28	17.80	ND	89.48	170	17	<0.5	1.7	5.0	24	--		
MW-2	02-12-99	107.28	15.55	ND	91.73	12,000	620	95	490	2,200	270	--		
MW-2	06-03-99	107.28	17.31	ND	89.97	<50	<0.5	<0.5	<0.5	1.1	8	--	2.53	NP
MW-2	10-26-99	107.28	16.58	ND	90.70	<50	1.0	<0.5	<0.5	3	<3	--	8.17	NP
MW-2	02-02-00	107.28	15.30	ND	91.98	<50	<0.5	<0.5	<0.5	<1	<3	--	9.1	NP
MW-3	03-20-95	107.77	15.60	ND	92.17	29,000	880	190	760	2,000	--	16		
MW-3	06-06-95	107.77	17.54	ND	90.23	22,000	450	54	380	1,300	--	7.1		
MW-3	08-24-95	107.61	17.42	ND	90.19	Not sampled: well was inaccessible due to construction								
MW-3	11-16-95	107.61	17.58	ND	90.03	13,000	210	<20	320	1,000	790	8.3		
MW-3	02-27-96	107.61	15.03	ND	92.58	9,700	94	15	290	720	430	10		
MW-3	05-15-96	107.61	17.35	ND	90.26	5,600	66	12	37	67	230	--		
MW-3	08-14-96	107.61	17.10	ND	90.51	830	17	<1*	8	7	110	--		
MW-3	11-11-96	107.61	17.73	ND	89.88	500	28	3	12	13	150	--		
MW-3	03-25-97	107.61	17.99	ND	89.62	<50	<0.5	<0.5	<0.5	<0.5	94	--		
MW-3	05-15-97	107.61	17.84	ND	89.77	<50	<0.5	<0.5	<0.5	<0.5	65	--		
MW-3	10-26-97	107.61	18.50	ND	89.11	220	4	<1	<1	<1	160	--		
MW-3	11-10-97	107.61	18.00	ND	89.61	350	8	<2	3	3	230	--		

Table 1
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ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Well Number	Date Gauged/ Sampled	Top of Casing Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	TRPH (mg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
MW-3	02-13-98	107.61	13.00	ND	94.61	<50	1.3	<0.5	<0.5	1	21	--		
MW-3	05-12-98	107.61	17.20	ND	90.41	120	<0.5	<0.5	<0.5	<0.9	71	--		
MW-3	07-28-98	107.61	17.46	ND	90.15	<50	1.4	<0.5	<0.5	<0.5	52	--		
MW-3	10-28-98	107.61	18.00	ND	89.61	170	<0.5	<0.5	<0.5	0.7	35	--		
MW-3	02-12-99	107.61	15.76	ND	91.85	120	2.0	0.6	<0.5	1.3	37	--		
MW-3	06-03-99	107.61	Well inaccessible: Surveyed well VW-1 as an alternative ----------											
MW-3	10-26-99	107.61	16.69	ND	90.92	630	14	0.7	13	2	38	--	1.24	NP
MW-3	02-02-00	107.61	15.65	ND	91.96	290	18	0.5	45	56	46	--	0.4	NP
MW-4	03-20-95	106.58	13.85	ND	92.73	88	1	<0.5	<0.5	0.7	--	--		
MW-4	06-06-95	106.58	15.70	ND	90.88	<50	<0.5	<0.5	<0.5	<0.5	--	--		
MW-4	08-24-95	106.71	15.86	ND	90.85	Not sampled: well was inaccessible due to construction								
MW-4	11-16-95	106.71	16.10	ND	90.61	<50	<0.5	<0.5	<0.5	<0.5	6	--		
MW-4	02-27-96	106.71	13.72	ND	92.99	<50	<0.5	<0.5	<0.5	<0.5	10	--		
MW-4	05-15-96	106.71	15.90	ND	90.81	Not sampled: well sampled semi-annually, during the first and third quarter								
MW-4	08-14-96	106.71	15.68	ND	91.03	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-4	11-11-96	106.71	16.19	ND	90.52	Not sampled: well sampled semi-annually, during the first and third quarter								
MW-4	03-25-97	106.71	16.10	ND	90.61	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-4	05-15-97	106.71	16.38	ND	90.33	Not sampled: well sampled semi-annually, during the first and third quarter								
MW-4	10-26-97	106.71	17.78	ND	88.93	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-4	11-10-97	106.71	16.43	ND	90.28	Not sampled: well sampled semi-annually, during the first and third quarter								
MW-4	02-13-98	106.71	13.05	ND	93.66	<50	1.3	0.7	<0.5	2.3	19	--		
MW-4	05-12-98	106.71	15.69	ND	91.02	Not sampled: well sampled semi-annually, during the first and third quarter								
MW-4	07-28-98	106.71	15.93	ND	90.78	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-4	10-28-98	106.71	16.40	ND	90.31	Not sampled: well sampled semi-annually, during the first and third quarter								
MW-4	02-12-99	106.71	14.13	ND	92.58	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-4	06-03-99	106.71	16.00	ND	90.71	Not sampled: well sampled semi-annually, during the first and third quarter								

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

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Well Number	Date Gauged/ Sampled	Top of Casing Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	TRPH (mg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
MW-4	10-26-99	106.71	15.76	ND	90.95	Not sampled: well sampled semi-annually, during the first and third qtr.							1.72	
MW-4	02-02-00	106.71	14.32	ND	92.39	<50	<0.5	<0.5	<0.5	<1	<3	--	0.7	NP
MW-5	03-20-95	106.68	14.92	ND	91.76	21,000	6,900	450	800	1,300	--	--		
MW-5	06-06-95	106.68	16.61	ND	90.07	6,500	1,700	<20	120	69	--	--		
MW-5	08-24-95	106.60	16.47	ND	90.13	Not sampled: well was inaccessible due to construction								
MW-5	11-16-95	106.60	16.69	ND	89.91	1,800	470	<5	17	5	1,000	--		
MW-5	02-27-96	106.60	14.35	ND	92.25	10,000	1,000	71	690	1,000	440/450*	--		
MW-5	05-15-96	106.60	16.58	ND	90.02	3,400	350	6	72	20	220	--		
MW-5	08-14-96	106.60	17.26	ND	89.34	2,100	130	2.7	47	4.7	220	--		
MW-5	11-11-96	106.60	16.62	ND	89.98	1,200	31	1	8	2	130	--		
MW-5	03-25-97	106.60	16.38	ND	90.22	<50	<0.5	<0.5	<0.5	<0.5	5	--		
MW-5	05-15-97	106.60	16.54	ND	90.06	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-5	10-26-97	106.60	17.60	ND	89.00	<50	<0.5	<0.5	<0.5	<0.5	7	--		
MW-5	11-10-97	106.60	16.78	ND	89.82	<50	<0.5	<0.5	<0.5	<0.5	24	--		
MW-5	02-13-98	106.60	12.21	ND	94.39	11,200	51	<10	<10	<10	2,000	--		
MW-5	05-12-98	106.60	NR	ND	NR	Not sampled: well inaccessible								
MW-5	07-28-98	106.60	16.47	ND	90.13	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-5	10-28-98	106.60	16.80	ND	89.80	<50	0.8	<0.5	<0.5	<0.5	99	--		
MW-5	02-12-99	106.60	14.88	ND	91.72	<1,000	<10	<10	<10	<10	1,100	--		
MW-5	06-03-99	106.60	16.65	ND	89.95	290	10	<0.5	<0.5	0.6	200	--	2.45	NP
MW-5	10-26-99	106.60	16.10	ND	90.50	<50	<0.5	<0.5	<0.5	<1	11	--	NM	NP
MW-5	02-02-00	106.60	14.65	ND	91.95	<50	<0.5	<0.5	<0.5	<1	39	--	8.6	NP
MW-6	03-20-95	105.16	12.13	ND	93.03	<50	<0.5	<0.5	<0.5	<0.5	--	--		
MW-6	06-06-95	105.16	13.95	ND	91.21	<50	<0.5	<0.5	<0.5	<0.5	--	--		
MW-6	08-24-95	105.13	14.07	ND	91.06	<50	<0.5	<0.5	<0.5	<0.5	<3	--		

Table 1
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ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Well Number	Date Gauged/ Sampled	Top of Casing Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	TRPH (mg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
MW-6	11-16-95	105.13	14.34	ND	90.79	<60	<0.5	<0.5	<0.5	<0.5	--	--		
MW-6	02-27-96	105.13	12.00	ND	93.13	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-6	05-15-96	105.13	14.10	ND	91.03	Not sampled: well sampled annually, during the first quarter								
MW-6	08-14-96	105.13	13.70	ND	91.43	Not sampled: well sampled annually, during the first quarter								
MW-6	11-11-96	105.13	14.11	ND	91.02	Not sampled: well sampled annually, during the first quarter								
MW-6	03-25-97	105.13	14.15	ND	90.98	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-6	05-15-97	105.13	14.44	ND	90.69	Not sampled: well sampled annually, during the first quarter								
MW-6	10-26-97	105.13	16.02	ND	89.11	Not sampled: well sampled annually, during the first quarter								
MW-6	11-10-97	105.13	14.52	ND	90.61	Not sampled: well sampled annually, during the first quarter								
MW-6	02-13-98	105.13	10.06	ND	95.07	<50	<0.5	<0.5	<0.5	<0.5	8	--		
MW-6	05-12-98	105.13	13.75	ND	91.38	Not sampled: well sampled annually, during the first quarter								
MW-6	07-28-98	105.13	14.06	ND	91.07	Not sampled: well sampled annually, during the first quarter								
MW-6	10-28-98	105.13	14.71	ND	90.42	Not sampled: well sampled annually, during the first quarter								
MW-6	02-12-99	105.13	12.22	ND	92.91	<100	<1	<1	<1	<1	110	--		
MW-6	06-03-99	105.13	13.95	ND	91.18	Not sampled: well sampled annually, during the first quarter								
MW-6	10-26-99	105.13	14.06	ND	91.07	Not sampled: well sampled annually, during the first quarter							3.94	
MW-6	02-02-00	105.13	12.03	ND	93.10	<50	<0.5	<0.5	<0.5	<1	<3	--	1.2	NP
MW-7	03-20-95	107.08	12.32	ND	94.76	<50	<0.5	<0.5	<0.5	<0.5	--	--		
MW-7	06-06-95	107.08	14.59	ND	92.49	Not sampled: well sampled semi-annually, during the first and third quarters								
MW-7	08-24-95	107.05	14.64	ND	92.41	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-7	11-16-95	107.05	15.30	ND	91.75	Not sampled: well sampled semi-annually, during the first and third quarters								
MW-7	02-27-96	107.05	12.24	ND	94.81	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-7	05-15-96	107.05	14.65	ND	92.40	Not sampled: well sampled annually, during the first quarter								
MW-7	08-14-96	107.05	14.35	ND	92.70	Not sampled: well sampled annually, during the first quarter								
MW-7	11-11-96	107.05	14.92	ND	92.13	Not sampled: well sampled annually, during the first quarter								
MW-7	03-25-97	107.05	14.80	ND	92.25	<50	<0.5	<0.5	<0.5	<0.5	<3	--		

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

ARCO Service Station 6148
5131 Shattuck Avenue, Oakland, California

Well Number	Date Gauged/ Sampled	Top of Casing Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	TRPH (mg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
MW-7	05-15-97	107.05	15.27	ND	91.78	Not sampled: well sampled annually, during the first quarter								
MW-7	10-26-97	107.05	16.68	ND	90.37	Not sampled: well sampled annually, during the first quarter								
MW-7	11-10-97	107.05	15.37	ND	91.68	Not sampled: well sampled annually, during the first quarter								
MW-7	02-13-98	107.05	10.80	ND	96.25	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-7	05-12-98	107.05	14.32	ND	92.73	Not sampled: well sampled annually, during the first quarter								
MW-7	07-28-98	107.05	14.79	ND	92.26	Not sampled: well sampled annually, during the first quarter								
MW-7	10-28-98	107.05	15.57	ND	91.48	Not sampled: well sampled annually, during the first quarter								
MW-7	02-12-99	107.05	12.46	ND	94.59	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-7	06-03-99	107.05	14.53	ND	92.52	Not sampled: well sampled annually, during the first quarter								
MW-7	10-26-99	107.05	14.74	ND	92.31	Not sampled: well sampled annually, during the first quarter							1.97	
MW-7	02-02-00	107.05	12.57	ND	94.48	<50	<0.5	<0.5	<0.5	<1	<3	--	0.7	NP
VW-1	06-03-99	NR	17.51	ND	NR	420	2.3	0.6	2.0	2.2	74	--	1.28	P

ft-MSL: elevation in feet, relative to mean sea level
TPH: total petroleum hydrocarbons as gasoline, California DHS LUFT Method
BTEX: Benzene, toluene, ethylbenzene, total xylenes by EPA method 8021B. (EPA method 8020 prior to 10/26/99)
MTBE: Methyl tert-butyl ether by EPA method 8021B. (EPA method 8020 prior to 10/26/99).
TRPH: total recoverable petroleum hydrocarbons
µg/L: micrograms per liter
mg/L: milligrams per liter
NR: not reported; data not available
ND: none detected
#: floating product entered the well during purging
--: not analyzed or not applicable
*: confirmed by EPA 8240
**: For previous historical groundwater elevation and analytical data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results and Remediation System Performance Evaluation Report, ARCO Service Station 6148, Oakland, California,* (EMCON, March 4, 1996)

APPENDIX C

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!

Submittal Type:	**GEO_WELL**
Submittal Title:	**3Q09 GEO_WELL 6148**
Facility Global ID:	**T0600100103**
Facility Name:	**ARCO #6148**
File Name:	**GEO_WELL.zip**
Organization Name:	**Broadbent & Associates, Inc.**
Username:	**BROADBENT-C**
IP Address:	**67.118.40.90**
Submittal Date/Time:	**9/16/2009 12:58:33 PM**
Confirmation Number:	**2291566252**

STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER ESI

UPLOADING A EDF FILE

SUCCESS

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

Submittal Type:	**EDF - Monitoring Report - Quarterly**
Submittal Title:	**3Q09 GW Monitoring**
Facility Global ID:	**T0600100103**
Facility Name:	**ARCO #6148**
File Name:	**09080455.zip**
Organization Name:	**Broadbent & Associates, Inc.**
Username:	**BROADBENT-C**
IP Address:	**67.118.40.90**
Submittal Date/Time:	**8/25/2009 3:44:14 PM**
Confirmation Number:	**8499627530**

VIEW QC REPORT

VIEW DETECTIONS REPORT