Atlantic Richfield Company
(a BP affiliated company)

P.O. Box 1257
San Ramon, CA 94583
Phone: (925) 275-3801
Fax: (925) 275-3815

July 27, 2009

Re: Second Quarter, 2009 Ground-Water Monitoring Report
Atlantic Richfield Company Station #498
286 South Livermore Avenue
Livermore, CA
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:

Paul Supple
Environmental Business Manager

Second Quarter, 2009 Ground-Water Monitoring Report
Atlantic Richfield Company Station #498
286 Livermore Avenue
Livermore, California

Prepared for

Mr. Paul Supple
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

July, 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

July 27, 2009

Project No. 08-82-603

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

Attn.: Mr. Paul Supple

Re: Second 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. Supple:

Provided herein is the *Second 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 Second Quarter, 2009 ground-water monitoring results.

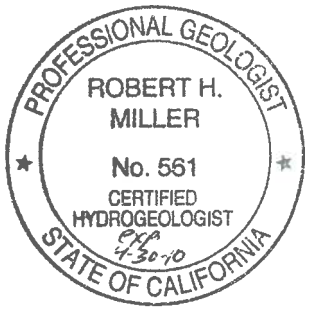
Should you have questions regarding the work performed or results obtained, please do not hesitate to contact us at (530) 566-1400.

Sincerely,

BROADBENT & ASSOCIATES, INC.

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

Robert H. Miller, P.G., C.HG.
Principal 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. Paul Supple
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 (Second Quarter, 2009):

1. Submitted First Quarter, 2009 Ground-Water Monitoring Report. Report completed by BAI.
2. Conducted ground-water monitoring/sampling for Second Quarter, 2009. Work performed by Stratus Environmental, Inc. (Stratus).

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

1. Submit Second Quarter, 2009 Ground-Water Monitoring Report (contained herein).
2. Submit Soil and Ground-Water Investigation Work Plan by August 18, 2009.
3. No ground-water monitoring/sampling work activities are currently scheduled to be completed on the property during Third Quarter 2009.

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):	**30.90 (MW-1) to 43.98 (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 Second Quarter, 2009 (MW-1, MW-2, and MW-3) with concentrations ranging from 110 micrograms per liter (µg/L) in MW-2 to 5,100 µg/L in MW-3. Benzene was detected in wells MW-1, MW-2, and MW-3 at concentrations ranging from 1.6 µg/L in well MW-1 to 310 µg/L in well MW-3. Toluene was detected in MW-3 at a concentration of 14 µg/L. Ethylbenzene was detected in MW-3 at a concentration of 14 µg/L. Xylenes (total) were detected in MW-3 at a concentration of 310 µg/L. Methyl tert-butyl ether was detected in wells MW-1, MW-2, and MW-3 at concentrations ranging from 32 µg/L (MW-1) to 66 µg/L (MW-3). Tert-butyl alcohol (TBA) was detected in MW-1, MW-2, and MW-3 at concentrations of 28 µg/L, 83 µg/L, and 100 µg/L, respectively. No other analytes were detected from ground-water samples collected during Second Quarter, 2009.

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

Drawing 1 depicts a site location map. Drawing 2 shows the analytical summary map for the Second 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 14 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.

CONSLUSION AND RECOMMENDATION:

The February 6, 2009 *Soil and Ground-Water Investigation and Fourth Quarter, 2008 Quarterly Monitoring Report* recommended that two additional quarters of ground-water monitoring/sampling (First and Second Quarter, 2009) be completed before recommendations are provided for additional investigation work activities. The two additional quarters of ground-water monitoring/sampling were recommended to further the understanding of the hydrogeology at the site which should assist in placement of sample locations for future ground-water investigation work activities. The March 16, 2009 ACEH letter approved these recommendations and requested that a soil and ground-water investigation work plan be completed and submitted by August 28, 2009.

A summary of water elevations monitored over the last three quarters important to understanding the hydrogeology at the site are as follows:

- The ground-water elevation in MW-1 has remained relatively consistent, fluctuating approximately two feet from the time period fourth quarter, 2008 to second quarter, 2009.
- Ground-water elevations in wells MW-2 and MW-3 fluctuated significantly increasing approximately 10 feet from the time period fourth quarter, 2008 to first quarter, 2009 followed be a decrease of approximately 5 feet from the time period first quarter, 2009 to second quarter, 2009.
- Ground-water has only been observed in well MW-4 on one occasion during the first quarter, 2009.
- A ground-water elevation contour map has only been generated once (from data collected during the first quarter, 2009) utilizing wells MW-2, MW-3, and MW-4.

As a reminder, construction of wells MW-1 and MW-4 are similar (both screened from 20 to 40 feet below land surface) and wells MW-2 and MW-3 are similar (both screened from 37 to 57 feet below land surface). Although the screen intervals overlap, based on the data collected to date it appears that MW-1 is completed in a different water bearing formation. Unfortunately, a review of the lithology from each boring did not provide further insight into separate water bearing zones. One possible explanation to explain the anomalous water levels in MW-1 could be the presence of a localized perched water bearing zone in the immediate vicinity of the well. A further discussion on closing this perceived data gap will be included in the forthcoming soil and ground-water investigation work plan.

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 has yet to be completed, Station #498 will be sampling during the Third Quarter, 2009. Semi-annual monitoring and sampling will be implemented beginning Fourth Quarter, 2009.

The ACEH July 9, 2009 letter requested that the sampling frequency of each well and rationale for the proposed sampling schedule be provided in subsequent monitoring reports. It is proposed herein that all site wells (MW-1 through MW-4) be sampled semi-annually. The rationale to include all wells in

the semi-annual sampling event is based on the fact that the project is still in the assessment phase; therefore, collection of data from all wells appears prudent.

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.

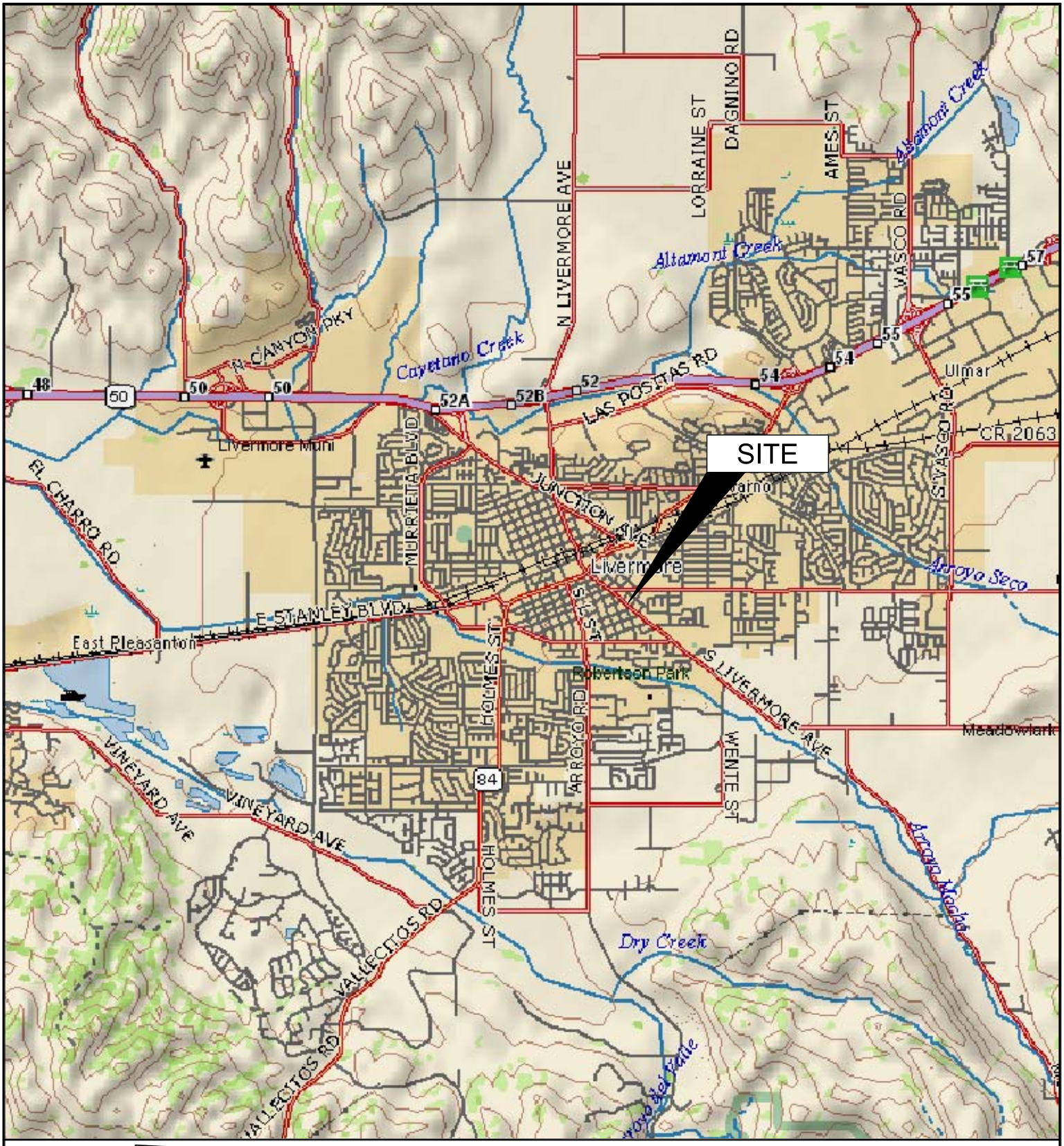
ATTACHMENTS:

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

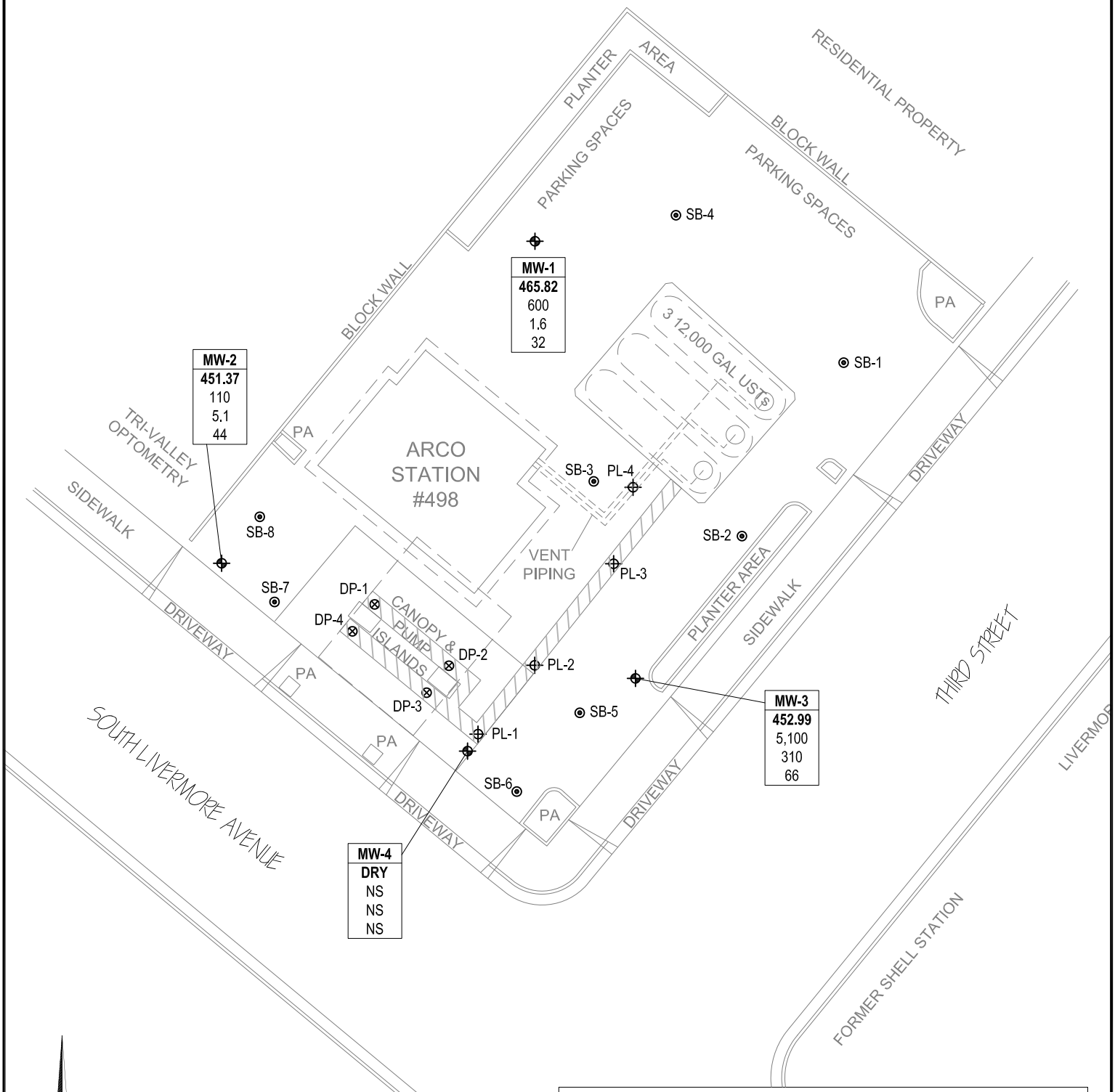


BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, California 95926
Project No.: 06-82-603 Date: 7/22/2009

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: 6/2/09

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**
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**
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**
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**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**

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**	
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**	
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**	
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**

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

June 22, 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: June 2, 2009
Unusual Field Conditions: None
Scope of Work Performed: Quarterly groundwater monitoring and sampling
Variations from Work Scope: Well MW-4 was dry.

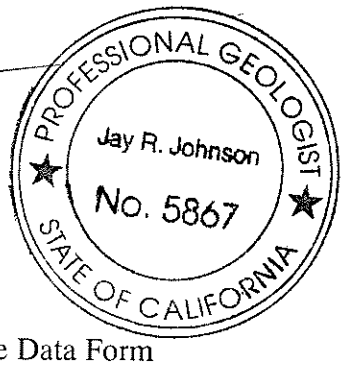
This submittal presents the data collected in association with routine groundwater monitoring. The attachments include field data sheets, non-hazardous waste data form, chain of custody documentation, certified analytical results, and field procedures for groundwater sampling documentation. The information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

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 886 S. Livermore
City Livermore, CA
Sampled by: TH
Signature

Site Number Acco 498
Project Number E-498-04
Project PM Jay Johnson
DATE 6/2/09

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	PRE DO (mg/L)	Post DO
Mw-1	0925		30.90	40.11	9.21	2	.5	4.61	4.5		X			32.67	Mw-1	0850	.59	2.36
2	0810		43.98	57.01	14.03	2	.5	7.02	7		X			44.20	2	0940	1.87	1.98
3	0820		43.33	55.25	11.92	2	.5	5.96	6		X			45.46	3	0910	2.06	1.63
Mw-4	0810		DRY	39.85	—	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 PJH 6/1/09
Conductivity
DO

T:\Forms

STRATUS ENVIRONMENTAL, INC.

Site Address 286 S. Livermore
City Livermore, CA
Site Sampled by TH

Site Number Arco 498
Project No. E-498-04
Project PM Jay Johnson
Date Sampled 6/2/09

Well ID MW-1 0850
purge start time bailer odor

	Temp C	pH	cond	gallons
time	21.2	7.12	339	Ø
time	21.3	7.07	346	2.5
time	21.3	7.17	350	4.5
time				

purge stop time

Well ID MW-3 0910
purge start time bailer odor

	Temp C	pH	cond	gallons
time	21.6	7.10	386	Ø
time	21.4	7.16	400	3
time	21.2	7.18	394	6
time				

pugre stop time

Well ID MW-2 0940
purge start time bailer odor

	Temp C	pH	cond	gallons
time	21.6	7.42	401	Ø
time	21.2	7.38	415	3.5
time	21.1	7.42	394	7
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
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
time				
time				
time				
time				

purge stop time

ORIGINAL

NO. 672157

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR

SITE:

NAME BP WEST COAST PRODUCTS LLC ARCO # 495

EPA I.D. NO. NOT REQUIRED

ADDRESS P.O. BOX 80249

PROFILE NO.

RANCHO SANTA MARGARITA

CITY, STATE, ZIP CA 92688

PHONE NO. ( )

CONTAINERS: No. ______ VOLUME 18.5 gal WEIGHT ______

TYPE: ☐ TANK TRUCK ☐ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER ______

WASTE DESCRIPTION NON-HAZARDOUS WATER

GENERATING PROCESS WELL PURGING/DECON WATER

	COMPONENTS OF WASTE	PPM	%		COMPONENTS OF WASTE	PPM	%
1.	WATER 99-100%			5.			
2.	TPH <1%			6.			
3.				7.	BESI#		
4.				8.			

PROPERTIES: 7-10 pH ☐ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER ______

HANDLING INSTRUCTIONS: WEAR ALL APPROPRIATE PROTECTIVE CLOTHING

THE GENERATOR CERTIFIES THAT THE WASTE AS DESCRIBED IS 100% NON-HAZARDOUS.

Larry Moothart BESI for BP — 6/2/01

TYPED OR PRINTED FULL NAME & SIGNATURE — DATE

TRANSPORTER

Transporter #1 Transporter #2

NAME STRATUS ENVIRONMENTAL

EPA I.D. NO.

ADDRESS 3330 CAMERON PARK DR

SERVICE ORDER NO. ______

CITY, STATE, ZIP CAMERON PARK, CA 95682

PICK UP DATE ______

PHONE NO. 530-676-2031

TRUCK, UNIT, I.D. NO.

TYPED OR PRINTED FULL NAME & SIGNATURE — DATE 6/2/01

TSD FACILITY

NAME INSTRAT, INC

EPA I.D. NO.

DISPOSAL METHOD

ADDRESS 1105 AIRPORT RD #C

☐ LANDFILL ☐ OTHER ______

CITY, STATE, ZIP RIO VISTA, CA 94571

PHONE NO. 530-753-1829

TYPED OR PRINTED FULL NAME & SIGNATURE — DATE

GEN	OLD/NEW	L	A	TONS
TRANS		S	B	
C/Q		RT/CD		HWDF NONE

DISCREPANCY

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): STD-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: GRO by 8015 M	BTEX PS OXY's *	1,2 DCA *	EDB Ethanol *
	MW-1	6/2/2009	0850		X		6				X		X	X	X	X
	MW-2	6/2	0940		X		6				X		X	X	X	X
	MW-3	6/2	0910		X		6				X		X	X	X	X
	TB-0498-06022009						2									

Report Type & QC Level
Standard ___
Full Data Package ___

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

* by 8260

On Hold

Sampler's Name: A. Hill
Sampler's Company: Stratus
Shipment Method: GSO
Ship Date: 6/2/09
Shipment Tracking No:

Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
	6/2/09	1545			

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.

June 16, 2009

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

Subject: **Calscience Work Order No.: 09-06-0218**
Client Reference: ARCO 498

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 6/3/2009 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:	06/03/09
3330 Cameron Park Drive, Suite 550	Work Order No:	09-06-0218
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	**09-06-0218-1-F**	**06/02/09 08:50**	**Aqueous**	**GC 4**	**06/10/09**	**06/10/09 23:25**	**090610B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	600	50	1		ug/L
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
1,4-Bromofluorobenzene	118	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	**09-06-0218-2-E**	**06/02/09 09:40**	**Aqueous**	**GC 4**	**06/10/09**	**06/10/09 23:58**	**090610B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	110	50	1		ug/L
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
1,4-Bromofluorobenzene	108	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-3	**09-06-0218-3-E**	**06/02/09 09:10**	**Aqueous**	**GC 4**	**06/10/09**	**06/11/09 00:31**	**090610B01**

Comment(s): -BZ = Sample preserved improperly.

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	5100	50	1		ug/L
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
1,4-Bromofluorobenzene	124	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-695-570**	**N/A**	**Aqueous**	**GC 4**	**06/10/09**	**06/10/09 12:05**	**090610B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
1,4-Bromofluorobenzene	105	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: 06/03/09
Work Order No: 09-06-0218
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	**09-06-0218-1-A**	**06/02/09 08:50**	**Aqueous**	**GC/MS Z**	**06/09/09**	**06/09/09 16:18**	**090609L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	1.6	0.50	1		Methyl-t-Butyl Ether (MTBE)	32	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	28	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	106	73-145			Dibromofluoromethane	103	81-135		
Toluene-d8	101	83-119			1,4-Bromofluorobenzene	96	74-110		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	**09-06-0218-2-A**	**06/02/09 09:40**	**Aqueous**	**GC/MS Z**	**06/09/09**	**06/09/09 16:47**	**090609L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	5.1	1.0	2		Methyl-t-Butyl Ether (MTBE)	44	1.0	2	
1,2-Dibromoethane	ND	1.0	2		Tert-Butyl Alcohol (TBA)	83	20	2	
1,2-Dichloroethane	ND	1.0	2		Diisopropyl Ether (DIPE)	ND	1.0	2	
Ethylbenzene	ND	1.0	2		Ethyl-t-Butyl Ether (ETBE)	ND	1.0	2	
Toluene	ND	1.0	2		Tert-Amyl-Methyl Ether (TAME)	ND	1.0	2	
Xylenes (total)	ND	1.0	2		Ethanol	ND	600	2	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	106	73-145			Dibromofluoromethane	101	81-135		
Toluene-d8	101	83-119			1,4-Bromofluorobenzene	95	74-110		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-3	**09-06-0218-3-B**	**06/02/09 09:10**	**Aqueous**	**GC/MS Z**	**06/10/09**	**06/10/09 19:15**	**090610L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	310	5.0	10		Methyl-t-Butyl Ether (MTBE)	66	5.0	10	
1,2-Dibromoethane	ND	5.0	10		Tert-Butyl Alcohol (TBA)	100	100	10	
1,2-Dichloroethane	ND	5.0	10		Diisopropyl Ether (DIPE)	ND	5.0	10	
Ethylbenzene	180	5.0	10		Ethyl-t-Butyl Ether (ETBE)	ND	5.0	10	
Toluene	14	5.0	10		Tert-Amyl-Methyl Ether (TAME)	ND	5.0	10	
Xylenes (total)	310	5.0	10		Ethanol	ND	3000	10	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	104	73-145			Dibromofluoromethane	108	81-135		
Toluene-d8	101	83-119			1,4-Bromofluorobenzene	99	74-110		

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: 06/03/09
Work Order No: 09-06-0218
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	**099-12-703-926**	**N/A**	**Aqueous**	**GC/MS Z**	**06/09/09**	**06/09/09 11:27**	**090609L01**

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	98	73-145			Dibromofluoromethane	97	81-135		
Toluene-d8	99	83-119			1,4-Bromofluorobenzene	96	74-110		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-703-931**	**N/A**	**Aqueous**	**GC/MS Z**	**06/10/09**	**06/10/09 11:30**	**090610L01**

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	103	73-145			Dibromofluoromethane	103	81-135		
Toluene-d8	101	83-119			1,4-Bromofluorobenzene	96	74-110		

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

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Stratus Environmental, inc.		Date Received:	06/03/09
3330 Cameron Park Drive, Suite 550		Work Order No:	09-06-0218
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
09-06-0328-1	**Aqueous**	**GC 4**	**06/10/09**	**06/10/09**	**090610S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	91	90	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:	06/03/09
3330 Cameron Park Drive, Suite 550		Work Order No:	09-06-0218
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
09-06-0345-3	**Aqueous**	**GC/MS Z**	**06/09/09**	**06/09/09**	**090609S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	106	107	86-122	1	0-8	
Carbon Tetrachloride	104	104	78-138	1	0-9	
Chlorobenzene	101	98	90-120	3	0-9	
1,2-Dibromoethane	107	102	70-130	5	0-30	
1,2-Dichlorobenzene	101	102	89-119	1	0-10	
1,1-Dichloroethene	110	107	52-142	3	0-23	
Ethylbenzene	104	102	70-130	2	0-30	
Toluene	103	103	85-127	0	0-12	
Trichloroethene	97	96	78-126	1	0-10	
Vinyl Chloride	105	110	56-140	5	0-21	
Methyl-t-Butyl Ether (MTBE)	102	102	64-136	0	0-28	
Tert-Butyl Alcohol (TBA)	102	98	27-183	4	0-60	
Diisopropyl Ether (DIPE)	109	107	78-126	2	0-16	
Ethyl-t-Butyl Ether (ETBE)	106	99	67-133	7	0-21	
Tert-Amyl-Methyl Ether (TAME)	90	90	63-141	0	0-21	
Ethanol	138	133	11-167	4	0-64	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Stratus Environmental, inc.		Date Received:	06/03/09
3330 Cameron Park Drive, Suite 550		Work Order No:	09-06-0218
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
09-06-0312-2	**Aqueous**	**GC/MS Z**	**06/10/09**	**06/10/09**	**090610S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	103	103	86-122	0	0-8	
Carbon Tetrachloride	106	105	78-138	1	0-9	
Chlorobenzene	100	99	90-120	1	0-9	
1,2-Dibromoethane	103	100	70-130	3	0-30	
1,2-Dichlorobenzene	101	99	89-119	2	0-10	
1,1-Dichloroethene	112	110	52-142	1	0-23	
Ethylbenzene	104	102	70-130	1	0-30	
Toluene	103	103	85-127	0	0-12	
Trichloroethene	97	97	78-126	1	0-10	
Vinyl Chloride	111	111	56-140	0	0-21	
Methyl-t-Butyl Ether (MTBE)	99	95	64-136	4	0-28	
Tert-Butyl Alcohol (TBA)	98	111	27-183	13	0-60	
Diisopropyl Ether (DIPE)	115	113	78-126	2	0-16	
Ethyl-t-Butyl Ether (ETBE)	102	96	67-133	6	0-21	
Tert-Amyl-Methyl Ether (TAME)	86	85	63-141	2	0-21	
Ethanol	130	126	11-167	3	0-64	

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:	09-06-0218
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
099-12-695-570	Aqueous	GC 4	06/10/09	06/10/09	090610B01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	103	101	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:	09-06-0218
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
099-12-703-926	Aqueous	GC/MS Z	06/09/09	06/09/09	090609L01

Parameter	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Benzene	104	104	87-117	82-122	0	0-7	
Carbon Tetrachloride	104	104	78-132	69-141	0	0-8	
Chlorobenzene	101	101	88-118	83-123	0	0-8	
1,2-Dibromoethane	103	101	80-120	73-127	2	0-20	
1,2-Dichlorobenzene	101	104	88-118	83-123	2	0-8	
1,1-Dichloroethene	108	108	71-131	61-141	0	0-14	
Ethylbenzene	104	102	80-120	73-127	2	0-20	
Toluene	100	102	85-127	78-134	1	0-7	
Trichloroethene	100	103	85-121	79-127	3	0-11	
Vinyl Chloride	107	110	64-136	52-148	3	0-10	
Methyl-t-Butyl Ether (MTBE)	101	102	67-133	56-144	1	0-16	
Tert-Butyl Alcohol (TBA)	108	105	34-154	14-174	2	0-19	
Diisopropyl Ether (DIPE)	107	109	80-122	73-129	1	0-8	
Ethyl-t-Butyl Ether (ETBE)	100	104	73-127	64-136	4	0-11	
Tert-Amyl-Methyl Ether (TAME)	97	95	69-135	58-146	2	0-12	
Ethanol	99	107	34-124	19-139	8	0-44	

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: 09-06-0218
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
099-12-703-931	**Aqueous**	**GC/MS Z**	**06/10/09**	**06/10/09**	**090610L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Benzene	106	103	87-117	82-122	3	0-7	
Carbon Tetrachloride	107	104	78-132	69-141	2	0-8	
Chlorobenzene	102	101	88-118	83-123	1	0-8	
1,2-Dibromoethane	103	101	80-120	73-127	3	0-20	
1,2-Dichlorobenzene	101	99	88-118	83-123	2	0-8	
1,1-Dichloroethene	113	113	71-131	61-141	1	0-14	
Ethylbenzene	105	105	80-120	73-127	0	0-20	
Toluene	104	102	85-127	78-134	2	0-7	
Trichloroethene	104	102	85-121	79-127	2	0-11	
Vinyl Chloride	117	112	64-136	52-148	4	0-10	
Methyl-t-Butyl Ether (MTBE)	99	94	67-133	56-144	5	0-16	
Tert-Butyl Alcohol (TBA)	108	99	34-154	14-174	8	0-19	
Diisopropyl Ether (DIPE)	114	112	80-122	73-129	2	0-8	
Ethyl-t-Butyl Ether (ETBE)	99	95	73-127	64-136	4	0-11	
Tert-Amyl-Methyl Ether (TAME)	87	85	69-135	58-146	2	0-12	
Ethanol	130	115	34-124	19-139	13	0-44	LQ

Total number of LCS compounds : 16
Total number of ME compounds : 1
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: 09-06-0218

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: 09-06-0218

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

BP/ARC Project Name: ARCO 498
BP/ARC Facility No: 498

Req Due Date (mm/dd/yy): STD-TAT (0218)
Lab Work Order Number:
Page 1 of 1
Rush TAT: Yes ■ No X

Lab Name:	Cal Science
Lab Address:	7440 Lincoln Way
Lab PM:	Richard Villafania
Lab Phone:	714-895-5494 / 714-895-7501 (fax)
Lab Shipping Accnt:	
Lab Bottle Order No:	
Other Info:	
BP/ARC EBM:	Paul Supple
EBM Phone:	925-275-3506
EBM Email:	paul.supple@bp.com

BP/ARC Facility Address:	286 S. Livermore Ave.
City, State, ZIP Code:	Livermore, CA
Lead Regulatory Agency:	Alameda County
California Global ID No.:	T06001-24081
Enfos Proposal No:	000QX-0002
Accounting Mode:	Provision X OOC-BU ___ OOC-RM ___
Stage:	Appraise Activity: Monitor

Consultant/Contractor:	Stratus Environmental
Consultant/Contractor Project No:	E498-QM
Address:	3330 Cameron Park Dr., Cameron Park, CA 95682
Consultant/Contractor PM:	Jay Johnson
Phone:	530-676-6000 / 530-676-6005 (fax)
Email EDD To:	chuff@stratusinc.net
Invoice To:	BP/ARC ___ Contractor ___

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

Lab No.	Sample Description	Date (2009)	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H_2SO_4	HNO_3	HCl	Methanol	GRO by 8015M	BTEX / 5 OXY's*	1,2 DCA*	EDB / Ethanol*	Comments
1	MW-1	6/2	0850		X		6				X		X	X	X	X	* by 8260
2	MW-2	6/2	0940		X		6				X		X	X	X	X	
3	MW-3	6/2	0910		X		6				X		X	X	X	X	
4	TB-0498-06022009						2										ON Hold

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

Sampler's Name: A. Hill
Sampler's Company: Stratus
Shipment Method: GSO Ship Date: 6/2/09
Shipment Tracking No: 9255512248

Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
[signature]	6/2/09	1545	[signature] CCS	6/3/09	1000

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

BP/ARC LaMP COC Rev. 6 01/01/2009

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 09-06- 0 2 1 8

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: STRATUS ENV'L.

DATE: 6 / 3 / 09

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

Temperature 2.6 °C - 0.2 °C (CF) = 2.4 °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:** WS

CUSTODY SEALS INTACT:

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

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present **Initial:** W.S.C

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 ☐100PB ☐100PBna_2 ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Summa® ☐_____ **Other:** ☐_____ **Checked/Labeled by:** W.S.C

Container: C: Clear A: Amber P: Plastic G: Glass J: Jar (Wide-mouth) B: Bottle (Narrow-mouth) **Reviewed by:** DC

Preservative: h: HCL n: HNO_3 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:** W.S.C

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:	**2Q09 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:	**7/8/2009 4:24:49 PM**
Confirmation Number:	**4730440437**

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:	**2Q09 GW Monitoring**
Facility Global ID:	**T0600124081**
Facility Name:	**ARCO #0498**
File Name:	**09060218.zip**
Organization Name:	**Broadbent & Associates, Inc.**
Username:	**BROADBENT-C**
IP Address:	**67.118.40.90**
Submittal Date/Time:	**7/8/2009 4:32:09 PM**
Confirmation Number:	**5224503874**

VIEW QC REPORT

VIEW DETECTIONS REPORT