Atlantic Richfield Company

Chuck Carmel
Environmental Business Manager

PO Box 1257
San Ramon, CA 94583
Phone: (925) 275-3803
Fax: (925) 275-3815
E-Mail: charles.carmel @bp.com

October 26, 2009

Re: Third Quarter 2009 Ground-Water Monitoring Report
Atlantic Richfield Company Service Station #498
286 South Livermore Avenue, Livermore, California
ACWD Case No. RO0002873

"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 Ground-Water Monitoring Report
Atlantic Richfield Company Station #498
286 Livermore Avenue
Livermore, California

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
Chico, California 95926
(530) 566-1400
www.broadbentinc.com

October, 2009

Project No. 08-82-603

Broadbent & Associates, Inc.
1324 Mangrove Ave., Suite 212
Chico, CA 95926
Voice (530) 566-1400
Fax (530) 566-1401

BROADBENT & ASSOCIATES, INC
ENVIRONMENTAL, WATER RESOURCES & ENGINEERING

October 26, 2009

Project No. 08-82-603

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

Attn.: Mr. Chuck Carmel

Re: Third Quarter, 2009 Ground-Water Monitoring Report, Atlantic Richfield Company (a BP affiliated company) Station #498, 286 South Livermore Avenue, Livermore, California. ACWD Case No. RO0002873.

Dear Mr. Carmel:

Provided herein is the *Third Quarter, 2009 Ground-Water Monitoring Report* for Atlantic Richfield Company Station #498 (herein referred to as Station #498) located at 286 South Livermore Avenue, Livermore, California (Property). This report presents a summary of Third Quarter, 2009 ground-water monitoring results.

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.

(FOR)

Jason R. Emme
Senior Staff Scientist

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

Enclosures

cc: Mr. Paresh Khatri, Alameda County Environmental Health, 1131 Harbor Bay Parkway, Suite 250, Alameda, CA 84502 (Submitted via ACEH ftp Site)
GeoTracker

STATION #498 QUARTERLY GROUND-WATER MONITORING REPORT

Facility: #498 Address:	286 South Livermore Avenue, Livermore, CA
Station #498 Environmental Business Manager:	Mr. Chuck Carmel
Consulting Co./Contact Persons:	Broadbent & Associates, Inc. (BAI) / Rob Miller & Matt Herrick
Primary Agency/Regulatory ID No.:	Alameda County Environmental Health (ACEH)/ ACEH Case No. RO0002873
Consultant Project No.:	08-82-603
Facility Permits/Permitting Agency.:	NA

WORK PERFORMED THIS QUARTER (Third Quarter, 2009):

1. Submitted Second Quarter, 2009 Ground-Water Monitoring Report. Report completed by BAI.
2. Submitted Soil and Ground-Water Investigation Work Plan dated August 28, 2009.
3. Conducted ground-water monitoring/sampling for Third Quarter, 2009. Work performed by Stratus Environmental, Inc. (Stratus).

WORK PROPOSED FOR NEXT QUARTER (Fourth Quarter, 2009):

1. Submit Third Quarter, 2009 Ground-Water Monitoring Report (contained herein).
2. Conduct ground-water monitoring/sampling for Fourth Quarter, 2009.
3. Begin implementation of soil and ground-water investigation work activities once ACEH approves the August 28, 2009 Work Plan.

QUARTERLY RESULTS SUMMARY:

Current phase of project:	**Ground-water monitoring/sampling/Assessment**
Frequency of ground-water sampling:	**Wells MW-1, MW-2, MW-3, and MW-4: Quarterly**
Frequency of ground-water monitoring:	**Quarterly**
Is free product (FP) present on-site:	**No**
Current remediation techniques:	**NA**
Depth to ground water (below TOC):	**32.00 (MW-1) to 50.25 (MW-2) feet**
General ground-water flow direction:	**NA**
Approximate hydraulic gradient:	**NA**

DISCUSSION:

Gasoline range organics (GRO) were detected in all three wells sampled during Third Quarter, 2009 (MW-1, MW-2, and MW-3) with concentrations ranging from 88 micrograms per liter (µg/L) in MW-2 to 25,000 µg/L in MW-3. Benzene was detected in wells MW-2 and MW-3 at concentrations of 0.79 µg/L and 380 µg/L, respectively. Toluene was detected in MW-3 at a concentration of 150 µg/L. Ethylbenzene was detected in MW-3 at a concentration of 930 µg/L. Xylenes (total) were detected in MW-3 at a concentration of 2,900 µg/L. Methyl tert-butyl ether was detected in wells MW-1, MW-2, and MW-3 at concentrations ranging from 5.3 µg/L (MW-1) to 75 µg/L (MW-3). Tert-butyl alcohol (TBA) was detected in MW-1 and MW-2 at concentrations of 17 µg/L and 37 µg/L, respectively. No other analytes were detected from ground-water samples collected during Third Quarter, 2009.

Well MW-4 was not monitored or sampled during Third Quarter, 2009 as the well was dry.

Drawing 1 depicts a site location map. Drawing 2 shows the analytical summary map for the Third Quarter, 2009. Ground-water contours were not generated due to insufficient data. Although three wells were gauged for depth to ground water, the elevation in MW-1 was approximately 18 feet higher than wells MW-2 and MW-3. Table 1 includes a summary of ground-water monitoring data including relative water elevations and laboratory analyses. Table 2 provides a summary of fuel additives analytical data. Table 3 lists historic ground-water flow direction and gradient.

The July 9, 2009 ACEH letter approved recommendations included in the Atlantic Richfield Company June 26, 2009 letter to reduce monitoring and sampling to semi-annually to be completed during the second and fourth quarter each year. However, as one hydrologic cycle (four consecutive quarters) of sampling had yet to be completed, Station #498 was sampled during the Third Quarter, 2009. Semi-annual monitoring and sampling will be implemented beginning Fourth Quarter, 2009.

The August 28, 2009 Soil and Ground-Water Investigation Work Plan was submitted as requested by the ACEH in their letter dated March 16, 2009. A response from the ACEH regarding proposed Work Plan Activities has not been received.

CLOSURE:

The findings presented in this report are based upon: observations of Stratus Environmental, Inc. and/or their subcontractor(s) field personnel (see Appendix A), the points investigated, and results of laboratory tests performed by Calscience Environmental Laboratories, Inc. 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.

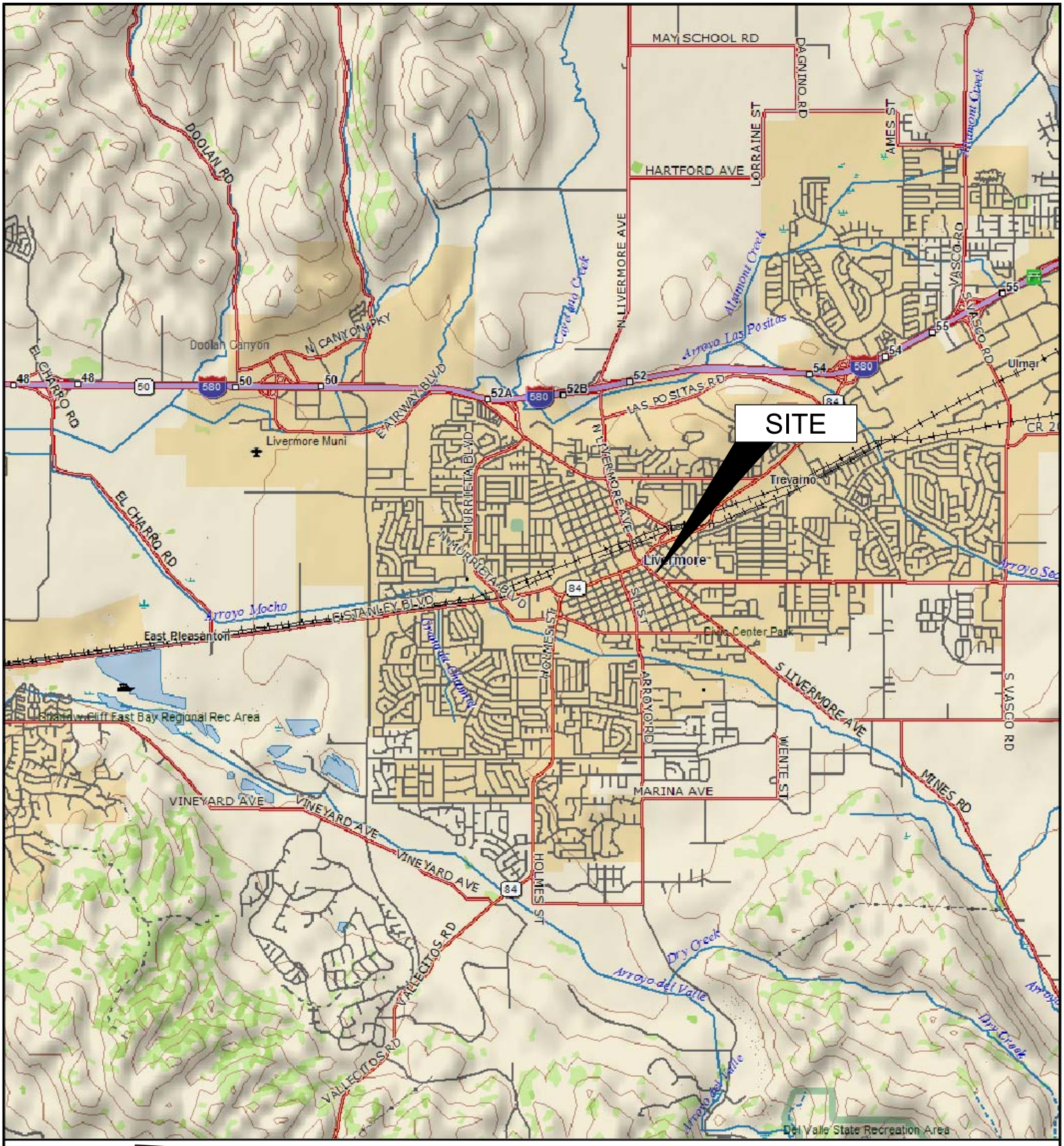
ATTACHMENTS:

Drawing 1. Site Location Map, Station #498, Livermore, CA
Drawing 2. Analytical Summary Map, Station #498, Livermore, CA

Table 1. Summary of Ground-Water Monitoring Data: Relative Water Elevations and Laboratory Analyses, Station #498, Livermore, CA
Table 2. Summary of Fuel Additives Analytical Data, Station #498, Livermore, CA
Table 3. Historical Ground-Water Flow Direction and Gradient, Station #498, Livermore, CA

Appendix A. Stratus Environmental, Inc. Ground-Water Sampling Data Package (Includes Field Data Sheets, Non-Hazardous Waste Data Form, Chain of Custody Documentation, Certified Analytical Results, and Field Procedures for Ground-Water Sampling)

Appendix B. GeoTracker Upload Confirmation



SITE

0 1 2

APPROXIMATE SCALE (mi)

N

IMAGE SOURCE: DELORME

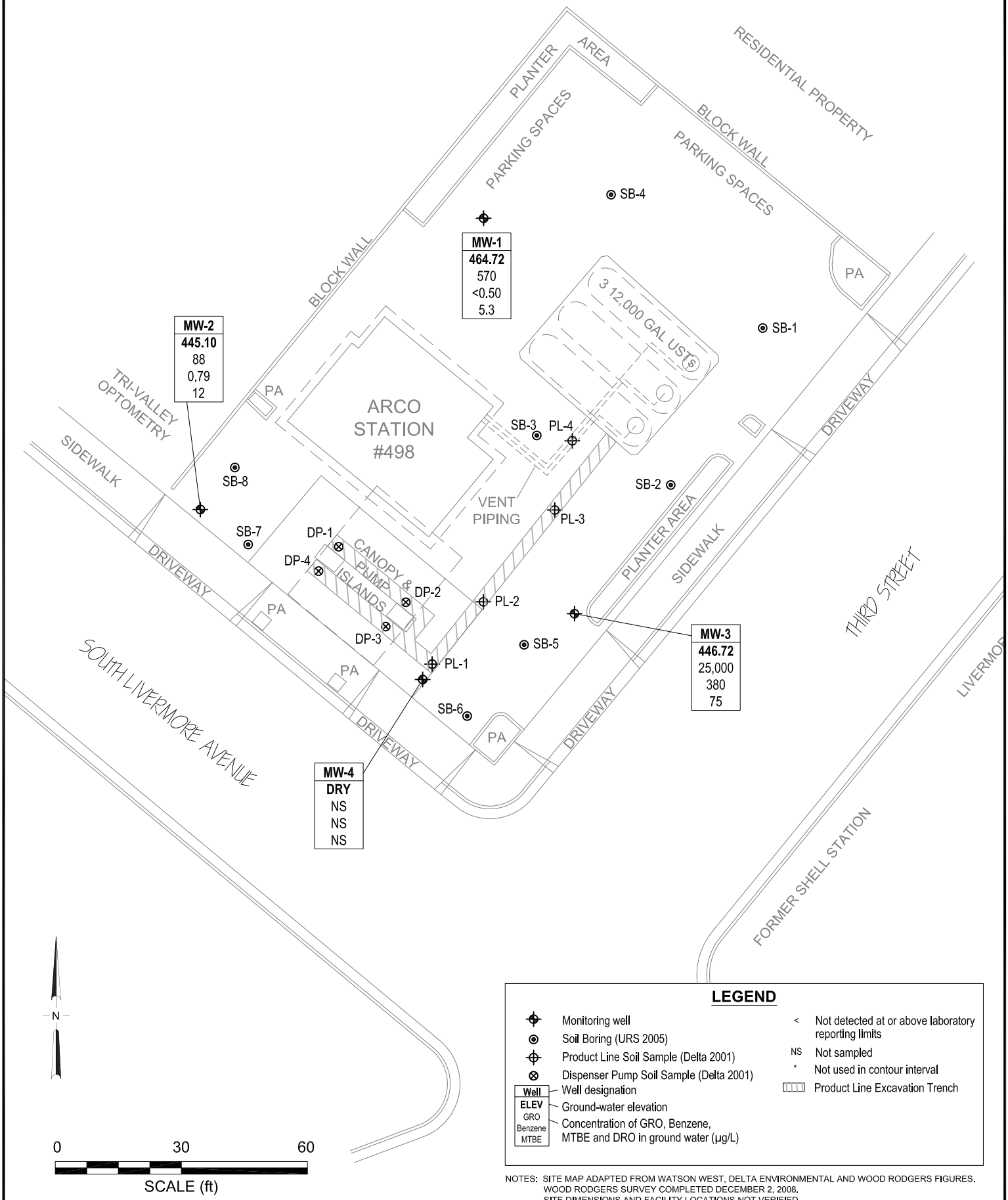
BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, California 95926

Project No.: 06-82-603 Date: 9/30/2009

Station #498
286 South Livermore Avenue
Livermore, California

Site Location Map

Drawing
1



LEGEND

- Monitoring well
- Soil Boring (URS 2005)
- Product Line Soil Sample (Delta 2001)
- Dispenser Pump Soil Sample (Delta 2001)
- Well designation
- Ground-water elevation
- Concentration of GRO, Benzene, MTBE and DRO in ground water (µg/L)
- < Not detected at or above laboratory reporting limits
- NS Not sampled
- * Not used in contour interval
- Product Line Excavation Trench

Well
ELEV
GRO
Benzene
MTBE

NOTES: SITE MAP ADAPTED FROM WATSON WEST, DELTA ENVIRONMENTAL AND WOOD RODGERS FIGURES. WOOD RODGERS SURVEY COMPLETED DECEMBER 2, 2008. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212
Chico, CA

Station #498
286 South Livermore Avenue
Livermore, California

Analytical Summary Map with Historic Sample Locations
Project No.: 08-82-603 Date: 9/30/09

Drawing
2

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

Station #498, 286 South Livermore Avenue, Livermore, CA

Well and Sample Date	P/NP	Comments	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	pH
									GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MtBE		
MW-1																
12/29/2008	P		496.72	20	40	28.81	--	467.91	1,100	38	1.2	4.0	3.3	17	2.72	6.83
3/20/2009	P		496.72	20	40	28.95	--	467.77	640	9.1	<0.50	4.1	<0.50	21	0.35	7.28
6/2/2009	P		496.72	20	40	30.90	--	465.82	600	1.6	<0.50	<0.50	<0.50	32	0.59	7.17
9/2/2009	**P**		**496.72**	**20**	**40**	**32.00**	**--**	**464.72**	**570**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**5.3**	**1.02**	**7.38**
MW-2																
12/29/2008	P		495.35	37	57	48.76	--	446.59	110	7.1	<0.50	<0.50	0.76	16	1.04	7.67
3/20/2009	P		495.35	37	57	38.78	--	456.57	200	3.9	<1.0	<1.0	<1.0	56	0.41	7.51
6/2/2009	P		495.35	37	57	43.98	--	451.37	110	5.1	<1.0	<1.0	<1.0	44	1.87	7.42
9/2/2009	**P**		**495.35**	**37**	**57**	**50.25**	**--**	**445.10**	**88**	**0.79**	**<0.50**	**<0.50**	**<0.50**	**12**	**1.55**	**6.91**
MW-3																
12/29/2008	P		496.32	37	57	48.21	--	448.11	28,000	310	200	840	6,200	71	1.95	7.39
3/20/2009	P		496.32	37	57	38.48	--	457.84	11,000	360	84	600	1,500	71	0.56	7.25
6/2/2009	P	a	496.32	37	57	43.33	--	452.99	5,100	310	14	180	310	66	2.06	7.18
9/2/2009	**P**		**496.32**	**37**	**57**	**49.60**	**--**	**446.72**	**25,000**	**380**	**150**	**930**	**2,900**	**75**	**1.35**	**6.93**
MW-4																
12/29/2008	--	Dry	496.01	20	40	--	--	--	--	--	--	--	--	--	--	--
3/20/2009	P		496.01	20	40	37.82	--	458.19	410	0.78	<0.50	<0.50	0.64	16	0.52	7.16
6/2/2009	--	Dry	496.01	20	40	--	--	--	--	--	--	--	--	--	--	--
9/2/2009	**--**	**Dry**	**496.01**	**20**	**40**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**

SYMBOLS AND ABBREVIATIONS:

-- = Not sampled/analyzed/applicable/measured/ available
< = Not detected at or above specified laboratory reporting limit
DO = Dissolved oxygen
DTW = Depth to water in ft bgs
ft bgs= feet below ground surface
ft MSL= feet above mean sea level
GRO = Gasoline range organics
GWE = Groundwater elevation measured in ft MSL
mg/L = Milligrams per liter
MTBE = Methyl tert-butyl ether
NP = Not purged before sampling
P = Purged before sampling
TOC = Top of casing measured in ft MSL
µg/L = Micrograms per liter

NOTES:

a = Sample preserved improperly.

Table 2. Summary of Fuel Additives Analytical Data

Station #498, 286 South Livermore Avenue, Livermore, CA

Well and Sample Date	Concentrations in (µg/L)								Comments
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-1									
12/29/2008	<300	<10	17	<0.50	<0.50	<0.50	<0.50	<0.50	
3/20/2009	<300	25	21	<0.50	<0.50	<0.50	<0.50	<0.50	
6/2/2009	<300	28	32	<0.50	<0.50	<0.50	<0.50	<0.50	
9/2/2009	**<300**	**17**	**5.3**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-2									
12/29/2008	<300	22	16	<0.50	<0.50	<0.50	<0.50	<0.50	
3/20/2009	<600	62	56	<1.0	<1.0	<1.0	<1.0	<1.0	
6/2/2009	<600	83	44	<1.0	<1.0	<1.0	<1.0	<1.0	
9/2/2009	**<300**	**37**	**12**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-3									
12/29/2008	<30,000	<1,000	71	<50	<50	<50	<50	<50	
3/20/2009	<7,500	<250	71	<12	<12	<12	<12	<12	
6/2/2009	<3,000	100	66	<5.0	<5.0	<5.0	<5.0	<5.0	
9/2/2009	**<7,500**	**<250**	**75**	**<12**	**<12**	**<12**	**<12**	**<12**	
MW-4									
3/20/2009	<300	2,000	16	<0.50	<0.50	<0.50	<0.50	<0.50	

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

Table 3. Historical Ground-Water Flow Direction and Gradient

Station #498, 286 South Livermore Avenue, Livermore, CA

Date Sampled	Approximate Flow Direction	Approximate Hydraulic Gradient
12/29/2008	NA	NA
3/20/2009	North-Northwest	0.02
6/2/2009	NA	NA
9/2/2009	**NA**	**NA**

NOTES:

NA = Not Available

APPENDIX A

STRATUS ENVIRONMENTAL, INC. GROUND-WATER SAMPLING DATA PACKAGE (INCLUDES FIELD DATA SHEETS, NON-HAZARDOUS WASTE DATA FORM, CHAIN OF CUSTODY DOCUMENTATION, CERTIFIED ANALYTICAL RESULTS, AND FIELD PROCEDURES FOR GROUND-WATER SAMPLING)

STRATUS
ENVIRONMENTAL, INC.

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

September 21, 2009

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

Re: Groundwater Sampling Data Package, ARCO Service Station No.498, located at 286 Livermore Ave. Livermore, California.

General Information

Data Submittal Prepared / Reviewed by: Carol Huff / Jay Johnson
Phone Number: (530) 676-6000
On-Site Supplier Representative: Tony Hill

Sampling Date: September 2, 2009
Unusual Field Conditions: None
Scope of Work Performed: Quarterly groundwater monitoring and sampling
Variations from Work Scope: Well MW-4 was dry.

This submittal presents the data collected in association with routine groundwater monitoring. The attachments include field data sheets, non-hazardous waste data form, chain of custody documentation, certified analytical results, and field procedures for groundwater sampling documentation. 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.

September 21, 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
- Non-Hazardous Waste Data Form
- Chain of Custody Documentation
- Certified Analytical Results
- Field Procedures for Groundwater Sampling

cc: Mr. Paul Supple, BP/ARCO

STRATUS ENVIRONMENTAL, INC.

Site Address 2180 S. Livermore Ave
City Livermore, CA
Sampled by: TH
Signature

Site Number Arco 498
Project Number E 498-04
Project PM Jay Johnson
DATE 9/2/09

Water Level Data					Purge Volume Calculations					Purge Method				Sample Record			Field Data
Well ID	Time	Depth to Product (feet)	Depth to Water (feet)	Total Depth (feet)	Water column (feet)	Diameter (inches)	Multiplier	3 casing volumes (gallons)	Actual water purged (gallons)	No Purge	Bailer	Pump	other	DTW at sample time (feet)	Sample I.D	Sample Time	DO (mg/L)
MW-1	0910		32.00	40.08	8.08	2	.5	4.04	4		X			33.69	MW-1	0940	1.02
2	0905		50.25	57.03	6.78	2	.5	3.39	3.5		X			50.39	2	1030	1.55
3	0855		49.60	55.25	5.66	2	.5	2.83	3		X			50.62	3	1000	1.35
MW-4	0900		DRY	39.84	-	2	.5	-	-	X				-	MW-4	-	-

Multiplier
2" = 0.5 3" = 1.0 4" = 2.0 6" = 4.4

Please refer to groundwater sampling field procedures
pH/Conductivity/temperature Meter - Oakton Model PC-10
DO Meter - Oakton 300 Series (DO is always measured before purge)

CALIBRATION DATE
pH ATH 8/29/09
Conductivity
DO

T:\Forms

ENVIRONMENTAL, INC.

Site Address 686 S. Livermore
City Livermore
Site Sampled by TH

Site Number Arco 448
Project No. E-498-04
Project PM Jay Johnson
Date Sampled 9/6/09

Well ID MW-1				0940
purge start time bailer				odor
	Temp C	pH	cond	gallons
time	21.5	7.47	692	Ø
time	20.8	7.36	662	2
time	20.7	7.38	654	4
time				
purge stop time				

Well ID MW-3				1000
purge start time bailer				odor
	Temp C	pH	cond	gallons
time	20.5	6.96	740	Ø
time	20.1	6.90	756	1.5
time	20.3	6.93	750	3
time				
pugre stop time				

Well ID MW-2				1030
purge start time bailer				No odor
	Temp C	pH	cond	gallons
time	20.8	6.92	782	Ø
time	20.2	6.91	824	1.5
time	20.7	6.91	826	3.5
time				
purge stop time				

Well ID				
purge start time				
	Temp C	pH	cond	gallons
time				
time				
time				
time				
purge stop time				

Well ID				
purge start time				
	Temp C	pH	cond	gallons
time				
time				
time				
time				
purge stop time				

Well ID				
purge start time				
	Temp C	pH	cond	gallons
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Well ID				
purge start time				
	Temp C	pH	cond	gallons
time				
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time				
time				
purge stop time				

Well ID				
purge start time				
	Temp C	pH	cond	gallons
time				
time				
time				
time				
purge stop time				

WELLHEAD OBSERVATION FORM

STRATUS ENVIRONMENTAL, INC.

Site Name/Number: Arco 498 *Date:* 9/2/09 *Technican:* A.H

Well I.D.	Box in Good Condition? X = Yes Blank = No	Well lid secure? X=Yes If not call PM prior to departure	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? # of missing/ Total # *	Bolts Stripped? # of stripped/ Total # *	Bolt Holes Stripped? # of stripped/ Total # *	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												
2	X												
3	X												
MW-4	X												

* Explain corrective action taken (replaced bolt/tapped bolt hole etc…) or if a safety issue, please call PM

DRUM INVENTORY

Drums on site? Yes (No) (circle)

Type and # Steel: _____ Plastic: _____

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

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

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, grafitti on compound, etc.)

NO. 855537

NON-HAZARDOUS WASTE DATA FORM

1. BESI #

GENERATOR

2. Generator's Name and Mailing Address

Generator's Site Address (if different than mailing address)

Generator's Phone:

3. Transporter 1 Company Name

Phone #

4. Transporter 2 Company Name

Phone #

5. Designated Facility Name and Site Address

Phone #

6. Waste Shipping Name and Description	7. Containers No.	7. Containers Type	8. Total Quantity	9. Unit Wt/Vol	10. Profile No.
A.					
B.					
C.					
D.					

11. Special Handling Instructions and Additional Information

12. GENERATOR'S CERTIFICATION: I certify the materials described above on this data form are non-hazardous.

Generator's/Offeror's Printed/Typed Name | Signature | Month | Day | Year

TRANSPORTER

13. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name | Signature | Month | Day | Year

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

FACILITY

14. Designated Facility Owner or Operator: Certification of receipt of materials covered by this data form.

Printed/Typed Name | Signature | Month | Day | Year

GENERATOR

Atlantic Richfield Company
A BP affiliated company

Laboratory Management Program LaMP Chain of Custody Record

BP/ARC Project Name: ARCO 498
BP/ARC Facility No: 498
Req Due Date (mm/dd/yy): SID - TAT
Rush TAT: Yes ___ No X
Lab Work Order Number:

Lab Name: Cal Science	BP/ARC Facility Address: 286 S. Livermore Ave.	Consultant/Contractor: Stratus Environmental
Lab Address: 7440 Lincoln Way	City, State, ZIP Code: Livermore, CA	Consultant/Contractor Project No: E498-QM
Lab PM: Richard Villafania	Lead Regulatory Agency: Alameda County	Address: 3330 Cameron Park Dr., Cameron Park, CA 95682
Lab Phone: 714-895-5494 / 714-895-7501 (fax)	California Global ID No.: T06001-24081	Consultant/Contractor PM: Jay Johnson
Lab Shipping Accnt:	Enfos Proposal No: 000QX-0002	Phone: 530-676-6000 / 530-676-6005 (fax)
Lab Bottle Order No:	Accounting Mode: Provision X OOC-BU ___ OOC-RM ___	Email EDD To: chuff@stratusinc.net
Other Info:	Stage: Appraise Activity: Monitor	Invoice To: BP/ARC ___ Contractor ___
BP/ARC EBM: Paul Supple		
EBM Phone: 925-275-3506		
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	Requested Analyses: 8260 BTEX / 5 oxy's	1,2 DCA	EDB	Report Type & QC Level
	MW-1	9/2	0940		X		6				X		X	X	X	Standard X
	MW-2	9/2	1030		X		6				X		X	X	X	Full Data Package ___
	MW-3	9/2	1000		X		6				X		X	X	X	
																Comments
	TB-0498-09220009						2									Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.
																ON Hold

Sampler's Name: A. Hill	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: Stratus		9/2/09	1450	CEL	9-2-09	1450
Shipment Method: GSO Ship Date: 9/2						
Shipment Tracking No:						

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

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

Calscience
Environmental
Laboratories, Inc.

September 18, 2009

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

Subject: **Calscience Work Order No.: 09-09-0251**
Client Reference: ARCO 498

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 9/3/2009 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,

Calscience Environmental
Laboratories, Inc.
Richard Villafania
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

Stratus Environmental, inc.	Date Received:	09/03/09
3330 Cameron Park Drive, Suite 550	Work Order No:	09-09-0251
Cameron Park, CA 95682-8861	Preparation:	EPA 5030B
	Method:	EPA 8015B (M)

Project: ARCO 498

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-1	**09-09-0251-1-D**	**09/02/09 09:40**	**Aqueous**	**GC 4**	**09/09/09**	**09/09/09 11:14**	**090909B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	570	50	1		ug/L
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
1,4-Bromofluorobenzene	86	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	**09-09-0251-2-D**	**09/02/09 10:30**	**Aqueous**	**GC 4**	**09/09/09**	**09/09/09 11:47**	**090909B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	88	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-3	**09-09-0251-3-D**	**09/02/09 10:00**	**Aqueous**	**GC 4**	**09/09/09**	**09/09/09 12:53**	**090909B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	25000	1200	25		ug/L
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
1,4-Bromofluorobenzene	97	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-695-656**	**N/A**	**Aqueous**	**GC 4**	**09/09/09**	**09/09/09 03:32**	**090909B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
1,4-Bromofluorobenzene	94	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: 09/03/09
Work Order No: 09-09-0251
Preparation: EPA 5030B
Method: EPA 8260B
Units: ug/L

Project: ARCO 498

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-1	**09-09-0251-1-A**	**09/02/09 09:40**	**Aqueous**	**GC/MS U**	**09/05/09**	**09/05/09 20:49**	**090905L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	5.3	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	17	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	98	80-128			Dibromofluoromethane	103	80-127		
Toluene-d8	104	80-120			1,4-Bromofluorobenzene	95	68-120		

MW-2	**09-09-0251-2-B**	**09/02/09 10:30**	**Aqueous**	**GC/MS U**	**09/09/09**	**09/09/09 19:31**	**090909L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.79	0.50	1		Methyl-t-Butyl Ether (MTBE)	12	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	37	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	114	80-127		
Toluene-d8	104	80-120			1,4-Bromofluorobenzene	85	68-120		

MW-3	**09-09-0251-3-A**	**09/02/09 10:00**	**Aqueous**	**GC/MS U**	**09/05/09**	**09/05/09 21:47**	**090905L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	380	12	25		Methyl-t-Butyl Ether (MTBE)	75	12	25	
1,2-Dibromoethane	ND	12	25		Tert-Butyl Alcohol (TBA)	ND	250	25	
1,2-Dichloroethane	ND	12	25		Diisopropyl Ether (DIPE)	ND	12	25	
Ethylbenzene	930	25	50		Ethyl-t-Butyl Ether (ETBE)	ND	12	25	
Toluene	150	12	25		Tert-Amyl-Methyl Ether (TAME)	ND	12	25	
Xylenes (total)	2900	12	25		Ethanol	ND	7500	25	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	97	80-128			Dibromofluoromethane	96	80-127		
Toluene-d8	100	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.	Date Received:	09/03/09
3330 Cameron Park Drive, Suite 550	Work Order No:	09-09-0251
Cameron Park, CA 95682-8861	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	ug/L

Project: ARCO 498

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-703-1,070**	**N/A**	**Aqueous**	**GC/MS U**	**09/05/09**	**09/05/09 13:54**	**090905L01**

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	106	80-127		
Toluene-d8	98	80-120			1,4-Bromofluorobenzene	86	68-120		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-703-1,073**	**N/A**	**Aqueous**	**GC/MS U**	**09/09/09**	**09/09/09 12:01**	**090909L01**

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	117	80-128			Dibromofluoromethane	114	80-127		
Toluene-d8	100	80-120			1,4-Bromofluorobenzene	88	68-120		

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

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Stratus Environmental, inc.		Date Received:	09/03/09
3330 Cameron Park Drive, Suite 550		Work Order No:	09-09-0251
Cameron Park, CA 95682-8861		Preparation:	EPA 5030B
		Method:	EPA 8015B (M)

Project ARCO 498

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
09-09-0496-4	**Aqueous**	**GC 4**	**09/09/09**	**09/09/09**	**090909S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	94	101	38-134	8	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Stratus Environmental, inc.		Date Received:	09/03/09
3330 Cameron Park Drive, Suite 550		Work Order No:	09-09-0251
Cameron Park, CA 95682-8861		Preparation:	EPA 5030B
		Method:	EPA 8260B

Project ARCO 498

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
09-09-0016-6	**Aqueous**	**GC/MS U**	**09/05/09**	**09/05/09**	**090905S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	112	112	76-124	0	0-20	
Carbon Tetrachloride	107	107	74-134	0	0-20	
Chlorobenzene	106	105	80-120	2	0-20	
1,2-Dibromoethane	109	105	80-120	3	0-20	
1,2-Dichlorobenzene	106	108	80-120	2	0-20	
1,1-Dichloroethene	109	112	73-127	2	0-20	
Ethylbenzene	114	114	78-126	0	0-20	
Toluene	113	112	80-120	1	0-20	
Trichloroethene	106	103	77-120	3	0-20	
Vinyl Chloride	105	107	72-126	2	0-20	
Methyl-t-Butyl Ether (MTBE)	104	107	67-121	2	0-49	
Tert-Butyl Alcohol (TBA)	106	106	36-162	0	0-30	
Diisopropyl Ether (DIPE)	115	117	60-138	2	0-45	
Ethyl-t-Butyl Ether (ETBE)	116	117	69-123	1	0-30	
Tert-Amyl-Methyl Ether (TAME)	112	111	65-120	1	0-20	
Ethanol	87	106	30-180	20	0-72	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Stratus Environmental, inc.		Date Received:	09/03/09
3330 Cameron Park Drive, Suite 550		Work Order No:	09-09-0251
Cameron Park, CA 95682-8861		Preparation:	EPA 5030B
		Method:	EPA 8260B

Project ARCO 498

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
09-09-0380-8	**Aqueous**	**GC/MS U**	**09/09/09**	**09/09/09**	**090909S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	107	104	76-124	3	0-20	
Carbon Tetrachloride	103	103	74-134	0	0-20	
Chlorobenzene	107	106	80-120	1	0-20	
1,2-Dibromoethane	107	103	80-120	4	0-20	
1,2-Dichlorobenzene	105	99	80-120	6	0-20	
1,1-Dichloroethene	102	102	73-127	0	0-20	
Ethylbenzene	112	112	78-126	0	0-20	
Toluene	105	103	80-120	1	0-20	
Trichloroethene	102	100	77-120	2	0-20	
Vinyl Chloride	90	93	72-126	4	0-20	
Methyl-t-Butyl Ether (MTBE)	100	96	67-121	2	0-49	
Tert-Butyl Alcohol (TBA)	96	102	36-162	6	0-30	
Diisopropyl Ether (DIPE)	105	102	60-138	3	0-45	
Ethyl-t-Butyl Ether (ETBE)	105	105	69-123	0	0-30	
Tert-Amyl-Methyl Ether (TAME)	111	107	65-120	4	0-20	
Ethanol	84	92	30-180	9	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: 09-09-0251
Cameron Park, CA 95682-8861	Preparation: EPA 5030B
	Method: EPA 8015B (M)

Project: ARCO 498

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-695-656	**Aqueous**	**GC 4**	**09/09/09**	**09/09/09**	**090909B01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	99	104	78-120	5	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: 09-09-0251
Cameron Park, CA 95682-8861	Preparation: EPA 5030B
	Method: EPA 8260B

Project: ARCO 498

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-703-1,070	**Aqueous**	**GC/MS U**	**09/05/09**	**09/05/09**	**090905L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Benzene	106	105	80-120	73-127	1	0-20	
Carbon Tetrachloride	101	102	74-134	64-144	1	0-20	
Chlorobenzene	104	105	80-120	73-127	0	0-20	
1,2-Dibromoethane	105	104	79-121	72-128	1	0-20	
1,2-Dichlorobenzene	105	104	80-120	73-127	1	0-20	
1,1-Dichloroethene	101	104	78-126	70-134	3	0-28	
Ethylbenzene	110	113	80-120	73-127	3	0-20	
Toluene	105	106	80-120	73-127	1	0-20	
Trichloroethene	101	102	79-127	71-135	1	0-20	
Vinyl Chloride	96	97	72-132	62-142	1	0-20	
Methyl-t-Butyl Ether (MTBE)	98	100	69-123	60-132	2	0-20	
Tert-Butyl Alcohol (TBA)	95	90	63-123	53-133	5	0-20	
Diisopropyl Ether (DIPE)	104	109	59-137	46-150	5	0-37	
Ethyl-t-Butyl Ether (ETBE)	103	107	69-123	60-132	4	0-20	
Tert-Amyl-Methyl Ether (TAME)	104	105	70-120	62-128	0	0-20	
Ethanol	77	89	28-160	6-182	14	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: 09-09-0251
Cameron Park, CA 95682-8861	Preparation: EPA 5030B
	Method: EPA 8260B

Project: ARCO 498

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-703-1,073	Aqueous	GC/MS U	09/09/09	09/09/09	090909L01

Parameter	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Benzene	103	99	80-120	73-127	4	0-20	
Carbon Tetrachloride	104	100	74-134	64-144	3	0-20	
Chlorobenzene	102	98	80-120	73-127	4	0-20	
1,2-Dibromoethane	104	100	79-121	72-128	4	0-20	
1,2-Dichlorobenzene	100	101	80-120	73-127	1	0-20	
1,1-Dichloroethene	102	99	78-126	70-134	3	0-28	
Ethylbenzene	107	106	80-120	73-127	1	0-20	
Toluene	103	98	80-120	73-127	5	0-20	
Trichloroethene	103	99	79-127	71-135	4	0-20	
Vinyl Chloride	91	91	72-132	62-142	0	0-20	
Methyl-t-Butyl Ether (MTBE)	97	99	69-123	60-132	2	0-20	
Tert-Butyl Alcohol (TBA)	92	89	63-123	53-133	4	0-20	
Diisopropyl Ether (DIPE)	100	100	59-137	46-150	0	0-37	
Ethyl-t-Butyl Ether (ETBE)	102	100	69-123	60-132	2	0-20	
Tert-Amyl-Methyl Ether (TAME)	105	103	70-120	62-128	2	0-20	
Ethanol	95	96	28-160	6-182	1	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: 09-09-0251

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: 09-09-0251

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

Page 1 of 1

BP/ARC Project Name: ARCO 498
BP/ARC Facility No: 498
Req Due Date (mm/dd/yy): STD - TAT
Rush TAT: Yes ___ No X
Lab Work Order Number: 09-09-0251

Lab Name:	Cal Science	BP/ARC Facility Address:	286 S. Livermore Ave.	Consultant/Contractor:	Stratus Environmental
Lab Address:	7440 Lincoln Way	City, State, ZIP Code:	Livermore, CA	Consultant/Contractor Project No:	E498-QM
Lab PM:	Richard Villafania	Lead Regulatory Agency:	Alameda County	Address:	3330 Cameron Park Dr., Cameron Park, CA 95682
Lab Phone:	714-895-5494 / 714-895-7501 (fax)	California Global ID No.:	T06001-24081	Consultant/Contractor PM:	Jay Johnson
Lab Shipping Accnt:		Enfos Proposal No:	000QX-0002	Phone:	530-676-6000 / 530-676-6005 (fax)
Lab Bottle Order No:		Accounting Mode:	Provision X OOC-BU ___ OOC-RM ___	Email EDD To:	chuff@stratusinc.net
Other Info:		Stage:	Appraise Activity: Monitor	Invoice To:	BP/ARC ___ Contractor ___
BP/ARC EBM:	Paul Supple				
EBM Phone:	925-275-3506				
EBM Email:	paul.supple@bp.com				

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	Matrix: Other	No. Containers / Preservative: Total Number of Containers	Unpreserved	H_2SO_4	HNO_3	HCl	Methanol	Requested Analyses: 8260 by 8015M	BTEX / 5 oxy's by 8260	1,2 DCA	EDB / Ethanol
1	MW-1	9/2/2009	0940		X			6				X		X	X	X	X
2	MW-2	9/2	1030		X			6				X		X	X	X	X
3	MW-3	9/2	1000		X			6				X		X	X	X	X
4	TB-0498-09023009							2									

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

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

ON Hold

Sampler's Name:	A. Hill
Sampler's Company:	Stratus
Shipment Method:	GSO
Ship Date:	9/2
Shipment Tracking No:	512567675

Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
to GSO	9/2/09	1450	CEL	9-2-09	1450
	9-2-09	1730	WCbatha CEL	9/3/09	1030

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

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

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 09-09-0251

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: STRATUS ENV'L.

DATE: 9/3/09

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

Temperature 2.5 °C - 0.2 °C (CF) = 2.3 °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: WB

CUSTODY SEALS INTACT:

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

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

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 ☑VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na$_2$** ☐1AGB**s** ☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☐1PB ☐500PB ☐500PB**na** ☐250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☐_____ ☐_____ ☐_____

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

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelop **Reviewed by:** YL

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:** YL

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

GEOTRACKER UPLOAD CONFIRMATION

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 498**
Facility Global ID:	**T0600124081**
Facility Name:	**ARCO #0498**
File Name:	**GEO_WELL.zip**
Organization Name:	**Broadbent & Associates, Inc.**
Username:	**BROADBENT-C**
IP Address:	**67.118.40.90**
Submittal Date/Time:	**9/29/2009 3:15:18 PM**
Confirmation Number:	**7362875699**

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:	**T0600124081**
Facility Name:	**ARCO #0498**
File Name:	**09090251.zip**
Organization Name:	**Broadbent & Associates, Inc.**
Username:	**BROADBENT-C**
IP Address:	**67.118.40.90**
Submittal Date/Time:	**9/29/2009 3:17:02 PM**
Confirmation Number:	**6139077603**

VIEW QC REPORT

VIEW DETECTIONS REPORT